Tivoli® IBM Tivoli NetView for z/OS

IBM

Version 5 Release 4

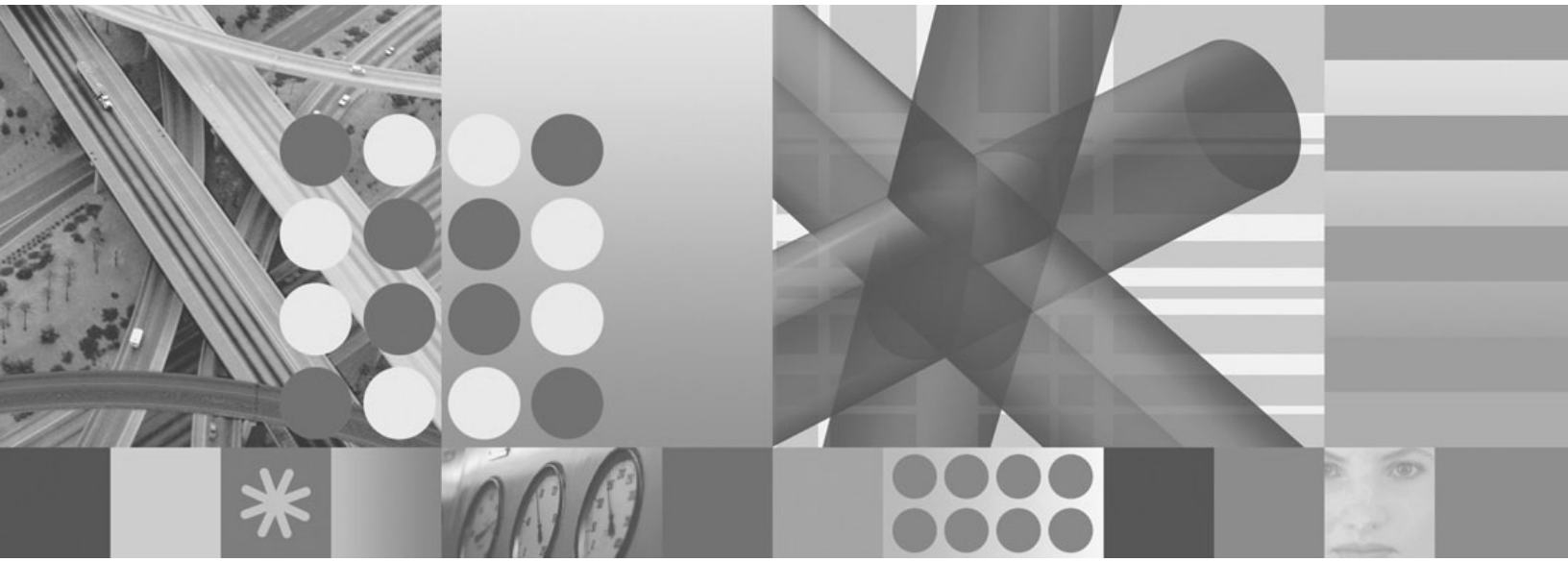
User's Guide: Automated Operations Network

GC31-8851-05

Tivoli® IBM Tivoli NetView for z/OS

IBM

Version 5 Release 4



User's Guide: Automated Operations Network

GC31-8851-05

Note
Before using this information and the product it supports, read the information in "Notices" on page 451.

This edition applies to version 5, release 4 of IBM Tivoli NetView for z/OS (product number 5697-ENV) and to all subsequent versions, releases, and modifications until otherwise indicated in new editions.

This edition replaces GC31-8851-04.

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About this publication

The IBM® Tivoli® NetView® for z/OS® product provides advanced capabilities that you can use to maintain the highest degree of availability of your complex, multi-platform, multi-vendor networks and systems from a single point of control. This publication, the *IBM Tivoli NetView for z/OS User's Guide: Automated Operations Network*, describes how to use NetView Automated Operations Network (AON) functions to improve system and network efficiency and to eliminate or simplify much of the routine work that operators perform. It also describes customization and programming activities used to tailor and extend the automated operations capabilities of AON, which provides event-driven network automation implemented from a NetView base.

Intended audience

This publication is for those who use Automated Operations Network (AON) to perform network automation. The publication is intended for those who are new to automation and for network operators who need to control and to manage the NetView network automation policy and functions. It is also for system programmers and lead operations personnel who are responsible for customizing AON, who should have experience using the NetView program and should understand the requirements of their network.

Publications

This section lists publications in the IBM Tivoli NetView for z/OS library and related documents. It also describes how to access Tivoli publications online and how to order Tivoli publications.

IBM Tivoli NetView for z/OS library

The following documents are available in the IBM Tivoli NetView for z/OS library:

- *Administration Reference*, SC31-8854, describes the NetView program definition statements required for system administration.
- *Application Programmer's Guide*, SC31-8855, describes the NetView program-to-program interface (PPI) and how to use the NetView application programming interfaces (APIs).
- *Automation Guide*, SC31-8853, describes how to use automated operations to improve system and network efficiency and operator productivity.
- *Command Reference Volume 1 (A-N)*, SC31-8857, and *Command Reference Volume 2 (O-Z)*, SC31-8858, describe the NetView commands, which can be used for network and system operation and in command lists and command procedures.
- *Customization Guide*, SC31-8859, describes how to customize the NetView product and points to sources of related information.
- *Data Model Reference*, SC31-8864, provides information about the Graphic Monitor Facility host subsystem (GMFHS), SNA topology manager, and MultiSystem Manager data models.
- *Installation: Configuring Additional Components*, SC31-8874, describes how to configure NetView functions beyond the base functions.
- *Installation: Configuring Graphical Components*, SC31-8875, describes how to install and configure the NetView graphics components.

- *Installation: Configuring the Tivoli NetView for z/OS Enterprise Management Agent*, SC31-6969, describes how to install and configure the NetView for z/OS Enterprise Management Agent.
- *Installation: Getting Started*, SC31-8872, describes how to install and configure the base NetView functions.
- *Installation: Migration Guide*, SC31-8873, describes the new functions provided by the current release of the NetView product and the migration of the base functions from a previous release.
- *IP Management*, SC27-2506, describes how to use the NetView product to manage IP networks.
- *Messages and Codes Volume 1 (AAU-DSI)*, SC31-6965, and *Messages and Codes Volume 2 (DUI-IHS)*, SC31-6966, describe the messages for the NetView product, the NetView abend codes, the sense codes that are included in NetView messages, and generic alert code points.
- *Programming: Assembler*, SC31-8860, describes how to write exit routines, command processors, and subtasks for the NetView product using assembler language.
- *Programming: Pipes*, SC31-8863, describes how to use the NetView pipelines to customize a NetView installation.
- *Programming: PL/I and C*, SC31-8861, describes how to write command processors and installation exit routines for the NetView product using PL/I or C.
- *Programming: REXX and the NetView Command List Language*, SC31-8862, describes how to write command lists for the NetView product using the Restructured Extended Executor language (REXX) or the NetView command list language.
- *Resource Object Data Manager and GMFHS Programmer's Guide*, SC31-8865, describes the NetView Resource Object Data Manager (RODM), including how to define your non-SNA network to RODM and use RODM for network automation and for application programming.
- *Security Reference*, SC31-8870, describes how to implement authorization checking for the NetView environment.
- *SNA Topology Manager Implementation Guide*, SC31-8868, describes planning for and implementing the NetView SNA topology manager, which can be used to manage subarea, Advanced Peer-to-Peer Networking, and TN3270 resources.
- *Troubleshooting Guide*, GC27-2507, provides information about documenting, diagnosing, and solving problems that might occur in using the NetView product.
- *Tuning Guide*, SC31-8869, provides tuning information to help achieve certain performance goals for the NetView product and the network environment.
- *User's Guide: Automated Operations Network*, GC31-8851, describes how to use the NetView Automated Operations Network (AON) component, which provides event-driven network automation, to improve system and network efficiency. It also describes how to tailor and extend the automated operations capabilities of the AON component.
- *User's Guide: NetView*, GC31-8849, describes how to use the NetView product to manage complex, multivendor networks and systems from a single point.
- *User's Guide: NetView Management Console*, GC31-8852, provides information about the NetView management console interface of the NetView product.
- *User's Guide: Web Application*, SC32-9381, describes how to use the NetView Web application to manage complex, multivendor networks and systems from a single point.

- *Licensed Program Specifications*, GC31-8848, provides the license information for the NetView product.
- *Program Directory for IBM Tivoli NetView for z/OS US English*, GI10-3194, contains information about the material and procedures that are associated with installing the IBM Tivoli NetView for z/OS product.
- *Program Directory for IBM Tivoli NetView for z/OS Japanese*, GI10-3210, contains information about the material and procedures that are associated with installing the IBM Tivoli NetView for z/OS product.
- *IBM Tivoli NetView for z/OS V5R4 Online Library*, SK2T-6175, contains the publications that are in the NetView for z/OS library. The publications are available in PDF, HTML, and BookManager® formats.

Related publications

You can find additional product information on the NetView for z/OS Web site:

http://www.ibm.com/software/tivoli/products/netview-zos/

For information about the NetView Bridge function, see *Tivoli NetView for OS/390 Bridge Implementation*, SC31-8238-03 (available only in the V1R4 library).

Accessing terminology online

The *Tivoli Software Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Software Glossary* is available at the following Tivoli software library Web site:

http://publib.boulder.ibm.com/tividd/glossary/tivoliglossarymst.htm

The IBM Terminology Web site consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology Web site at the following Web address:

http://www.ibm.com/software/globalization/terminology/

For a list of NetView for z/OS terms and definitions, refer to the IBM Terminology Web site. The following terms are used in this library:

NetView
For the following products:
- Tivoli NetView for z/OS version 5 release 4
- Tivoli NetView for z/OS version 5 release 3
- Tivoli NetView for z/OS version 5 release 2
- Tivoli NetView for z/OS version 5 release 1
- Tivoli NetView for OS/390® version 1 release 4

MVS For z/OS operating systems

MVS element
For the BCP element of the z/OS operating system

CNMCMD
For the CNMCMD member and the members that are included in it using the %INCLUDE statement

CNMSTYLE
For the CNMSTYLE member and the members that are included in it using the %INCLUDE statement

PARMLIB
For SYS1.PARMLIB and other data sets in the concatenation sequence

Unless otherwise indicated, references to programs indicate the latest version and release of the programs. If only a version is indicated, the reference is to all releases within that version.

When a reference is made about using a personal computer or workstation, any programmable workstation can be used.

Using NetView for z/OS online help

The following types of NetView for z/OS mainframe online help are available, depending on your installation and configuration:

- General help and component information
- Command help
- Message help
- Sense code information
- Recommended actions

Using LookAt to look up message explanations

LookAt is an online facility that you can use to look up explanations for most of the IBM messages you encounter, and for some system abends and codes. Using LookAt to find information is faster than a conventional search because, in most cases, LookAt goes directly to the message explanation.

You can use LookAt from the following locations to find IBM message explanations for z/OS elements and features, z/VM®, VSE/ESA, and Clusters for AIX® and Linux® systems:

- The Internet. You can access IBM message explanations directly from the LookAt Web site at http://www.ibm.com/systems/z/os/zos/bkserv/lookat/ .
- Your z/OS TSO/E host system. You can install code on your z/OS or z/OS.e system to access IBM message explanations, using LookAt from a TSO/E command line (for example, TSO/E prompt, ISPF, or z/OS UNIX® System Services running OMVS).
- Your Microsoft® Windows® workstation. You can install LookAt directly from the *z/OS Collection* (SK3T-4269) or the *z/OS and Software Products DVD Collection* (SK3T-4271) and use it from the resulting Windows graphical user interface (GUI). The command prompt (also known as the DOS command line) version can still be used from the directory in which you install the Windows version of LookAt.
- Your wireless handheld device. You can use the LookAt Mobile Edition from http://www.ibm.com/systems/z/os/zos/bkserv/lookat/lookatm.html with a handheld device that has wireless access and an Internet browser.

You can obtain code to install LookAt on your host system or Microsoft Windows workstation from the following locations:

- A CD in the *z/OS Collection* (SK3T-4269).
- The *z/OS and Software Products DVD Collection* (SK3T-4271).
- The LookAt Web site. Click **Download** and then select the platform, release, collection, and location that you want. More information is available in the LOOKAT.ME files that is available during the download process.

Accessing publications online

The documentation DVD, *IBM Tivoli NetView for z/OS V5R4 Online Library*, SK2T-6175, contains the publications that are in the product library. The publications are available in PDF, HTML, and BookManager formats. Refer to the readme file on the DVD for instructions on how to access the documentation.

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli Information Center Web site at http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp.

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that enables Adobe® Reader to print letter-sized pages on your local paper.

Ordering publications

You can order many Tivoli publications online at http://www.elink.ibmlink.ibm.com/publications/servlet/pbi.wss

You can also order by telephone by calling one of these numbers:
- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, contact your software account representative to order Tivoli publications. To locate the telephone number of your local representative, perform the following steps:

1. Go to http://www.elink.ibmlink.ibm.com/publications/servlet/pbi.wss.
2. Select your country from the list and click **Go**.
3. Click **About this site** to see an information page that includes the telephone number of your local representative.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. Standard shortcut and accelerator keys are used by the product and are documented by the operating system. Refer to the documentation provided by your operating system for more information.

For additional information, see the Accessibility appendix in the *User's Guide: NetView*.

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site at http://www.ibm.com/software/tivoli/education.

Downloads

Clients and agents, NetView product demonstrations, and several free NetView applications can be downloaded from the NetView for z/OS support Web site:

http://www.ibm.com/software/sysmgmt/products/support/IBMTivoliNetViewforzOS.html

In the ″IBM Tivoli for NetView for z/OS support″ pane, click **Download** to go to a page where you can search for or select downloads.

These applications can help with the following tasks:

- Migrating customization parameters and initialization statements from earlier releases to the CNMSTUSR member and command definitions from earlier releases to the CNMCMDU member.
- Getting statistics for your automation table and merging the statistics with a listing of the automation table
- Displaying the status of a job entry subsystem (JES) job or canceling a specified JES job
- Sending alerts to the NetView program using the program-to-program interface (PPI)
- Sending and receiving MVS commands using the PPI
- Sending Time Sharing Option (TSO) commands and receiving responses

Support for problem solving

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

Online
Go to the IBM Software Support site at http://www.ibm.com/software/support/probsub.html and follow the instructions.

IBM Support Assistant
The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related information and serviceability tools for problem determination. To install the ISA software, go to http://www.ibm.com/software/support/isa/.

Troubleshooting information
For more information about resolving problems with the NetView for z/OS product, see the *IBM Tivoli NetView for z/OS Troubleshooting Guide*. Additional support for the NetView for z/OS product is available through the NetView user group on Yahoo at http://groups.yahoo.com/group/NetView/. This support is for NetView for z/OS customers only, and registration is required. This forum is monitored by NetView developers who answer questions and provide guidance. When a problem with the code is found, you are asked to open an official problem management record (PMR) to obtain resolution.

Conventions used in this publication

This publication uses several conventions for special terms and actions, operating system-dependent commands and paths, and command syntax.

Typeface conventions

This publication uses the following typeface conventions:

Bold

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text

- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:**, and **Operating system considerations**:)
- Keywords and parameters in text

Italic

- Citations (examples: titles of publications, diskettes, and CDs
- Words defined in text (example: a nonswitched line is called a *point-to-point line*)
- Emphasis of words and letters (words as words example: "Use the word *that* to introduce a restrictive clause."; letters as letters example: "The LUN address must start with the letter *L*.")
- New terms in text (except in a definition list): a *view* is a frame in a workspace that contains data.
- Variables and values you must provide: ... where *myname* represents...

`Monospace`

- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

Operating system-dependent variables and paths

For workstation components, this publication uses the UNIX convention for specifying environment variables and for directory notation.

When using the Windows command line, replace **$***variable* with **%***variable***%** for environment variables and replace each forward slash (**/**) with a backslash (\) in directory paths. The names of environment variables are not always the same in the Windows and UNIX environments. For example, %TEMP% in Windows environments is equivalent to $TMPDIR in UNIX environments.

Note: If you are using the bash shell on a Windows system, you can use the UNIX conventions.

Syntax diagrams

Read syntax diagrams from left-to-right, top-to-bottom, following the horizontal line (the main path). This section describes how syntax elements are shown in syntax diagrams.

Symbols

The following symbols are used in syntax diagrams:

►► Marks the beginning of the command syntax.

► Indicates that the command syntax is continued.

| Marks the beginning and end of a fragment or part of the command syntax.

►◄ Marks the end of the command syntax.

Parameters

The following types of parameters are used in syntax diagrams:

Required Required parameters are shown on the main path.

Optional Optional parameters are shown below the main path.

Default Default parameters are shown above the main path. In parameter descriptions, default parameters are underlined.

Syntax diagrams do not rely on highlighting, brackets, or braces. In syntax diagrams, the position of the elements relative to the main syntax line indicates whether an element is required, optional, or the default value.

Parameters are classified as keywords or variables. Keywords are shown in uppercase letters. Variables, which represent names or values that you supply, are shown in lowercase letters and are either italicized or, in NetView help and BookManager publications, displayed in a differentiating color.

In the following example, the USER command is a required keyword parameter, *user_id* is a required variable parameter, and *password* is an optional variable parameter.

Punctuation and parentheses

You must include all punctuation that is shown in the syntax diagram, such as colons, semicolons, commas, minus signs, and both single and double quotation marks.

When an operand can have more than one value, the values typically are enclosed in parentheses and separated by commas. For a single value, the parentheses typically can be omitted. For more information, see "Multiple operands or values" on page xxiii.

If a command requires positional commas to separate keywords and variables, the commas are shown before the keywords or variables.

When examples of commands are shown, commas are also used to indicate the absence of a positional operand. For example, the second comma indicates that an optional operand is not being used:

```
COMMAND_NAME opt_variable_1,,opt_variable_3
```

You do not need to specify the trailing positional commas. Trailing positional and non-positional commas either are ignored or cause a command to be rejected. Restrictions for each command state whether trailing commas cause the command to be rejected.

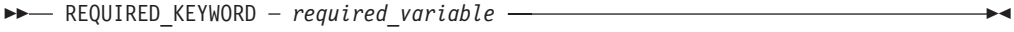
Abbreviations

Command and keyword abbreviations are listed in synonym tables after each command description.

Syntax examples

This section show examples for the different uses of syntax elements.

Required syntax elements: Required keywords and variables are shown on the main syntax line. You must code required keywords and variables.



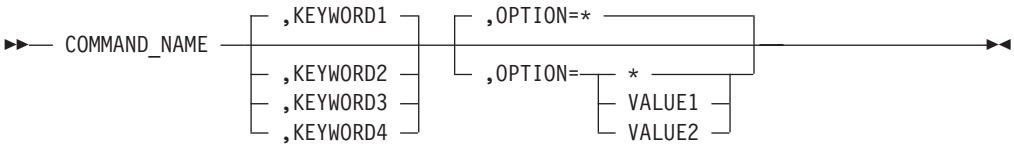
If multiple mutually exclusive required keywords or variables are available to choose from, they are stacked vertically in alphanumeric order.

Optional syntax elements: Optional keywords and variables are shown below the main syntax line. You can choose not to code optional keywords and variables.

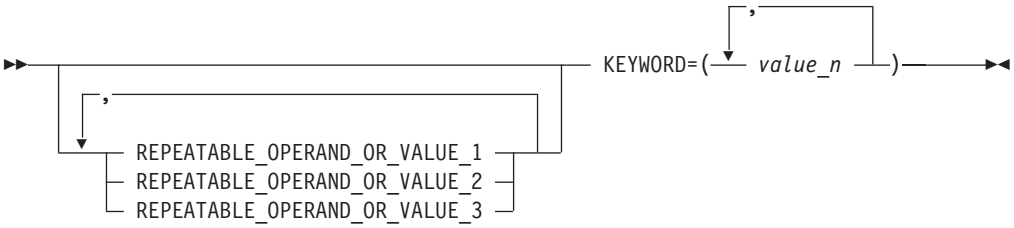
If multiple mutually exclusive optional keywords or variables are available to choose from, they are stacked vertically in alphanumeric order below the main syntax line.

Default keywords and values: Default keywords and values are shown above the main syntax line in one of the following ways:

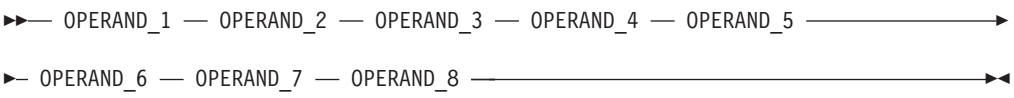
- A default keyword is shown only above the main syntax line. You can specify this keyword or allow it to default. The following syntax example shows the default keyword KEYWORD1 above the main syntax line and the rest of the optional keywords below the main syntax line.
- If an operand has a default value, the operand is shown both above and below the main syntax line. A value below the main syntax line indicates that if you specify the operand, you must also specify either the default value or another value shown. If you do not specify the operand, the default value above the main syntax line is used. The following syntax example shows the default values for operand OPTION=* above and below the main syntax line.



Multiple operands or values: An arrow returning to the left above a group of operands or values indicates that more than one can be selected or that a single one can be repeated.



Syntax that is longer than one line: If a diagram is longer than one line, each line that is to be continued ends with a single arrowhead and the following line begins with a single arrowhead.



Syntax fragments: Some syntax diagrams contain syntax fragments, which are used for lengthy, complex, or repeated sections of syntax. Syntax fragments follow the main diagram. Each syntax fragment name is mixed case and is shown in the main diagram and in the heading of the fragment. The following syntax example shows a syntax diagram with two fragments that are identified as Fragment1 and Fragment2.

Fragment1

Fragment2

Part 1. Introducing Automated Operations Network

Chapter 1. Introducing Automated Operation Network (AON)

This chapter describes how to use the Automated Operations Network (AON) component of NetView by showing you how to display and use its panels. Many of the AON functions can be accessed without displaying a panel if you provide all the parameters with the command and function. For a list of these commands, refer to the *IBM Tivoli NetView for z/OS Command Reference Volume 2 (O-Z)*.

The AON operator interface enables you to use operator functions to view color-coded status displays, change automation settings, receive messages, issue commands, and perform many other functions that control automation and resources.

To use the operator interface, log on to NetView. If you log on as a NetView-NetView task (NNT), the operator interface is bypassed; however, you can use AON by issuing commands from the command line.

Displaying the AON: Operator Commands Main Menu

You can display the operator interface from any command line within NetView. The main panel of the AON operator interface is the AON: Operator Commands Main Menu panel.

To display the AON: Operator Commands Main Menu panel:

1. Type **AON** on the command line.
2. Press Enter.

   The AON: Operator Commands Main Menu panel shown in Figure 1 is displayed.

```
EZLK0000             AON: Operator Commands Main Menu            CNM01


Select an option

          _ 0.   Tutorial
            1.   AON Base Functions
            2.   SNA Automation
            3.   TCP/IP Automation









Command ===>
F1=Help      F2=End         F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 1. AON: Operator Commands Main Menu Panel

If an automation component is not enabled, the menu option for that component is displayed in a different, dimmer color from that of the installed options.

If you use the AON functions to disable all or part of AON automation, the option on the main menu panel for the disabled component is displayed in the dimmer color. The main menu panel enables you to access base AON, SNA, and TCP/IP automation functions.

Displaying the AON Base Functions Panel

To access AON functions, use the AON Base Functions panel:

1. Display the **AON: Operator Commands Main Menu** panel.

   Note: To display the AON: Operator Commands Main Menu panel, see "Displaying the AON: Operator Commands Main Menu" on page 3.
2. On the AON: Operator Commands Main Menu panel, type **1** in the entry field.
3. Press Enter.

   The AON: Base Functions panel shown in Figure 2 is displayed.

   Note: You can also display the AON: Base Functions panel by typing **AON 1** on any command line. The following chapters explain how to use several of the options on this panel.

```
EZLK0100            AON: Base Functions                          CNM01


Select an option

          _ 0. Tutorial
            1. Help Desk
            2. AutoView
            3. DDF
            4. Automation Settings
            5. Cross Domain Functions
            6. Timer
            7. Task and Log Maintenance
            8. Support Functions
            9. Display the Inform Log









Command ===>
F1=Help      F2=Main Menu   F3=Return                                  F6=Roll
                                                                      F12=Cancel
```

Figure 2. AON: Base Functions Panel

Understanding How a Panel Is Organized

This section describes using the AON operator interface panels. The panels have a similar structure. Each panel has a heading at the top that displays basic information about the panel. Under the heading, many panels display lists or rows of data, as well as interactive entry fields, such as menus and data entry fields.

Some panels display pop-up command windows, providing additional entry fields for issuing commands. Some panels support selection lists from which you can select previously defined entries. Some panels support the use of wildcard characters.

Finally, each panel has an area near the bottom where messages are displayed in response to actions you issue on the panel. At the bottom of each panel, a set of function keys is available for navigating through the interface.

Each of these panel parts is described in detail in the following subsections.

Headings

The heading is located at the top of a panel, as shown in Figure 3, and provides information about the panel.

Figure 3. Example of a Panel Heading

1 The panel ID.

2 The name of the panel.

3 The domain name. (The name is not displayed on all panels.)

4 If there is more information for this panel, you can display the information by scrolling the panel. (This field is not displayed on all panels.)

Note: When applicable, the time of day is also displayed on panels.

Entry Fields

Most panels have menu choices or data entry fields, as shown in Figure 4 on page 6, in which you can type data to be processed. Menu choices and data entry fields differ from panel to panel.

```
EZLK7200             Display Status Data                        CNM01

Select an Option

                              1
       _ 1. Id    ____________________________

         2. From  ________________
            To    ________________

Select a Component

      2 1. AON Base
        2. AON SNA Automation - SNBU Option









Command ===>
F1=Help      F2=End         F3=Return                          F6=Roll
                                                               F12=Cancel
```

Figure 4. Example of a Panel with Entry Fields and Menu Options

1 An example of a data entry field

2 An example of a menu choice entry field

Data Panels

Some panels display data arranged in columns or rows for informational purposes. The Domain, Status, Operator, Type, Init, and Description columns shown in Figure 5 are examples. The data that is displayed on a particular panel differs from panel to panel.

```
EZLK5000               AON: Cross Domain Logon                  CNM01


                     Origin  Operator  OPER1
 1  1=Start    2=Stop    3=Send
       Domain  Status    Operator  Type    Init   Description
 2  _  CNM01   Inactive            NNT
    _  CNM02   Inactive            NNT
    _  CNM10   Inactive            NNT
```

Figure 5. Example of Information Displays

1 Action codes

2 Entry fields

Pop-up Command Windows

On some panels, the F4 key is activated. When you press the **F4** key, a pop-up window is displayed that lists commands that you can issue against a resource. The commands that are displayed in the pop-up window depend on the type of resource that has been selected. Figure 6 on page 7 shows an example of a pop-up command window.

```
EZLK5100              AON: Cross Domain Logon                  CNM01


                    Origin  Operator  OPER1
   1=Start    2=Stop    3=Send          ..................................
   Domain  Status    Operator  Type     :  Select an Action               :
_  AON01   Inactive            NNT      :                                 :
_  AON02   Inactive            NNT      :  To act on a single session:    :
_  AOC10   Inactive            NNT      :    1. Start CNM01  Session      :
_  CNM10   Inactive            NNT      :    2. Stop CNM01  Session       :
_  AOF10   Inactive            NNT      :    3. Send to CNM01             :
_  AOC06   Inactive            NNT      :    4. Start New RMTCMD Session  :
_  CNM06   Inactive            NNT      :    5. View Start Error Message  :
_  AOC05   Inactive            NNT      :  To act on all defined sessions: :
_  CNM05   Inactive            NNT      :    6. Start All Sessions        :
_  CNM01   Inactive            RMTCMD   :    7. Stop All Sessions         :
                                         :                                 :
                                         :                                 :
                                         : F1=Help               F12=Cancel:
                                         ..................................
To issue commands, tab to the Domain and press F4.

Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                             F12=Cancel
```

Figure 6. Pop-up Command Window

From this pop-up command window, you can choose any of the seven actions.

Message Display Area

AON frequently displays messages on the panels of the operator interface in response to actions. These messages are displayed in the lower portion of a panel, where the message EZL910I ENTER A SELECTION is displayed in Figure 7.

```
EZL910I ENTER A SELECTION
Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 7. Message Displayed in Message Area

These messages can be of various types. Some tell you whether a function completed successfully, and others tell you what further actions you need to take, why a function failed, and other useful information.

Note: Some functions use the NetView command facility to display messages. For example, if you are defined as a notification operator for a resource, AON optionally sends messages to you when there are problems with that resource. Those messages are displayed on your NetView command facility and stay there until you clear them. You can use the DM command to clear them.

Online help for AON messages is available. To view message help:

1. Type **HELP** *messagenumber*.
2. Press Enter.

For more information about AON messages, see *IBM Tivoli NetView for z/OS Messages and Codes Volume 2 (DUI-IHS)*.

Function Keys (F Keys)

The function keys are displayed at the bottom of each panel (except tutorials), as shown in Figure 8. Use the function keys to perform functions on the interface.

```
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Forward   F8=Backward                F10=Left      F11=Right    F12=Cancel
```

Figure 8. Function Keys

The keys used on each panel vary according to the functions required. The following keys usually have these functions:

F1 Displays contextual help. Detailed help for the entire AON product, the AON base, or the specialized automation components is included in the tutorials. The Help key shows you only the instructions you need for using the panel currently displayed.

F2 Displays the AON: Operator Commands Main Menu panel.

F3 Displays the previous panel.

F4 Displays a pop-up command window.

F5 Updates the information on the panel.

F6 Rolls the display among the various active functions.

F7 Moves the interface backward one panel if MORE is indicated.

F8 Moves the interface forward one panel if MORE is indicated.

F10 Scrolls the panel to the left.

F11 Scrolls the panel to the right.

F12 Cancels the current function.

Selection Lists

Some of the panels of the AON interface display the following prompt beside an entry field:

```
(Type ? for a selection list)
```

Use selection lists to see a complete list of the available responses.

Using the Wildcard Function

Some of the fields of the AON interface require that you fill in information and specify search parameters. When you want to locate all instances of a certain resource you can define your search parameters with a *wildcard* character. AON enables you to use two different wildcard characters:

* Multiple character wildcard

% Single character wildcard

For example, both PU0* and PU%% are matches for PU01. ENTRY=ENVI* searches for all entries starting with ENVI.

Navigating through AON Panels

You can navigate through the panels of the AON operator interface by using several methods:

- Selecting menu choices
- Using fast path commands
- Using AON command synonyms

Selecting menu choices enables new AON operator interface users to navigate through the panels. Users experienced with the arrangement of the panels throughout the interface can use the fast path method or command synonyms to navigate through the panels more quickly. Each of these methods of navigation is described in the following subsections.

Selecting Menu Options

One way to navigate the AON operator interface is by selecting menu choices. The following example shows how you use menu choices to display the comprehensive AON tutorial:

1. Display the AON: Operator Commands Main Menu panel shown in Figure 1 on page 3.

   Note: To display the AON: Operator Commands Main Menu panel, see "Displaying the AON: Operator Commands Main Menu" on page 3.

2. Type 0 for Tutorial in the Select an option entry field.
3. Press Enter.

   The AON tutorial shown in Figure 9 is displayed:

```
EZLTAA01              General Automation                    Page 1 of 7
                  INTRODUCING AUTOMATED OPERATIONS

  The following tutorial defines automated operations and
  how they are implemented on a Tivoli system using the NetView product.

  Before discussing automated operations, it is helpful to know what
  is meant by :



           o     Availability

           o     System operations

           o     Network operations

           o     The operator



Command ===>
             F2=End         F3=Return    F4=Top        F5=Bottom     F6=Roll
             F8=Forward                                F11=Entry Point
```

Figure 9. AON Tutorial

Using Fast Path Commands

Fast path commands enable you to display a panel directly from a panel that is not adjacent without displaying intervening panels. You can use the fast path from the NetView command facility or from any command line in the AON operator interface.

For example, to use the fast path method to display the tutorial shown in Figure 9 on page 9:
1. Type **AON 0** on any command line.
2. Press Enter.

You can use the fast path method to reach a panel that is up to three levels away from the AON: Operator Commands Main Menu.

For example, the Reinitialize Automation panel is three levels below the AON: Operator Commands Main Menu panel. To display that panel by using the fast path method:
1. Type **AON 1.8.2** on any command line.
2. Press Enter.

   The AON: Reinitialize Automation panel is displayed:

```
EZLK8200                AON: Reinitialize Automation             CNM01



 Select Confirmation Option    . . _ 1. Confirm

                                     2. Cancel


 Reload with Automation Table  . . DSITBL01
 Generate Listing File         . . LISTNAME


 Reload with Control File      . . NVPOLICY


 Trace Setting                 . . OFF



Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 10. AON: Reinitialize Automation Panel

Using AON Command Synonyms

You can also display specific panels by using AON command synonyms. AON command synonyms are commands you type on the command line to display another panel.

Note: If you issue a command from a panel and you select an option or fill in an input field at the same time, the command takes precedence over the panel entries. AON does not process any of the panel entries.

As an example, use the command synonym AONINFO to display the AON tutorial in Figure 9 on page 9.
1. Type **AONINFO** on any NetView or AON command line.
2. Press Enter.

   The AON tutorial shown in Figure 9 on page 9 is displayed.

You can use command synonyms to reach a panel that is up to three levels away from the AON: Operator Commands Main Menu.

For example, the Reinitialize Automation panel is three levels below the AON: Operator Commands Main Menu panel. To display that panel by using the command synonym:

1. Type **AONINIT** on any command line.
2. Press Enter.

   The AON: Reinitialize Automation panel shown in Figure 10 on page 10 is displayed.

Using AON Commands

You can issue AON commands from any NetView command line.

For most AON functions, you can bypass the operator interface completely by using these commands. This enables you to use the automation functions from within your own user-written programs. To issue commands, type the command and its parameters. If you issue the command with all of the required parameters entered correctly, AON processes the command without going through the operator interface. If you enter the command name without any parameters or with the parameters entered incorrectly, AON displays the appropriate operator interface panel.

Note: If you issue a command from a panel and you select an option or fill in an input field at the same time, the command takes precedence over the panel entries. AON does not process any of the panel entries.

Getting Help

To access help for AON, use the extensive online help facilities that come with the program. AON offers online tutorials, which answer basic questions about how AON works, and contextual help, which answers questions about the fields of a particular panel.

Displaying the AON Tutorial

The AON comprehensive tutorial is one of several help facilities that come with the AON program. This tutorial explains how the AON program works by defining automated operations and how they are implemented on a Tivoli system using AON.

To display the main AON tutorial:

1. Display the AON: Operator Commands Main Menu panel.

   Note: To display the AON: Operator Commands Main Menu panel, see "Displaying the AON: Operator Commands Main Menu" on page 3.
2. On the AON: Operator Commands Main Menu panel, type **0** in the entry field.
3. Press Enter. The following panel is displayed:

```
EZLTAA01              General Automation                    Page 1 of 7
                  INTRODUCING AUTOMATED OPERATIONS

  The following tutorial defines automated operations and
  how they are implemented on a Tivoli system using the NetView product.

  Before discussing automated operations, it is helpful to know what
  is meant by :



          o     Availability

          o     System operations

          o     Network operations

          o     The operator



Command ===>
             F2=End         F3=Return    F4=Top        F5=Bottom     F6=Roll
             F8=Forward                               F11=Entry Point
```

Figure 11. AON Tutorial

As you can see in the top right corner of the panel, the first AON tutorial consists of seven panels. Use the function keys at the bottom of the panel to scroll through the panels.

Using Contextual Help

In addition to extensive online tutorials, AON provides contextual help for each of the panels of the operator interface. Press **F1** to display help for a panel and the entry fields on it.

Using Message Help

You can get online help for any of the messages you receive. To see the message help:

1. Type **HELP** *message number*.
2. Press Enter.

   A help panel is displayed that explains the message.

For more information about AON messages, see *IBM Tivoli NetView for z/OS Messages and Codes Volume 2 (DUI-IHS)*.

Using Command Help

You can get online help for most of the AON commands. If the command takes you to a panel, you can display online help for that panel. If the command performs other functions, you can display a help panel that explains what you can do with the command.

To see the online help for a command:

1. Type **HELP** *command name* on the command line of any panel.
2. Press Enter.

   A help panel is displayed for the command.

Chapter 2. Solving Network Problems with Help Desks

You can solve problems on the network by using automated help desks. You use the AON: Help Desk panel to display all of the help desks that are available to you. The help desks for all of the components function similarly, but the displays and options vary according to the needs of the type of network.

Any automation component that has a defined help desk is displayed as an option on the AON: Help Desk panel. You can use help desks to display color-coded pictures of how resources are connected to networks, stop and start resources, perform problem determination, and issue commands to solve network problems.

This chapter describes how to use the AON: Help Desk panel. "Using the SNA Help Desk" on page 15 provides an overview of the SNA Help Desk.

Displaying the AON Help Desk

To display the AON Help Desk panel:

1. Display the Base Functions panel.

   Note: To display the Base Functions panel, see "Displaying the AON Base Functions Panel" on page 4.

2. Type **1** in the entry field.
3. Press **Enter**.

   The AON: Help Desk panel shown in Figure 12 is displayed.

   Note: You can also display the AON: Help Desk panel by entering **AON 1.1** or **AONHD** on any command line.

```
EZLK1000             AON: Help Desk                          CNM01

   Resource Name  ____________________________

   Resource Type  ____________________ (Optional)

   Select an Option - n displays the NetView HelpDesk

      (Optional) _ 0. All
                   1. SNA









TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'   F12=Cancel
```

Figure 12. AON: Help Desk Panel

The AON: Help Desk panel displays the following entry fields and options:

Resource Name
Enables you to specify the resource that is having a problem. The resource name is required.

Resource Type
Enables you to specify the type of resource. For example, resource types in the SNA environment include physical unit (PU), logical unit (LU), Network Control Program (NCP), and application (APPL). The resource type is optional.

Select an Option
Enables you to specify the help desk for the kind of network on which the specified resource is located. You can select one of the following options:

All Searches all of the automation components listed on the panel for the resource and displays the resource on its help desk.

SNA Searches the SNA automation component for the resource.

If you leave this field blank, AON searches all of the automation components for the resource.

The following sections explain how to use each option.

Searching AON Components for a Resource

To search all AON components listed on the AON: Help Desk panel for a resource and display the resource in each of the help desks:

1. Display the AON: Help Desk panel.

   Note: To display the AON: Help Desk panel, see "Displaying the AON Help Desk" on page 13.
2. Type the name of the resource in the Resource Name field on the AON Help Desk panel.
3. Optionally, type the resource type in the Resource Type field.
4. Leave the Select an Option entry field blank.
5. Press **Enter**.

   If the resource is defined to more than one automation component, the AON: Component Selection panel shown in Figure 13 on page 15 lists each occurrence of the resource.

```
EZLKIDNT           AON: Component Selection                      CNM01


 The resource chosen has valid definitions in the following installed
options.  Select the applicable option.

Resource Chosen   test

     Select an Option

                  _ 0. All
                    1. SNA
                    2. SNBU
                    3. TCPIP









 Command ===>
 F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                   F12=Cancel
```

Figure 13. AON: Component Selection Panel

6. Type the number of the option you want in the Select an Option entry field. You can select any of the options displayed on the panel. In the following example, AON found the resource in AON/SNA.
7. Press **Enter**.

   AON displays the Help Desk panel that you selected. See the following sections for more information about the AON/SNA Help Desk.

Using the SNA Help Desk

You can use the SNA Help Desk when a user terminal is experiencing a problem. If the problem is with a SNA resource on a remote NetView domain, you must have a NetView-NetView Task (NNT) or a remote commands session to that domain to use the SNA Help Desk.

To use the SNA Help Desk:

1. Display the AON: Help Desk panel.

   Note: To display the AON: Help Desk panel, see "Displaying the AON Help Desk" on page 13.
2. Type the name of the resource in the Resource Name field on the AON: Help Desk panel. This example uses resource TA1PT209.
3. Type the resource type in the Resource Type field. AON/SNA resource types are generic resource groups such as PU, LU, NCP, and APPL.
4. Type **2** in the Select an Option entry field.
5. Press **Enter**.

   The SNA Automation: Help Desk panel shown in Figure 14 on page 16 is displayed.

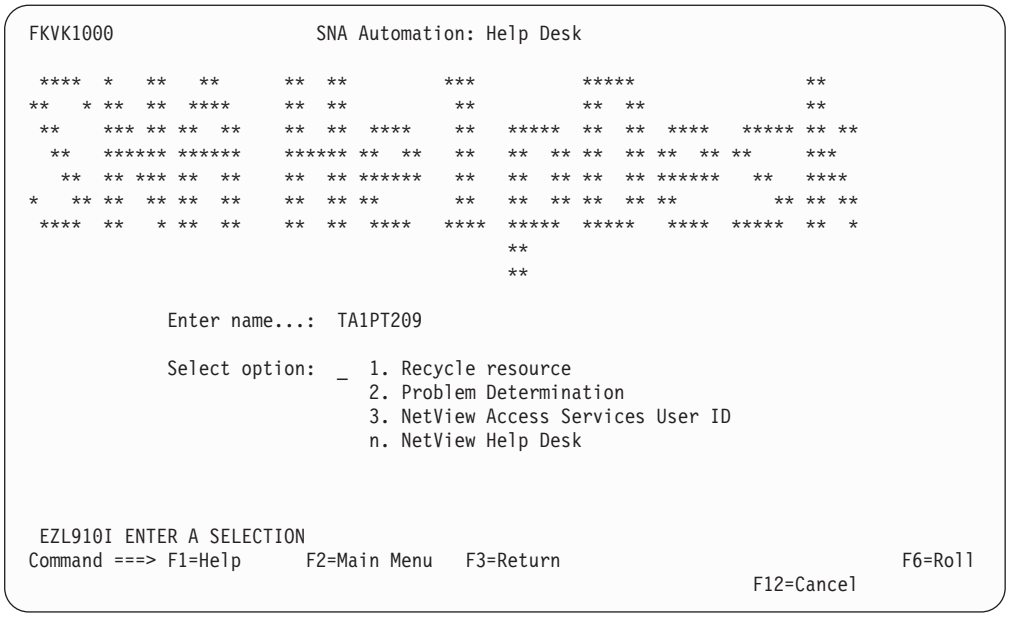


Figure 14. SNA Automation: Help Desk Panel

6. To search for a different resource than is displayed in the Enter Name field, type over the existing resource name.
7. Type the option you want in the Select Option entry field. You can select one of the following options:

   Recycle resource
   Forces the resource inactive then activates it again. If AON/SNA cannot not recycle the resource, it displays additional panels with further options.

   Problem Determination
   Displays the current status of the resource. You can perform additional queries and tests on the resource.

   NetView Access Services User ID
   Works with user IDs that are logged on NetView Access Services and their applications on the same VTAM® where AON/SNA resides.

   NetView Help Desk
   This option takes you to the main NetView Help Desk facility.
8. Press **Enter**.

Chapter 3. Displaying Resource Information with AutoView

The AutoView function works with more than one setting for a single resource. The AutoView function displays all known data for the resource and tries to determine which automation components are interested in the resource.

Displaying the AON: AutoView Panel

To display the AON: AutoView panel:

1. Display the Base Functions panel.
2. Type **2** in the entry field.
3. Press **Enter**.

   The AON: AutoView panel shown in Figure 15 is displayed.

   Note: You can also display the AON: AutoView panel by entering **AON 1.2** or **AUTOVIEW** on any command line.

```
EZLK2000             AON: AutoView                              NTVE1

   Resource Name  ____________________________

   Resource Type  ____________________ (Optional)

   Select an Option

      (Optional) _ 1. TCPIP
                   2. APPN
                   3. SNBU
                   4. SNA




Command ===>
F1=Help      F2=Main Menu   F3=Return                            F6=Roll
                                                                F12=Cancel
```

Figure 15. AON: AutoView Panel

The AON: AutoView panel displays the following entry fields and options:

Resource Name
Enables you to specify a resource for which you want to display current information or change settings.

Resource Type
Enables you to specify the resource type.

Select an Option
Specifies the component to which the resource is defined. Each component has predefined information that it displays about the resource. Each component has commands that you can use to get further information about the resource or set and change automation

settings. The list of options varies, depending on which components have the resource defined. The following components are provided:

APPN Looks for the resource as an Advanced Peer-to-Peer Networking (APPN) network resource.

SNBU Looks for the resource as a switched network backup (SNBU) network resource.

TCPIP Looks for the resource as a Tivoli NetView for AIX or z/OS Communication Server IP resource.

SNA Looks for the resource as a SNA network resource.

Note: These options might be displayed in a different order on your panels, because the panel changes depending on the configuration of your site.

The following sections provide an example of how AutoView works for a SNA resource.

USAGE Notes:

- The AutoView function utilizes UNIX System Services to monitor and display IP resource status through TCP autotasks. These autotasks are defined in the control file and must be authorized to access UNIX System Services.
- The AutoView function queries SNMP MIB variables to determine the status of IP resources. The SNMP Community name defined in CNMPOLICY for each TCP390 stack must match the one configured by the z/OS communication server for each stack. The Community name can be dynamically updated by using the IP Resource Manager function.

For more information about UNIX System Services authorization and the SNMP Community name, refer to the *IBM Tivoli NetView for z/OS Security Reference*. The Community name definition is described in the TCP390 definition in the *IBM Tivoli NetView for z/OS Administration Reference*.

Displaying Resource Information (A SNA Example)

To display information about a SNA resource:

1. Display the AON: AutoView panel.

   Note: To display the AON: AutoView panel, see "Displaying the AON: AutoView Panel" on page 17.

2. Type the name of a SNA resource in the **Resource Name** field. This example uses resource TA1P523A.
3. Optionally, type the resource type in the **Resource Type** field. Resource types are LU, PU, NCP, or APPL.
4. Optionally, to select SNA, type the number for SNA in the **Select an Option** entry field.
5. Press **Enter**.

   If you selected SNA, or left the option blank, and the resource is defined to a SNA network, the panel in Figure 17 on page 19 is displayed. Proceed to Step 6 on page 20.

   If you left the option blank and the resource is defined to more than one type of network, the AON: Component Selection panel shown in Figure 16 on page 19

19 is displayed. Proceed to Step 5a.

```
EZLK2000             AON: AutoView                                 CNM01


    Resource Name  _______________________________


    Resource Type  ____________________ (Optional)


   Select an Option

       (Optional) _ 1. TCPIP
                    2. APPN
                    3. SNBU
                    4. SNA







Command ===>
F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                                    F12=Cancel
```

Figure 16. AON: Component Selection Panel

On the AON: Component Selection panel, follow these steps:

a. Type **1** in the select an option field.
b. Press **Enter**.

   The following panel is displayed:

```
EZLKVIEW                 AON: AutoView                  CNM01

Resname . . . . . . . . TA1P523A
Restype . . . . . . . . PU
Option  . . . . . . . . SNA
Status  . . . . . . . . PCTD2          1
Automation Status . . . TREACT
Automation Flag . . . . ON
DDF message . . . . . . NONE


                             2                        3

Resource Definitions      _ 1. Automation         (RECOVERY DEFAULTS)
                            2. Thresholds         (THRESHOLDS DEFAULTS)
                            3. Active Monitoring  (ACTMON DEFAULTS)
                            4. Monitor Intervals  (MONIT DEFAULTS)
                            5. Timer              (NONE)
                            6. Display Network LOG Information for TA1P523A




 Command ===>
 F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                                     F12=Cancel
```

Figure 17. AON: AutoView Panel

Although the appearance of the AON: AutoView panel differs among automation components, the panel in Figure 17 displays the following information and options:

1 Summarizes information about the resource including the resource

name, resource type, status, automation settings for the resource, DDF message for the resource (if any) and other information, depending on the automation component.

2 Displays a list you can use for the resource. The following actions are supported:

Automation
Sets the RECOVERY flags for the resource. If none are found, DEFAULTS is displayed. For detailed information about Automation settings, see "Displaying the Recovery Settings Panel" on page 25.

Thresholds
Sets the THRESHOLDS processing for errors received on this resource. The default is DEFAULTS if none is defined. For detailed information about setting thresholds, see "Displaying Thresholds" on page 30.

Active Monitoring
Sets the ACTMON entry for this resource. If none are found, the DEFAULTS value is used. For detailed information about setting active monitoring, see "Displaying the Active Monitor Settings Panel" on page 35.

Monitor Intervals
Sets the MONIT intervals for the resource, defaulting to the type of resource if intervals are defined for that type. Otherwise, DEFAULTS are used if no intervals are found. For detailed information about setting monitor intervals, see "Displaying the Monitor Intervals Panel" on page 32.

Timer Sets a timer command for the resource. For detailed information about setting timers, refer to the information on timer commands in the *IBM Tivoli NetView for z/OS User's Guide: NetView.*

Display Network LOG Information
Displays only the Netlog information for the resource using the NetView BLOG command.

3 Displays which control file entry is currently defining the settings for the commands listed in the second group. For example, in Figure 17 on page 19, the settings for option 1 (Automation) are defined in the RECOVERY DEFAULTS control file entry.

For commands that do not have a corresponding control file entry, such as option 5 (Timer), the information in parentheses tells you if any settings exist. In Figure 17 on page 19, no timers are set for the resource TA1P523A.

6. To continue with the example, type **6** for Display Network LOG Information in the **Resource Definitions** field.
7. Press **Enter**.

   The NetView Log shown in Figure 18 on page 21 is displayed with the resource you specified.

```
STATMON.BROWSE     ACTP  NETWORK LOG FOR 04/29/07 (07119) COLS 017 096  15:20
HOST: HOST1            *1*   *2*   *3*   *4*                     SCROLL: CSR
 ---2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----
 CNM01 P% 11:49:06   IST259I  INOP RECEIVED FOR TA1P523A CODE = 01
 CNM01 P% 11:49:06   IST619I  ID = TA1P523A FAILED - RECOVERY IN PROGRESS
 CNM01  % 11:49:08   CNM094I STATUS UPDATE FOR RESOURCE = TA1P523A IN NETWORK =
 CNM01  % 11:49:20   CNM094I STATUS UPDATE FOR RESOURCE = TA1P523A IN NETWORK =
 CNM01 P% 11:49:20   IST621I  RECOVERY SUCCESSFUL    FOR NETWORK NODE TA1P523A
 CNM01  % 11:49:20   CNM094I STATUS UPDATE FOR RESOURCE = TA1P523A IN NETWORK =
 CNM01    14:42:25   EZL112I ACTIVE TYPE= TA1P523A









CMD==>
1=HLP 2=END 3=RET 4=TOP 5=BOT 6=ROL 7=BCK 8=FWD 9=RPF 10=LFT 11=RGT 12=ALL
```

Figure 18. NetView Log Panel Displaying One Resource

8. Browse the log as needed.

   Note: This option uses the NetView BLOG sample. If there are no entries in the log for the resource you are using, no action is taken and no message is displayed.

Chapter 4. Specifying Automation Policy Settings

Specify automation policy settings using the AON: Automation Settings panel and the subordinate panels. Use these panels to add, display, change, and delete automation policy settings that control various parts of the network.

When NetView initializes, it loads a copy of the automation policy into storage. When you use the AON: Automation Settings panels to change automation settings, you change the in-storage copy of the policy without altering the original. When the policy is reloaded into storage, the changes you made to the automation settings are reset.

If you need to make permanent changes to the policy, your system programmer can edit and reload it so that the changes are available the next time AON initializes.

Note: The AON: Automation Settings panel lists settings for all network resources. However, to view and change numerous settings for a single resource, use the AutoView panel. The AutoView panel consolidates commands for automation settings onto a single menu. The AutoView function displays settings panels that apply only to a single resource.

Displaying the AON: Automation Settings Panel

To display the AON: Automation Settings panel:

1. Display the Base Functions panel.

   Note: To display the Base Functions panel, see "Displaying the AON Base Functions Panel" on page 4.

2. On the Base Functions panel, type **4** in the entry field.
3. Press **Enter**.

   The AON: Automation Settings panel shown in Figure 19 on page 24 is displayed.

   Note: You can also display the AON: Automation Settings panel by entering **AON 1.4** on any command line.

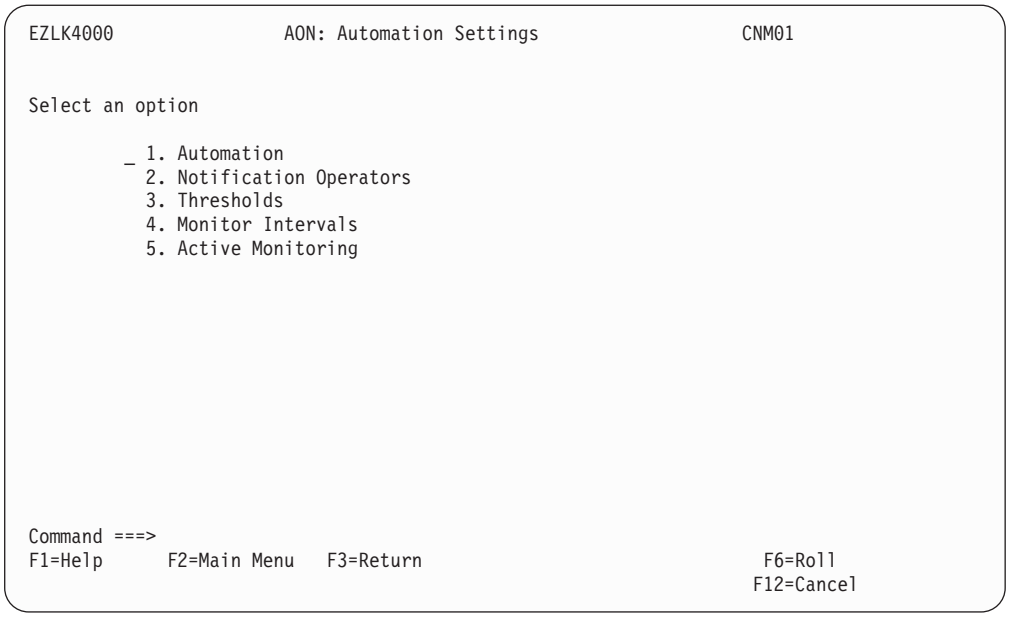


Figure 19. Automation Settings Panel

The AON: Automation Settings panel displays the following options:

Automation
Defines the times when AON automation recovery actions occur on resources. These values are retrieved from the RECOVERY control file entry.

Notification Operators
Specifies which operators receive AON messages when automation events occur. These values are retrieved from the NTFYOP control file entry.

Thresholds
Specifies the number of times an event must occur within a given time span before AON sends notifications to the selected operators. These values are retrieved from the THRESHOLDS control file entry.

Monitor Intervals
Controls reactivation intervals for failing resources. These intervals determine how often AON attempts to recover the failed resources and send messages to the notification operators. These values are retrieved from the MONIT control file entry.

Active Monitoring
Controls active monitoring intervals for resources. AON regularly checks the status of important resources that must be available to the network. The active monitoring intervals determine how often AON monitors those resources. These values are retrieved from the ACTMON control file entry.

The following sections describe how to use these options.

Specifying Recovery Settings

Use the Recovery Settings panel to add, display or change, and delete automation settings. Recovery settings set automation on or off for one resource or group of resources. You can also specify times when automation does not operate.

Note: A RECOVERY DEFAULTS policy definition is required. The DEFAULTS entry is used during recovery processing and a specific resource name or type is not coded. The DEFAULTS entry cannot be deleted.

Displaying the Recovery Settings Panel

To display the Recovery Settings panel:

1. Display the AON: Automation Settings panel.

   Note: To display the AON: Automation Settings panel, see "Displaying the AON: Automation Settings Panel" on page 23.
2. Type **1** in the entry field on the AON: Automation Settings panel.
3. Press **Enter**.

   The Recovery Settings panel shown in Figure 20 is displayed.

   Note: You can also display the Recovery Settings panel by entering **AON 1.4.1**, **SETAUTO**, **DISAUTO**, or **DELAUTO** on any command line.

```
EZLK4100          Recovery Settings                              CNM01

Select one of the following. Then press enter.
1=Add  2=Display/Change  3=Delete

     Type                             Automation       Scheduled Recovery
_  AOF01*                                OFF
_  APPL                                  OFF
_  CNM01*                                OFF
_  DEFAULTS                              ON
_  LINKSTA                               ON
_  TAF*                                  OFF
_  TSO*                                  OFF









Command ===>
F1=Help      F2=Main Menu   F3=Return              F5=Refresh    F6==Roll
F7=Backward  F8=Forward                                        F12==Cacel
```

Figure 20. Recovery Settings Panel

The Recovery Settings panel displays three columns of data:

Type Lists all the resources that have recovery settings defined.

Automation
Indicates whether automation is set on or off for the resources by looking at the AUTO= parameter in the control file setting.

Scheduled Recovery
Looks at the NOAUTO= parameter. For resources that have intervals scheduled when automation does *not* occur, this field has one of the following values:

ON When the current time is outside the times defined with the NOAUTO= parameter.

OFF When the current time is within one of the times specified with the NOAUTO= parameter.

If you leave the field blank, scheduled recovery is not in place for the resource.

Scheduled recovery intervals are optional. If no such intervals are coded, automation is either on all the time or off all the time depending on the setting in the Automation column. The Scheduled Recovery column is blank if no scheduled intervals are specified for the resource.

Note: Scheduled Recovery settings, if any, and automation must be set to ON for automation to occur on the resource.

Use the Recovery Settings panel to add, display or change, and delete recovery settings. The following sections explain how to perform these actions.

Displaying or Changing Recovery Settings

To display or change an existing recovery setting:

1. Display the Recovery Settings panel.

   Note: To display the Recovery Settings panel, see "Displaying the Recovery Settings Panel" on page 25.

2. Type **2** in the entry field next to the resource, the settings for which you want to change, on the Recovery Settings panel.
3. Press **Enter**.

   The Display/Change Recovery Setting panel shown in Figure 21 is displayed.

```
EZLK4120               Recovery Settings                        NTV70

               Display/Change Automation Recovery Settings
                                        ......... Valid Days ...........
Fill in the fields below,               : 1 = MONday      2 = TUEsday   :
then press PF10 to change.              : 3 = WEDnesday   4 = THUrsday  :
                                        : 5 = FRIday      6 = SATurday  :
 Type : PU                              : 7 = SUNday      8 = WEEKDAY   :
                                        : 9 = WEEKEND     * = everyday  :
 Auto : 1   (1=Y 2=N 3=YA 4=NA)         : 0 = calendar day or date      :
                                        : - = delete a NOAUTO window    :
                                        ................................
 NoAuto   Day :                              Start Time     End Time
                                             Hour Minute   Hour Minute
          *   *_____________________          18 :  00      23 :  59
          _   _____________________           00 :  00      00 :  00
          _   _____________________           00 :  00      00 :  00
          _   _____________________           00 :  00      00 :  00
          _   _____________________           00 :  00      00 :  00


Command ===>
F1=Help      F2=Main Menu   F3=Return                F5=Refresh    F6=Roll
F7=Backward  F8=Forward               F10=Update                 F12=Cancel
```

Figure 21. Display/Change Recovery Settings Panel with Valid Days Pop-up Window

4. Type over the values you want to change on the Display/Change Recovery Setting panel. The values are displayed in one color (the default color is green). You cannot change the entry displayed in the **Type** field.
5. Press **Enter**.

To set automation to on or off, type the number for one of the following actions in the **Auto** field:

1=Y Sets recovery on.
2=N Sets recovery off.
3=YA Sets recovery on for the specified resource and its lower nodes.
4=NA Sets recovery off for the specified resource and its lower nodes.

Note: YA and NA are valid only for SNA resources that do not contain wildcard characters (* and %).

You can specify the times when you do not want automation to operate in the **NoAuto** field. The NoAuto setting enables you to define exactly when you want automation to be active for the resource. The following are the values for the NoAuto setting columns.

Day
Specifies the days when recovery is set off, as follows:
0 Any special day defined in DSISCHED, for example, HOLIDAY
1 MONday
2 TUEsday
3 WEDnesday
4 THUrsday
5 FRIday
6 SATurday
7 SUNday
8 WEEKDAY
9 WEEKEND
* everyday
– delete a NOAUTO window

Note: The example in Figure 21 on page 26 shows an asterisk (*) to represent that everyday is selected. You can also specify the valid days by typing the capital letters shown in the Valid Days pop-up window, in the second column text field under Day.

Start Time
Sets automation off starting at this time. Specify the time in the *hh:mm* format, where *hh* is a number in the range of 00–23 and *mm* is a number in the range of 00–59.

End Time
Determines the end of the interval when automation is not active for the resource. Specify the time in the *hh:mm* format, where *hh* is a number in the range of 00–23 and *mm* is a number in the range of 00–59.

Note: The ending time must be later in the day than the starting time *except* when you specify * (every day).

Specifying Notification Operators

Use the Notification Operators panel to:

- add new notification operators
- display or change the settings for existing operators
- delete settings for existing operators

Notification operators are operators who receive messages from AON and its components when automation events occur. These values are retrieved from the NTFYOP control file entry.

Displaying the Notification Operators Panel

To display the Notification Operators panel:

1. Display the AON: Automation Settings panel.

   Note: To display the AON: Automation Settings panel, see "Displaying the AON: Automation Settings Panel" on page 23.

2. Type **2** in the entry field.
3. Press **Enter**.

   The Notification Operators panel is displayed in Figure 22.

   Note: You can also display the Notification Operators panel by entering **AON 1.4.2**, **SETNTFY**, **DISNTFY**, or **DELNTFY** on any command line.

```
EZLK4200          Notification Operators                          CNM01

Select one of the following. Then press Enter.                    More:   +
 1=Add  2=Display/Change  3=Delete
                     Notify      Logged
     Operator         Flag         On         Description
_   OPER1              Y           N         'Operator One'
_   OPER2              Y           N         'Operator Two'
_   OPER3              Y           Y         'Operator Three'
_   OPER4              Y           Y         'Operator Four'
_   OPER5              Y           N         'Operator Five'
_   OPER6              Y           N         'Operator Six'
_   OPER7              Y           N         'Operator Seven'
_   NISTMP1            Y           N         'Test Operator One'
_   NISTMP2            Y           N         'Test Operator Two'
_   NISTMP3            Y           N         'Test Operator Three'
_   NISTMP4            Y           Y         'Test Operator Four'
_   NISTMP5            Y           N         'Test Operator Five'
_   NISTMP6            Y           N         'Test Operator Six'
_   NISTMP7            Y           N         'Test Operator Seven'

Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 22. Notification Operators Panel

The Notification Operators panel lists the following columns of data:

Operator
The operator ID of the notification operator.

Notify Flag
Indicates if messages are sent to the notification operator. Use this flag to temporarily stop the notification messages without removing the operator from the list of valid notification operators. The data is taken from the NOTIFY= parameter in the NTFYOP control file entry.

Logged On
Indicates if this notification operator is currently logged on to the system.

If the operator is logged on and the Notify Flag is set to Yes (Y), then the operator is receiving messages as defined by the notification settings.

Description
Describes the notification operator, usually, the name of the operator (optional).

Adding a Notification Operator

To add an operator ID to the list of valid notification operators:

1. Display the Notification Operators panel.

   Note: To display the Notification Operators panel, see "Displaying the Notification Operators Panel" on page 28.
2. Type **1** in the field next to an existing notification operator.
3. Press **Enter**. A pop-up window shown in Figure 23 is displayed.

```
EZLK4210          Notification Operators                          CNM01

Select one of the following. Then press Enter.                    More:   +
 1=Add  2=Display/Change  3=Delete
                     Notify      Logged
     Operator         Flag         On         Description
 1  OPER1              Y           N         'Operator One'
 _  OPER2         ................................................
 _  OPER3         : Operator      ________                        :
 _  OPER4         : Description   ________________________        :
 _  OPER5         : Classes       ____________________________    :
 _  OPER6         : Messages      _ Information                   :
 _  OPER7         :               _ Warning                       :
 _  NISTMP1       :               _ Error                         :
 _  NISTMP2       :               _ Action                        :
 _  NISTMP3       : Notify        _            (1=Yes  2=No)      :
 _  NISTMP4       :                                               :
 _  NISTMP5       : F1=Help                              F12=Cancel :
 _  NISTMP6       :................................................:
 _  NISTMP7            Y           N         'Test Operator Seven'

Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 23. Notification Operators Panel

4. Type the operator ID in the **Operator** field. This is the only required field.
5. Type a brief description for the operator in the **Description** field.
6. Type the numbers for the message classes in the **Classes** field. The default message class is 10. The data is taken from the CLASS= parameter in the NTFYOP control file entry.

   Note: See *IBM Tivoli NetView for z/OS Messages and Codes Volume 2 (DUI-IHS)* for more information about message classes.
7. In the **Messages** fields, type any character in the field for each message type that is held on the command facility until the notification operator clears it. The data is taken from the HELDMSG= parameter in the NOTFYOP control file entry. The message types are:

   I or INFO
   Informational messages

   W or WARN
   Warning messages

   E or ERROR
   Error messages

   A or ACTION
   Action messages

8. Type **1** to set notifications on for the operator or **2** to suppress the notification messages in the **Notify** field. You can also leave this field blank. By default, the notification operator receives the messages in the message classes assigned.
9. Press **Enter**.

   If the information is entered correctly, AON displays this confirmation message on the panel:

   ```
   EZL919I ALL ACTIONS SUCCESSFULLY COMPLETED
   ```
10. Press **F3** to return to the Notification Operators panel.

    The new notification operator is displayed in the alphabetized list on the updated Notification Operators panel.

Setting Automation Thresholds

To add, change, or delete threshold settings use the Thresholds panel. Threshold settings trigger notifications to operators when the thresholds are reached. An event is defined as an alert generated by the system. Thresholds are set for the resources in the network. These values are retrieved from the THRESHOLDS control file entry.

Define the threshold settings so that each threshold type is unique for the resource being monitored. Define critical thresholds to have the smallest interval or highest occurrence frequency, followed by frequent, then infrequent.

Displaying Thresholds

To display the Thresholds panel:

1. Display the AON: Automation Settings panel.

   Note: To display the AON: Automation Settings panel, see "Displaying the AON: Automation Settings Panel" on page 23.
2. Type **3** in the entry field.
3. Press **Enter**.

   The Thresholds panel shown in Figure 24 on page 31 is displayed.

   Note: You can also display the Thresholds panel by entering **AON 1.4.3**, **SETTHRES**, **DISTHRES**, or **DELTHRES** on any command line.

```
EZLK4300          Thresholds                                        CNM01
 Select one of the following.  Then press Enter.                    More:   +
 1=Add  2=Change  3=Delete

    Type
 _  DEFAULTS
      Infrequent: 05    Errors in    24     Hours    00    Minutes
      Frequent:   04    Errors in    01     Hours    00    Minutes
      Critical:   04    Errors in    00     Hours    12    Minutes   Notify   1

 _  HOST
      Infrequent: 00    Errors in    00     Hours    00    Minutes
      Frequent:   00    Errors in    00     Hours    00    Minutes
      Critical:   10    Errors in    00     Hours    10    Minutes   Notify   1

 _  INFC
      Infrequent: 00    Errors in    00     Hours    00    Minutes
      Frequent:   00    Errors in    00     Hours    00    Minutes
      Critical:   10    Errors in    00     Hours    10    Minutes   Notify   1


Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                            F12=Cancel
```

Figure 24. Thresholds Panel

The threshold types are defined as:

Infrequent
The minimum number of events needed within a defined period of time to trigger notification to an operator. This data is taken from the INFR= keyword of the THRESHOLDS control file entry.

Frequent
The number of events needed to indicate that the resource might be having some trouble. Notification is sent to an operator. This data is taken from the FREQ= keyword of the THRESHOLDS control file entry.

Critical
Specifies the number of events needed to define a situation as critical. Normally, recovery stops when a situation reaches critical state. This data is taken from the CRIT= keyword of the THRESHOLDS control file entry.

Notify If Notify is 1, the notification policy is driven when the critical threshold is exceeded.

Note: A THRESHOLD DEFAULTS policy definition is required. The DEFAULTS entry is used when there is threshold processing and a specific resource name or type is not specified. You cannot delete the DEFAULTS entry.

Each threshold setting follows the same syntax. Two settings are entered to set the threshold:

number
The number of events that cause the threshold to be exceeded. The valid range is 0–10.

interval
The time span, in hours and minutes, in which the number of events must occur for the threshold to be exceeded. The valid range is 00:00–99:59.

You can use the Thresholds panel to add, change, and delete threshold settings. The following sections explain how to perform these actions in detail.

Adding a Threshold

To add a threshold:

1. Display the **Thresholds** panel.

   Note: To display the Thresholds panel, see "Displaying Thresholds" on page 30.

2. Type **1** in entry field on the Thresholds panel.
3. Press **Enter**.

   A pop-up window shown in Figure 25 is displayed.

```
EZLK4310          Thresholds                                      CNM01

Select one of the following.  Then press Enter.                   More:   +
 1=Add  2=Change  3=Delete

    Type
 _  DEFAULTS
      Infrequent: 05    Errors in    24     Hours    00    Minutes
      Fr ..............................................    Minutes
      Cr :                                           :    Minutes
         : Type: ____________________________        :
 1  HOST :                                           :
      In :   Infrequent:  00 Errors in  00 : 00       :    Minutes
      Fr :   Frequent:    00 Errors in  00 : 00       :    Minutes
      Cr :   Critical:    00 Errors in  00 : 00       :    Minutes
         :   Notify:      1                          :
 _  INFC : F1=Help                          F12=Cancel :
      In :.............................................:    Minutes
      Frequent:   00    Errors in    00     Hours    00    Minutes
      Critical:   10    Errors in    00     Hours    10    Minutes



Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 25. Thresholds Panel

4. In the pop-up window, type in the values you want.
5. Press **Enter**.

   When AON adds the thresholds, the following message is displayed in the message area near the bottom of the panel:

   ```
   EZL919I ALL ACTIONS SUCCESSFULLY COMPLETED
   ```

Changing Monitor Intervals

Use the Monitor Intervals panel to add, display and change, and delete monitor intervals. Monitor intervals determine how often AON tries to reactivate failed resources and if AON sends messages to the notification operators during these attempts. These values are retrieved from the MONIT control file entry.

Note: A DEFAULTS entry in the control file is required. The DEFAULTS entry is used when the parameters do not exist on the specific resource definition.

Displaying the Monitor Intervals Panel

To display the Monitor Intervals panel:

1. Display the **AON: Automation Settings** panel.

Note: To display the AON: Automation Settings panel, see "Displaying the AON: Automation Settings Panel" on page 23.

2. Type **4** in the entry field on the AON: Automation Settings panel.
3. Press **Enter**.

   The Monitor Intervals panel shown in Figure 26 is displayed.

   Note: You can also display the Monitor Intervals panel by entering **AON 1.4.4**, **SETMONIT**, or **DELMONIT** on any command line.

```
EZLK4400          Monitor Intervals                              CNM01

Select one of the following. Then press enter.
 1=Add  2=Display/Change  3=Delete

     Type
 _   CDRM
 _   CP
 _   CPCPSESS
 _   DEFAULTS
 _   HOST
 _   INFC
 _   IPHOST
 _   IPINFC
 _   IPNAMESERV
 _   IPPORT
 _   IPTELNET
 _   NAMESERV
 _   NCP
 _   SP

Command ===>
F1=Help      F2=Main Menu   F3=Return                F5=Refresh    F6==Roll
F7=Backward  F8=Forward                                          F12==Cancel
```

Figure 26. Monitor Intervals Panel

The types of monitor intervals are displayed in the Type column. You can use the Monitor Intervals panel to add, display, change, or delete monitor intervals. The following sections explain how to perform these actions.

Displaying or Changing a Current Monitor Interval

To display or change recovery monitoring intervals:

1. Display the **Monitor Intervals** panel.

   Note: To display the Monitor Intervals panel, see "Displaying the Monitor Intervals Panel" on page 32.
2. Type **2** in the entry field next to the resource type whose monitor interval you want to display or change.
3. Press **Enter**.

   A pop-up window shown in Figure 27 on page 34 is displayed.

```
EZLK4410          Monitor Intervals                              CNM01

Select one of the  ....................................
 1=Add  2=Display/ : Type:  _________________________ :
                   :              Hour Minute          :
    Type           :     Interval: 00 :  00  Notify: __  :
 1  CDRM           :     Interval: 00 :  00  Notify: __  :
 _  CP             :     Interval: 00 :  00  Notify: __  :
 _  CPCPSESS       :     Interval: 00 :  00  Notify: __  :
 _  DEFAULTS       :     Interval: 00 :  00  Notify: __  :
 _  HOST           :     Interval: 00 :  00  Notify: __  :
 _  INFC           :     Interval: 00 :  00  Notify: __  :
 _  IPHOST         :     Interval: 00 :  00  Notify: __  :
 _  IPINFC         :     Interval: 00 :  00  Notify: __  :
 _  IPNAMESERV     :     Interval: 00 :  00  Notify: __  :
 _  IPPORT         :     Interval: 00 :  00  Notify: __  :
 _  IPTELNET       :     Interval: 00 :  00  Notify: __  :
 _  NAMESERV       :                                     :
 _  NCP            : F1=Help                F12=Cancel :
 _  SP             :....................................:

Command ===>
F1=Help      F2=Main Menu   F3=Return                F5=Refresh    F6==Roll
F7=Backward  F8=Forward                                          F12==Cancel
```

Figure 27. Monitor Intervals Panel

4. To change a monitoring interval, type over the settings you want to change. The variables on this setting are:

   hh:mm
   The length of the interval between reactivation attempts expressed as hours (*hh*) and minutes (*mm*). The range is 00:00–24:00.

   Notify
   The setting that determines whether messages are sent to the notification operators when AON attempts to reactivate the resource. The settings can be:

   Y Consult the notification policy to determine which notifications to issue.

   N Do not send notifications.

   YF Consult the notification policy to determine which notifications to issue. Repeat recovery monitoring at the last interval specified.

   NF
   Do not send notifications. Repeat recovery monitoring at the last interval specified.

5. Press **Enter**.

   If the settings are entered correctly, AON displays this message:

   ```
   EZL919I ALL ACTIONS SUCCESSFULLY COMPLETED
   ```

Changing Active Monitor Settings

Use the Active Monitor Setting panel to set intervals for active monitoring and to verify that resources are active. If the resource is not active, recovery monitoring starts for the resource and a timer is set to check the resource again for the next interval. These values are retrieved from the ACTMON control file entry.

Active monitoring expects specific entries only. Wildcard entries are not allowed. Example SNA entries and types are:
- Specific resource name (PU01, LINE23)
- General resource type (NCP, LU, PU)

Note: A DEFAULTS entry in the control file is required. The DEFAULTS entry is used when the parameters do not exist on the specific resource definition.

Displaying the Active Monitor Settings Panel

To display the Active Monitor Settings panel:

1. Display the **AON: Automation Settings** panel.

   Note: To display the AON: Automation Settings panel, see "Displaying the AON: Automation Settings Panel" on page 23.

2. Type **5** in the entry field on the AON: Automation Settings panel.
3. Press **Enter**.

   The Active Monitor Settings panel is displayed, as shown in Figure 28.

   Note: You can also display the Active Monitor Settings panel by entering **AON 1.4.5** or **ACTMON** on any command line.

```
EZLK4500          Active Monitor Settings                          CNM01

Select one of the following. Then press Enter.                     More: - +
 1=Add  2=Display/Change  3=Delete

    Name               Resource Type           Interval       Timer ID
_   SULU               CPCPSESS                               FKV00011
_   TA1L5023           LINE                    13             FKV00009
_   TA1N500            NCP                     00:10          FKV00010
_   TA1T1046           LU                      30
_   TA1T1047           LU                      01:00
_   TA1T1048           LU                      90
_   TEST1              SESSION                 15
_   TEST2              SESSION
_   TEST3              SESSION
_   USIBMTA.TA1CPBAD   CP                      01:00
_   USIBMTA.TA1CP207   CP                      01:00          FKV00012
_   USIBMTA.TA1CP208   CP                      01:00
_   9.67.6.2           HOST                    00:25
_   9.67.6.3           HOST


Command ===>
F1=Help      F2=Main Menu   F3=Return                F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                          F12=Cancel
```

Figure 28. Active Monitor Settings Panel

The Active Monitor Settings panel displays these columns of data:

Name The name of a resource.

Resource Type
The type of resource. This data is taken from the RESTYPE= keyword of the ACTMON control file entry.

Interval
The interval setting. The interval can be in minutes or in both hours and minutes. This data is taken from the INTVL= keyword of the ACTMON control file entry.

Timer ID
The ID of the timer. The timer issues the ACTMON routine for this resource to see if the resource is active.

Use the Active Monitoring Settings panel to add, display or change, and delete active monitoring settings. The following sections explain how to perform these actions.

Displaying or Changing Active Monitor Settings

To display or change active monitoring settings:

1. Display the **Active Monitor Settings** panel.

   Note: To display the Active Monitor Settings panel, see "Displaying the Active Monitor Settings Panel" on page 35.

2. Move the cursor to the field next to the resource you want to display or change and type **2**.
3. Press **Enter**.

   A pop-up window shown in Figure 29 is displayed.

```
EZLK4520          Active Monitor Settings                        CNM01

Select one of the following. Then press Enter.                   More: - +
 1=Add  2=Display/Change  3=Delete

    Name               Resource Type           Interval       Timer ID
_   SULU                CPCPSESS                              FKV00011
2   TA1L5023  ..........................................      FKV00009
_   TA1N500   :                                         :     FKV00010
_   TA1T1046  : Name: TA1L5023___________               :
_   TA1T1047  :                                         :
_   TA1T1048  : Type: LINE_____________________         :
_   TEST1     :                                         :
_   TEST2     : Interval: 00 : 13                       :
_   TEST3     :                                         :
_   USIBMTA.T : Timer Id:        FKV00009               :
_   USIBMTA.T : Timer Date/Time: 04/15/07 13:15:59      :  FKV00012
_   USIBMTA.T :                                         :
_   9.67.6.2  : F1=Help                       F12=Cancel :
_   9.67.6.3  :.........................................:


Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 29. Active Monitoring Settings Panel

4. Type the resource type in the **Type** field.
5. Type the interval values you want in the **Interval** field.

   An interval is defined by *hh:mm* with valid values that are in the range of 00:00–24:00. The intervals specified are cumulative time delays from the previous activation setting. You cannot change any other fields on this panel.
6. Press **Enter**.

If the data is entered correctly, the following message is displayed:

```
EZL919I ALL ACTIONS SUCCESSFULLY COMPLETED
```

Chapter 5. Using Cross-Domain Functions

This chapter documents general-use programming interface and associated guidance information.

To establish communication with NetView and other applications use the AON: Cross Domain Functions panel and its subordinate panels. You can use these panels to manage cross-domain sessions for your operators, for AON Gateway operators, and for terminal access facility (TAF) full-screen sessions.

Displaying the Cross Domain Functions Panel

To display the Cross Domain Functions panel:

1. Display the Base Functions panel.

   Note: To display the **Base Functions** panel, see "Displaying the AON Base Functions Panel" on page 4.
2. Type **5** in the entry field.
3. Press **Enter**.

   The AON: Cross Domain Functions panel shown in Figure 30 is displayed.

   Note: You can also display the AON: Cross Domain Functions panel by entering **AON 1.5** on any command line.

```
EZLK500A              AON: Cross Domain Functions              CNM01


 Select an option

          _ 1. Manage Cross Domain Operator Sessions
            2. Manage Cross Domain Gateway Sessions
            3. Manage Full Screen (TAF) Sessions









 Command ===>
 F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 30. AON: Cross Domain Functions Panel

The AON: Cross Domain Functions panel displays the following options:

Manage Cross Domain Operator Sessions
Enables you to establish sessions with other NetView domains using your NetView-NetView Task (NNT) sessions or through remote command

(RMTCMD) sessions. After you log on to the sessions, you can send commands across those sessions. These values are retrieved from the CDLOG control file entry.

Manage Cross Domain Gateway Sessions
Enables you to start and stop the AON gateway sessions to other NetView domains and send commands across the gateway sessions. When you use the gateways, an automation operator logs on to the other domains and handles communications, so you do not need to establish your own sessions with the domains with which you want to communicate. These values are retrieved from the GATEWAY control file entry.

Manage Full-Screen (TAF) Sessions
Enables you to establish a full-screen session with another application using the NetView Terminal Access Facility (TAF). After you log on to another application using TAF, the display on your domain looks like the full-screen display for the application that has the established session. These values are retrieved from the FULLSESS control file entry.

The following sections explain how to use the options.

Managing Cross Domain Operator Sessions

Use the AON: Cross Domain Functions panel to communicate with other NetView domains by establishing personal operator sessions with those domains. These values are retrieved from the CDLOG control file entry.

You can use the AON: Cross Domain Logon panel to:
- Start an operator session to another domain
- Stop an active session
- Send a command to an active session

You can establish NNT or RMTCMD sessions.

Note: To use the help desk to recover SNA resources on other NetView domains, you must have NNT sessions established to those domains to reactivate the failed SNA resources. Use the Manage Cross Domain Operator Sessions option to establish those sessions.

Displaying the AON: Cross Domain Logon Panel

To display the AON: Cross Domain Logon panel:

1. Display the AON: Cross Domain Functions panel.

   Note: To display the AON: Cross Domain Functions panel, see "Displaying the Cross Domain Functions Panel" on page 37.
2. Type **1** in the entry field on the **AON: Cross Domain Functions** panel.
3. Press **Enter**.

   The AON: Cross Domain Logon panel, shown in Figure 31 on page 39, is displayed.

   Note: You can also display the AON: Cross Domain Logon panel by entering **AON 1.5.1** or **CDLOG** on any command line.

```
EZLK5000              AON: Cross Domain Logon                  CNM01


                    Origin  Operator  OPER2
   1=Start    2=Stop    3=Send
   Domain  Status    Operator  Type    Init   Description
_  CNM01   Inactive            RMTCMD
_  CNM01   Inactive            NNT
_  CNM02   Inactive            NNT
_  AOC10   Inactive            NNT
_  CNM10   Inactive            NNT
_  AOF10   Inactive            NNT
_  AOC06   Inactive            NNT
_  CNM06   Inactive            NNT
_  AOC05   Inactive            NNT
_  CNM05   Inactive            NNT



To issue commands, tab to the Domain and press F4.

Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                            F12=Cancel
```

Figure 31. AON: Cross Domain Logon Panel

The AON: Cross Domain Logon panel displays the following data:

Domain
Target NetView domain.

Status Status of the operator session, which is either active or inactive.

Operator
Target operator ID for session.

Type Type of operator session, either NetView-NetView Task (NNT) or remote command (RMTCMD). This data is taken from the SESSTYPE= keyword of the CDLOG control file entry.

Init Specifies whether this operator session should start automatically when you log on to your home NetView domain. This data is taken from the INIT= keyword of the CDLOG control file entry.

Description
A brief description for the session.

You can use the AON: Cross Domain Logon panel to start and stop cross-domain operator sessions and to send a command from your NetView domain to another domain, using an active NNT or remote command session. The following sections explain how to perform these actions.

Starting a Cross Domain Operator Session

To start a cross-domain operator session:

1. Display the **AON: Cross Domain Logon** panel.

   Note: To display the AON: Cross Domain Logon panel, see "Displaying the AON: Cross Domain Logon Panel" on page 38.
2. Type **1** in the field next to the domain name in which you want to start a session on the Cross Domain Logon panel.
3. Press **Enter**.

When all the information needed to start the session is available from the control file, the session starts immediately. However, usually, you must provide further information to start the session. If further information is needed, AON displays the pop-up window shown in Figure 32.

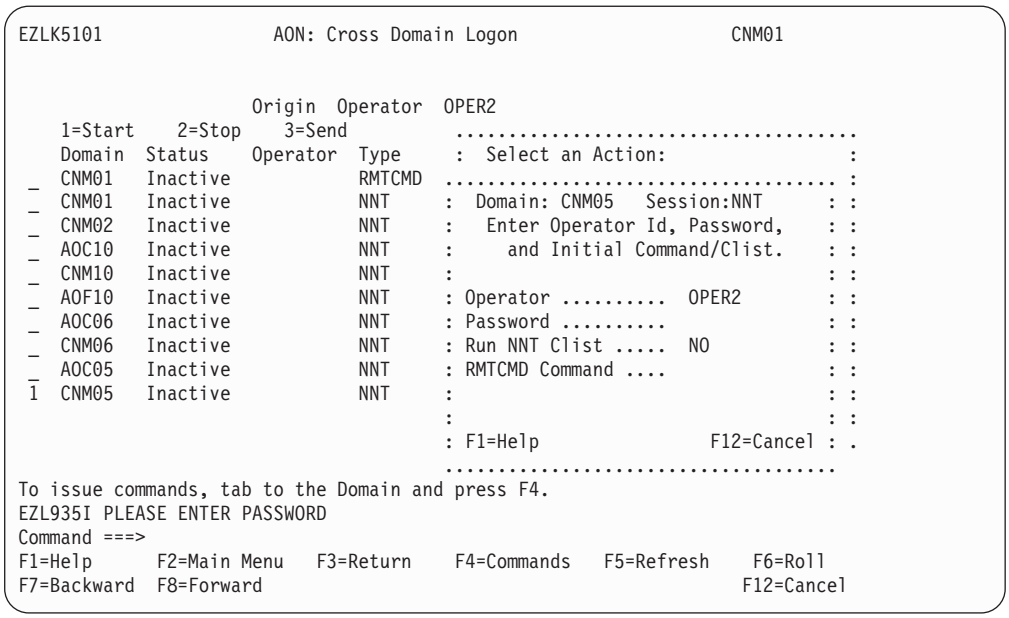


Figure 32. AON: Cross Domain Logon Panel with Pop-up Window

4. Type the operator ID you want to use to establish an NNT or remote commands session with the remote NetView domain in the **Operator** field.
5. Type the password for the operator ID at the remote NetView domain in the **Password** field.
6. Type **yes** or **no** in the **Run NNT Clist** field to specify whether the NNT routine runs initially.
7. Type **yes** or **no** in the **RMTCMD Command** field to determine whether the RMTCMD routine runs initially. This field applies only to remote command sessions.
8. Press **Enter**.

   The status of the domain changes to active, if this session starts. Otherwise, an error message is displayed. Notice that the operator ID you entered in the pop-up window also is displayed in the operator column.

   Note: You can use the F4 key to display a pop-up command window for issuing session commands. For more information about using these commands, see "Pop-up Command Windows" on page 6.

Stopping an Active Operator Session

To stop an active operator session to another domain:

1. Display the **AON: Cross Domain Logon** panel.

   Note: To display the AON: Cross Domain Functions panel, see "Displaying the AON: Cross Domain Logon Panel" on page 38.
2. Type **2** in the entry field beside the name of the domain you want to stop.
3. Press **Enter**.

AON displays a pop-up window shown in Figure 33 for confirmation.

```
EZLK5102              AON: Cross Domain Logon                  CNM01


                    Origin  Operator  OPER2
   1=Start    2=Stop    3=Send          ....................................
   Domain  Status    Operator  Type     :  Select an Action:                :
_  CNM01   Inactive              ..........................................:
_  CNM01   Inactive              :                                         : :
_  CNM02   Inactive              :        Stop Session Confirmation        : :
_  AOC10   Inactive              :        Domain=CNM05  Oper= OPER2        : :
_  CNM10   Inactive              :                                         : :
_  AOF10   Inactive              :                                         : :
_  AOC06   Inactive              :     Select an Action:                   : :
_  CNM06   Inactive              :                                         : :
_  AOC05   Inactive              :        ENTER to continue                : :
2  CNM05   Active    OPER2       :                                         : :
                                 :        F12 to cancel                    : :
                                 :                                         : .
                                 : F1=Help                      F12=Cancel :
To issue commands, tab to the Dom ....................................

Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                              F12=Cancel
```

Figure 33. AON: Cross Domain Logon Panel with Stop Session Confirmation Pop-up Window

4. Press **Enter** to confirm that you want to stop the session or press **F12** to cancel the session.

   When the session ends, the status of your domain is shown as inactive, and the following message is displayed in the panel:

   `EZL930I SESSION(S) ENDED`

Sending a Command to Another Domain

To send a command from your NetView domain to another domain using an active NNT or remote command session:

1. Display the **AON: Cross Domain Logon** panel.

   Note: To display the Cross Domain Logon panel, see "Displaying the AON: Cross Domain Logon Panel" on page 38.

2. On the Cross Domain Logon panel, type **3** in the field beside the name of the domain to which you want to send the command.
3. Press **Enter**.

   If you try to send a command across an inactive session, you see the following message:

   `EZL881I NNT SESSION TO CNM02 IS NOT ACTIVE`

   If the operator session is active, the pop-up window shown in Figure 34 on page 42 is displayed.

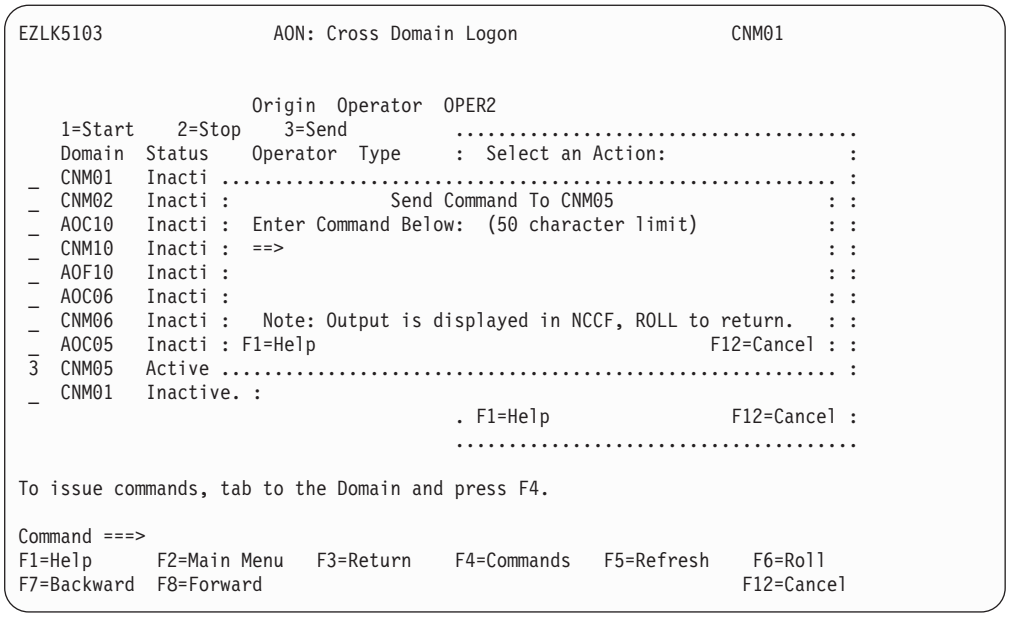


Figure 34. AON: Cross Domain Logon Panel with Send Command to Remote Domain Pop-up Window

4. Type the command you want to enter in the **Enter Command Below** field.
5. Press **Enter**.

   AON displays the command facility (NCCF). AON displays the results from issuing the command on the command facility, along with the following message:

   ```
   EZL938I ISSUING COMMAND = "command".  PRESS PF6 TO ROLL BACK
   TO CDLOG
   ```

6. To return to the operator interface, press the Roll key, **F6**.

   To display a pop-up command window from which you can issue session commands, press the Commands key, **F4**. For more information about using these commands, see "Pop-up Command Windows" on page 6.

Managing Cross-domain Gateway Sessions

Use the AON: Cross Domain Gateway Display panel to display the active and inactive sessions available for your domain. The list that is displayed is generated from the configuration file entries for your domain. You can use the AON: Cross Domain Gateway Display panel to start and stop a cross-domain gateway session and to send a command to a cross-domain gateway session. To send a command to a cross-domain gateway session, the session selected must be active. These values are retrieved from the GATEWAY control file entry.

Note: Gateway sessions must be NNT sessions. For more information, see the *IBM Tivoli NetView for z/OS Administration Reference*.

Displaying the AON: Cross Domain Gateway Panel

To display the AON: Cross Domain Gateway Display panel:

1. Display the **AON: Cross Domain Functions** panel.

   Note: To display the AON: Cross Domain Functions panel, see "Displaying the Cross Domain Functions Panel" on page 37.

2. Type **2** in the entry field on the AON: Cross Domain Functions panel.

3. Press **Enter**.

   The first half of the AON: Cross Domain Gateway Display panel shown in Figure 35 is displayed.

   Note: You can also display the AON: Cross Domain Gateway Display panel by entering **AON 1.5.2** or **AONGW** on any command line.

```
EZLK5200               AON: Cross Domain Gateway Display          CNM01
                   FOCAL POINT = CNM01
                   OPERATOR ID = OPER2                        More: >

 Select one of the following options, then press ENTER.
 1=Start    2=Stop    3=Send
         DESCRIPTION                        DOMAIN     STATUS        VIA
         --------------------------------   ------     --------      -----
 _       TO AOC06                           AOC06      INACTIVE      AOC06
 _       TO CNM06                           CNM06      ACTIVE        CNM06
 _       TO CNM10                           CNM10      ACTIVE        CNM10









Command==>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                              F11=Right     F12=Cancel
```

Figure 35. Cross Domain Gateway Display Panel

The Cross Domain Gateway Display panel displays the domains with which you are communicating through gateway operators and gives you information about the gateway operators that are controlling the communications.

The columns on the first half of the panel (Figure 35) provide the following information:

DESCRIPTION
The **Description** field shows a user-written description that describes the gateway to the remote NetView domain. For example, the first description says that this line of the status display states `TO AOC06`.

DOMAIN
The **Domain** field shows the name of the remote NetView domain as it is defined to NetView.

STATUS
The **Status** field indicates if communications between your home NetView domain and this remote NetView domain are ACTIVE or INACTIVE. In Figure 35, communications between the remote NetView domain, CNM06, and NetView domain, CNM01, are active.

VIA The **Via** field shows the NetView domain that is physically between this remote NetView domain and your NetView domain that is used for routing communications between them. In Figure 35, the communications between your NetView domain (CNM01) and CNM06 travel through CNM06, which means that your NetView domain and CNM06 are physically connected.

Note: Only one NetView domain can be physically located between your NetView domain and the remote NetView domain with which you establish gateway sessions.

4. To display the second half of the Cross Domain Gateway Display panel, press **F11**. Figure 36 shows the adjoining gateway display panel for the sample display shown in Figure 35 on page 43.

```
EZLK5201              AON: Cross Domain Gateway Display          CNM01
                    FOCAL POINT = CNM01
                    OPERATOR ID = OPER2                        More: <

 Select one of the following options, then press ENTER.
 1=Start    2=Stop    3=Send
      DIRECT INB/OUTB STAT  SYSNAME   PRODUCT     ADJ DOM   ALT DOM   USER ID
      --------------------  -------   -------     -------   -------   --------
 _    INACTIVE   INV OPID   NA        NA V.R
 _    ACTIVE     ACTIVE     CNM06     TIV-AON 1.4                     GATCNM06
 _    ACTIVE     ACTIVE     CNM10     TIV-AON 1.4                     GATCNM10









Command==>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                   F10=Left                 F12=Cancel
```

Figure 36. Cross Domain Gateway Display Panel—Scrolled-right View

The column headings in Figure 36 provide the following information about gateways between your NetView domain and this remote NetView domain:

DIRECT INB

The **Direct Inbound** field indicates if the remote domain has logged on to your NetView domain. Thus, for direct communications between your NetView domain and a physically adjacent NetView domain, the direct inbound status can be either ACTIVE or INACTIVE. If your NetView domain is not physically adjacent to the remote NetView domain, communications must be routed across an intermediate NetView domain that is physically adjacent to both your NetView domain and the remote NetView domain. The status is NO DIRECT, indicating that there are no direct communication gateways between your NetView domain and the remote NetView domain.

If an error occurred during a logon attempt by a gateway operator, the inbound status displays in yellow.

OUTB STAT

The **Outbound Status** field indicates if the gateway operator handling communications for your NetView domain is successfully logged on to this remote NetView domain and sending communications. A status of ACTIVE means that communications from your NetView domain (outbound) to this remote NetView domain are going to it successfully. If outbound communications are not active, the status displayed indicates the cause of the problem, if it is known.

If an error occurred during a logon attempt by a gateway operator, the inbound status displays in yellow.

SYSNAME

The **System Name** field shows you the name by which the Dynamic Display Facility (DDF) knows this remote NetView domain. This name might be the same name used for the NetView domain under the DOMAIN heading on the scrolled-left view of the gateway panel (see Figure 35 on page 43), but it is not required. If the connection has not been established, the panel displays `NA` to indicate that the name is not available. Your system programmer defines the DDF names for the NetView domains using the SYSNAME parameter on the ENVIRON SETUP control file entry.

PRODUCT

The **Product** field provides the name of the product being run on this target NetView domain, for example, TIV-AON 1.4. If the product is back-level, the entry says `OLD ?.?`, which indicates that communications have been established, but the product name is not supplied to this panel by the back-level product.

If communications with the domain have not been established since the last NetView startup, the name of the product cannot be determined, so you see `NA V.R`, which is an abbreviation for `Not Available Version.Release.`

ADJ DOM

The **Adjacent Domain** field indicates a NetView domain that is a path to the remote domain. The adjacent domain must be physically adjacent. If a NetView domain that is physically adjacent to both domains is defined as an adjacent NetView domain, you can use gateways to communicate with a NetView domain that is not physically adjacent to your own. Your system programmer defines adjacent NetView domains in the control file with the ADJNETV control file entry.

ALT DOM

The **Alternate Domain** field displays the name of the physically adjacent NetView domain that can function as a backup to the adjacent domain. If you are using an adjacent NetView domain as an intermediate routing domain, it is useful to have another pathway in case the preferred adjacent NetView domain goes down. Your system programmer defines backup NetView domains in the control file using the ADJNETV entry.

USER ID

The **User ID** field shows the user ID for the gateway operator logged on to your NetView domain from another NetView domain. The gateway operator is a program, but it logs on to the other NetView domains much like a human operator does. In Figure 36 on page 44, GATCNM06 is the user ID for the gateway operator on NetView domain CNM06 that logs on to your NetView domain. That is, GATCNM06 handles outbound communications for CNM06, but it brings inbound communications to your NetView domain.

Note: Each NetView domain uses one gateway operator for outbound communications. That gateway operator logs on to all the other NetView domains it communicates with. Your NetView domain can have many gateway operators logged on to it.

Sending a Command to a Cross-Domain Gateway Session

To send a command to a cross-domain gateway session, use the following steps. You can also use the SENDCMD command from the NetView command facility. See the NetView online help or the *IBM Tivoli NetView for z/OS Command Reference Volume 2 (O-Z)* for more information.

1. Display the Cross Domain Gateway Display panel.

   Note: To display the AON: Cross Domain Display panel, see "Displaying the AON: Cross Domain Gateway Panel" on page 42.
2. Type **3** in the field beside the domain name for which you want to send a command.
3. Press **Enter**.

   The AON: Command Routing panel shown in Figure 37 is displayed.

```
EZLK5300              AON: Command Routing                    CNM01


          RESP        =>    _                    1=Yes, 2=Ack, 3=No

          OPERATOR ID =>    ________     Can be left blank

          To DOMAIN   =>    CNM06

          Command     =>    ____________________________________________




Command==>
F1=Help      F2=Main Menu   F3=Return                          F6=Roll
                                                             F12=Cancel
```

Figure 37. AON: Command Routing Panel

4. Type the number of the entry you want in the **RESP** field. The choices are:

   1=Yes Displays the result of the command you issued on the command facility (NCCF).

   2=Ack Displays acknowledgment on the command facility indicating whether the command was issued.

   3=No Displays neither the result of whether the command was issued nor the acknowledgment.
5. Optionally, specify the operator ID where the command is to be issued in the **OPERATOR ID** field. If you do not specify an operator ID, the GATOPER defined in the control file is used as the operator ID.
6. Type the name of the NetView domain to which you are sending the command in the **To DOMAIN** field.
7. Type the command to issue on the other domain in the **Command** field.
8. Press **Enter**.

   The command you specified runs on the remote domain.

Managing Full-screen TAF Sessions

You can log on to selected applications in the system by using the AON: Terminal Access Facility Menu panel. AON enables automated setup of TAF sessions.

The AON: Terminal Access Facility Menu panel displays the status of all TAF full-screen applications that are defined in the control file for operators. You can start and stop TAF full-screen sessions from this panel. When you establish a TAF session, your current domain looks like the full screen for the application with which you are in session. These values are retrieved from the FULLSESS control file entry.

Note: It is not required that you establish sessions with applications using TAF.

Displaying the AON: TAF Menu Panel

To display the AON: Terminal Access Facility Menu panel:

1. Display the **Cross Domain Gateway Display** panel.

   Note: To display the AON: Cross Domain Display panel, see "Displaying the AON: Cross Domain Gateway Panel" on page 42.
2. Type **3** in the entry field on the AON: Cross Domain Display panel.
3. Press **Enter**.

   The AON: Terminal Access Facility Menu panel is displayed in Figure 38 on page 47.

   Note: You can also display the AON: Terminal Access Facility Menu panel by entering **AON 1.5.3** or **AONTAF** on any command line.

```
EZLK5400               AON: Terminal Access Facility Menu         CNM01

         SRCLU = TAFANF00   OPERATOR ID = OPER1

 Select one of the following. Then press Enter.
  1=Start/Return  2=Stop
         Description         Applid        System         Status
         -------------       ------        ------         --------
   _     TSO Application     TSO           CNM01          ACTIVE









 Command ===>
 F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
 F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 38. AON: Terminal Access Facility Menu Panel

The **AON: Terminal Access Facility Menu** panel displays the following data:

Description

A short description that identifies the application to be started.

Applid
The short identifier for the application.

System
The name of the system on which the application runs.

Status Specifies whether the application is active or inactive.

You can use the AON: Terminal Facility Menu panel to start, return to, and stop a TAF full-screen session. The following sections explain how to perform these actions.

Starting an Application Session

To start a TAF session:

1. Display the AON: Terminal Access Facility Menu panel.

   Note: To display the AON: Terminal Access Facility Menu panel, see "Displaying the AON: TAF Menu Panel" on page 47.
2. Type **1** next to the session you want to start.
3. Press **Enter**.

   The application you selected is displayed. The next step you take depends on the application. For example, if the application is Time Sharing Option (TSO), the logon panel for that TSO session is displayed.

Stopping an Application Session

To stop a TAF session:

1. Display the **AON: Terminal Access Facility Menu** panel.

   Note: To display the AON: Terminal Access Facility Menu panel, see "Displaying the AON: TAF Menu Panel" on page 47.
2. Type **2** next to the session you want to stop.
3. Press **Enter**.

   The TAF session deactivates.
4. Press **F5** to refresh the status.

Chapter 6. Performing Task and Log Maintenance

To perform task and log maintenance, use the AON: Task and Log Maintenance panel and the subordinate panels. Use these panels to:

- Display data in the configuration and status files
- Browse the NetView and automation logs
- Start and stop automation components
- Work with automation tasks

Displaying the AON: Task and Log Maintenance Panel

To display the Task and Log Maintenance panel:

1. Display the Base Functions panel.
2. Type **7** in the entry field on the AON: Base Functions panel.
3. Press **Enter**.

   The AON: Task and Log Maintenance panel shown in Figure 39 is displayed.

   Note: You can also display the AON: Task and Log Maintenance panel by typing **AON 1.7** or **AONMAINT** on any command line.

```
EZLK7000                AON: Task and Log Maintenance            CNM01


Select an option

         _ 1. Display Configuration Data
           2. Display Status Data
           3. Browse NetView Log
           4. Browse Automation Log
           5. Perform Data base Maintenance
           6. Start/Stop Automation Components
           7. NetView Tasks/Automation Operators









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 39. AON: Task and Log Maintenance Panel

The AON: Task and Log Maintenance panel displays the following options:

Display Configuration Data
: Displays current configuration data from the control file for an entry and type. The control file is checked and results displayed. You can add, change, and delete the configuration data.

Display Status Data
: Displays the current status for specific IDs or a range of IDs. Deletions from the status file are enabled.

Browse NetView Log
The command BR NETLOGA enables you to browse the NetView log.

Browse Automation Log
The NLOG command enables you to browse the AON log.

Perform Data Base Maintenance
Enables selective purging of outdated VSAM database records. The databases that can be maintained are the NetView Hardware Monitor database, the NetView Session Monitor database, the AON status file, and other databases as installed by the AON components.

Start/Stop Automation Components
Enables you to start, stop, or reload the automation components. The components are DDF, LOG file, status file, and control file. In addition, you can change which control file member is loaded again or you can load another control file.

Automation Tasks/Operators
Finds all tasks on the domain and displays the information in a list. From this list, you can stop, start, force the task off the system, display detailed information about the task, or show the utilization of the task.

The following sections explain how to use these options.

Displaying Configuration Data

Use the AON: Configuration Data Display panel to display data in the control file.

Displaying the AON: Configuration Data Display Panel

To display the AON: Configuration Data Display panel:

1. Display the **AON: Task Log and Maintenance** panel.

   Note: To display the AON: Task Log and Maintenance panel, see "Displaying the AON: Task and Log Maintenance Panel" on page 49.
2. Type **1** in the entry field.
3. Press **Enter**.

   The AON: Configuration Data Display panel, shown in Figure 40 on page 51, is displayed.

   Note: You can also display the AON: Configuration Data Display panel by entering **AON 1.7.1** or **DSPCFG** on any command line.

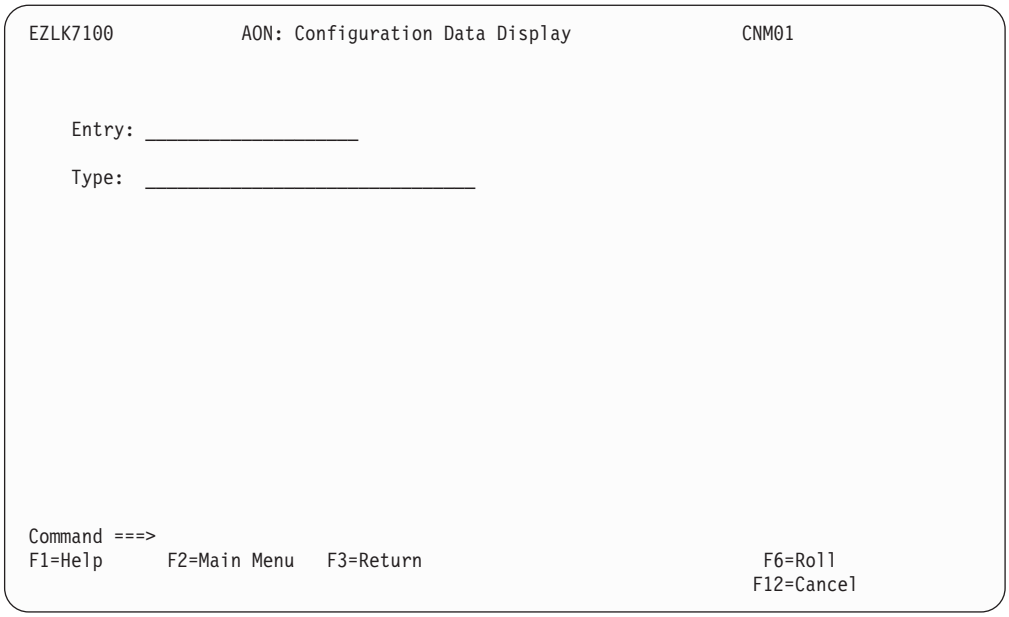


Figure 40. AON: Configuration Data Display Panel

4. Type the name of the entry in the control file that you want to display in the **Entry** field. You can enter from 1 to 15 characters without embedded blanks, commas, or quotation marks.

   Note: The following wildcards are enabled for this field:
   - * Multiple character wildcard
   - % Single character wildcard

   You can display the entire control file by entering an asterisk (*) in the this field.

5. Type any data associated with the entry in the **Type** field. You can enter from 1 to 32 characters without embedded blanks, commas, or quotation marks.

   Note: The following wildcards are enabled for this field:
   - * Multiple character wildcard
   - % Single character wildcard

   You can display the entire control file by entering an asterisk (*) in the this field.

   For example, to display all settings for notification operators, type **NTFYOP** in the entry field.

6. Press **Enter**.

   The AON: Configuration Data Display panel, shown in Figure 41 on page 52, displays the control file entries for notification operators.

```
EZLK7110          Display Configuration Data                      CNM01

Select one of the following.  Then press Enter.                   More:   +
 1=Add  2=Change  3=Delete

_  OPER1                    NTFYOP
_    OPER                   'OPERATOR ONE'
_    CLASS                  (60,65,66)
_    HELDMSG                (I,W,E,A)
_  OPER2                    NTFYOP
_    OPER                   'OPERATOR TWO'
_    CLASS                  (10,20,30,50)
_    HELDMSG                (I,W,E,A)
_  OPER3                    NTFYOP
_    OPER                   'OPERATOR THREE'
_    CLASS                  (10,30)
_  OPER4                    NTFYOP
_    OPER                   'OPERATOR FOUR'
_    CLASS                  10
_  OPER5                    NTFYOP

Command ===>
F1=Help      F2=Main Menu   F3=Return                F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                          F12=Cancel
```

Figure 41. Display Configuration Data Panel

Use the AON: Configuration Data Display panel to add, change, and delete notification operators. The following sections explain how to perform these actions. The changes are made to the in-storage copy of your policy and overwritten the next time the policy is reloaded.

Adding Data to the Control File

To add an entry to the control file:

1. Display the control file through the **AON: Configuration Data Display** panel.

   Note: To display the control file with the AON: Configuration Data Display panel, see "Displaying the AON: Configuration Data Display Panel" on page 50.

2. Type **1** next to an existing control file entry on the AON: Configuration Data Display panel.

   Note: To add only a keyword, type **1** in a field for a keyword.

3. Press **Enter**.

   The Configuration Data Display, shown in Figure 42 on page 53, is displayed with the ADD ENTRY pop-up window.

```
EZLK7111          Configuration Data Display                      CNM01

Select one of the following.  Then press Enter.                   More:   +
 1=Add  2=Change  3=Delete
                          ................................................
 1  OPER1                 :                 ADD ENTRY                    :
 _    OPER                : Entry . . ____________________               :
 _    CLASS               :                                              :
 _    HELDMSG             : Type  . . ___________________________        :
 _  OPER2                 :                                              :
 _    OPER                : F1=Help                            F12=Cancel :
 _    CLASS               :..............................................:
 _    HELDMSG               (I,W,E,A)
 _  OPER3                  NTFYOP
 _    OPER                 'OPERATOR THREE'
 _    CLASS                (10,30)
 _  OPER4                  NTFYOP
 _    OPER                 'OPERATOR FOUR'
 _    CLASS                10
 _  OPER5                  NTFYOP

Command ===>
F1=Help       F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward   F8=Forward                                           F12=Cancel
```

Figure 42. Configuration Data Display Panel with Add Entry Pop-up Window

4. Type the name of the entry you want to add in the **Entry** field in the pop-up window.
5. Type the type of the entry you want to add in the **Type** field in the pop-up window.
6. Press **Enter**.

   The Define Data pop-up window shown in Figure 43 is displayed.

```
EZLK7112          Configuration Data Display                      CNM01

Select one of the following.  Then press Enter.                   More:   +
 1=Add  2=Change  3=Delete
                          ................................................
 1  OPER1                 :                 ADD ENTRY                    :
 _    OPER                : Entry . . ntfyop_____________                :
 _    CLASS               :                                              :
 _    HELDMSG             : Type  . . tstoper____________________        :
 _  OPER2    ..............................................................  :
 _    OPER   :                  DEFINE DATA                           :  :
 _    CLASS  :  KEYWORD . . . . _____________________________         : .:
 _    HELDMSG:                                                        :
 _  OPER3    :  KEYWORD VALUE .  _____________________________         :
 _    OPER   :                   _____________________________         :
 _    CLASS  :                                                        :
 _  OPER4    : F1=Help                                    F12=Cancel :
 _    OPER   :                                            F10=Save   :
 _    CLASS  :............................................................:
 _  OPER5                  NTFYOP

Command ===>
F1=Help       F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward   F8=Forward                                           F12=Cancel
```

Figure 43. DEFINE DATA Pop-up Window

7. Type a keyword in the keyword field of the **DEFINE DATA** pop-up window. The keyword can be any name from 1 to 31 characters in length. You cannot use embedded blanks, commas, or quotation marks.

8. Type a value in the **KEYWORD VALUE** field. This is the value for the keyword entered. You can use as many as 62 characters for the value. You can use embedded blanks and commas only if the keyword value is enclosed in quotation marks.
9. To save the settings press **F10**.

   The following message is displayed:

   `EZL001I REQUEST EZLSCMOD WAS SUCCESSFUL FOR ntfyop.`

Displaying Status Data

Use the Display Status Data panel and the subordinate panels to display data in the status file.

The Display Status Data panel uses a set of command processors to write and update records for the AON status files. These records are written to a VSAM data set. The file contains the following type of information for each resource:

- Automation Status
- The operator ID that last changed the **Automation Status** field
- The last exceeded threshold
- The time stamps for errors that resulted in a lost session
- The operator ID that last changed a record in the Automation Status file.
- Additional information depending on the component.

Displaying the Status Data Panel

To display the Display Status Data panel:

1. Display the **AON: Task Log and Maintenance** panel.

   Note: To display the AON: Task Log and Maintenance panel, see "Displaying the AON: Task and Log Maintenance Panel" on page 49.
2. Type **2** in the entry field.
3. Press **Enter**.

   The Display Status Data panel shown in Figure 44 on page 55 is displayed.

   Note: You can also display the AON: Configuration Data Display panel by typing **AON 1.7.2** or **DSPSTS** on any command line.

```
EZLK7200             Display Status Data                        CNM01


Select an Option

       _ 1. Id    ____________________________

         2. From  ________________
            To    ________________

Select a Component

      _ 1. AON Base
        2. AON SNA Automation - SNBU Option









Command ===>
F1=Help      F2=End         F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 44. Display Status Data Panel

The Display Status Data panel displays the following options:

Select an Option
Searches the status file by using one of two methods that you specify:

Id Searches for a specific resource by searching on the ID of the resource. The ID is the 16-character resource name for the resource records. To use this option, see the "Example" section.

From/To
Searches an alphabetical range within which the ID of the resource you want to view falls. The **From** and **To** fields are both required for this option. These entries are also 16-character keys to the resource records.

Select a Component
Specifies an AON component associated with the resource. If your component is not listed on the panel, select **1** for AON base.

The following example explains how to display the status of a resource. If you need status file records for SNBU automation, you must select those components. Status data for a resource managed by those components use different record formats and the data is accessible only by selecting that component.

Example

When you know the ID of a resource and want to display status data for that resource, do the following:

1. Type **1** in the **Select an Option** entry field on the Display Status Data panel.
2. Type the name of the resource in the **Id** entry field. This example uses resource **TA1N400**.
3. Type the number corresponding to the component type of the resource in the **Select a Component** entry field. This example uses **1** for AON Base.
4. Press **Enter**.

The Display Status Data panel, shown in Figure 45, is displayed with the data for the resource you specified.

```
EZLK7210          Display Status Data                              CNM01

Select one of the following.  Then press Enter.
 1=Delete

 _  ID= TA1N400          , TYPE= UNKNOWN    , STATUS= ACTIV
      LAST UPDATE BY OPERATOR AUTMSG
      LAST THRESHOLD EXCEEDED -
      OPERATOR NOTIFIED: Y , TIMER SET:
      LAST STATUS CHANGE DATE= 04/18/07 , TIME= 19:27 , OPID= AUTMSG
      LAST MONITORED DATE= 04/18/07 , TIME= 19:27
      NO ERROR DATA AVAILABLE









Command ===>
F1=Help      F2=Main Menu   F3=Return                  F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                             F12=Cancel
```

Figure 45. Display Status Data Panel

5. Optionally, type **1** to delete the record from the status file.
6. Press **Enter**.

Maintaining Databases

Use the AON: Database Maintenance panel to maintain databases. The panel is built dynamically, based on the components installed. However, if a component does have a status file, it is defined in the component option definition table using the STSCMD= keyword. Select the database with which you want to work, and specify the Purge Limit and Purge Time.

Note: The DBMAINT command reproduces, without records marked for deletion, the VSAM database that is currently active. When the DBMAINT command finishes, the database that was active when the DBMAINT command started is activated again. The DBMAINT command works for an active primary or secondary VSAM database for the NetView hardware monitor (NPDA) or the NetView session monitor (NLDM). The AON status file (EZLSTS) has only a primary database.

Displaying the AON: Database Maintenance Panel

To display the Database Maintenance panel:

1. Display the **AON: Task Log and Maintenance** panel.

   Note: To display the AON: Task Log and Maintenance panel, see "Displaying the AON: Task and Log Maintenance Panel" on page 49.
2. Type **5** in the entry field.
3. Press **Enter**.

   The AON: Database Maintenance panel, shown in Figure 46 on page 57, is displayed.

Note: You can also display the AON: Database Maintenance panel by typing **AON 1.7.5** or **DBMAINT** on any command line.

```
EZLK7500                AON: Database Maintenance              CNM01


Select one of the following

         _ 1. Session Monitor
           2. Hardware Monitor
           3. AON Base
           4. AON SNA Automation - SNBU Option




Compress    :  1                    (1=Yes   2=No)

Purge Limit :  007 Days

Purge Time  :  045 Minutes


Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6==Roll
F7=Backward  F8=Forward                                          F12==Cancel
```

Figure 46. AON: Database Maintenance Panel

The AON: Database Maintenance panel displays the following fields and options:

Select one of the following
Enables you to purge records and compress the databases for hardware and session monitors and for AON status files.

Compress
Specifies whether to compress a database after deleting records from it.

Purge Limit
Specifies the number of days to leave in the file. If the number is 7, then all records older than 7 days are purged.

Purge Time
Specifies the amount of time to wait for the purge of the records to complete.

Chapter 7. Using Support Functions

This chapter documents general-use programming interface and associated guidance information.

Use the Support Functions panel and the subordinate panels to perform the following options:

- Set traces
- Reinitialize AON
- Enable or disable automation
- Set common global variables
- Load or unload the automation table
- Browse or reload the option definition tables

The following subsections explain how to use these options.

Displaying the Support Functions Panel

To display the Support Functions panel:

1. Display the Base Functions panel.

   Note: To display the Base Functions panel, see "Displaying the AON Base Functions Panel" on page 4.

2. Type **8** in the entry field.
3. Press **Enter**.

   The Support Functions panel is shown in Figure 47 on page 60.

   Note: You can also display the Support Functions panel by typing **AON 1.8** on any command line.

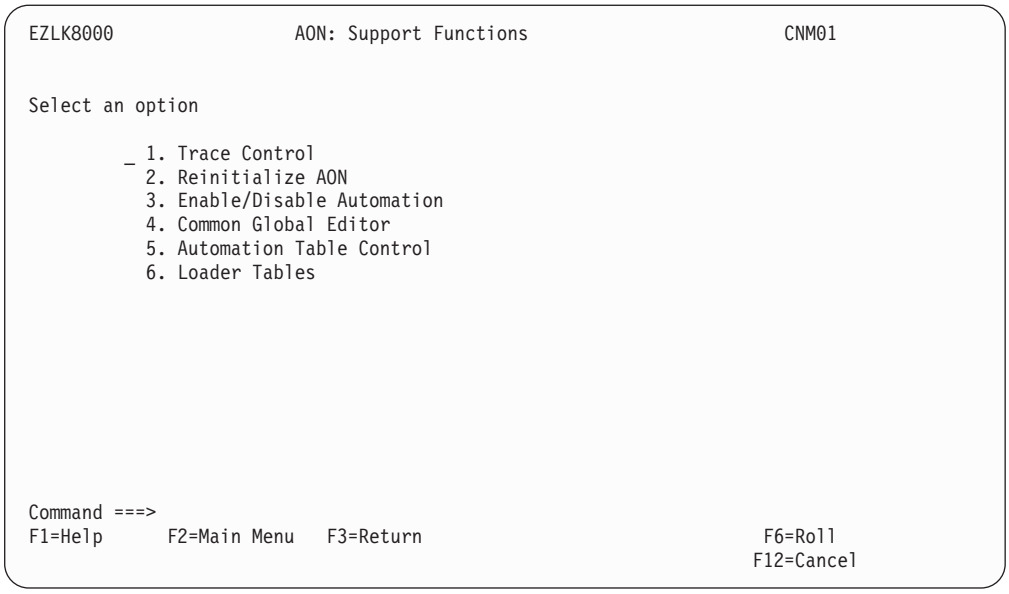


Figure 47. AON: Support Functions Panel

The AON: Support Functions panel displays the following options:

Trace Control
Traces the AON programs. You can use this option to debug problems without editing the AON program.

Reinitialize AON
Restarts AON using the automation table and control file currently being used.

Enable/Disable Automation
Turns off automation for AON and its components, or turns off automation for the components and subcomponents only.

Common Global Editor
Lists all common global variables used in NetView. Use this option to add, change, or delete common global variables.

Automation Table Control
Invokes the AUTOMAN function to assist you in managing your automation tables.

Loader Tables
Lists the tables used to load the common global variables. Use this option to browse and reload tables.

The following sections explain how to use these options.

Setting Traces

To trace all of the programs that AON uses, or to trace a single program, use the Set Trace panel.

Displaying the Set Trace Panel

To display the Set Trace panel:

Note: The AONTRACE and RXTRACE commands do not require AON. These functions are documented in this chapter as reference items.

1. Display the **Support Functions** panel.

   Note: To display the Support Functions panel, see "Displaying the Support Functions Panel" on page 59.
2. Type **1** in the entry field on the Support Functions panel.
3. Press **Enter**.

   The Set Trace panel is shown in Figure 48.

   Note: You can also display the Set Trace panel by entering **AON 1.8.1** or **AONTRACE** or **RXTRACE** on any command line.

```
EZLK8100                          Set Trace                    NTVE1


Select an option

       _ 1. Entry/Exit tracing
         2. Program tracing
         3. Administrative Functions









Command ===>
F1=Help      F2=Main Menu   F3=Return                            F6=Roll
                                                                F12=Cancel
```

Figure 48. Set Trace Panel

The Set Trace panel displays the following options:

Entry/Exit tracing
: Traces all the entry and exit parameters of the AON code. This includes command lists, REXX programs, and some AON command processors. You can trace the programs running on an operator ID, a NetView domain, or both.

Program tracing
: Traces the command lists and interpreted REXX programs you specify. Also, specify a trace option that limits the trace. Use the Program tracing option for the operator ID or the domain.

Administrative Functions
: Authorized operators can enable Entry/Exit tracing and Program tracing. By default, tracing is disabled and can only be enabled through this option.

The following sections explain how to use these options.

Setting Entry/Exit Traces

To trace all the programs that AON uses:

1. Display the **Set Trace** panel.

   Note: To display the Set Trace panel, see "Setting Traces" on page 60.

2. Type **1** in the entry field on the Set Trace panel.
3. Press **Enter**.

   The Set Entry/Exit Tracing panel is shown in Figure 49.

```
EZLK8110                  Set Entry/Exit Tracing               NTVE1



Operator id   OPER1 __ (? for list)
Select trace option . . .

           _ 1. ON          Turn on entry and exit tracing for operator
             2. OFF         Suppress entry and exit tracing for operator
             3. DEFAULT     Use trace option for domain (domainwide default)


Domain id     NTVE1
Select trace option . . .

           _ 1. ON          Turn on entry and exit tracing for domain
             2. OFF         Suppress entry and exit tracing for domain




Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 49. Set Entry/Exit Tracing Panel

4. Select Entry/Exit tracing for an operator ID, a domain, or both on the **Set Entry/Exit Tracing** panel. Domain tracing occurs only on the current domain. Current settings are highlighted.

   To select Entry/Exit tracing for a domain only, use the following steps:

   a. Type **1** for ON or **2** for OFF in the **Domain id Select trace option** entry field.
   b. Press **Enter**.

      The following message is displayed:

      ```
      EZL908I SETTINGS REPLACED
      ```

Setting Program Traces

To set a trace for a particular program:

1. Display the **Set Trace** panel.

   Note: To display the Set Trace panel, see "Setting Traces" on page 60.
2. Type **2** in the entry field on the Set Trace panel.
3. Press **Enter**. The Set Program Tracing panel is shown in Figure 50 on page 63.

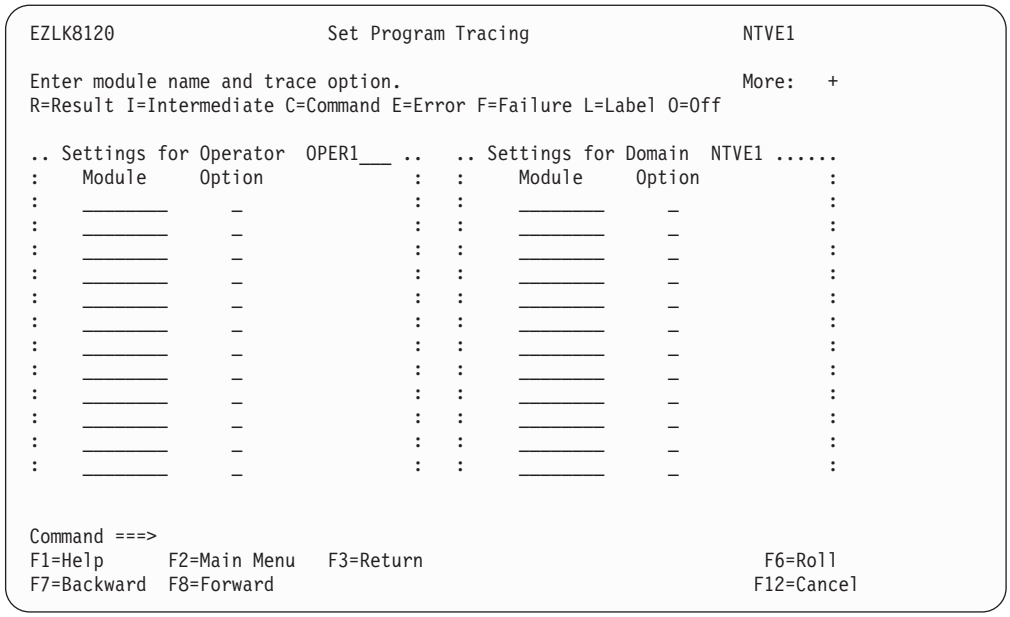


Figure 50. Set Program Tracing Panel

You can trace the programs by operator ID or domain ID. If you trace by domain ID, NetView traces the programs in the domain the operator is logged onto. You can also select a tracing option on this panel that enables you to limit the trace.

4. Type the name of the program or programs you want to trace in the **Module** column for either the operator ID or domain ID.
5. Type the letter for the trace option you want to use in the **Option** column. You can select one of the following trace options:

   R (Result)
   Use this option for general debugging. This traces all the clauses before running them and traces the final results of evaluating expressions.

   I (Intermediate)
   Use this option to trace all clauses before they are run and trace any intermediate results during expression evaluation and substitution.

   C (Command)
   Use this option to trace all commands before running them and display any error return codes from the commands.

   E (Error)
   Use this option to trace any command that has an error or fails after it is run. This option also displays the return codes.

   F (Failure)
   Use this option to trace any command that fails after it is issued. This option is the same as the Trace Normal command.

   L (Label)
   Use this option to trace all labels passed. Make a note of all subroutine calls and signals when you use this option.

   O (Off)
   Use this option to turn all traces off and reset any previous trace settings.

Note: If the program being traced is a NetView command list, the C, E, and O options are valid and all other selections result in a trace ALL.

6. Press **Enter**.

   The following message is displayed:

   ```
   EZL908I SETTINGS REPLACED
   ```

Administrative Functions

By default, entry/exit and program tracing is disabled for performance purposes. This is defined on your environment setup policy definition statement. To enable tracing:

1. Display the **Set Trace** panel.

   Note: To display the Set Trace panel, see "Setting Traces" on page 60.

2. Type **3** in the entry field on the Set Trace panel.
3. Press **Enter**.

   The Trace Administrative Functions panel is shown in Figure 51.

```
EZLK8130                  Trace Administrative Functions         NTVE1


  Current Trace Setting is . . .  NONE

  To modify the trace setting select an option:

          Trace Setting      Entry/Exit Trace          Program Trace
           _ 1. ON                 Yes                     Yes
             2. OFF                No                      Yes
             3. NONE             Disabled                Disabled


  Selecting NONE will disable both Entry/Exit and Program tracing.

  You should select NONE for best overall performance and only
  select ON or OFF when you need to debug a possible problem.




Command ===>
             F2=Main Menu   F3=Return                                F6=Roll
                                                                   F12=Cancel
```

Figure 51. Trace Administrative Functions Panel

Figure 51 displays that tracing is currently set to NONE, which means that all tracing is disabled for this domain. To enable tracing, select Options 1 or 2. Option 1 enables both entry/exit and program tracing. Option 2 only enables Program tracing.

When you select options 1 or 2 you can turn on program tracing for any AON program by going back to the Trace Menu panel and selecting the **Program Trace** option.

Reinitializing Automation

Use the AON: Reinitialize Automation panel to reinitialize the AON program. You can use the automation table and control file currently being used. To display the AON: Reinitialize Automation panel:

1. Display the **Support Functions** panel.

Note: To display the Support Functions panel, see "Displaying the Support Functions Panel" on page 59.

2. Type **2** in the entry field on the Support Functions panel.
3. Press **Enter**.

   The Reinitialize Automation panel is shown in Figure 52.

   Note: You can also display the AON: Reinitialize Automation panel by typing **AON 1.8.2** or **AONINIT** on any command line.

```
EZLK8200                AON: Reinitialize Automation             CNM01



 Select Confirmation Option    . . _ 1. Confirm

                                     2. Cancel


 Reload with Automation Table  . . DSITBL01
 Generate Listing File         . . LISTNAME


 Reload with Control File      . . NVPOLICY


 Trace Setting                 . . OFF



Command ===>
F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                                   F12=Cancel
```

Figure 52. Reinitialize Automation Panel

4. Verify that the name of the automation table is correct. The default name for the automation table is DSITBL01. The policy file is defined in the CNMSTYLE member. The policy file name is fixed and cannot be changed.
5. Type **1** in the first entry field to confirm that you want to reinitialize AON or type **2** to cancel the reinitialization. For information on how AON loads the automation table, refer to the *IBM Tivoli NetView for z/OS Installation: Getting Started*.
6. Press **Enter**.

   AON confirms or cancels your request.

Enabling and Disabling Automation

You can use the AON: Enable/Disable Automation panel to turn off message processing for components. The panel supports multiple selections. If you enable or disable message processing for the AON base, you also enable or disable automation for all of the components. Therefore, select AON with caution.

When you select options 1–4 on the listing panel, special confirmation panels enable you to confirm your action on the Enable/Disable panel. When you select a component that has subcomponents, the confirmation panel that is displayed lists all the subcomponents that the selection affects.

Note: Using this panel to enable or disable automation does not permanently change the settings. When you recycle AON or select the default option, AON resets the settings.

Displaying the AON: Enable/Disable Automation Panel

To display the AON: Enable/Disable automation panel:

1. Display the **AON: Support Functions** panel.

   To display the AON: Support Functions panel, see "Displaying the Support Functions Panel" on page 59.
2. Type **3** in the entry field on the Support Functions panel.
3. Press **Enter**.

   The AON: Enable/Disable Automation panel is shown in Figure 53.

   Note: You can also display the Enable/Disable Automation panel by entering **AON 1.8.3** or **AONENABL** on any command line.

```
EZLK8300              AON: Enable/Disable Automation             CNM01

Select one of the following.  Then press enter.
 1=Enable  2=Disable  3=Default  4=Initialize  5=Product Information

   Component Name                                 Initialized  Enabled
  _ AON Base                                      Y            Y
  _ AON SNA Automation                            Y            Y
  _ AON SNA Automation - SNBU Option              Y            Y
  _ AON SNA Automation - X25 Option               N            N
  _ AON SNA Automation - APPN Option              Y            N
  _ AON SNA Automation - SubArea Option           Y            Y
  _ AON TCP/IP Automation                         Y            Y
  _ AON TCP/IP Automation - NV4AIX Option         N            N
  _ AON TCP/IP Automation - TCP/IP 390 Option     Y            Y









Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6==Roll
F7=Backward  F8=Forward                                           F12==Cancel
```

Figure 53. Enable/Disable Automation Panel

The AON: Enable/Disable panel displays the following information:

Component name
: Lists the components.

Initialized
: States whether the component has been initialized when AON is initialized or when you specified for it to be initialized.

Enabled
: States the current ENABLE/DISABLE setting of the component. A component can be listed as initialized but not enabled, but when a component is not initialized, it cannot be enabled.

You can use the Enable/Disable Automation panel to enable and disable automation, to specify default automation for a component, to initialize a component, and to display information about a product. The following sections explain how to perform these actions.

Using the Common Global Editor

You can use the Common Global Editor panel to view all of the current common global variables being used in NetView. You can use the Common Global Editor panel to add, change, or delete common global variables (CGLOBALs).

Note: The Common Global Editor does not require AON. These functions are documented in this chapter as reference items.

Use this editor with caution because any changes you make can affect AON and NetView processing. Each common global variable is restricted to 255 characters. Mixed case is supported for common global variable values and is set exactly as you type.

Any changes that you make by using the editor are for the current AON session only. When AON recycles, the common global variables are reset to values at initialization time.

Displaying the Common Global Editor Panel

To display the Common Global Editor panel:

1. Display the **Support Functions** panel.

   Note: To display the Support Functions panel, see "Displaying the Support Functions Panel" on page 59.
2. Type **4** in the entry field on the Support Functions panel.
3. Press **Enter**.

   The Common Global Editor panel is shown in Figure 54.

   Note: You can also display the Common Global Editor panel by typing **AON 1.8.4** or **CGED** on any command line.

```
EZLK8400                      Common Global Editor              NTVE1


Select an option

         _ 1. EZLRT
           2. EZLOPT
           3. Generic


Search Criteria

           ____________________









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 54. Common Global Editor Panel

The Common Global Editor panel displays the following options:

Select an option.
Specifies a common global. The options are:

EZLRT
Shows the resource type common global variables set from the option definition tables at AON startup. Do not delete these common global variables.

EZLOPT
Shows the option definitions set from the option definition tables at AON startup. Do not delete these common global variables.

Generic
Shows the common global variables specified by the operator. If you select this option and do not fill in the **Search Criteria** field, AON displays all of the common global variables. If you type a value in the **Search Criteria** field, AON appends an asterisk (*) to the global name. You can also use a wildcard.

Search Criteria
Specifies the search criteria that you want to use.

The following sections explain how to use these options.

Changing Common Global Variables

To change a common global variable:

1. Display the Common Global Editor panel.

   Note: To display the Common Global Editor panel, see "Displaying the Common Global Editor Panel" on page 67.

2. Select an option and the search criteria you want on the Common Global Editor panel. For example, type **1** for EZLRT common global variables.

   Note: If you select EZLRT or EZLOPT, the editor checks for an entry in the **Search Criteria** field. The entry in this field is then appended to EZLRT or EZLOPT. The search criteria must not exceed 31 characters.

   For example, if you type **1** in the **Select Option** field and specify **AON** in the **Search Criteria** field, the editor searches for all common global variables that are EZLRT.AON.*

   Or, if you type **2** in the **Select Option** entry field and enter **APPN.ACT*** in the **Search Criteria** field, the editor looks for all common global variables that are EZLOPT.APPN.ACT*

3. Press **Enter**.

   The CGLOBAL EDITOR panel is shown in Figure 55 on page 69.

```
EZLK8410          Operator Command : CGLOBAL EDITOR               NTVE1

Select one of the following.  Then press enter.
 1=Add  2=Change  3=Delete

    Name                            0.........1.........2.........3.........4.
 _ EZLOPT.AON.AONALRT                00010204
 _ EZLOPT.AON.AONNAME                AON Base
 _ EZLOPT.AON.AONPROD                5697ENV00
 _ EZLOPT.AON.AONREL                 050400
 _ EZLOPT.AON.ENABLE                 Y
 _ EZLOPT.AON.MAINPANELPOS           1
 _ EZLOPT.AON.MAXFEATURES            3
 _ EZLOPT.AON.MSGCLASS               90
 _ EZLOPT.AON.OCMDCMD                EZLE0100
 _ EZLOPT.AON.OCMDDESC               AON Base Functions
 _ EZLOPT.AON.OPERLIST               ALRTOPER MSGOPER MSGOPER2 BASEOPER
 _ EZLOPT.AON.STSCMD                 EZLSTS
 _ EZLOPT.AON.STSPIPE                EZLSPIPS

 EZL919I ALL ACTIONS SUCCESSFULLY COMPLETED
Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                             F11=Right     F12=Cancel
```

Figure 55. Operator Command: CGLOBAL Editor Panel

4. Type **2** in the entry field next to the CGLOBAL you want to change.
5. Type over the existing value of the CGLOBAL to the right of the entry field with the new value.
6. Press **Enter**.

   The following message is displayed:

   `EZL919I ALL ACTIONS SUCCESSFULLY COMPLETED`

   AON changes the CGLOBAL.

Chapter 8. Managing Multiple Automation Tables

This chapter documents general-use programming interface and associated guidance information.

The AUTOTBL command enables you to load multiple automation tables. An automation table, typically, is made up of many included members. The automation table management (AUTOMAN) command enables you to make changes to selected tables or changes that have an affect on all automation tables. To help you work with automation tables, AUTOMAN provides a full-screen panel interface.

AUTOMAN and the full-screen panel interface enable you to do the following:

- View and manage single or multiple automation tables
- Enable or disable individual automation tables or statements
- View existing tables and their status

Getting Started

AUTOMAN provides individual table commands and global commands. The individual table commands apply to one or more selected tables, and global commands apply to all automation tables. See the following features and options of each type of command:

- With individual table commands, you can enable or disable automation tables. You can also enable or disable automation table statements, based on the following:
  - Sequence number
  - Label
  - Endlabel
  - Block
  - Group
  - Include

  With individual table commands, you can also issue requests for the following:
  - Display disabled statements
  - Display labels, blocks, and groups
  - Load or unload tables
  - Test tables
  - Display the %INCLUDE structure
  - Display synonyms
- With global commands, you can enable, disable, or unload automation tables. You can enable disabled statements or enable and disable blocks, groups, and labels. Global commands affect all automation tables.

  Automation statements can be enabled or disabled across all tables based on the following:
  - Label
  - Block
  - Group

With global commands, you can also issue requests for the following:

- Locate disabled statements
- Display labels, blocks, and groups
- Display the %INCLUDE structure

Using Automation Table Management

From the command line, enter **AUTOMAN**. The panel in Figure 56 is displayed. This panel enables you to see your automation table structure and take action, as necessary.

```
EZLK8500                 Automation Table Management

AUTOMATION TABLE           Enter any character in the selection fields
SEL     POS     NAME         STATUS     MARKERS     TASK     DATE     TIME
 _       1      DISTABLE     ENABLED                NETOP2   03/18/07 13:15:24
 _       2      DSITBL01     ENABLED    (AON)       NETOP2   03/18/07 13:11:09









Command ===>
F1=Help      F2=Main Menu  F3=Return     F4=Commands  F5=Refresh  F6=Roll
F7=Backward  F8=Forward    F9=Responses  F10=Global Commands      F12=Cancel
```

Figure 56. Automation Table Structure

Using Commands for Selected Tables

The Commands pop-up in Figure 57 on page 73 provides options to help you work with one or more selected automation tables. In the following figure, options 1–7 apply to one or more selected tables, in contrast to global commands in *IBM Tivoli NetView for z/OS Automation Guide*, which apply to all tables. Options 8–9 apply to only one table.

In Figure 56, pressing **F4**, for `Commands`, displays Figure 57 on page 73 where `DSITBL01` is selected to be disabled.

Selecting option 2 causes a pop-up to be displayed to confirm that you want to disable the selected table. When DSITBL01 is disabled, a message will indicate whether the command was successful or whether failures were detected. Press **F9** in Figure 56 to view the results of your command.

```
EZLKATBC             AUTOMATION TABLE MANAGEMENT

AUTOMATION TABLE       Enter any character in the selection fields
SEL  POS  NAME    ................................................
/     1   DISTABL : COMMANDS (Choose a highlighted command option)    :
_     2   DSITBL0 :                                                   :
                  :  _     1 -ENABLE the selected tables             :
                  :        2 -DISABLE the selected tables            :
                  :        3 -RELOAD the selected tables             :
                  :        4 -RELOAD and REINSTATE disabled elements :
                  :        5 -TEST the selected tables               :
                  :        6 -ENABLE/DISABLE parts of the selected   :
                  :           tables                                 :
                  :        7 -UNLOAD selected tables                 :
                  :        8 -INSERT a table                         :
                  :        9 -DISPLAY options                        :
                  :                                                  :
                  : Enter=Execute Command         F3 or F12=Cancel   :
                  :................................................:

Command ===>
F1=Help      F2=Main Menu                                        F6=Roll
```

Figure 57. Automation Table Management Commands Pop-up Window

Chapter 9. Using the Inform Log Utility

This chapter documents general-use programming interface and associated guidance information.

Operators can use the inform log utility to display inform log entries. The entries are records of the automated notification actions that have taken place, such as a pager call or e-mail. An operator can view the log, acknowledge receipt of an inform notification, reinform a specific contact, or delete an entry. All automated actions are logged, by default, when inform logging is enabled. The logging of operator calls with INFORM/EZLECALL can be enabled in the inform policy. Refer to the SETUP policy member in the *IBM Tivoli NetView for z/OS Administration Reference* for more details.

Note: It is not the purpose of the inform log utility to keep a log that tracks all inform actions. Rather, for tracking purposes, messages are generated and can be found in the NetView log. The purpose of the ILOG data set is to help you dynamically track, respond to, and delete inform log entries. Because of the I/O required and data set constraints, the ILOG function might not be practical in all environments.

To invoke the inform log utility, you can enter one of the following commands:

```
ILOG
AON 1.9
```

If you enter **ILOG**, the following full-screen panel containing the contents of your inform log is displayed:

```
EZLKINFL                 INFORM LOG UTILITY

Enter  1 -ACKNOWLEDGE   2 -REINFORM   3 -REINFORM/NEW MESSAGE   4 -DELETE

_   CONTACT ENTRY NUMBER   1 OUT OF    3 CURRENT CONTACT STATUS ACKNOWLEDGED
AON DEVELOPMENT TEAM                     EMAIL      AT 23:00:00 ON 01/26/07
A PU NAMED PU00005 FAILED DUE TO INNOP
_   CONTACT ENTRY NUMBER   2 OUT OF    3 CURRENT CONTACT STATUS ACKNOWLEDGED
AON DEVELOPMENT TEAM                     EMAIL      AT 13:37:50 ON 01/27/07
A CDRM NAMED NTB7MUS FAILED DUE TO PACDRM
_   CONTACT ENTRY NUMBER   3 OUT OF    3 CURRENT CONTACT STATUS ISSUED
AON DEVELOPMENT TEAM                     EMAIL      AT 13:39:48 ON 01/27/07
A PU NAMED PU00001 FAILED DUE TO INNOP




Command ===>
F1=Help      F2=Main Menu   F3=Return              F5=Refresh        F6=Roll
F7=Backward  F8=Forward     F9=Search                               F12=Cancel
```

Figure 58. Inform Log Utility Panel

You can choose any of the following functions, which are shown in Figure 58, for a single inform log entry:

1 -ACKNOWLEDGE
Changes the displayed status to ACKNOWLEDGED.

2 -REINFORM
Reissues the message against the active inform policy member using the original policy name.

3 -REINFORM/NEW MESSAGE
Reissues the message against the active inform policy member using the original policy name and provides a pop-up window with the original message text. The message text can be edited or replaced prior to confirming the REINFORM.

4 -DELETE
Removes the entry from the inform log.

The following function keys, located at the bottom of the panel, provide functions that are independent of an individual log entry:

F5 Refreshes and displays a current version of the inform log.

F9 Searches for specified log entries. From a pop-up window, you can search for a name, partial name, message text, and date and time. The default is to search through all log entries from the oldest to the most current. For more information, see "Searching Log Entries" on page 78.

The lines of a log entry in Figure 58 on page 75 displays the following options:

First line

Contains the current entry number, the total number of entries, and the status of the entry.

```
CONTACT ENTRY NUMBER  1 OUT OF  3 CURRENT CONTACT STATUS ISSUED
```

Second line

Contains the contact name field, the connection type used, and the time and date of the notification.

```
AON DEVELOPMENT TEAM           EMAIL    AT 23:00:00 ON 01/26/07
```

Third line

Contains the message issued by the notification.

```
A PU NAMED PU00005 FAILED DUE TO INNOP
```

You can also access the inform log utility by entering the **AON 1.9** command synonym. When the AON Base Functions panel, shown in Figure 59 on page 77, is displayed select option **9**:

```
EZLK0100         AON: Base Functions                                NTVGD


Select an option

        _  0.   Tutorial
           1.   Help Desk
           2.   AutoView
           3.   DDF
           4.   Automation Settings
           5.   Cross Domain Functions
           6.   Timer
           7.   Task and Log Maintenance
           8.   Support Functions
           9.   Display the Inform Log









Command ===>
F1=Help      F2=Main Menu   F3=Return                            F6=Roll
                                                                F12=Cancel
```

Figure 59. AON Base Functions Panel

Checking Notification Status

The status conditions, which are located at the end of the first line in each log entry, are described in the following list. See Figure 58 on page 75 where the status is ISSUED.

ISSUED
An inform request was sent to a service point.

ACKNOWLEDGED
An operator acknowledged the notification.

DELETED
The request was deleted from the inform log database.

ROUTED
The request was routed to another NetView domain that owns the service point.

REINFORMED
The request was reissued after the current inform policy was applied.

REINFORMED/NEW
The request was reissued after the current inform policy was applied and a new message has been sent.

FAILED
The request failed. The probable cause is a communication error with the service point.

NOTROUTED
The request could not be routed to the target NetView domain.

UNKNOWN ENTRY
The inform log contains a corruption error.

Reissuing Notifications

To display the following pop-up window where you can reissue notifications, enter **3 -REINFORM/NEW MESSAGE** on the panel shown in Figure 58 on page 75:

```
EZLKINFR                 INFORM LOG UTILITY

Enter  1 -ACKNOWLEDGE   2 -REINFORM   3 -REINFORM/NEW MESSAGE   4 -DELETE

    CONTACT ENTRY NUMBER   1 OUT OF    3 CURRENT CONTACT STATUS ISSUED
AON  ..............................................................
A P  :  REISSUE an INFORM action via policy PAUL                    :
3    :                                                              :
AON  :   Update or Replace original message (60 character limit)    :
A C  :  => A CDRM NAMED NTB7MVS FAILED DUE TO PACDRM                 :
     :                                                              :
AON  :  Note: Numeric message is required for Numeric Pagers        :
A P  : F1=Help       Press ENTER to REINFORM       F12=Cancel       :
     ..............................................................




Command ===>
F1=Help      F2=Main Menu   F3=Return              F5=Refresh        F6=Roll
F7=Backward  F8=Forward     F9=Search                               F12=Cancel
```

Figure 60. Inform Log Utility with Reissue Request Pop-up Panel

Depending on how your policy is defined, the REISSUE request might change. For example, at 16:00, the policy might indicate a notification is to be sent as an e-mail, but at 19:00 the same policy might have no active contacts or might issue a notification through a pager.

Usage Notes®:

- An active inform policy member is required to view the inform log. Only automated notifications generated by EZLENFRM (the notification policy) are logged in the inform log by default. For more information about the notification policy, refer to the *IBM Tivoli NetView for z/OS Administration Reference*
- Inform entries are logged in the DSILIST DD data set.
- The ILOG command uses the INFORM command to perform REINFORM actions. For information about the ILOG, INFORM, and INFORMTB commands, refer to the *IBM Tivoli NetView for z/OS Command Reference Volume 1 (A-N)*.

Searching Log Entries

The inform log search panel, shown in Figure 61 on page 79, enables you to search the inform log entries.

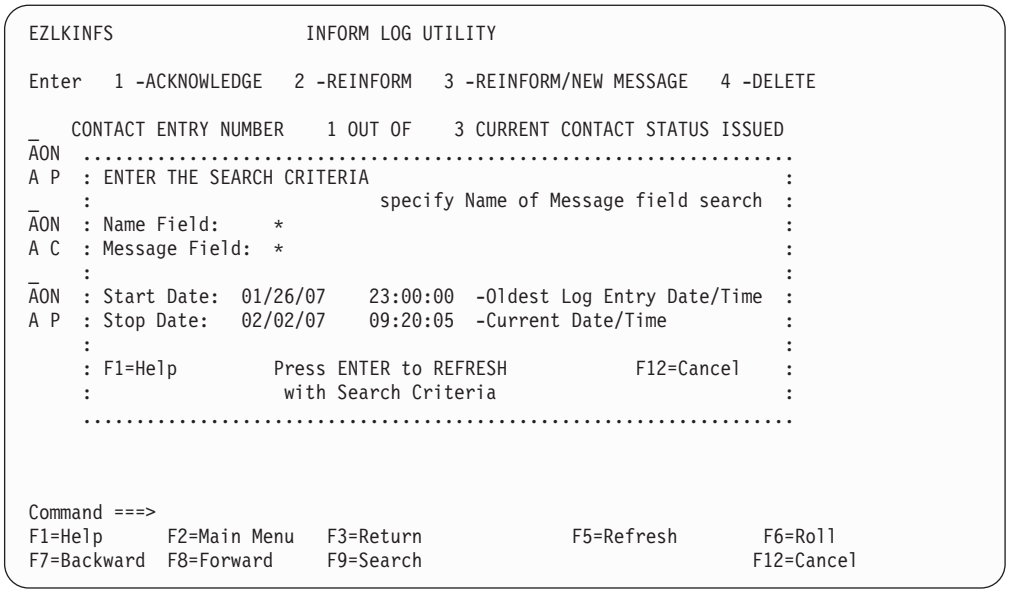


Figure 61. Inform Log Utility Search Panel

By default, the search proceeds through all entries beginning with the oldest date and time and ending with the current date and time. You can limit your search by any, a combination of, or all of, the following ways:

- The name or message fields
- Start and stop date and time

In a partial search, you can specify part of a name followed by and asterisk in the name field and the inform log utility finds every occurrence of the partial name. For example, you can search for XYZ or XYZ* and the inform log utility finds all entries containing XYZ. The asterisk (*) is optional. If you narrow the search still further using specific start and stop dates and times, the search is limited to the specified criteria beginning and ending on the specified dates and times.

If search criteria is not updated, press **F5**. An error message is displayed.

Part 2. Using AON/SNA

Chapter 10. Getting Started with AON/SNA

This chapter explains navigation through the AON/SNA *operator interface*. The AON/SNA operator interface is a series of full-screen, menu-driven panels that enable you to use all of the operator functions available in AON/SNA.

You can identify an AON/SNA panel by the prefix of FKV in the panel name, located in the top left of the panel. Use the operator interface to look at color-coded displays of your network, resolve network problems, receive messages, issue commands, and perform many other functions that control automation and resource availability.

To perform a task in AON/SNA, use the operator interface or *panels*. For each task, there is a primary panel, which might have one or more subordinate panels.

In addition to AON/SNA panels, some AON/SNA tasks use AON panels, identified by an EZL prefix in the top left corner of the panel, and some AON/SNA tasks use NetView panels.

Accessing the Operator Interface

You can access the AON/SNA operator interface from anywhere within NetView or the AON panels. You can also reach the AON/SNA panels from the other AON component (AON/TCP) if this component is installed and initialized by your organization.

To access the AON: Operator Commands Main Menu panel:

1. Type **AON** from the NetView command line.
2. Press **Enter**.

   NetView displays the AON: Operator Commands Main Menu panel shown in Figure 62 on page 84. This panel displays all of the available components of AON. If a component (like AON/SNA) is not available, the name of the component on the panel is not available.

```
 EZLK0000             AON: Operator Commands Main Menu            CNM01


Select an option

         _ 0.   Tutorial
           1.   AON Base Functions
           2.   SNA Automation
           3.   TCP/IP Automation









Command ===>
F1=Help      F2=End         F3=Return                              F6=Roll
                                                                   F12=Cancel
```

Figure 62. AON: Operator Commands Main Menu Panel

3. Type **2** in the entry field, which is located to the left of the first option.
4. Press Enter.

   AON displays the SNA Automation: Menu panel shown in Figure 63 on page 84. Use this panel to access all the functions of AON/SNA.

   Note: You can also display the AON/SNA operator interface by entering **AONSNA** on any command line within NetView, AON, or from the other AON components, provided these components are installed and initialized on your system.

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

         _ 0.   Tutorial
           1.   Help Desk
           2.   SNAMAP
           3.   VTAM Options Management
           4.   NetStat
           5.   VTAM Commands
           6.   APPN menu
           7.   Switched Network Backup menu
           8.   X.25 menu
           9.   NCP Recovery Definitions (NCP name=________)









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                   F12=Cancel
```

Figure 63. SNA Automation: Menu Panel

Using the SNA Help Desk

The SNA Help Desk is an application program that enables NetView operators to solve network problems and to support end-users. The SNA Help Desk systematically finds the cause of the network problems and helps you perform recovery actions through a series of panels. The SNA Help Desk resolves network problems for AON/SNA by primarily attending to SNA resources with support for remote systems and NetView Access Services IDs (NVAS).

The SNA Help Desk enables you to select a resource and recycle it. The SNA Help Desk also enables you to use the problem determination panels to solve problems with that resource. Because AON/SNA performs problem determination through the operator interface panels, you receive immediate feedback on the status of a resource with any possible problems highlighted.

The SNA Help Desk enables you to view a resource and its higher connected nodes. This contrasts with SNAMAP that enables you to zoom to lower connected nodes.

The SNA Help Desk enables inexperienced help desk operators to solve network problems. The resource name is the only required field, so all you need to know is the terminal ID of the user. After you enter the terminal ID into the system, the SNA Help Desk displays a pictorial representation of how the user's terminal is attached to the system.

If your enterprise installed NetView Access Services (NVAS), you can select the NetView Access Services IDs (NVAS) option. This option determines the location of network problems using the caller's user ID, thus eliminating the need to know even the terminal ID.

To increase your productivity, the SNA Help Desk:

- Reduces the amount of input you enter
- Automates problem determination
- Enables you to be productive immediately, even if you do not know the network configuration
- Teaches you problem determination skills while you resolve network failures

To recover resources in another NetView domain, AON/SNA needs an active NNT or remote command (RMTCMD) NetView session with domains other than the one on which AON/SNA is located. This connection is necessary for the SNA Help Desk to find resources that are not on the operator's domain. If you need to establish these sessions, use the AON CDLOG command to go directly to the panel for establishing those sessions.

Accessing the SNA Help Desk

To display the SNA Help Desk, select the Help Desk option on the SNA Automation: Menu panel, or use the fast path command or a panel synonym.

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

         1 0.   Tutorial
           1.   Help Desk
           2.   SNAMAP
           3.   VTAM Options Management
           4.   NetStat
           5.   VTAM Commands
           6.   APPN menu
           7.   Switched Network Backup menu
           8.   X.25 menu
           9.   NCP Recovery Definitions (NCP name=________)









Command ===>
F1=Help      F2=Main Menu   F3=Return                               F6=Roll
                                                                   F12=Cancel
```

Figure 64. Selecting the SNA Automation Help Desk

To display the SNA Help Desk from the SNA Automation: Menu panel:

1. Type **1** in the entry field.
2. Press **Enter**.

   AON/SNA displays the SNA Automation: Help Desk panel shown in Figure 65.

   Note: You can also display the SNA Automation: Help Desk panel by typing **AON 2.1** or **SNAHD** on any command line and pressing **Enter**.

```
FKVK1000                  SNA Automation: Help Desk

 ****  *   **   **      **  **         ***          *****               **
**   * **  **  ****     **  **          **          **  **              **
 **    *** ** **  **    **  **  ****    **   *****  **  **  ****   ***** ** **
  **   ****** ******    ****** **  **   **   **  ** **  ** ** **  ** **     ***
   **  ** *** **  **    **  ** ******   **   **  ** **  ** ****** **   **** ****
*   ** **  ** **  **    **  ** **       **   **  ** **  ** **         ** ** **
 ****  **   * **  **    **  **  ****   ****  *****  *****   ****  *****  **  **
                                              **
                                              **

             Enter name...:  ________

             Select option:  _  1. Recycle resource
                                2. Problem Determination
                                3. NetView Access Services User ID
                                n. NetView Help Desk



Command ===>
F1=Help      F2=Main Menu   F3=Return                               F6=Roll
                                                                   F12=Cancel
```

Figure 65. SNA Automation: Help Desk Panel

3. Type the terminal ID of the user in the **Enter name** field.

4. Type the number of the option you want in the **Select option** entry field. You can select one of the following options:

   Recycle resource
   Attempts to activate the resource and its hierarchy.

   Problem Determination
   Displays the status of the resource and its higher node to help determine the problem.

   NetView Access Services User ID
   Enables you to use a NetView Access Services user ID to start problem determination.

   NetView Help Desk
   This option takes you to the main NetView Help Desk facility.

5. Press **Enter**.

   AON/SNA displays the panel for the option you selected. See the following sections for more information about those options.

Recycling Resources

When you recycle a resource, AON/SNA attempts to deactivate and then activate the resource. Before attempting to activate the resource you select, AON/SNA checks all of the higher nodes to determine the highest inactive node and tries to recycle those nodes first.

For example, to recycle a resource from the SNA Automation: Help Desk panel shown in Figure 66 on page 87 do the following:

1. Type the terminal ID in the **Enter name** field, as shown in Figure 66. This example uses the TA1PT209 terminal ID.
2. Type **1** in the entry field.
3. Press **Enter**.

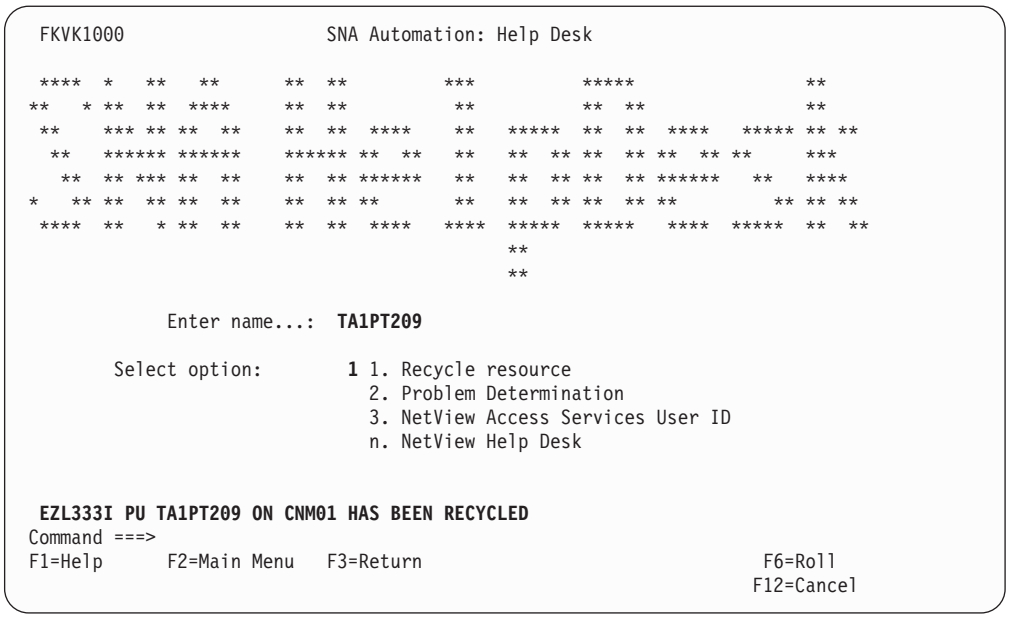


Figure 66. Message Indicating Recycled Resources — SNA Automation: Help Desk

If AON/SNA cannot activate the resource, it displays a panel that displays a message, explaining the current status of the resource. Figure 66 on page 87 shows a message that indicates AON/SNA successfully recycled the resource.

When AON/SNA cannot recycle the resource, it displays an Operator Command Interface: SNA Help Desk panel shown in Figure 67.

```
FKVK1RC1          Operator Command Interface: SNA Help Desk        CNM01


  Current Status of  PU  : TA1P519A is NEVAC
  Resource Domain is: CNM01

  Select one of the following or Press F12 to Cancel:

   _ 1. View Status Information for  NEVAC
     2. Force activate resource
     3. View Hardware Monitor for LINE : TA1L5019
     4. View terminal Error Code explanation
     5. View X.25 Error Code explanation
     6. View Sense Code Information for   08220000







 EZL910I ENTER A SELECTION
Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 67. Operator Command Interface: SNA Help Desk Panel

Figure 67 shows the domain you are on and the status of the resource. To use this panel, do the following:

1. Type the number of the command you want to process in the entry field. You can select one of the following options:

   View Status information
   Displays the status of the resource. Provides an explanation of the status as supplied by the NetView STATUS command.

   Force activate resource
   Tries to force the resource active.

   View Hardware Monitor
   Displays the most recent events for the highest inactive node of the resource.

   View terminal Error Code
   Displays a pop-up window, prompting you for a three-letter error code that you get from the person who called. You see an explanation of the terminal error code.

   View X.25 Error Code explanation
   Provides an explanation of the five-character error code provided by the person who called.

   View Sense Code Information
   Displays any sense code data and provides an explanation of it. This field might show sense code data when a VARY active occurs. You can look at this information using the NetView SENSE command. If there is no sense data, AON/SNA sets the sense field to 00000000.

2. Press **Enter**.

   AON/SNA processes the command you selected.

Determining Problem Cause

AON/SNA displays a panel that shows the pictorial representation of your network and displays a message that explains the status of the resource. For example, if the resource is active, AON/SNA displays a message similar to the following:

```
EZL043I  TA1PT209 IS ACTIVE
```

You can use the SNA Help Desk to determine the cause of network problems. For example, suppose a user, whose terminal ID is RL523A1, detects problems. The user calls the help desk operator, who enters the terminal ID on the AON Help Desk panel. The AON/SNA Help Desk determines that the terminal is a SNA resource, so it displays the SNA Automation: Help Desk panel shown in Figure 68.

```
FKVK1000                  SNA Automation: Help Desk

 ****  *   **   **      **  **         ***          *****               **
**   * **  **  ****     **  **          **          **  **              **
 **    *** ** **  **    **  **  ****    **   *****  **  **  ****   ***** ** **
  **   ****** ******    ****** **  **   **   **  ** **  ** **  ** **     ***
   **  ** *** **  **    **  ** ******   **   **  ** **  ** ******   **   ****
*   ** **  ** ** **     **  ** **       **   **  ** **  ** **         ** ** **
 ****  **   * **  **    **  **  ****   ****  *****  *****   ****  *****  **  **
                                              **
                                              **

             Enter name...:  RL523A1

             Select option:  2  1. Recycle resource
                                2. Problem Determination
                                3. NetView Access Services User ID
                                n. NetView Help Desk



Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 68. SNA Automation: Help Desk Panel – Selecting Problem Determination

To use the Problem Determination option on the SNA Automation: Help Desk panel:

1. Type the terminal ID in the **Enter name** field. This example uses the RL523A1 terminal ID.
2. Type **2** in the entry field.
3. Press **Enter**.

   AON/SNA displays the Operator Command Interface: SNA Help Desk panel shown in Figure 69 on page 90.

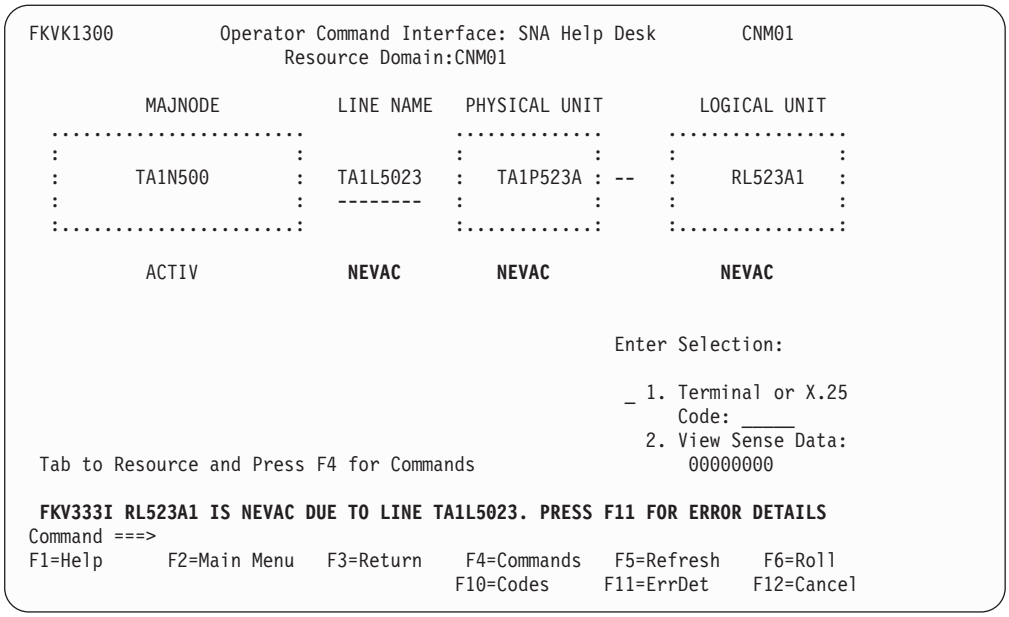


Figure 69. Color-Coded Resource Hierarchy

Figure 69 shows the resource hierarchy. This panel is color-coded to indicate the status of the resources. Because the line is not active, the line, the PU, and the LU all display in red on the panel. The red is represented in boldface in Figure 69. The line, the PU, and the LU each have a status of NEVAC (never active).

The selection menu in the lower right corner of the panel shows any sense codes or error codes associated with the problem. If you know the sense code data or the X.25 code, you can select these options for further information. Press F10 to move to the **Enter Selection** entry field or press the Tab key to move the cursor to the resource. On the Operator Command Interface: SNA Help Desk panel the cursor is positioned at the failing resource.

If the resource is not active, AON/SNA enables the F11 key. In this scenario, the message on the Operator Command Interface: SNA Help Desk panel instructs you to press F11 for error details and to continue with problem determination. Although the LU that you are investigating is RL523A1, the message displayed at the bottom of the panel in Figure 69 reveals that the line is the source of the problem.

4. Press **F11**.

   AON/SNA displays the SNA Help Desk Problem Determination panel shown in Figure 70 on page 91.

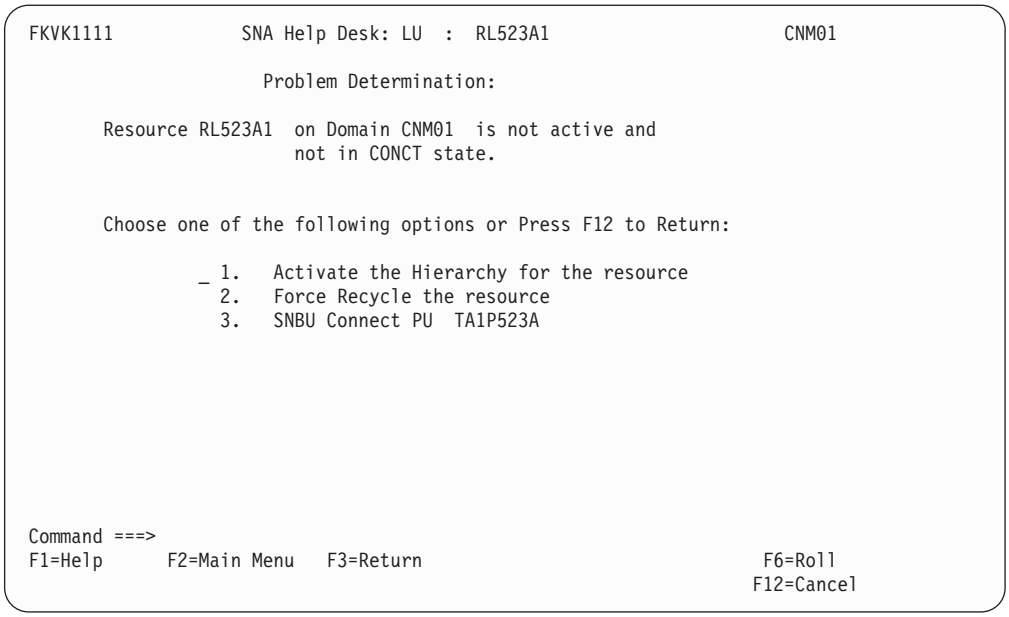


Figure 70. SNA Help Desk Problem Determination Panel

Figure 70 shows the error message at the top of the panel. The panel lists actions to take to attempt to solve the problem. The Problem Determination panel provides the following actions:

Activate the Hierarchy for the resource
Attempts to activate the hierarchy of the resource starting from the highest inactive resource to the resource you entered.

Force Recycle the resource
Attempts to deactivate, then activate the resource you entered.

SNBU Connect PU
Takes you to SNBU so you can initiate the dial backup connection.

See the following sections for more information about these options.

Activating the Hierarchy

You can use the Problem Determination panel to activate the LU and the other resources in its hierarchy (the PU and the line). To do this, follow these steps:

1. Type **1** in the entry field shown in Figure 71 on page 92.
2. Press **Enter**.

   AON/SNA attempts to activate all of the resources in the hierarchy, starting from the highest inactive resource continuing down to the resource you entered on the panel.

```
FKVK1111           SNA Help Desk: LU  :  RL523A1                    CNM01

                     Problem Determination:

       Resource RL523A1  on Domain CNM01  is not active and
                         not in CONCT state.


       Choose one of the following options or Press F12 to Return:

                1 1.   Activate the Hierarchy for the resource
                  2.   Force Recycle the resource
                  3.   SNBU Connect PU









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 71. Activating the Hierarchy for the Resource

AON/SNA cannot always resolve the problem by activating the hierarchy for the resource. Figure 72 shows a message indicating that AON/SNA did not activate the hierarchy for RL523A1.

```
FKVK1111           SNA Help Desk: LU  :  RL523A1                    CNM01

                     Problem Determination:

       Resource RL523A1  on Domain CNM01  is not active and
                         not in CONCT state.


       Choose one of the following options or Press F12 to Return:

                _ 1.   Activate the Hierarchy for the resource
                  2.   Force Recycle the resource
                  3.   SNBU Connect PU









FKV339I UNABLE TO ACTIVATE THE HIERARCHY FOR RL523A1. SENSECODE=08220000
Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 72. Unable to Activate Message on the Problem Determination Panel

If AON/SNA did not activate the resource, try the **Force Recycle the resource** option (option 2) on the Problem Determination panel.To force the recycle of a resource on the Problem Determination panel as shown in the panel in Figure 71:

1. Type **2** in the entry field.
2. Press **Enter**.

   If AON/SNA successfully activates the resource, it returns a message similar to the one that is shown in boldface in Figure 66 on page 87. If AON/SNA cannot recycle the resource, it displays a message similar to the following:

   ```
   EZL334I  UNABLE TO VARY restype resname ON domain ACTIVE
   ```

Note that beginning with NetView V5R4, the SNBU Connect PU option is deprecated.

Using Problem Determination Commands

The Operator Command Interface: SNA Help Desk panel enables you to issue commands for a resource. To issue commands, press the F4 function key. AON/SNA displays a pop-up command window that lists the commands you can issue for the resource you select. To issue a command for a resource:

1. Press the **Tab** key to move the cursor to the resource you want.
2. Press **F4**.

   AON/SNA displays a pop-up command window with the commands you can issue for that resource. Figure 73 shows the command window for the TA1PT209 resource.

```
FKVK1401          Operator Command Interface: SNA Help Desk        CNM01
                        Resource Domain: CNM01

         MAJNODE             LINE NAME          PU_T2.1
  .....................                 .....................
  :                   :                 :                   :
  :       TA1N400     :   J000900F      .............................
  :                   :   -----------   : ID:  TA1PT209              :
  :...................:                 : ACTIV                       :
                                        :                             :
          ACTIV              ACTIV      :    1. Recycle TA1PT209      :
                                        :    2. AutoView              :
   SWITCHED SNA MAJOR NODE              :    3. SNAMAP                :
                                        :    4. List LUs              :
  .....................                 :    5. DDF Details           :
  :       SWTOK01     : --------------  :    6. Automation Commands   :
  :...................:                 :    7. NetView Commands      :
                                        :                             :
         ACTIV                          :                             :
                                        : F1=Help           F12=Cancel :
 Tab to Resource and Press F4 for Commands :.............................:

Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
                                       F10=Codes     F11=ErrDet    F12=Cancel
```

Figure 73. Operator Command Interface: SNA Help Desk Panel with Pop-up Command Window

3. Type the number for the command that you want to issue in the entry field of the pop-up window. You can select one of the following commands:

   Recycle *resname*
   Forces the resource inactive, then activates the resource. See "Recycling Resources" on page 87 for more information about recycling resources.

   AutoView
   Displays the current automation setting for a resource. These settings include the current status of a resource, and the recovery, threshold, and monitoring settings. You can change the settings.

   SNAMAP
   Displays a map of the resource. You can zoom in on the resource to see the connecting lower nodes. You can also enter commands from the panel that is displayed.

   DDF Details
   Takes you to the Dynamic Display Facility (DDF) panel that shows the details for the resource. This panel also displays a message.

Automation commands
Displays the Automation Commands panel. See "Using the Automation Commands" for more details about the commands available on this panel.

NetView commands
Displays the NetView Commands panel. See "Issuing NetView Commands" on page 95 for more details about the commands available on this panel.

4. Press **Enter**.

   AON/SNA issues the command that you selected.

Using the Automation Commands: You can use the Automation Commands panel to issue commands that control automation. You can access this panel by selecting Automation Commands from a pop-up command window shown in Figure 73 on page 93. To issue automation commands:

1. Type **6** in the entry field on the pop-up command window.
2. Press **Enter**.

   AON/SNA displays the SNA Help Desk Automation Commands panel shown in Figure 74.

```
FKVK1ACM             SNA Help Desk                              CNM01
                   Automation Commands

 Current Resource Name: TA1PT209

 Select a command:

         _ 1. Automation Flag
           2. Thresholds
           3. Monitor Intervals
           4. Active Monitoring
           5. SNBU Connect
           6. Change SNBU Speed
           7. Automation Definition
           8. Status History
           9. LUDRPOOL




Command ===>
F1=Help      F2=Main Menu   F3=Return                          F6=Roll
                                                              F12=Cancel
```

Figure 74. Using the SNA Help Desk Automation Commands Panel

3. Type the number of the command you want in the entry field. You can select one of the following commands:

   Automation Flag
   Enables you to set, change, or delete the automation recovery settings in the control file.

   Thresholds
   Enables you to set, change, or delete the threshold settings in the control file.

   Monitor Intervals
   Enables you to set or change the monitoring intervals.

Active Monitoring
Enables you to set or change active monitoring.

SNBU Connect
Enables you to change the SNBU connection, if SNBU is one of your resources.

Change SNBU Speed
Enables you to change the modem speed, if SNBU is one of your resources.

Automation Definition
Displays the configuration data for this resource.

Status History
Displays all the status information for this resource.

LUDRPOOL
Displays X.25 results from the LUDRPOOL command.

4. Press **Enter**.

   AON/SNA issues the command that you selected.

Issuing NetView Commands: You can issue six different NetView commands from the NetView Commands panel. You can access this panel by selecting NetView Commands from a pop-up command window shown in Figure 73 on page 93. To issue NetView commands:

1. Type **7** in the entry field on the pop-up commands window.
2. Press **Enter**.

   AON/SNA displays the SNA Help Desk NetView Commands panel shown in Figure 75.

```
FKVK1NCM              SNA Help Desk                              CNM01
                     NetView Commands

 Current Resource Name: TA1PT209
 Resource Domain      : CNM01

 Select a command:

         _ 1. Hardware Monitor
           2. Session Monitor
           3. Timer
           4. Activate
           5. Inactivate
           6. Help Status  ACTIV--L--









Command ===>
F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                                    F12=Cancel
```

Figure 75. Using the SNA Help Desk NetView Commands Panel

3. Type the number of the command you want in the entry field. You can select one of the following commands:

   Hardware Monitor
   Displays the most recent events for the resource.

Session Monitor
Displays the summary information for the latest response time.

Timer Enables you to set or change the timers for the resource.

Activate
Attempts to activate the resource.

Inactivate
Attempts to deactivate the resource.

Help Status
Shows the current status of the resource that is displayed in the **Current® Resource Name** field on the NetView Commands panel.

4. Press **Enter**.

   AON/SNA issues the command that you selected.

Using NetView Access Services (NVAS)

NetView Access Services (NVAS) provides simultaneous access to one or several applications from a single terminal, using one user ID and password. The applications include any of the following:

- System (for example, CICS®)
- Subsystem (for example, TSO/E)
- Application
- Transaction within a system

AON/SNA supports only the relay mode sessions for NetView Access Services (NVAS).

To select NetView Access Services from the SNA Automation: Help Desk panel shown in Figure 76 on page 97:

1. Type your NVAS user ID in the **Enter name** field.
2. Type **3** in the entry field.
3. Press **Enter**.

```
FKVK1000                 SNA Automation: Help Desk

 ****  *   **   **      **  **         ***          *****                **
**   * **  **  ****     **  **          **          **  **               **
 **    *** ** **  **    **  **  ****    **   *****  **  **  ****   ***** ** **
  **   ****** ******    ****** **  **   **   **  ** **  ** **  ** **     ***
   **  ** *** **  **    **  ** ******   **   **  ** **  ** ******   **   ****
*   ** **  ** **  **    **  ** **       **   **  ** **  ** **         ** ** **
 ****  **   * **  **    **  **  ****   ****  *****  *****   ****  *****  **  **
                                             **
                                             **

             Enter name...: OPER1__

             Select option:   3 1. Recycle resource
                                2. Problem Determination
                                3. NetView Access Services User ID
                                n. NetView Help Desk



Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 76. Selecting the Option for NetView Access Services (NVAS) Problems

AON/SNA displays the SNA Help Desk panel for NetView Access Services shown in Figure 77.

```
FKVKCHP1          Operator Command Interface: SNA Help Desk        CNM01
                    NetView Access Services: EMS01

               USERID= OPER1                GROUP= PROD
Enter a Non-blank character next to selection to Cancel.  Then press enter.

   Terminal Address                     Relay LUs    Application LUs  ACB Type
 _ TA1TT170                           _ EMS01F01     AON01026           I
                                      _ EMS01F03     AON06012           U
                                      _ EMS01F01     AON05012           I
                                      _ EMS01F02     AON04008           U









Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 77. SNA Help Desk Panel for NetView Access Services

The SNA Help Desk panel for NetView Access Services lists all available applications that are active for your user ID. The SNA Help Desk panel for NetView Access Services can display up to 99 applications for a single NetView Access Services user ID. You can use the F7 and F8 function keys to look at all of the applications.

The SNA Help Desk panel for NetView Access Services displays information about the ID and what LUs the ID is logged onto. From here, you can cancel the NetView Access Services user ID. This action cancels one or more of the applications under the NetView Access Services user ID.

The SNA Help Desk panel for NetView Access Services provides the following information for the user ID:

Terminal Address
The address on which the NetView Access Services user ID is logged on. If the address shows as DISCONNECTED, the ID is disconnected. However, AON/SNA might still run applications that you originally logged onto by the user ID.

Relay LU
The pseudo terminal name given when an application is selected by the NetView Access Services user ID. If the name shows as NO SESSIONS, the NetView Access Services user ID is logged on and is currently on the selection list.

Application LU
The primary logical unit for the application. The naming conventions are important to help identify the application.

ACB Type
Explains the type of session the ID is logged on to. The settings are:
U Unique
I Individual
S Shared

A shared session is a special case because it uses the same relay LU as the other NetView Access Services user ID. To cancel a relay LU that is shared, AON/SNA cancels the terminal address instead. If AON/SNA cancels a shared user ID, the user of that ID can log onto NetView Access Services with that ID and issue the LF command against the application that is stopped.

Canceling a NetView Access Services User ID

To cancel a NetView Access Services user ID and all NetView Access Services applications:

1. Type a non-blank character in the entry field next to the terminal address.
2. Press **Enter**.

   AON/SNA cancels the NetView Access Services user ID and all the NetView Access Services applications.

To cancel one or more applications running under the NetView Access Services user ID:

1. Press the **Tab** key to move the cursor to the **Relay LUs** column.
2. Type a non-blank character in the entry field next to the relay LUs and applications you want to cancel.
3. Press **Enter**.

   AON/SNA cancels the applications you selected.

To cancel any other type of ACB session:

1. Type a non-blank character in the entry field next to the terminal address.
2. Press **Enter**.

   AON/SNA cancels the ACB session you selected.

Attention: AON/SNA does not display a confirmation panel before canceling the NetView Access Services user ID. Use this function carefully.

Chapter 11. Using SNAMAP

SNAMAP provides a tool to view a list of all the resources on a domain. You create the list by selecting one of the following resource types:

- Major nodes
- Applications
- Cross-domain resource managers
- Cross-domain resources
- Link stations
- Cluster controllers
- Terminals
- User entered resource name

SNAMAP displays lower connected nodes. This contrasts with the SNA Help Desk which provides a view of a resource and its connected higher nodes.

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

        2  0.   Tutorial
           1.   Help Desk
           2.   SNAMAP
           3.   VTAM Options Management
           4.   NetStat
           5.   VTAM Commands
           6.   APPN menu
           7.   Switched Network Backup menu
           8.   X.25 menu
           9.   NCP Recovery Definitions (NCP name=________)









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 78. Selecting SNAMAP on the SNA Automation: Menu Panel

To use SNAMAP:

1. Type **2** in the entry field on the **SNA Automation: Menu** panel shown in Figure 78.
2. Press **Enter**.

   AON/SNA displays the SNA Automation: SNAMAP panel shown in Figure 79 on page 100.

   Note: You can also get to the SNA Automation: SNAMAP panel by typing **AON 2.2** or **SNAMAP** on any command line and pressing **Enter**.

```
FKVK2000                SNA Automation: SNAMAP                   CNM01


Select an option

       1 1. Major Nodes
         2. Applications
         3. Cross Domain Resource Managers
         4. Cross Domain Resources
         5. Link Stations
         6. Cluster Controllers
         7. Terminals
         8. ____________________




Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 79. SNA Automation: SNAMAP Panel

3. Type the number of the option you want in the entry field. This example selects option 1 (Major Nodes) shown in Figure 79.
4. Press **Enter**.

   AON/SNA displays the Operator Command Interface: SNAMAP panel shown in Figure 80.

```
FKVK2100          Operator Command Interface: SNAMAP              CNM01

Type an action code.  Then press Enter.                           More   +
 1=Activate  2=Inactivate
                          Type                Status
 _  VTAMSEG               APPL SEGMENT        ACTIV
 _  A01MPU                PU T4/5 MAJ NODE    ACTIV
 _  ISTPDILU              CDRSC SEGMENT       ACTIV
 _  ISTADJCP              ADJCP MAJOR NODE    ACTIV
 _  ISTCDRDY              CDRSC SEGMENT       ACTIV
 _  ISTDSWMN              SW SNA MAJ NODE     ACTIV
 _  TA1N100               PU T4/5 MAJ NODE    ACTIV
 _  AON1APPC              APPL SEGMENT        ACTIV
 _  AN22E01               APPL SEGMENT        ACTIV
 _  AN23E02               APPL SEGMENT        ACTIV
 _  AO23E01               APPL SEGMENT        ACTIV
 _  AN23E1A               APPL SEGMENT        ACTIV
 _  AN23EVP               APPL SEGMENT        ACTIV
 _  A01EMS                APPL SEGMENT        ACTIV
 _  A01TCPIP              APPL SEGMENT        ACTIV

Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                              F11=Zoom      F12=Cancel
```

Figure 80. Operator Command Interface: SNAMAP Panel

The Operator Command Interface: SNAMAP panel lists the available resources and shows the type and status of each resource. Press the F7 and F8 function keys to scroll through the list of resources if they are displayed on more than one panel.

You can use one of the following action codes on a specified resource:

1=Activate
Activates the resource you specify
2=Inactivate
Deactivates the resource you specify

See the following sections for more information about activating and deactivating a resource.

Activating Resources

You can activate a specific resource from the Operator Command Interface: SNAMAP panel. For example, to activate the AN23E02 resource:

1. Press the **Tab** key to move the cursor to the AN23E02 resource, as shown on the Operator Command Interface: SNAMAP panel in Figure 80 on page 100.
2. Type **1** in the entry field beside the AN23E02 resource.
3. Press **Enter**.

   AON/SNA displays a message indicating that the resource is now active, as shown in Figure 81.

```
FKVK2100          Operator Command Interface: SNAMAP              CNM01

Type an action code.  Then press Enter.                           More:   +
 1=Activate  2=Inactivate
                        Type                 Status
 _  VTAMSEG             APPL SEGMENT         ACTIV
 _  A01MPU              PU T4/5 MAJ NODE     ACTIV
 _  ISTPDILU            CDRSC SEGMENT        ACTIV
 _  ISTADJCP            ADJCP MAJOR NODE     ACTIV
 _  ISTCDRDY            CDRSC SEGMENT        ACTIV
 _  TA1N100             PU T4/5 MAJ NODE     ACTIV
 _  AON1APPC            APPL SEGMENT         ACTIV
 _  AN22E01             APPL SEGMENT         ACTIV
 *  AN23E02             APPL SEGMENT         ACTIV
 _  AO23E01             APPL SEGMENT         ACTIV
 _  AN23E1A             APPL SEGMENT         ACTIV
 _  A01EMS              APPL SEGMENT         ACTIV
 _  A01TCPIP            APPL SEGMENT         ACTIV
 _  A01TSO              APPL SEGMENT         ACTIV
 _  CDRM01              CDRM SEGMENT         ACTIV
 IST1132I AN23E02          IS ACTIVE, TYPE = APPL SEGMENT
Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                               F11=Zoom     F12=Cancel
```

Figure 81. Activate Message

Deactivating Resources

You can deactivate a specific resource from the Operator Command Interface: SNAMAP panel. For example, to deactivate the AON1APPC resource:

1. Press the **Tab** key to move the cursor to the AON1APPC resource, as shown on the Operator Command Interface: SNAMAP panel in Figure 80 on page 100.
2. Type **2** in the entry field beside the AON1APPC resource.
3. Press **Enter**.

   AON/SNA displays a message indicating that the resource is now inactive, as shown in Figure 82 on page 102.

```
FKVK2100          Operator Command Interface: SNAMAP              CNM01

Type an action code.  Then press Enter.                           More:   +
 1=Activate  2=Inactivate
                         Type                 Status
 _  VTAMSEG              APPL SEGMENT         ACTIV
 _  A01MPU               PU T4/5 MAJ NODE     ACTIV
 _  ISTPDILU             CDRSC SEGMENT        ACTIV
 _  ISTADJCP             ADJCP MAJOR NODE     ACTIV
 _  ISTCDRDY             CDRSC SEGMENT        ACTIV
 _  ISTDSWMN             SW SNA MAJ NODE      ACTIV
 _  TA1N100              PU T4/5 MAJ NODE     ACTIV
 *  AON1APPC             APPL SEGMENT         ACTIV
 _  AN22E01              APPL SEGMENT         ACTIV
 _  AN23E02              APPL SEGMENT         ACTIV
 _  AO23E01              APPL SEGMENT         ACTIV
 _  AN23E1A              APPL SEGMENT         ACTIV
 _  A01EMS               APPL SEGMENT         ACTIV
 _  A01TCPIP             APPL SEGMENT         ACTIV
 _  A01TSO               APPL SEGMENT         ACTIV
 IST1133I AON1APPC          IS NOW INACTIVE, TYPE = APPL SEGMENT
Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                               F11=Zoom     F12=Cancel
```

Figure 82. Deactivate Message

4. Press **F5** to refresh the panel.

You can also press the **F4** function key to display the pop-up command window, or the **F11** function key to display the next level of information for a resource. Both of these function keys are cursor sensitive and display the information for the resource at the position of the cursor. The following sections describe the use of these keys.

Viewing Lower Connected Nodes

You can use the F11 function key to view the connected lower nodes for a specific resource. AON/SNA labels this function key as a zoom key. To see the connected lower nodes:

1. On the **Operator Command Interface: SNAMAP** panel, press the **Tab** key to move the cursor to the resource you want. This example shows the TA1N100 resource.
2. Press **F11**.

   AON/SNA displays the lower connected nodes for the TA1N100 resource in a pop-up window on the right side of the panel shown in Figure 83 on page 103.

```
 FKVK2110         Operator Command Interface: SNAMAP             CNM01

Type an action code.  Then press Enter.                         More   +
 1=Activate  2=Inactivate
                 ............................................................
_  VTAMSEG      : Type an action code. Then press Enter.      More:   +    :
_  A01MPU       :  1=Activate  2=Inactivate                                :
_  ISTPDILU     :                       Type                Status         :
_  ISTADJCP     : _ TA07LNPA            LINES               ACTIV----T     :
_  ISTCDRDY     : _ TA07L000            LINES               NEVAC          :
_  ISTDSWMN     : _ TA07L004            LINES               NEVAC          :
_  TA1N100      : _ L07CA000            LINES               NEVAC          :
_  AON1APPC     : _ L07CA001            LINES               NEVAC          :
_  AN22E01      : _ L07CA002            LINES               NEVAC          :
_  AN23E02      : _ L07CA003            LINES               NEVAC          :
_  AO23E01      : _ L07CA004            LINES               NEVAC          :
_  AN23E1A      :                                                          :
_  AN23EVP      : F1=Help     F3=Return  F4=Commands F5=Refresh  F6=Roll   :
_  A01EMS       : F7=Backward F8=Forward            F11=Zoom    F12=Cancel :
_  A01TCPIP     :..........................................................:

Command ===>
F1=Help      F2=Main Menu   F3=Return    F4=Commands   F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                F11=Zoom      F12=Cancel
```

Figure 83. Viewing Lower Connected Nodes

You can activate or deactivate the resources listed in the pop-up window. For more information about activating and deactivating the resources, see "Activating Resources" on page 101 and "Deactivating Resources" on page 101.

Using SNAMAP Pop-up Commands

You can use the F4 function key to display a list of pop-up commands that you can issue for a specified resource. For example, you might want to display the status history of a resource before you activate it.

To display the command list and issue a command:

1. On the **Operator Command Interface: SNAMAP** panel, press the **Tab** key to move the cursor to the resource you want. This example shows the TA07LNPA resource.
2. Press **F4**.

   AON/SNA displays the commands you can use in a pop-up window on the right side of the panel shown in Figure 84 on page 104.

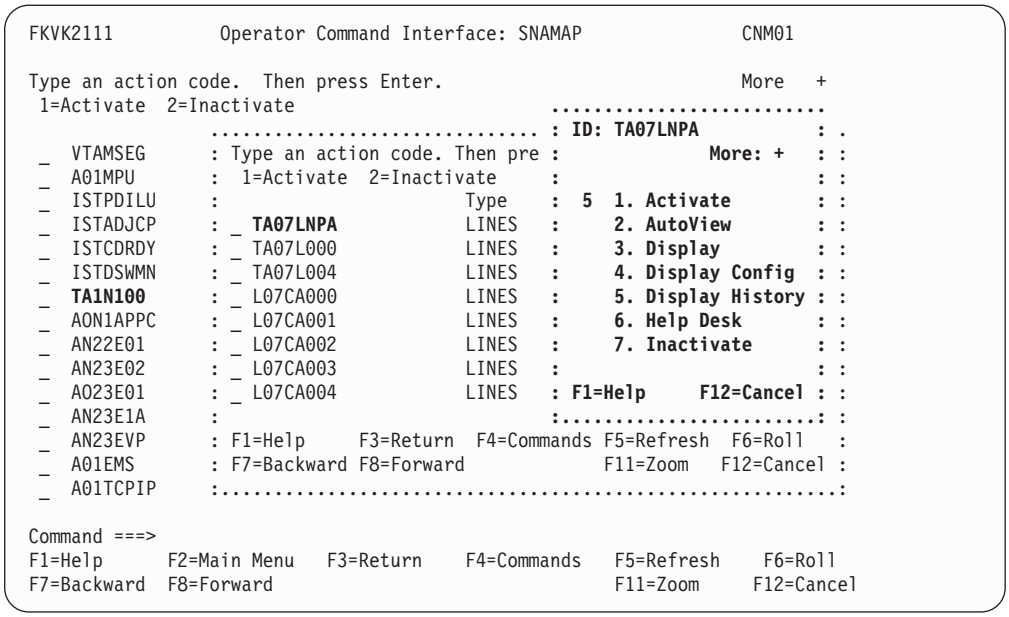


Figure 84. Displaying the Command List Pop-up Window

3. Type the number of the command you want to issue in the entry field in the pop-up command window. In this example, you can issue one of the following commands:

   Activate
   Activates the resource.

   AutoView
   Shows all the automation settings for the resource and enables you to change the settings.

   Display
   Displays the details about this resource.

   Display Config
   Displays the control file for the resource.

   Display History
   Displays the status file history for the resource.

   Help Desk
   Displays the problem determination information from the SNA Help Desk.

   Inactivate
   Deactivates the resource.

   Monitor
   Displays the monitoring intervals for the resource.

   Recovery
   Displays the recovery settings for the resource.

   Thresholds
   Displays the error threshold settings for the resource.

   Timer Displays the timer settings for the resource.

   Press the **F7** and **F8** function keys to scroll through the list of commands.
4. Press **Enter**.

AON/SNA processes the command you selected.

Chapter 12. Displaying Network Status

To display the status of specified resource groups, use the NetStat option. To check the status of your network, specify the type of resource and which resources of that type to display.

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

         4 0.   Tutorial
           1.   Help Desk
           2.   SNAMAP
           3.   VTAM Options Management
           4.   NetStat
           5.   VTAM Commands
           6.   APPN menu
           7.   Switched Network Backup menu
           8.   X.25 menu
           9.   NCP Recovery Definitions (NCP name=________)









Command ===>
F1=Help      F2=Main Menu   F3=Return                             F6=Roll
                                                                 F12=Cancel
```

Figure 85. SNA Automation: Menu Panel – Selecting the NetStat Option

To check the status of your network from the **SNA Automation: Menu** panel:

1. Type **4** in the entry field.
2. Press **Enter**.

   AON/SNA displays the SNA Automation: NetStat panel shown in Figure 86 on page 108.

   Note: You can also display the NetStat panel by typing **AON 2.4** or **NETSTAT** on any command line and pressing **Enter**.

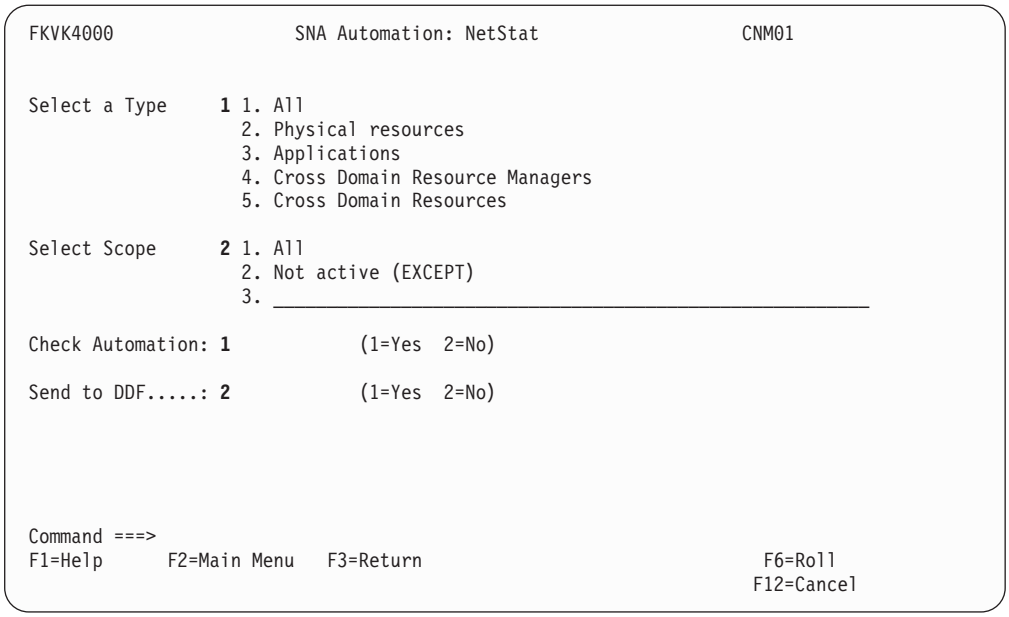


Figure 86. SNA Automation: NetStat Panel

3. Type the number of the resource type you want in the **Select a Type** entry field. You can select one of the following options:

   All Displays all known resources. The default is All.

   Physical resources
   Displays only the physical resources. For example, this option displays NCPs, lines, PUs, and LUs.

   Applications
   Displays all of the applications.

   Cross Domain Resource Managers
   Displays all of the cross-domain resource managers.

   Cross Domain Resources
   Displays all the cross-domain resources.

4. Type the number of the scope you want in the **Select Scope** entry field. You can select one of the following options:

   All Displays all resources regardless of their status.

   Not active (EXCEPT)
   Displays all resources currently not in an active state. The default is `EXCEPT`.

   User-defined field
   Displays the scope of resources you specify. If you do not want to display resources with a certain status, type an ¬ before the status.

5. Specify whether you want to check automation. You can specify one of the following values:

   1=Yes Checks the recovery setting for the resource before it displays the resource. If you specify `Yes` and recovery is turned off, the resource is not displayed. This is the default.

   2=No Does not check automation.

6. Specify if you want to send the resource to DDF. You can specify one of the following values:

1=Yes Updates DDF with the status of the resource you display. Specify `Yes` if you need to reset the status of the resource or reload DDF.

2=No Does not update DDF with the status of the resource. The default is `No`.

7. Press **Enter**.

   AON/SNA displays the status of the resources you specified on the Operator Command Interface: NetStat panel shown in Figure 87.

```
FKVK4100          Operator Command Interface: NetStat             CNM01

                                                                  More:  +
   Name                Type                Status
   TA27                CDRM                NEVAC
   --------            -----               -----
   TA07LNPA            LINE                NEVAC
   TA07L000            LINE                NEVAC
   TA07L004            LINE                NEVAC
   L07CA000            LINE                NEVAC
   L07CA001            LINE                NEVAC
   L07CA002            LINE                NEVAC
   L07CA003            LINE                NEVAC
   L07CA004            LINE                NEVAC
   L07CA005            LINE                NEVAC
   L07CA006            LINE                NEVAC
   L07CA007            LINE                NEVAC
   L07CA009            LINE                NEVAC
   L07CA010            LINE                NEVAC


Command ===>
F1=Help      F2=Main Menu   F3=Return                          F6=Roll
F7=Backward  F8=Forward                                       F12=Cancel
```

Figure 87. Operator Command Interface: NetStat Panel

Note: For information about the programmatic interface to the AON NETSTAT function, see the SNA resource automation information, see "SNA Resource Automation (FKVESYNC)" on page 378.

Chapter 13. Issuing VTAM Commands

To issue VTAM commands and see the results of the commands on a panel, use the VTAM commands option on the SNA Automation: Menu panel or the VTAMCMD command. The VTAM commands option saves commands across user task sessions. If any command is left on the panel when you exit the panel, it is displayed in the same place when you return to the panel. This is helpful if you have a small set of frequently used commands, and you do not want to look up the syntax of a command each time you use it.

The VTAM command option is cursor sensitive. If you have several commands on the panel, AON/SNA issues the command at the position of the cursor. You can issue a command by typing a new command and pressing **Enter**, or use the **Tab** key to move the cursor to the command you want to select and press **Enter**.

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

          5 0.   Tutorial
            1.   Help Desk
            2.   SNAMAP
            3.   VTAM Options Management
            4.   NetStat
            5.   VTAM Commands
            6.   APPN menu
            7.   Switched Network Backup menu
            8.   X.25 menu
            9.   NCP Recovery Definitions (NCP name=________)









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 88. Selecting the VTAM Commands Option

To issue VTAM commands from the SNA Automation: Menu panel:

1. Type **5** in the entry field.
2. Press **Enter**.

   AON/SNA displays the SNA Automation: VTAM Commands panel shown in Figure 89 on page 112.

   Note: You can also get to the VTAM Commands panel by typing **AON 2.5** or **VTAMCMD** on any command line and pressing **Enter**.

```
FKVK5000               SNA Automation: VTAM Commands            CNM01


 Type in a VTAM Command or Tab to a Command.  Then press Enter.

  F NET,CHKPT,TYPE=ALL_____________________________________________
  ID=TA1PT209______________________________________________________
  TOPO_____________________________________________________________
  _________________________________________________________________
  D NET,TOPO,LIST=SUMMARY__________________________________________
  D NET,DIRECTRY,ID=USIBMTA.TA01___________________________________
  D NET,TOPO,LIST=ICN______________________________________________
  D NET,ADJCP,ID=*_________________________________________________
  ID=TA1T1048,E____________________________________________________
  ID=CICS01A,E_____________________________________________________


 NOTE: If the word NET does not occur in the command,
       D NET is assumed.


Command ===>
F1=Help      F2=Main Menu   F3=Return                          F6=Roll
                                                              F12=Cancel
```

Figure 89. SNA Automation: VTAM Commands Panel

When you select this panel for the first time, the command input fields are blank. However, because AON/SNA saves the commands across user sessions, including NetView sessions, the panel fills up with the commands you use. This saves time if you use a few commands frequently.

You can shorten the commands on this panel. For example, you can enter the `D NET,TOPO,LIST=ICN` command as `TOPO,LIST=ICN` because AON/SNA assumes you want to use D NET if you do not specify the word NET.

To change a command, use the Tab key to move the cursor to the command and type over it.

To add a VTAM command to this panel and issue it:

1. Type the command in the entry field. You can only type one command on each line.
2. Press **Enter**.

   AON/SNA issues the command and displays the Operator Command Interface: VTAM Commands panel shown in Figure 90 on page 113. In this example, the `DISPLAY NET,ID=TA1T1048` command response is displayed.

```
FKVK5100          Operator Command Interface: VTAM Commands         CNM01

Output of: D NET,ID=TA1T1048,E                                      More:   +

IST097I    DISPLAY  ACCEPTED
IST075I    NAME = USIBMTA.TA1T1048 , TYPE = CDRSC
IST486I    STATUS= ACT/S----Y, DESIRED STATE= ACTIV
IST977I    MDLTAB=***NA*** ASLTAB=***NA***
IST861I    MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I    DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I    CAPABILITY-PLU ENABLED  ,SLU ENABLED  ,SESSION LIMIT NONE
IST231I    CDRSC    MAJOR NODE = ISTCDRDY
IST479I    CDRM NAME = TA06    , VERIFY OWNER = NO
IST1131I   DEVICE = CDRSC
IST654I    I/O TRACE = OFF, BUFFER TRACE = OFF
IST171I    ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I    SESSIONS:
IST634I    NAME     STATUS          SID          SEND RECV VR TP NETID
IST635I    CNM01024 ACTIV-P    F9DB431A7D93BAD8 000D 0024  0  1 USIBMTA


Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
F7=Backward  F8=Forward                                         F12=Cancel
```

Figure 90. Operator Command Interface: VTAM Commands Panel

The output from the command is displayed on this panel. If the output is more than one panel long, you can scroll through the panels to see all of the information.

To issue previously saved commands:

1. Press the **Tab** key to move the cursor to the command you want to issue.
2. Press **Enter**.

   AON/SNA issues the command and displays the output on the Operator Command Interface: VTAM Commands panel.

Chapter 14. Using Advanced Peer-to-Peer Networking (APPN)

AON/SNA Advanced Peer-to-Peer Networking (APPN) is a powerful, flexible, easy-to-use networking solution for client-server and distributed applications supported by VTAM 4.1 or later.

In an AON/SNA APPN environment, AON provides menu-driven commands to simplify VTAM topology and directory database management. This environment accepts operator commands for common AON/SNA APPN VTAM functions. It also provides active monitoring of control points and control point sessions.

You can use the AON/SNA: APPN Command Menu panel to perform the following APPN functions:

- Issue checkpoint commands
- Display control points
- Display directory
- Display transmission group profiles

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

          6 0.   Tutorial
            1.   Help Desk
            2.   SNAMAP
            3.   VTAM Options Management
            4.   NetStat
            5.   VTAM Commands
            6.   APPN menu
            7.   Switched Network Backup menu
            8.   X.25 menu
            9.   NCP Recovery Definitions (NCP name=________)









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 91. SNA Automation: Menu Panel – Selecting the APPN Menu Option

To use the APPN functions from the **SNA Automation: Menu** panel:

1. Type **6** in the entry field.
2. Press **Enter**.

   AON/SNA displays the SNA Automation: APPN Commands Menu panel shown in Figure 92 on page 116.

   Note: You can also get to the APPN Commands Menu panel by typing **AON 2.6** or **APPN** on any command line and pressing **Enter**.

```
FKVKA000         SNA Automation: APPN Commands Menu              CNM01


Select an option

          _ 0. Tutorial
            1. Issue Checkpoint Commands
            2. Display Control Points
            3. Display Directory
            4. Display Transmission Group Profiles









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 92. SNA Automation: APPN Commands Menu Panel

Displaying Control Points

You can select the display control points command from the SNA Automation: APPN Commands Menu panel. After you make this selection, you can select from the following actions for the resource:

- Details
- Delete topology
- Delete directory
- Active monitoring
- Timers
- AutoView

You can use the SNA Automation: APPN Control Points Display panel to identify control points to specify in your statements in the CPCPSESS control file entry.

You can use the Display Control Points option on the SNA Automation: APPN Commands Menu panel to work with the control points on your APPN network. To do this:

1. Type **2** in the entry field on the **SNA Automation: APPN Commands Menu** panel. Figure 92 shows this panel.
2. Press **Enter**.

   AON/SNA displays the APPN CP Display panel shown in Figure 93 on page 117.

   Note: You can also display the SNA Automation: APPN CP Display panel, type **AON 2.6.2** on any command line and pressing **Enter**.

```
FKVKA200         SNA Automation: APPN CP Display                  CNM01

Type an action code.  Then press Enter.                          More:  +
 1=Details  2=Delete Topology  3=Delete Directory  4=Active Monitoring
 5=Timers   6=AutoView
    Control Point        Node Type
 1  ISTADJCP             ADJCP MAJOR NODE
 _  USIBMTA.TA1PT106     EN
 _  TA1CP213             *NA*
 _  TA1CP214             *NA*
 _  USIBMTA1.OPER1       EN
 _  USIBMTA.NTC0PUN6     *NA*
 _  USIBMTA.TA1CP210     EN
 _  APPN.TA1PT209        EN
 _  USIBMXXX.YYY00000    EN
 _  USIBMTA.TA1PT107     EN
 _  USIBMTA.TA1PT220     EN
 _  USIBMTA.TA1CP207     NN
 _  USIBMTA.TA1PT203     EN
 _  TA1CP208             *NA*

Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                            F12=Cancel
```

Figure 93. SNA Automation: APPN CP Display Panel

3. Type an action code in the entry field next to the resource you want. This example shows the Details action code next to the ISTADJCP control point. You can select one of the following actions:

   1=Details
   Displays detailed VTAM information for the control point on the Operator Command Interface: APPN CP Detail panel. This is obtained from the combined output of the VTAM `D NET,E` commands and its link station. The output includes both session and LU information, which is helpful in solving problems. The status of the link station is often a clue to physical network problems, while the control point status information shows configuration or application program problems.

   2=Delete topology
   Deletes the control point from the topology database. Displays the messages about the deletion on the Operator Command Interface: VTAM commands panel.

   3=Delete directory
   Deletes the control point from the directory database. Displays the messages about the deletion on the Operator Command Interface: VTAM commands panel.

   4=Active monitoring
   Starts or stops active monitoring of the control point. AON/SNA displays the Active Monitoring Settings panel and enables you to change the settings.

   5=Timers
   Displays the AON Automation: Timer Set panel where you can add, display, change, and delete the timers for the control point you select.

   6=AutoView
   Displays automation information for the control point. Displays the AON: AutoView panel.

4. Press **Enter**.

AON/SNA displays the Operator Command Interface: APPN CP Detail panel shown in Figure 94.

```
FKVKA210          Operator Command Interface: APPN CP Detail       CNM01

                 Control Point ISTADJCP                            More:   +

IST097I    DISPLAY  ACCEPTED
IST075I    NAME = ISTADJCP         , TYPE = ADJCP MAJOR NODE
IST486I    STATUS= ACTIV     , DESIRED STATE= ACTIV
IST1100I   ADJACENT CONTROL POINTS FROM MAJOR NODE ISTADJCP
IST1102I   NODENAME          NODETYPE CONNECTIONS CP CONNECTIONS
IST1103I   USIBMTA.TA1PT106   EN        1           1
IST1103I   TA1CP213          *NA*       0           0
IST1103I   TA1CP214          *NA*       0           0
IST1103I   USIBMTA1.DOWNING   EN        1           1
IST1103I   USIBMTA.NTC0PUN6  *NA*       0           0
IST1103I   USIBMTA.TA1CP210   EN        1           1
IST1103I   APPN.TA1PT209      EN        1           1
IST1103I   USIBMXXX.YYY00000  EN        1           1
IST1103I   USIBMTA.TA1PT107   EN        1           1
IST1103I   USIBMTA.TA1PT220   EN        1           1
IST1103I   USIBMTA.TA1CP207   NN        1           1

Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
F7=Backward  F8=Forward                                         F12=Cancel
```

Figure 94. Operator Command Interface: APPN CP Detail Panel

Chapter 15. NCP Recovery Definitions

To display the NCPRECOV Control File definitions for a particular NCP, or for all NCPs you have defined, use the NCP Recovery Definitions menu option.

To display all defined NCPs choose option 9. To display a particular NCP, choose option 9 and enter the name of the NCP in the **NCP name=** field on the panel.

Selecting the NCP Recovery Definition menu option causes the DSPCFG command to be issued based upon your NCP selection.

Figure 95 displays the SNA Automation: Menu panel.

```
FKVK0000         SNA Automation: Menu                              CNM01


Select an option

          9 0.   Tutorial
            1.   Help Desk
            2.   SNAMAP
            3.   VTAM Options Management
            4.   NetStat
            5.   VTAM Commands
            6.   APPN menu
            7.   Switched Network Backup menu
            8.   X.25 menu
            9.   NCP Recovery Definitions (NCP name= ________ )



Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 95. Selecting NCP Recovery Definitions

To access NCP Recovery Definitions from the SNA Automation: Menu panel:

1. Type **9** in the entry field.
2. Press **Enter**.

AON/SNA issues the DSPCFG command for all of your defined NCPs, which is shown in Figure 96 on page 120.

```
EZLK7110          Display Configuration Data                      CNM01

Select one of the following.  Then press Enter.
 1=Add  2=Change  3=Delete

 _  NCP01                    NCPRECOV
 _    HOST                   CNM01
 _    DUMP                   (Y,N)
 _    RELOAD                 (Y,N)
 _    LINKSTA                001-S
 _    DUMPSTA                001-S
 _    LOADTIME               00:05
 _    DUMPTIME               00:10
 _    EXIT01                 FKVEX01
 _    EXIT02                 FKVEX02
 _    EXIT03                 FKVEX03
 _    EXIT04                 FKVEX04
 _    LOADMOD                NCP01A



Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 96. Selecting NCP Recovery Definitions

This is the DSPCFG panel for the NCP01 NCPRECOV Control File statement. In this example, this is the only NCP being automated on this system.

Chapter 16. Displaying SNA Resource Information with AutoView

The AutoView function displays a summary of information for a single resource and provides a list of commands you can issue for more information about the resource and changing its automation settings. To use the AutoView panel, you must know the name of the resource with which you want to work.

To display the AutoView selection panel:

1. Type **SNAVIEW** on the command line of any panel.
2. Press **Enter**. A panel similar to the one shown in Figure 97 is displayed. This panel is dynamically ordered according to your installation, so the order of the options on your panel might be different.

```
EZLK2000              AON: AutoView                              NTVE1


    Resource Name  ________________________________

    Resource Type  ____________________ (Optional)

    Select an Option

       (Optional) _ 1. NVAIX
                    2. APPN
                    3. SNBU
                    4. IP390
                    5. TCPIP
                    6. SNA



Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 97. AON: AutoView Panel

3. Type the resource name in the **Resource Name** field.
4. Optionally, tab to the **Resource Type** field and type the resource type (such as LU, PU, NCP, or APPL).
5. Type **5** for SNA in the entry field. If you do not select an option, AON searches all of the automation components to find the resource.
6. Press **Enter**.

For example, to use AutoView for the TA1P523A resource, type **TA1P523A** in the **Resource Name** field, which is shown in Figure 98 on page 122.

```
EZLK2000           AON: AutoView                                CNM01

    Resource Name  TA1P523A___________

    Resource Type  PU_________________ (Optional)

    Select an Option

       (Optional) _ 1. TCPIP
                    2. APPN
                    3. SNBU
                    4. SNA




Command ===>
F1=Help      F2=Main Menu   F3=Return                             F6=Roll
                                                                 F12=Cancel
```

Figure 98. AON: AutoView Panel Sample Entry

Finding Defined Resources

Each automation component displays a different set of predefined information and a different list of commands. Because no particular automation component is selected in the example shown in Figure 98, AON searches all the automation components for the resource, TA1P523A. When the resource is defined to more than one automation component, AON lists all the places the resource is defined.

In Figure 99, AON found the resource, TA1P523A, defined as both a SNA and a SNBU resource.

```
EZLKIDNT           AON: Component Selection                     CNM01


The resource chosen has valid definitions in the following installed
options.  Select the applicable option.

Resource Chosen   TA1P523A

    Select an Option

                  1 0. All
                    1. SNA
                    2. SNBU









Command ===>
F1=Help      F2=Main Menu   F3=Return                             F6=Roll
                                                                 F12=Cancel
```

Figure 99. AON: Component Selection Panel

To select the SNA AutoView display:

1. Type **1** in the entry field of the **AON: Component Selection** panel.
2. Press **Enter**.

   Figure 100 shows the SNA AutoView display for the resource, TA1P523A.

```
EZLKVIEW                AON: AutoView                  CNM01

Resname . . . . . . . . TA1P523A
Restype . . . . . . . . PU
Option  . . . . . . . . SNA
Status  . . . . . . . . PCTD2        1
Automation Status . . . TREACT
Automation Flag . . . . ON
DDF message . . . . . . NONE


                              2                   3

Resource Definitions      _ 1. Automation         (RECOVERY DEFAULTS)
                            2. Thresholds         (THRESHOLDS DEFAULTS)
                            3. Active Monitoring  (ACTMON DEFAULTS)
                            4. Monitor Intervals  (MONIT DEFAULTS)
                            5. Timer              (NONE)
                            6. Display Network LOG Information for TA1P523A



 Command ===>
 F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                   F12=Cancel
```

Figure 100. AON: AutoView Panel

Viewing Resource Information

The following resource information is available:

1 The first group of information provides a summary of information about the resource including the resource name, resource type, status, automation settings for the resource, DDF message for the resource, if any, and other information depending on the automation component used.

2 The second group is a list of commands you can issue for the resource to display more information, change automation settings, or perform other functions depending on the automation component used.

3 The third group of information (shown in parentheses) tells you which control file entry is currently defining the settings for the commands shown in the second group. For example, in Figure 100, the settings for option 1 (Automation) are defined by the RECOVERY DEFAULTS control file entry.

For commands that do not have a corresponding control file entry, such as option 5 (Timer) the information in the parentheses indicates whether a setting exists. In Figure 100, there are no timers set for TA1P523A.

You can select one of the following resource definitions:

Automation
Turns automation on and off.

Thresholds
Adds, changes, or deletes the threshold settings. The settings are infrequent, frequent, and critical threshold.

Active Monitoring
Indicates if the resource is active.

Monitor Intervals
Sets the intervals for trying to reactivate a resource.

Timer Adds, changes, or deletes a timer.

Display Network LOG Information
Displays only the Netlog information for the resource.

Part 3. Using AON with TCP/IP

Chapter 17. Using the AON/TCP Operator Interface

This chapter explains how to navigate through the full-screen, menu-driven panels that make up the operator interface for AON/TCP. As an operator, you can do most of your work from within the operator interface.

Automated Operations Network (AON) provides a rich operator interface for managing TCP/IP resources through an AIX service point (NV4AIX option) or a z/OS (IP390 option) system. The functions provided by each option are dependent on functions provided by the AIX of MVS platforms; therefore, not all functions are available for both options.

With the AIX option, you can manage TCP/IP resources through RUNCMDs to one, or more, AIX service points. For example, you can PING TCP/IP hosts through the AIX service point. Also use the AIX option to define thresholds for CPU utilization, disk utilization, resource failures, and security authorization failures.

With the z/OS option, you can manage TCP/IP resources through z/OS Communication Server IP. For example, you can use z/OS Communication Server IP to issue PING and TRACERTE commands. Also, you can manage Telnet and FTP sessions connecting to your MVS system. Use the connection management function to display connection information, to determine connection status, and, if necessary, to take corrective actions. You can issue SNMP requests (for example, GET), enable TCP/IP tracing, monitor resources for specific performance thresholds, and automate and monitor critical sockets.

Note: Some of these z/OS functions no longer require AON. For more information, see the topics that describe these functions.

Accessing the Operator Interface

You can perform any of the operator functions from the operator interface. With the operator interface, you can look at color-coded status displays of the resources on your network, change automation settings, receive messages, issue commands, and perform many other functions that control automation and resource availability. New AON/TCP users might find the panels an easier way to reach the different functions.

You can access the AON/TCP operator interface from anywhere within the NetView program or from the AON panels. To access AON/TCP from the NetView program, perform the following steps:

1. Type `AON` on the command line.
2. Press Enter.

   The AON: Operators Commands Main Menu panel, which is shown in Figure 101 on page 128, is displayed:

```
EZLK0000             AON: Operator Commands Main Menu            CNM01


Select an option

         _ 0.   Tutorial
           1.   AON Base Functions
           2.   SNA Automation
           3.   TCP/IP Automation









Command ===>
F1=Help      F2=End         F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 101. AON: Operator Commands Main Menu Panel

The AON: Operator Commands Main Menu panel is the main panel for AON. This panel displays all available components. AON checks the control file entry for each AON component to determine if the component is installed and initialized. If the component is not available, the name of the component on the panel is not available.

3. To select the TCP/IP Menu option from the AON: Commands Main Menu panel, type 3 in the entry field, and press Enter.

   The TCP/IP Automation: Commands Menu panel, shown in Figure 102, is displayed. You can use this panel to access all the functions of AON/TCP.

```
FKXK0000         TCP/IP Automation: Commands Menu             CNM01


Select an option

         _ 1. NetView for AIX Menu
           2. MVS TCP/IP Menu









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 102. TCP/IP Automation: Commands Menu

Note: You can also reach the AON/TCP interface by entering AONTCP on any NetView command line.

Tivoli NetView (for AIX) Menu

This topic describes how to use the AON/TCP AIX commands. Selecting option **1** from Figure 102 on page 128 displays the following panel:

```
FKXK1000      NetView for AIX TCP/IP Automation: Commands Menu     CNM01


Select an option

         _ 1. Issue Ping
           2. General Commands
           3. Issue Remote Ping
           4. Performance Thresholds Management
           5. Display Resource List









Command ===>
F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                                    F12=Cancel
```

Figure 103. NetView for AIX TCP/IP Automation: Commands Menu Panel

To select an option from the TCP/IP Automation: Commands Menu panel, type the number of the option you want to use in the entry field, and press Enter.

The number you select determines the AON/TCP option that is displayed. The following list describes the AON/TCP menu options:

Option 1
Sends a RUNCMD to the AIX service point to PING a TCP/IP resource.

Option 2
Sends the user specified command (through a RUNCMD) to the AIX service point.

Option 3
Sends a RUNCMD to the AIX service point to issue a remote PING of a TCP/IP resource.

Option 4
Manages AON/TCP thresholds for disk and CPU utilization, resource failures, and security authorization.

Option 5
Displays TCP/IP critical resource list, which are resources that have been defined using a TCP/IP policy definition statement.

Pinging a TCP/IP Node through a Service Point

Pinging a service point can be a useful diagnostic tool if you are having trouble transmitting data. The response returned by the ping command tells you if the service point and node are up and functioning.

To send a ping command to a service point, follow these steps:

1. Type 1 in the entry field on the TCP/IP Automation: Commands Menu panel.
2. Press Enter.

   AON/TCP displays the TCP/IP Automation: Ping a Service Point panel, shown in Figure 104.

   Note: For fast access to the TCP/IP Automation: Ping a Service Point panel, enter `AON 3.1.1` or `NV6KPING` from the command line.

```
FKXK1100         TCP/IP Automation: Ping a Service Point          CNM01

 Node Name           _____________________________
                     _____________________________

 Service Point Name  ________              (? for Selection list)


 Select Ping Flags to use, then press Enter.  (All Flags are optional)

  _  (-c) Ping Count   3__
  _  (-i) Ping Time    5__
  _  (-d) Socket-level debugging
  _  (-n) Numeric Output only
  _  (-q) Summary only
  _  (-r) Ping directly to Host
  _  (-R) Record route option
  _  (-v) Lists ICMP packets
  _  (-s) Number of send data bytes   56_


Command ===>
F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                                   F12=Cancel
```

Figure 104. TCP/IP Automation: Ping a Service Point Panel

3. Type the name of the node associated with the host you want to ping in the **Node Name** field.
4. Optionally, you can type the name of the service point to which you want to send the ping in the **Service Point Name** field. If you want to see a list of possible service points, type ?. This field is optional, but accelerates the response because all service points do not have to be checked for the node.
5. Optionally, you can type a non-blank character in the entry field next to any of the following ping flags:

   (-c) Ping Count
   Specifies the number of echo requests that you want to send and receive. AON/TCP retrieves the default value from the control file.

   (-i) Ping Time
   Specifies the number of seconds to wait between sending each ping request. AON/TCP retrieves the default value from the control file.

   (-d) Socket-level debugging
   Indicates that you want to get information about a host and start socket-level debugging.

   (-n) Numeric Output only
   Indicates that you do not want AON/TCP to look up symbolic names for host addresses.

   (-q) Summary only
   Specifies quiet output. If you specify this option, AON/TCP displays only the summary lines at startup and finish time.

(-r) Ping directly to Host
Indicates that you want to bypass the routing tables and send the ping directly to a host on an attached network. You can use this option to ping a local host through an interface that no longer has a route through it.

(-R) Record route option
Indicates that you want to include the RECORD_ROUTE option in the ECHO_REQUEST packet and display the route buffer on returned packets.

(-v) Lists ICMP packets
Indicates that you want to request verbose output, which lists ICMP packets that are received in addition to echo requests.

(-s) Number of send data bytes
Specifies the number of data bytes to send. The default is 56. Add 8 bytes for the ICMP header data to determine the actual number of bytes to send per data packet.

6. Press Enter.

   If you entered a question mark in the **Service Point Name** field, AON/TCP displays the Operator Command Interface: SELECTION panel, shown in Figure 105, from which you can select the service point.

```
EZLKSLCT          Operator Command Interface: SELECTION            NTV70

Select one of the following.  Then press Enter.

                                                                   SP
 _  NV6HKHOST                                    NV6000          NV6KPU
 _  NTC0PUN6                                     NV6000          NTC0PUN6









Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 105. Operator Command Interface: SELECTION Panel

7. Type s (or any other non-blank character) beside the appropriate service point.
8. Press Enter.

   AON/TCP displays the TCP/IP Automation: Ping a Service Point panel with the service point name field filled in and a message as shown in Figure 106 on page 132.

```
FKXK1100         TCP/IP Automation: Ping a Service Point          CNM01

Node Name           TESTER1_____________________________
                    _____________________________________

Service Point Name  NTC0PUN6              (? for Selection list)
  (Optional)

Select Ping Flags to use, then press Enter.  (All Flags are optional)

 _  (-c) Ping Count   3__
 _  (-i) Ping Time    5__
 _  (-d) Socket-level debugging
 _  (-n) Numeric Output only
 _  (-q) Summary only
 _  (-r) Ping directly to Host
 _  (-R) Record route option
 _  (-v) Lists ICMP packets
 _  (-s) Number of send data bytes   56_

FKX910I SERVICE POINT NAME SET. PRESS ENTER TO CONTINUE
Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 106. TCP/IP Automation: Ping a Service Point Panel with Message

9. Press Enter.

   After performing a successful ping command, AON/TCP displays a panel like the one shown in Figure 107.

```
FKXKLWN2  OUTPUT FROM  REMOTE CMDS                                  1 of 11
 FKX504I NETVIEW FOR AIX SERVICE POINT NTC0PUN6 RESPONSE FOR COMMAND
 Executing RUNCMD "asis ping -c 3 -i 5 tester1"
 PING tester1.anycity.xyz.com (1.23.45.67): 56 data bytes
 64 bytes from 1.23.45.67: icmp_seq=0 ttl=60 time=84 ms
 64 bytes from 1.23.45.67: icmp_seq=1 ttl=60 time=15 ms
 64 bytes from 1.23.45.67: icmp_seq=2 ttl=60 time=15 ms

 --- tester1.anycity.xyz.com ping statistics ---
 3 packets transmitted, 3 packets received, 0% packet loss
 round-trip min/avg/max = 15/38/84 ms
 DSI268I RUNCMD COMPLETE









Command==>
PF3=Ret   PF4=Fndprev   PF5=Rptfnd   PF6=Roll   PF7=Back   PF8=Forw  PF12=Cancel
```

Figure 107. Ping Results Panel

This panel shows information such as how many packets were transmitted, how many packets were received, and how long the ping round trip took.

Issuing a Command to a Service Point

With the General Commands option on the TCP/IP Automation: Commands Menu panel, you can issue a command to a service point.

To issue any valid AIX line output command to a service point:

1. Type 2 in the entry field on the TCP/IP Automation: Commands Menu panel.

2. Press Enter.

   AON/TCP displays the TCP/IP Automation: Issue Command to Service Point panel, shown in Figure 108. Because data is saved across sessions, Figure 108 shows data in some of the fields.

   Note: You can also access the TCP/IP Automation: Issue Command to Service Point panel by entering AON 3.1.2 or NV6KCMD from any command line.

```
FKXK1200      TCP/IP Automation: Issue Command to Service Point    CNM01

 Service Point Name NVIXTA01_              (? for Selection list)

 Type in the remote command below.  Then press Enter.

0.........1.........2.........3.........4.........5.........6.........7......
 who_____________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________
 _______________________________________________________________________


Command ===>
F1=Help      F2=Main Menu   F3=Return                                F6=Roll
                                                  F11=Right     F12=Cancel
```

Figure 108. TCP/IP Automation: Issue Command to Service Point Panel

3. Type the name of the service point, to which you want to send the command, in the **Service Point Name** field. If you want to see a list of possible service points, type **?**.

   Note: If you entered a question mark in the **Service Point Name** field on the TCP/IP Automation: Issue Command to Service Point panel, AON/TCP displays an Operator Command Interface: SELECTION panel like the one shown in Figure 105 on page 131, from which you can select the service point by typing s next to the appropriate service point. After pressing Enter, AON/TCP displays the TCP/IP Automation: Issue Command to Service Point panel with the **Service Point Name** field filled in.

4. Type the AIX command on any of the available lines. Remember that the service point is case sensitive, so you must type the command exactly as the command is expected to be on the panel. You can send any AIX command to the NetView for AIX service point as long as the results are line mode and not interactive in nature.

   The length of the command to be issued cannot exceed 150 characters because of a limitation on passing information between programs.

   If you need more space than what is provided on one panel, you can press F11 to page to the right. To help you keep track of your position, the last 2 characters on the first panel are shown as the first 2 characters on the second panel when you page to the right.

AON/TCP supports AIX pipe characters, but you must use the pipe character that translates to EBCDIC X'6A'.

This panel is cursor sensitive and saves entries across sessions. So, to issue a needed command, place the cursor on the command. To change an existing command, type over any command not needed.

5. Press Enter.

   Note: If your command is longer than one panel, you can press Enter to issue the command regardless of whether you scrolled the panel to the right.

   AON/TCP displays a scrollable panel similar to the one shown in Figure 109.

```
FKXKLWN2  OUTPUT FROM  REMOTE CMDS                              Line   1 of 8
 FKX504I NV6000 SERVICE POINT NTC0PUN6 RESPONSE FOR COMMAND -
 Executing RUNCMD "asis who"
 root        hft/0       Mar 02 13:59
 root        pts/2       Apr 06 14:54
 root        pts/0       Apr 06 14:47
 root        pts/3       Apr 06 15:05
 root        pts/4       Apr 06 15:11
 DSI268I RUNCMD COMPLETE
```

Figure 109. Results of Issuing a Command to a Service Point

Displaying the Critical Resource List

The Display Resource List option displays a list of the critical TCP/IP resources you defined with TCPIP entries in the control file. After seeing the available resources, you can take one of the following actions:

- Ping a resource
- Issue AutoView for a resource
- Issue a remote ping to an AIX resource

To display a list of the TCP/IP resources that you defined for your network:

1. Type 5 in the entry field (on the NetView for AIX TCP/IP Automation: Commands Menu panel, shown in Figure 103 on page 129).
2. Press Enter.

   The TCP/IP Automation: Resource List panel, shown in Figure 110 on page 135, is displayed.

   Note: You can also access the TCP/IP Automation: Resource List panel by entering AON 3.1.5 from any command line.

```
FKXK1500          TCP/IP Automation: Resource List                CNM01

Select one of the following. Then press Enter.                  More:>
 1=Ping   2=Autoview   3=Remote Ping

     Alias           Serv Pt.  Type     IP Address      Host Name
_  BLDSERVER        NV6KHOST  NAMESERV 1.23.4.567      server.plant.floor.c
_  COSERVER         NV6KHOST  NAMESERV 1.23.4.56       coserver.plant.floor.c
_  DUMMYSRV         NMPIPL10  HOST     1.23.45.678     DUMMYSRV
_  OPSWS            NV6KHOST  HOST     9.87.6.54       opsws.plant.floor.c









Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Commands    F5=Refresh    F6=Roll
F7=Backward  F8=Forward                              F11=Right     F12=Cancel
```

Figure 110. TCP/IP Automation: Resource List Panel

The Resource List panel has the following fields:

Alias The alias, or nickname, of the host you are monitoring.

Serv Pt.
The service point responsible for the resource.

Type One of the following resource types:
- Host
- Nameserver
- INFC
- LINK

IP Address
The IP address of the host you are monitoring.

Host Name
The fully qualified name of the host you are monitoring.

3. Type the number of the action you want to perform in the entry field next to the appropriate alias name. The following action codes are available:

   1 Sends a ping command, which causes the same results as described in "Pinging a TCP/IP Node through a Service Point" on page 129. The advantage of performing the ping this way is that the **Node Name** and **Service Point Name** fields are already filled in for you.

   2 Displays an AutoView for the alias name. This panel shows all currently known information about the resource from the control file and the service point. From this panel, you can manage all the automation definitions for the resource.

   3 Sends a remote ping command, which causes the same results as in "Pinging a TCP/IP Node through a Service Point" on page 129. The advantage of performing the remote ping this way is that the **Source Node Name** and **Service Point Name** fields are already filled in for you.

4. Press Enter.

AON/TCP displays the appropriate panel. If you entered **1** for Ping, AON/TCP displays the panel in Figure 104 on page 130. Follow the steps in "Pinging a TCP/IP Node through a Service Point" on page 129 to complete the proper fields and issue a ping.

The Resource List panel displays AIX resources. If you press F4 on Figure 110 on page 135, the panel in Figure 111 is displayed containing the options window where you can select options for the appropriate resource:

```
FKXK1501          TCP/IP Automation: Resource List                CNM01

Select one of the following. Then press Enter.                   More:>
 1=Ping   2=Autoview   ........................................
                       :  Select an Option for BLDGSERVER         :
     Alias             :                                          :
_  BLDSERVER           :  __ 1. Ping server.plant.floor.co        :
_  COSERVER             :     2. Remote Ping server.plant.floor.co :
_  DUMMYSRV             :     3. Send command to NV6KHOST          :
_  OPSWS                :     4. Active Monitoring                 :
                       :     5. Automation                        :
                       :     6. Failure Thresholds                :
                       :     7. Performance Thresholds            :
                       :     8. Monitor Intervals                 :
                       :     9. Timer                             :
                       :    10. Display Configuration Data        :
                       :    11. Display Network LOG Information   :
                       :                                          :
                       : F1=Help                    F12=Cancel    :
                       ........................................



Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Commands    F5=Refresh    F6=Roll
F7=Backward  F8=Forward                              F11=Right     F12=Cancel
```

Figure 111. TCP/IP Automation: Resource List Panel

From this panel, you can perform the following tasks:

- Issue a ping of a resource.
- Issue a remote ping to a resource.
- Send a command to a resource.
- Display an AON ACTMON entry for a resource.
- Display the AON RECOVERY policy for a resource.
- Display an AON MONIT entry for a resource.
- Display timers that are set for a resource.
- Display TCP/IP control file definitions for a resource.
- Issue the BLOG command.

MVS TCP/IP

This section explains the function that uses z/OS Communications Server IP.

Selecting option **2** on the panel in Figure 102 on page 128 (TCP/IP Automation: Commands Menu) displays the MVS TCP/IP menu, which is shown in Figure 112 on page 137.

```
FKXK2000       MVS TCP/IP Commands Menu                          NTV9D


Select an option

        _  1. Issue Ping
           2. MVS IP Session Status
           3. Issue Tracerte Command
           4. Issue Commands
           5. SNMP MENU
           6. IP Server Management
           7. IP Resource Manager
           8. SNMP View
           9. CISCOWorks Blue Inter-network Status Monitor
          10. TCP/IP Trace Control Center. SP: ____________




Command ===>
F1=Help      F2=Main Menu   F3=Return                            F6=Roll
                                                               F12=Cancel
```

Figure 112. MVS TCP/IP Automation: Commands Menu

The options on this panel provide the following functions:

Option 1
Ping a resource through z/OS Communication Server IP.

Option 2
Solve problems and manage IP connections for your MVS system, such as TN3270 and FTP sessions.

Option 3
Issue a TCP/IP TraceRte command against a resource.

Option 4
View a full-screen panel that contains TSO or UNIX line mode commands. Responses are correlated and displayed in a full-screen panel.

Option 5
Link to the SNMP menu where you can issue SNMP commands.

Option 6
Monitor and control TSO and UNIX command servers.

Option 7
Provides management functions for TCP/IP resources, such as managing policy definitions and proactive monitoring.

Option 8
Provides generic interface resource views through SNMPView.

Option 9
Provides Cisco router management functions through Cisco Works Blue.

Note: AON/TCP provides a link to Cisco Works Blue from this panel, but before attempting to select this option, perform all of the installation or customization steps required to run Cisco Works Blue, for example, authorizing all NetView operators to use Cisco Works Blue.

Option 10
Perform diagnostic traces to resolve TCP/IP problems.

Usage Notes: For options 5, 8, and 10, the resources must support SNMP requests. Some functions of options 2 and 7 might also require SNMP support.

PING

Note: This function no longer requires AON. To use this function, issue the PING or MVSPING command. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

Pinging is used to test connectivity to an IP host and can be a useful tool. To ping a resource, select option **1** from the panel shown in Figure 112 on page 137 or enter `PING`, `MVSPING`, or `AON 3.2.1` from any command line.

Note: PING is also available from the NetView management console menus.

When you issue a PING or MVSPING command without any parameters, the panel shown in Figure 113 is displayed.

```
FKXK2100        MVS TCP/IP Automation: Ping from a Service Point    CNM01

Host Name or IP Address
_______________________________________________________________________


Service Point Name __________   (? for Selection list)


Ping Count        4__
Ping Timeout      3___
Ping Length       16___









Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 113. TCP/IP Automation: Ping Panel

The resource name can be an IP host name or an IP address. If no service point name is specified, the TCP/IP policy definitions for the service point associated with the resource are searched. Optionally, you can change the ping count, the ping timeout, and the ping length.

If you issue a PING or MVSPING command for a particular resource from an NCCF command line, the results are correlated and displayed from the command line rather than in panels.

For the syntax of and detailed information about the PING and MVSPING commands, see the online help.

Connection Status

Note: This function no longer requires AON. To use this function, issue the IPSTAT command. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

Users who connect to your z/OS environment can encounter various problems. With the connection management function, you can perform the following tasks:

- Determine connection endpoints
- Identify the type of connection (such as TN3270, FTP, or SMTP)
- Determine if a connection is stopped
- Drop a connection
- Run TCP/IP problem determination commands, such as PING and TRACERTE, to determine the cause of session problems
- Query sessions on multiple MVS hosts and multiple TCP/IP stacks
- Access the SNMP command menu
- Display detailed information about specified Telnet connections
- Cause specified ports to not accept any new Telnet connections
- Cause previously quiesced ports to begin accepting Telnet connections

To access the connection management function, select option **2** shown in Figure 112 on page 137, enter `AON 3.2.2`, or issue the IPSTAT command. A panel similar to the one shown in Figure 114 is displayed.

```
FKXK2200         TCP/IP for z/OS Connection Status                    NTV70


 Enter TCP/IP address or HOSTNAME:
 ____________________________________________________________________________

   Service Point  System     IP Address        Host Name
 _ NMPIPL10       TCPIP      9.42.45.10        nmpipl10.tivlab.raleigh.ibm.com
 _ NMPIPL10_B     TCPIP                        nmpipl10-b.tivlab.raleigh.ibm.co
 _ NMP101         TCPIP      9.42.45.101       nmp101.tivlab.raleigh.ibm.com
 _ NMP190         TCPIP      9.42.45.190       NMP190.TIVLAB.RALEIGH.IBM.COM
 Command ===>
 F1=Help      F2=Main Menu  F3=Return                                F6=Roll
 F7=Backward  F8=Forward    F9=Filters   F10=Details                F12=Cancel
```

Figure 114. Connection Status: Main Panel

> You can set filters for viewing connections by pressing F9 (Filters). For information about setting filters, see "Setting Connection Management Filters" on page 142.

To see the details about a stack, select a stack by placing the cursor next to the stack and press F10 (Details). After you view the details, return to the main connection status panel by pressing F3 (Return).

Displaying the Connections for a Stack

From the main connection status panel (FKXK2200), display one or more stacks and the number of connections for each by following these steps:

1. Type a TCP/IP address or host name (or a wildcard, for example, an asterisk (*)). Use of wild cards is the same as for the TCPCONN command; for more information, see the online help for the TCPCONN command.
2. Select one or more stacks by placing any non-blank character next to each stack.
3. Press Enter.

If, for example, you type an asterisk (*) for the TCP/IP address and select the first stack (NMPIPL10), a panel similar to the one shown in Figure 115 is displayed.

Notes:

1. Depending on how you have customized your IPPORT policy definitions, this panel might not show all active sessions. For additional information, see IPPORT in the *IBM Tivoli NetView for z/OS Administration Reference*.
2. The IBM and Cisco TN3270 servers do not support the use of a wildcard (*) in any part of the **IP Address** field. If you try to use a wildcard with a TN3270 server, the FKX962I message is displayed.

```
FKXK2210          TCP/IP for z/OS Connection Management

  CLIENT

  *


 Service                 Active       IP
 Point    Hostname       Connections  Address
 NMPIPL10 nmpipl10.tivlab.r 7         9.42.45.10
```

```
Command ===>
F1=Help      F2=Main Menu  F3=Return    F4=Commands    F5=Refresh    F6=Roll
F7=Backward  F8=Forward    F9=Filters                 F11=Zoom      F12=Cancel
```

Figure 115. Connection Management: Selected Stacks

To display a list of connections for a specific stack, select the stack by placing the cursor next to it and press F11 (Zoom). If you select NMPIPL10 on the panel shown in Figure 115, a panel similar to the one shown in Figure 116 on page 141 is displayed.

```
FKXK2220        TCP/IP for z/OS Connection Management
Active Connections  7
 CLIENT - - - - - - - - - - - - - - ->  SERVICE POINT
                                        NMPIPL10
*                                       9.42.45.10
                                        TCP/IP STACK
Local                                           Client
Port  Client Address                            Port  Send          Receive
1030  201.2.10.11                               23    13            36
23    201.2.10.11                               1030  14            72
4022  9.42.45.101                               1029  94            11875
1064  9.42.45.217                               4022  3709          2689
4022  9.42.45.190                               1027  105235        11358680
1028  9.42.45.190                               4022  106994        11337389
1024  127.0.0.1                                 1025  17            1054









Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Commands   F5=Refresh     F6=Roll
F7=Backward  F8=Forward     F9=Filters                               F12=Cancel
```

Figure 116. Connection Management: Connections for Selected Stack

Displaying Connection Information

To see the information for a connection, including the LU and application, and a list of commands that you can issue for the connection, select a connection by placing the cursor next to it and press F4 (Commands). If, for example, you select the first connection (local port 1030) and press F4, a panel similar to the one shown in Figure 117 is displayed.

```
FKXK2221        TCP/IP for z/OS Connection Managament
                                SERVICE
   CLIENT - - - - - - - - - - - > POINT - - - - - - - - - - > CONNECTION
                                NMPIPL10                     1030
   201.2.10.11                  9.42.45.10                   23
      .....................................................................
Local  : IP Address          201.2.10.11                                  :
Port   : Port                1030                Commands                 :
1030   : Connection ID       00009B7F            _  1. Ping               :
23     : LU                  NTCP7001               2. Tracerte           :
4022   : APPL                NT70TSO2               3. Drop               :
1064   : Send                13                     4. ARP Cache          :
4022   : Receive             36                     5. SNMP Commands      :
1028   : Send Window         32720                  6. Display Conn       :
1024   : Conn ResourceName   TCPIP                  7. Quiesce Port       :
       :                                            8. Resume Port        :
       :                                            9. Conn Details       :
       :                                            10. Connection Status :
       :  F1=Help   F4=LU Cmds   F5=APPL Cmds   F6=Roll   F12=Cancel     :
       :.....................................................................:

Command ===>
F1=Help      F2=Main Menu   F3=Return                                  F6=Roll
F7=Backward  F8=Forward     F9=Filters                                 F12=Cancel
```

Figure 117. Connection Management: Connection Information and Commands

To issue a command for the connection, type the number of the command to issue in the Commands field, and press Enter. For example, if you type 9 (Conn Detail) to see connection details and press Enter, a panel similar to the one shown in Figure 118 on page 142 is displayed.

Note: For options 5, 6, 9, and 10, the resources must support SNMP requests.

```
CNMKWIND OUTPUT FROM  TCPIP CONNECTION DETAILS               LINE 0 OF 22
*------------------------------ Top of Data -------------------------------*
ibmMvsTcpConnectionInSegs.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 14
ibmMvsTcpConnectionOutSegs.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 13
ibmMvsTcpConnectionInOctets.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 492
ibmMvsTcpConnectionOutOctets.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 492
ibmMvsTcpConnectionAge.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = Wrong Type (sh
ibmMvsTcpConnectionLastActivity.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 67150
ibmMvsTcpConnectionResourceName.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = TCPIP
ibmMvsTcpConnectionResourceId.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 39807
ibmMvsTcpConnectionSockOpt.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = "C0 00 "
ibmMvsTcpConnectionPolicyAction.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 =
ibmMvsTcpConnectionPolicyRule.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 =
ibmMvsTcpConnectionServerResrcId.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 26
ibmMvsTcpConnectionApplName.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = NT70TSO2
ibmMvsTcpConnectionLuName.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = NTCP7001
ibmMvsTcpConnectionLogMode.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = NSX32702
ibmMvsTcpConnectionProto.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = "02 "
ibmMvsTcpConnectionTtlsPolStat.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 1
ibmMvsTcpConnectionTtlsConnStat.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 1
ibmMvsTcpConnectionTtlsSslProt.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 = 4
ibmMvsTcpConnectionTtlsNegCipher.1.4.201.2.10.11.23.1.4.201.2.10.11.1030 =
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==>
```

Figure 118. Connection Details Output

Press F3 to return to the Commands panel. To see the commands that can be issued for the LU or the application, press F4 (LU Cmds) or F5 (APPL Cmds), respectively. To close any of the command panels, press F12.

Determining If a Connection is Stopped

To determine if a connection has stopped, refresh the connection information in the FKXK2220 panel (Figure 116 on page 141) by pressing F5. Check the send and receive columns. If, after you refresh the panel, the send and receive columns for the connection have not changed, the connection might be stopped.

To drop the connection, press F4 to display the command panel (Figure 117 on page 141) and issue the command to drop the connection. The following actions are taken:

1. A VARY TCPIP DROP command is issued for the connection.

   Note: For the DROP option to work properly, the operator issuing the DROP command must be authorized to issue the VARY TCPIP DROP command.

2. The connection list is refreshed.
3. A message similar to the following message is displayed:

   ```
   FKX611I SESSION 1006 WAS SUCCESSFULLY DROPPED
   ```

Setting Connection Management Filters

Displaying the connection management information can result in a very large volume of information for you to review to find a particular resource or set of resources. With the connection management filters, you can limit the display to only the resources of particular interest. You can set connection management filters from a panel; see “Using the Connection Management Filters Panel” on page 143. You can also set connection management filters from the command line; see “Using a Command” on page 144.

Using the Connection Management Filters Panel: To display the Connection Management Filters panel, which is shown in Figure 119, press PF9 (Filters). The current filter settings are shown on the panel.

```
FKXKCSF0    TCP/IP for z/OS Connection Management Filters              ID

The current filter settings are shown.

Type the data to be displayed in one or more fields.

Client IP Address
*

Port     Logical Unit     Application Name
*        *                *

Type an action code to define the logical operator for the search:
  2 1 OR
    2 AND









Command ===>
F1=Help                     F3=Return                          F6=Roll
                            F9=Defaults                       F12=Cancel
```

Figure 119. Connection Management Filters Panel

You can filter the connections by client IP address, port, logical unit, and application name. A blank or an asterisk (*) in an input field indicates that that data is not to be filtered.

The logical operator setting is used for the filtering criteria when several input fields are specified. If 1 (OR) is specified, connections that match any of the specified criteria are displayed. If 2 (AND) is specified, only the connections that match all of the specified criteria are displayed.

To see connections with IP addresses that begin with 201, type `201.*` in the **IP Address** field, and press Enter.

Note: Use of wild cards is the same as for the TCPCONN command; for more information, see the online help for TCPCONN.

The EZL919I message that is displayed indicates that the filters have been saved. Press F3 to return to the connections panel, which now lists the filtered connections, as shown in Figure 120 on page 144. Out of the connections originally displayed, only two connections met the filter criteria.

```
FKXK2220         TCP/IP for z/OS Connection Management
Active Connections  2
 CLIENT - - - - - - - - - - - - - - ->  SERVICE POINT
                                        NMPIPL10
*                                       9.42.45.10
                                        TCP/IP STACK
Local                                           Client
Port  Client Address                            Port  Send          Receive
1030  201.2.10.11                               23    59            105
23    201.2.10.11                               1030  37            141









Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Commands   F5=Refresh     F6=Roll
F7=Backward  F8=Forward     F9=Filters                               F12=Cancel
```

Figure 120. Connection Management: Filtered Connections

Using a Command: You can use the FKXECSF command to set the connection management filters. If you enter the command with no parameters, the filters panel is displayed; see "Using the Connection Management Filters Panel" on page 143.

An example of the FKXECSF command follows. For more information about the command, see the online help.

```
FKXESSF DISIP=201.*
```

TRACERTE

Note: This function no longer requires AON. To use this function, issue the TRACERTE command. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

The TRACERTE command is used to trace the routes of data packets to a specified IP host from the IP stack on the host on which the NetView program is running. Use this command to determine connectivity with or routing to a particular endpoint, roundtrip times between the NetView and target hosts, and routers along the way. The TRACERTE command is useful in problem determination, for example, in troubleshooting lost packets.

Note: The TRACERTE command is also available from NetView management console menus.

To access TRACERTE functions, select option 3 in the MVS TCP/IP Commands Menu (Figure 112 on page 137) or enter the TRACERTE or `AON 3.2.3` command. The panel shown in Figure 121 on page 145 is displayed. For information about the fields on this panel, press F1 to see the online help.

```
FKXK2300  MVS TCP/IP Automation: Trace Route from a service point  CNM01

  Host Name or IP Address:
  ________________________________________________________________________

  Service Point Name  ________              (? for Selection list)

     Max       30

     Try       3

     Port      33434

     Wait      5

     Debug     2                ( 1=Y , 2=N )

     Skip DNS  1                ( 1=Y , 2=N )
     lookup


 Command ===>
 F3=Ret  F4=Fndprev  F5=Rptfnd  F6=Roll  F7=Back  F8=Forward    F12=Cancel
```

Figure 121. TCP/IP Automation: Trace Route Panel

The resource name can be an IP host name or an IP address. If a stack name is not specified, the stack definitions in the CNMPOLCY member are searched for the specified IP address or host name.

Figure 122 shows output from a TRACERTE command for a workstation with an IP address of 1.23.45.678:

```
FKXKLWN2    OUTPUT FROM TCP/IP 390 TRACE ROUTE             Line  1 of 6

 Trace route to 1.23.45.678 (1.23.45.678)
    1 (1.23.45.6)     2 ms 0 ms 0 ms
    2 (1.23.45.66)    3 ms 3 ms 3 ms
    3 (1.23.45.67)    8 ms 9 ms 11 ms
    4 (1.23.45.678)  13 ms 11 ms 10 ms









   Command ===>
 F3=Ret  F4=Fndprev  F5=Rptfnd  F6=Roll  F7=Back  F8=Forward    F12=Cancel
```

Figure 122. TCP/IP Automation: Trace Route Output

For the syntax of and detailed information about the TRACERTE commands, see the online help.

Issuing Commands

You can issue line mode TSO or UNIX commands from the NetView program without logging on to TSO. To do that, select option **4** from the panel shown in Figure 112 on page 137 to display the panel shown in Figure 123 on page 146.

```
FKXK2400     TCP/IP Automation: Issue Command to Service Point     CNM01

 Service Point Name nmpipl10         (? for Selection list)

 Command Interface: 1                ( 1 = UNIX   2 = TSO )

 Type in the remote command below and press Enter.

0.........1.........2.........3.........4.........5.........6.........7
 netstat conn ___________________________________________________
 netstat home ___________________________________________________
 netstat ________________________________________________________
 tracerte pquigley ______________________________________________
 time ___________________________________________________________
 netstat ? ______________________________________________________
 netstat sock ___________________________________________________
 netstat up _____________________________________________________
 netstat tcp tcp32 ______________________________________________
 netstat byte ___________________________________________________

  Command ===>
F1=Help  F2=Main Menu  F3=Return             F6=Roll
                                                    F11=Right    F12=Cancel
```

Figure 123. TCP/IP Automation: Issue Command to Service Point Panel

You can also access the panel shown in Figure 123 by using the AON 3.2.4 command. To easily issue a command, for example, move to the first command line (netstat conn) and press Enter. A panel similar to the one shown in Figure 124 is displayed.

```
FKXKLWN2     OUTPUT FROM COMMAND                          Line 1 of 15
 COMMAND:netstat conn  WAS ISSUED TO SERVICE POINT: nmpipl10
   MVS TCP/IP Netstat V3R2

Active Transmission Blocks
User ID   Conn   Local Socket        Foreign Socket           State
-------   ----   ------------        --------------           -----
INTCLIEN  1000   *..TELNET           *..*                     Listen
INTCLIEN  1006   1.23.45.67..TELNET  1.23.45.678..1234        Established
OMVS      1004   *..10007            *..*                     Listen
SNMPD32   UDP    *..161              *..*                     UDP
SNMPD32   1001   *..1024             *..*                     Listen
SNMPQ32   UDP    *..162              *..*                     UDP
SNMPQ32   UDP    *..1024             *..*                     UDP
SNMPQ32   1002   *..1025             *..*                     Listen
NSSERV    1003   *..6000             *..*                     Listen




 Command ===>
F3=Ret  F4=Fndprev  F5=RPTfnd  F6=Roll  F7=Back  F8=Forward    F12=Cancel
```

Figure 124. Output from Command Issued to Service Point Panel

SNMP Management

Note: This function no longer requires AON. To use this function, issue the NVSNMP command. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

To manage SNMP, select option **5** from the MVS TCP/IP Automation: Commands Menu shown in Figure 112 on page 137 or issue the NVSNMP or SNMP command. The NVSNMP command provides a panel interface. The SNMP command, which

provides the WALK, BULKWALK, GET, GETBULK, GETNEXT, INFORM, and TRAP operations, is intended more for use in application programs.

When you issue the NVSNMP command, the panel shown in Figure 125 is displayed. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2500     TCP/IP for 390 SNMP Menu                          NTV70

Host Name or IP Address (blank: Use Stack Name)                    _
_____________________________________________________________________
TCP/IP Stack  _____________  (? for Selection list)

   1. Command:

 _ Get  _GetNext  _Set  _Walk

 _ 2. Group Menu

 _ 3. Remote Ping




 Command ===>
F1=Help     F2=Main Menu   F3=Return                          F6=Roll
                                                            F12=Cancel
```

Figure 125. TCP/IP SNMP Menu Panel

The SNMP Menu has three options: Command, Group Menu, and Remote Ping. The following topics describe how to use the Command and Group Menu options.

If you specify a community name, it is used for the resulting SNMP request. If you do not specify a community name, the name `public` is used. If a community name is not defined for the stack, then the default name defined to z/OS Communications Server IP is used. The community name can be defined in the TCP390 definition for the associated stack where the SNMP request is being issued. For more information, see the TCP390 definition in the *IBM Tivoli NetView for z/OS Administration Reference*.

Note: For security purposes, the community name is not displayed and is not shown in the NetView log.

Get Command

If you select the **Get** command for option **1** in Figure 125, the panel shown in Figure 126 on page 148 is displayed.

```
FKXK2510         TCP/IP for SNMP Commands                    NTV70

Resource: LOCAL
Password(Community)                    Command: GET
TCP/IP Stack: LOCAL
MIB Variables:
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________
 ____________________________________________________________________


 Command ===>
F1=Help     F2=Main Menu  F3=Return                          F6=Roll
                          F9=Options                        F12=Cancel
```

Figure 126. TCP/IP SNMP Commands Panel: Get Command

The options panel shows the SNMP options and the system settings. These settings can be defined in the policy definitions. Type an **X** beside the options you want to override. If the system definition is different than the SNMP default, the fields are automatically selected.

Note: If **Bulk** is selected using F9 (Options), the command is changed to GETBULK.

Set Command

If you select the Set command for option **1** in Figure 125 on page 147, the panel shown in Figure 127 is displayed.

```
FKXK251S            TCP/IP for 390 SNMP Commands                CNM01
Resource: LOCAL
Password(Community)
TCP/IP Stack: LOCAL            Command: Set
MIB Variable                                                    Type
 Value
sysName.0_____________________________________________________ ______
 NMPIPL10 Test system ____________________________________________
 ____________________________________________________________ ______
 ____________________________________________________________ ______
 ____________________________________________________________ ______
 ____________________________________________________________ ______
 ____________________________________________________________ ______
 ____________________________________________________________ ______
 ____________________________________________________________ ______

 Command ===>
F1=Help     F2=Main Menu  F3=Return                          F6=Roll
                          F9=Options                        F12=Cancel
```

Figure 127. TCP/IP SNMP Commands Panel: Set Command

For the **Set** command, the **Type** and **Value** fields are added to the panel. **Type** is used to override the MIB definition type. **Value** is used for the new value of the MIB.

Walk Command

If you select the Walk command for option **1** in Figure 125 on page 147, the panel shown in Figure 128 on page 149 is displayed..

```
FKXK2510           TCP/IP for SNMP Commands                    NTV7O

Resource: 1.23.45.678
Password(Community)                       Command: WALK
TCP/IP Stack: LOCAL

 MIB Variables:
  ____________________________________________________________________




Command ===>
F1=Help     F2=Main Menu  F3=Return                          F6=Roll
                          F9=Options                         F12=Cancel
```

Figure 128. TCP/IP SNMP Commands Panel: Walk Command

For a **Walk** command, only one MIB can be specified, so only one is accepted from the panel.

Note: If **Bulk** is selected using F9 (Options), the command is changed to BULKWALK.

Using the Group Command

Figure 129 is the resulting panel if you select the Group Menu in option **1** in Figure 125 on page 147.

```
FKXK2520     TCP/IP for 390 SNMP Groups                          NTV9D

                                                              More:  +
 Resource: LOCAL
Password (Community)
 TCP/IP Stack: LOCAL

Groups:
ExtGroup         LIST+        UDPTable        TABLE     atm             WALK
system           WALK         ip              WALK      3172sys         WALK
sys2             LIST         ipforward       WALK      3172ifTrap      WALK
sysOR            TABLE        ipAddrTable     WALK      3172channel     WALK
snmp             WALK         ipRouteTable    WALK      3172lan         WALK
IFTable          WALK         ipNoTab         LIST      3172blk         WALK
IFXTable         WALK         icmp            WALK      3172dblk        WALK
atTable          WALK         tcp             WALK      3172device      WALK
UDP              WALK         tcpConnTable    WALK      MvsTcpSystem    WALK
UDPnotab         LIST         tcpNoTab        LIST      MvsTcpIf        WALK


COMMAND ===>
ENTER=Get Group Data
F1=Help     F2=Main Menu  F3=Return   F4=Description            F6=Roll
F7=Backward F8=Forward    F9=Options                           F12=Cancel
```

Figure 129. TCP/IP SNMP Groups Panel

The SNMP Group panel displays the groups that are defined in DSIPARM sample FKXSNMP. To display more information about the group, tab to the group and pres F4. To display the SNMP options, press F9. For more information about creating MIB groups, see Appendix D, “Customizing the SNMP Group Definition File (FKXSNMP),” on page 443.

Figure 130 on page 150 displays the description of the group UDPnotab, and has a type of LIST. Note the four MIB variables that are displayed when you use the

UDPnotab group.

```
FKXK2524      TCP/IP for 390 SNMP Groups Description          NTV7O

Group: UDPnotab               Type: LIST

Abstract:
 UDP group MIBs without the UDP Table



MIB Variables:
 udplnDatagrams.0
 udpNoPorts.0
 udplnErrors.0
 udpOutDatagrams.0




 Command ===>
F1=Help     F2=Main Menu  F3=Return                            F6=Roll
                          F9=Options  ENTER=Get Group Data      F12=Cancel
```

Figure 130. TCP/IP SNMP Groups Description Panel: LIST

Figure 131 displays the description of the group system and has a type of WALK.

```
FKXK2524     TCP/IP for 390 SNMP Groups Description          NTV7O

Group: system                Type: WALK

Abstract:
 System group MIB variables for SNMP v1 or SNMP v2 including OR Table
 The definition of this group can be found in:
 RFC1907 for v2 or RFC1450 for v1.
MIB Variables:         FULL Name:SYSTEM









 Command ===>
F1=Help     F2=Main Menu  F3=Return                              F6=Roll
                          F9=Options  ENTER=Get Group Data    F12=Cancel
```

Figure 131. TCP/IP SNMP Groups Description Panel: WALK

Figure 132 on page 151 displays the description of the group UDPTable and has a type of TABLE.

```
FKXK2524     TCP/IP for 390 SNMP Groups Description          NTV7O

Group: UDPTable                Type: TABLE

Abstract:
 UDP group MIBs with the UDP Table


MIB Variables:          INDEX MIB: 1.3.6.1.2.1.7.5
udpLocalAddress
udpLocalPorts









 Command ===>
F1=Help     F2=Main Menu  F3=Return   F4=Description            F6=Roll
                          F9=Options  ENTER=Get Group Data    F12=Cancel
```

Figure 132. TCP/IP SNMP Groups Description Panel: TABLE

Using Extended SNMP Groups

If you need more flexibility than SNMP Groups provides, use extended SNMP Groups. These groups are different in that you can use them to code generic MIB objects (using the LIST+ statement), which are to be appended with group variables obtained from a pop-up panel when this group is selected.

For example, select option **2** on the SNMP Menu panel shown in Figure 125 on page 147 to use extended SNMP groups. When option **2** is selected, Figure 129 on page 149 is displayed.

In Figure 129 on page 149, move the cursor to LIST+ Group name (ExtGroup) and press Enter.

The panel in Figure 133 on page 152 is displayed.

Note: To use the LIST+ function you must first customize the FKXSNMP member in DSIPARM offline. For information about customizing the FKXSNMP member, see Appendix D, "Customizing the SNMP Group Definition File (FKXSNMP)," on page 443.

```
 FKXK252V      TCP/IP for 390 SNMP Group Extensions          NTV9D


  Resource: LOCAL
 Password (Community)
  TCP/IP Stack: LOCAL


           .............................................................
  Groups   :                                                           :
ExtGroup   :    PLEASE ENTER AN INTERFACE NUMBER                       :
system     :                                                           :
sys2       :     2_____________________________________                :
sysOR      :                                                           :
snmp       :                                                           :
IFTable    :                                                           :
IFXTable   :                                                           :
           :                                                           :
atTable    :                                                           :
UDP        :                                                           :
UDPnotab   :                                                           :
           :                                                           :
           :...........................................................:
             WALK


COMMAND ===>
F1=Help     F2=Main Menu  F3=Return  F6=Roll                      F12=Cancel
```

Figure 133. TCP/IP SNMP Group Extensions Panel

On the SNMP Group Extensions panel, type 2 to display details for interface 2 and press Enter. Listed MIB variable information for interface adapter number 2 is collected and displayed as shown in Figure 134.

```
 CNMKWIND Output from  SNMP GET to LOCAL                    LINE 0 OF 20
*--------------------------------TOP of DATA ----------------------------------
*
START OF DATA
ifName.2 = LOOPBACK
ifLinkUpDownTrapEnable.2 = 1
::::::::::::::::::::::::
END OF DATA







TO SEE YOUR KEY STTINGS, ENTER 'DISPLAY'
CMD==>
```

Figure 134. SNMP GET to LOCAL Output

IP Server Management

To manage TSO server sessions, select option **6** from the MVS TCP/IP Automation: Commands Menu shown in Figure 112 on page 137. When you select option 6, the panel shown in Figure 135 on page 153 is displayed:

```
FKXK2600                  TCP/IP for 390 Servers                    NTVE1
                                                                  More :
  Select an option:
     1=Start  2=Stop
                                          PPI
           Service                 Submit Receiver    PPI
    Domid  Point     Server  Type    JCL    Ids         Buffer   Status
_   NTVE1  NMP217    UNIX    UNIX    n/a    CNMEUNIX    0        ACTIVE
_   NTVE1  NMP217    NV2TS1  TSO     CNMSJTSO $E100001   0        ACTIVE
_   NTVE1  NMP217    NV2TS2  TSO     CNMSJTSO $E100002   0        ACTIVE
_   NTVE1  NMP217    NV2TS3  TSO     CNMSJTSO $E100003   0        ACTIVE
Command ===>
F1=Help      F2=Main Menu   F3=Return                F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                          F12=Cancel
```

Figure 135. IP Servers Panel

In the panel shown in Figure 135, three TSO servers for NMP217 and the UNIX server for NMP217 are displayed. Use the following steps to start or stop a server:

1. Move the cursor to a server.
2. Type 1 to start the server or 2 to stop the server.
3. Press F5 to refresh the panel.

Note: You can start or stop multiple servers at the same time.

A single CNMEUNIX server is used for each service point that requires UNIX system services. Therefore, starting or stopping any of the service point entries that use the CNMEUNIX server also starts or stops the single CNMEUNIX server. The status of the server is reflected on all service point entries in the service point list. The status of STARTING or STOPPING is displayed only on the service point entry for which a start or stop command is entered.

IP Resource Management

Note: This function no longer requires AON. To use this function, issue the IPMAN command. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

This section provides information about managing IP resources that are defined using the IP Resource Management panels.

Note: Some of the IP Resource Management panels use SNMP requests to collect data. The Community name used for those requests is defined on the TCP390 definition for the associated stack where the request is being issued. For more information, see the TCP390 definition statement in the *IBM Tivoli NetView for z/OS Administration Reference*.

IP Resource Management Main Panel

You can control monitoring of IP Resources from the IP Resource Management main panel, shown in "IP Resource Management Filters Panel" on page 157. To display this panel, enter `AON 3.2.7` or issue the IPMAN command.

You can select the following monitoring functions in the IP Resource Management main panel:

- ADD/START
- DISPLAY/CHANGE
- DELETE
- START
- STOP

```
FKXK2700          TCP/IP for 390 Resource Management

                                                                 REFRESH: 0
  Select an IP Management Active Monitoring command and press ENTER
  1=ADD/START   2=DISPLAY/CHANGE    3=DELETE    4=START    5=STOP
                    Resource    TCP/IP      Actmon
     Resource       Type        Stack       Definition    M Status
     -------------- ----------- ----------- ------------- - -------
 _   **NEW**         IPHOST
 _   **NEW**         IPPORT
 _   LOOP1026        IPPORT      NMP101                    R DOWN
 _   NMPIPL10        IPHOST      NMP101                    A NORMAL
 _   LOOP1024        IPPORT      NMP101                    A NORMAL
 _   TN3270          IPPORT      NMP101                    A NORMAL
 _   NMPIPL10        TCP390      NMPIPL10                  A NORMAL
 _   NMP101          TCP390      NMP101                    A NORMAL
 _   NMP217          TCP390      NMP217                    A NORMAL
 _   NMPIPL10V6      TCP390      NMPIPL10V6                R UNKNOWN
 _   TELNETAS        IPTELNET                              N NORMAL



Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Commands    F5=Refresh    F6=Roll
F7=Backward  F8=Forward     F9=Display Opts    F10=Connections      F12=Cancel
```

Figure 136. TCP/IP Resource Management Main Panel

Note the templates that are named **NEW**, one for IPHOST and one for IPPORT. These are the most used resource types. Select either template to add a resource by using the required fields for the type in the FKXK2760 panel, described in "IP Resource Management Add Panel" on page 155.

The following commands can be issued directly from the IP Resource Management main panel by typing the command number next to the resource name:

1 Display the Add/Change Panel in add mode. When the resource is added, monitoring is started. For additional information, see "IP Resource Management Add Panel" on page 155.

2 Display the Add/Change panel in change mode. For additional information, see "IP Resource Management Change Panel" on page 157.

3 Delets the entry only from the in storage control file and ends all monitoring.

4 Start monitoring for the resource.

5 Stop monitoring for the resource.

Note: For IP Port Monitoring, all ports under a defined stack are always actively monitored at the start of the NetView program. They cannot be stopped or started individually.

The following fields are displayed for each IP resource defined in the control file:

Resource
The name of the resource you are monitoring.

Resource Type
The resource type can be TCP390, IPHOST, IPINFC, IPNAMESRV, IPPORT, IPTELNET, IPTN3270, or OSAPORT.

TCP/IP Stack
When the name in this field is the same as the resource name, it is a stack. This status indicates whether the TCP/IP stack specified on the TCPNAME parameter of the TCP390 statement is active. It does not indicate whether the IP address as specified on the IPADDR statement or the host name as specified on the HOSTNAME statement match the primary interface address or host name currently in use by the TCP/IP stack.

Actmon Definition
If a reference to an ACTMON definition exists, that name is displayed in this field.

M The monitoring field contains the current active monitoring status. This list shows the monitoring status:
A Active monitoring
R Recovery monitoring
N No monitoring.

Status The status field contains the current status. These are the possible status indicators:
- NORMAL (GREEN)
- DOWN (RED)
- DEGRADED (PINK)
- THRESH (YELLOW)
- UNKNOWN (BLUE)

REFRESH
The IP Resource Manager main panel can be automatically refreshed, by changing the value of this field, from 0 (no refresh) to 59 minutes.

IP Resource Management Add Panel

Select ADD (option 1) on the IP Resource Management main panel to display the following panel (Figure 137 on page 156):

```
FKXK2760         TCP/IP for 390 Resource Management

 Update the allowable fields, Press F4   CMD Options
 to ADD resource and Start Monitoring    X - Fixed Field   R-Required Field
                                         1 - Change Field
CMD  KEYWORD    VALUE                   2 - Delete Field
---  ---------- ------------------------------------------------------------
R    RESNAME
X    RESTYPE    IPPORT
X    OPTION     IP390
R    SP         NMP217
_    PORT       8008
_    PROTOCOL   TCP
_    TCPNAME    T530EENV
_    FORMAT     PORT
_
_    ACTMON     IPPORT
_    DESC       "NetView Web Browser Socket"
_    STATUS     NORMAL
_    INTVL      00:10


Command ===>
F1=Help      F2=Main Menu   F3=Return       F4=SUBMIT UPDATE         F6=Roll
F7=Backward  F8=Forward     F9=Add a field                          F12=Cancel
```

Figure 137. TCP/IP Resource Management Add Panel

With the Add panel, you can add resources dynamically into the in store control file. When the resource is added, proactive monitoring is started for the resource. There is a delay before the monitoring field (M column) is updated on the main panel. Use F5 to refresh the panel until the change is displayed.

The IP Resource Management Add panel contains the following fields:

Command
A fixed field or a field that is updated using one of the following command options:

1 Change Value for keyword.
2 Delete keyword and its value.
R Indicates field is required. This option is set by the program.
X Indicates the field cannot be changed. This option is set by the program.

Keyword
Specifies the keyword name as set in the control file.

Value
Specifies the current value of the keyword under most circumstances. The value is cleared for ADD operations if a new value is required.

Notes:

1. Keywords marked with an X cannot be updated. In cases where multiple field relationships exist, not all required keywords are marked with an R.
2. Values for keywords are not syntax checked. Entering incorrect data can cause unpredictable results.

Changes are validated prior to a page forward or backward attempt. When R required fields are accepted their command is changed to X or fixed field, automatically.

To submit the changes, press F4. To add a new keyword-value pair press F9 to display the Add keyword window.

IP Resource Management Change Panel

Selecting Option 2 (change) on the IP Resource Management main panel displays the panel shown in Figure 138.

```
FKXK2760         TCP/IP for 390 Resource Management

 Update the allowable fields, Press F4   CMD Options
 to Change the settings                  X - Fixed Field   R-Required Field
                                         1 - Change Field
CMD  KEYWORD    VALUE                   2 - Delete Field
---  ---------- ------------------------------------------------------------
X    RESNAME    NMPIPL10
X    RESTYPE    IPHOST
X    OPTION     IP390
_    SP         NMPIPL10
_    ACTMON     ALLHOSTS
_    IPADDR     1.23.45.67
_    HOSTNAME   NMPIPL10
_    INTVL      00:15
_    STATUS     NORMAL
_    FORMAT     PING



Command ===>
F1=Help      F2=Main Menu   F3=Return       F4=SUBMIT UPDATE         F6=Roll
F7=Backward  F8=Forward     F9=Add a field                          F12=Cancel
```

Figure 138. TCP/IP Resource Management Change Panel

IP Resource Management Filters Panel

The IP Resource Management Filters panel can be displayed by entering IPMANSSF with no parameters or by pressing F9 on the IP Resource Management main panel.

```
FKXK2710              IP Resource Management Filters             NTVE1

The current filter and sort settings are shown. Change the settings
and press ENTER to activate.

Type the data to be displayed in one or more fields.
 Resource            Resource   TCP/IP        Status
 Name                Type       Stack Name
 *                   *          *             *
Type an action code to define the logical operator for the search:
  1   1 - OR   2 - AND

Type numbers from  1    to  4    to define the column order for sorting.
 Resource    Resource   TCP/IP        Status
 Name        Type       Stack Name
 1           2          3             4
Type an action code to define the sort order.
  1   1 - Ascending order  2 - Descending order



Command ===>
F1=Help                     F3=Return                               F6=Roll
                            F9=Defaults                            F12=Cancel
```

Figure 139. IP Resource Management Filters Panel

Use this panel to select the resources you want to display. The settings selected are saved on a task basis and apply in future queries. You can specify filter criteria for exact names or names starting with specific characters, if the criteria is followed by an asterisk (*). The following fields can be filtered:

Resource Name
Specify criteria for the resource name.

Resource Type
Specify criteria for the resource type.

TCP/IP
Specify criteria for the TCP/IP stack name.

Status Specify criteria based on resource status.

For filter options, specify the relationship between these options as 1 for OR or 2 for AND.

For sort options, specify 1–4 in any order. The four fields are then sorted based on the specified sort order. Indicate whether these sorts are to be done in ascending or descending order by entering a 1 or 2 in the last input field.

Pressing Enter causes the filter and sort entries to be validated and saved for use by the IP Resource Manager.

Pressing F9 restores the default filter and sort settings.

Press F3 to exit or F12 to cancel.

IP Resource Management Command Window

To display the COMMANDS window, press F4 from the IP Resource Management main panel or the SNMP Details panel. The information displayed depends on the resource type of the resource that has been selected.

```
FKXK2740              TCP/IP for 390 Resource Management

 Select a command and press Enter
                                   ....................................
                     Resource      : COMMANDS (based on Resource Type)   :
     Resource        Type          :                                     :
     --------------- ---------     :  _  1- Ping                         :
 _   **NEW**         IPHOST        :     2- Tracerte                     :
 _   **NEW**         IPPORT        :     3- Connection Management        :
 _   LOOP1026        IPPORT        :     4- SNMP                         :
 _   NMPIPL10        IPHOST        :     5- Display Timers               :
 _   LOOP1024        IPPORT        :     6- SNMP Details Panel           :
 _   TN3270          IPPORT        :                                     :
 _   NMPIPL10        TCP390        :                                     :
 /   NMP101          TCP390        :                                     :
 _   NMP217          TCP390        :                                     :
 _   NMPIPL10V6      TCP390        :                                     :
 _   TELNETAS        IPTELNET      :.....................................:



Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 140. TCP/IP Resource Management Panel: Commands Window

SNMPView

In general, the data displayed by SNMPView is retrieved from SNMP MIB variables. Any data field, with the underscore (_) next to it, can be set by performing the following steps:

1. Enter a non-blank character in place of the underscore.

2. Change the MIB data to be displayed.
3. Press Enter.

You can use the SNMPView function to display system wide and interface specific MIB data for your TCP/IP stacks and network resources.

To navigate through the panels, and display information about a resource, use option **8** on the MVS TCP/IP Commands Menu shown in Figure 112 on page 137. Type 8 and press Enter. The panel shown in Figure 141 is displayed.

```
FKXK2800       TCP/IP for 390 SNMP Resource View                NTVE1

 Host Name or IP Address:  (blank: Use Local Stack Name)
 ____________________________________________________________________

  X MVS Stack       _ IP Resource

 TCP/IP Stack Name :  LOCAL


_  Go Directly to the Interface List

_  Go to the details for Interface  ___  IP Address  ____________________

_  Go to the Connection List for IP Address  _____________


 Community Name :


Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                  F12=Cancel
```

Figure 141. TCP/IP SNMP Resource View Panel

IP Resource Data

To display IP Resource MIB data for NMPIPL25, fill in the text fields in Figure 141 in the following way:

1. Type NMPIPL25 in the **Host Name** or **IP Address** field.
2. Delete the X from the default MVS Stack selection.
3. Type X to select **IP Resource** view.
4. Press Enter. A selection list is displayed.
5. Type / in front of the selection you want and press Enter.

```
FKXK2800       TCP/IP for 390 SNMP Resource View                B63NV

  Host Name or IP Address: NMPIPL25_____________________________________
(blank: Use Stack Name)    _____________________________________________


   MVS Stack       X IP Resource

TCP/IP Stack Name:  NMPIPL25  (? for Selection list)


_  Go Directly to the Interface List

_  Go to the details for Interface  ___  IP Address  _______________

_  Go to the Connection List for IP Address  _______________


Community Name:


Command ===>
F1=Help      F2=Main Menu   F3=Return                            F6=Roll
                                                               F12=Cancel
```

Figure 142. TCP/IP SNMP Resource View Sample Panel

When you press Enter from the Resource View panel, shown in Figure 142, System MIB data is displayed on the Resource View: System panel, shown in Figure 143.

```
FKXK2810      TCP/IP for 390 SNMP Resource View: System          NTV70

SYSTEM DATA for:
NMPIPL25

_  System Name          =  NMPIPL25 Test System for AON Development w/v2r5

_  Location             =  D214/503

   Object ID            =  1.3.6.1.4.1.2.3.13
   UP Time              =  24270200
_  Contact              =  operator

   Services             =  PHYSICAL  DL/SUBNET INTERNET  E to E     APPL

   Description          =  AON NetView Test System NMPIPL25



Set Community Name:

Command ===>
F1=Help   F2=Main Menu   F3=Return   F4=Commands   F5=Refresh       F6=Roll
                                                  F11=Interfaces  F12=Cancel
```

Figure 143. TCP/IP SNMP Resource View: System Panel

From the system panel shown in Figure 143, press F4 to issue commands. The panel shown in Figure 144 on page 161, which contains the Commands window, is displayed.

```
FKXK2814      TCP/IP for 390 SNMP Resource View: System         NTV70

SYSTEM DATA for:
nmpipl25
                          .....................................
 System Name            =  :                                   :
                           :    Commands:                      :
 Location               =  :                   _  1. Ping     :
                           :                      2. Session Status :
 Object ID              =  :                      3. TraceRte  :
 UP Time                =  :                      4. SNMP Commands :
 Contact                =  :                ----  5. IP Data   :
                           :    Host-Wide |       6. TCP and UDP Data:
 Services               =  :       Data    ----  7. ICMP Data  :
 Description            =  :                                   :
                           :                                   :
                           :                                   :
                           :                                   :
                           :...................................:


Command ===>
F1=Help      F2=Main Menu   F3=Return                            F6=Roll
                                                                F12=Cancel
```

Figure 144. TCP/IP SNMP Resource View: System Panel with Commands Window

From Figure 144, type 5 in the Commands window and press Enter. The panel shown in Figure 145 is displayed.

```
 FKXK281P     TCP/IP for 390 SNMP Resource View: System          NTV70

IP DATA for:
NMPIPL25

_ Gateway Forwarding        =  YES(1)     Reassemble Timeout      =  60
_ Default TTL               =  64         Reassemble Requests     =  0
  Total Datagrams Received  =  7617       Reassemble Success      =  0
  IP Header Discards        =  0          Reassemble Fail         =  0
  Invalid Address Discards  =  0          Fragments Success       =  0
  Forwarded Datagrams       =  0          Fragments Fail          =  0
  Unknown Protocol Discards =  0          Fragments Create        =  0
  All Other Discards        =  0          Routing Discards        =  0
  Delivered Datagrams       =  8619
  Output Requests           =  7657
  Output Discards           =  0
  Discard No Route Avail.   =  0


Set Community Name:

Command ===>
F1=Help      F2=Main Menu   F3=Return              F5=Refresh       F6=Roll
                                                                   F12=Cancel
```

Figure 145. TCP/IP SNMP Resource View: System Panel

Press F3 to return to the panel shown in Figure 144. Type 6, and press Enter. The panel shown in Figure 146 on page 162 is displayed.

```
FKXK281T     TCP/IP for 390 SNMP Resource View: System         NTV70

TCP DATA                                  UDP DATA
NMPIPL25                                 |
                                         |
Retransmit Algorithm     =  vanj(4)      | Datagrams Recieved        =  5587
Min. Retransmit Timeout  =  500          | No Destination Ports      =  998
Max. Retransmit Timeout  =  120000       | Error Datagrams Received  =  0
Maximum TCP Connections  =  -1           | Datagrams Sent            =  6627
Active Open Connections  =  1            |
Passive Open Connections =  1            |
Falied Connect Attempts  =  0            |
Establish Resets         =  0            |
Current Established Conn =  2            |
Segments Received        =  40           |
Segments Sent            =  41           |
Retransmitted Segments   =  0            |
Bad TCP CHKSUMS          =  0            |
RST Flagged Segments     =  0            |
                                         |

Command ===>
F1=Help      F2=Main Menu   F3=Return               F5=Refresh       F6=Roll
                                                                    F12=Cancel
```

Figure 146. TCP/IP SNMP Resource View: System Panel

Press F3 to return to panel shown in Figure 144 on page 161. Choose option **7** and press Enter. The Resource View: System panel with Commands window is displayed, as shown in Figure 147.

```
FKXK281I    TCP/IP for 390 SNMP Resource View: System          NTV70

ICMP DATA for:
NMPIPL25
                              IN                OUT

  Messages                    1003              998
  Errors                      0                 997
  Destination Unreachable     999               997
  Time Exceeded               0                 0
  Parameter Problems          0                 0
  Source Quenches             0                 0
  Redirect                    0                 0
  Echo Requests               1                 0
  Echo Replies                3                 1
  Timestamp Requests          0                 0
  Timestamp Replies           0                 0
  Address Mask Requests       0                 0
  Address Mask Replies        0                 0


Command ===>
F1=Help      F2=Main Menu   F3=Return             F5=Refresh         F6=Roll
                                                                    F12=Cancel
```

Figure 147. TCP/IP SNMP Resource View: System Panel with Commands Window

Return to the panel shown in Figure 143 on page 160 and press F11. The panel shown in Figure 148 on page 163 is displayed.

```
FKXK2820     TCP/IP for 390 SNMP Resource View  : Interfaces     NTV70

 INTERFACES for:
 nmpipl25
        Status
 IF  Desired Actual   IP Address       Description
1   ACTIVE  ACTIVE                    Loopback Device
|_ 2   ACTIVE  ACTIVE   127.0.0.1        Loopback
3   DOWN    DOWN                      Channel to channel Device
|_ 4   DOWN    DOWN     9.67.50.57       Channel to channel (3088)
5   DOWN    DOWN                      Channel to channel Device
|_ 6   DOWN    DOWN                      Channel to channel (3088)




Command ===>
F1=Help      F2=Main Menu F3=Return   F4=Commands   F5=Refresh       F6=Roll
                          F9=Details                F11=Connections F12=Cancel
```

Figure 148. TCP/IP SNMP Resource View: Interfaces Panel

From the Interfaces panel, press F4. The SNMP Resource View: Interfaces panel is displayed with the Commands window as shown in Figure 149.

```
FKXK2824     TCP/IP for 390 SNMP Resource View  : Interfaces     NTV70

 INTERFACES for:
 nmpipl25
       Status                .....................................
IF  Desired Actual   IP Addr : Interface Name:                    :
1   ACTIVE  ACTIVE           : nmpipl25                           :
|_ 2   ACTIVE  ACTIVE   127. :                                    :
3   DOWN    DOWN             : Commands:                          :
|_ 4   DOWN    DOWN     9.67 :                                    :
5   DOWN    DOWN             :        _   1. Ping                 :
|_ 6   DOWN    DOWN           :            2. Session Stats        :
                              :            3. TraceRte             :
                              :            4. SNMP Commands        :
                              :                                    :
                              :                                    :
                              :                                    :
                              :                                    :
                              .....................................


Command ===>
F1=Help      F2=Main Menu   F3=Return                               F6=Roll
                                                                   F12=Cancel
```

Figure 149. TCP/IP SNMP Resource View: Interfaces Panel with Commands Window

Figure 150 on page 164 is an example of displaying a list of IP interfaces for an IP resource, such as resources.xyz.com.

```
FKXK2820     TCP/IP for 390 SNMP Resource View: Interfaces       NTV9D

 INTERFACES for:
 resources.xyz.com
        Status
 IF  Desired Actual   IP Address       Description
1   ACTIVE  ACTIVE   127.0.0.1        MS TCP Loopback interface
2   ACTIVE  ACTIVE   34.34.130.1      XYZ PCI Token-Ring Family Adapter









Command ===>
F1=Help      F2=Main Menu F3=Return   F4=Commands   F5=Refresh       F6=Roll
                          F9=Details                F11=Connections F12=Cancel
```

Figure 150. TCP/IP SNMP Resource View: Interfaces Panel

To display interface details, Tab to an interface, and press F9. The (IP resource) interface detail panel, shown in Figure 151, is displayed.

```
FKXK282D     TCP/IP for 390 SNMP Resource View:  Interfaces       NTV9D
 INTERFACE DETAILS for:
 resources.xyz.com
IF Name    :  N/A
IP ADDRESS :  34.34.130.1 Physical Address:   '123412341234'h
Description:  XYZ PCI Token-Ring Family Adapter

_ Desired Status:  ACTIVE      Actual Status:  ACTIVE

Interface Type       =  iso88025TokenRing(9)

Max Datagram Size    =  4056             Interface Speed      =  1600000
Last Status Change   =  0                TCP Connections      =  N/A
Network Mask         =  34.34.130.1      Reassemble Max Size  =  65535
IF Specific          =  0.0
Connector Present    =  N/A              Link Traps Enabled   =  N/A
High Speed  =  N/A                       Accept Any Packets   =  N/A


Set Community Name:

Command ===>
F1=Help    F2=Main Menu   F3=Return              F5=Refresh          F6=Roll
           F8=Statistics                         F11=Connections    F12=Cancel
```

Figure 151. TCP/IP0 SNMP Resource View: Interfaces Panel

MVS Stack Data

To display MVS Stack data for NMPIPL27, perform the following steps:

1. Type NMPIPL27 in the **Host Name** or **IP Address** field.
2. If the current default is IP Resource, then delete the X from the **IP Resource** selection.
3. Type X to select **MVS Stack** view.
4. In the **TCP/IP Stack Name** field, type ? and press Enter. A selection list is displayed.
5. Type / in front of the selection you want and press Enter.

The TCP/IP SNMP Stack View: System panel, shown in Figure 152 is displayed.

```
FKXK28M0       TCP/IP for 390 SNMP Stack View: System            NTV9D

SYSTEM DATA for MVS Stack:
NMPIPL27

 Proc Name =  TCP38    ASID =  60      _ Primary IF Index   =  4
                                         Primary IP ADDRESS = 1.23.45.67
_  System Name   =  SNMPBASE - Unspecified


   UP Time       =  2007-4-17,10:2:28.8

   Services      =    Physical    DL/Subnet    Internet    E to E    Appl

   Description   =  Sysname: OS/390 Nodename: F79MVS Release: 08.00 Vers
                    ion: 02 Machine: 9672



 Set Community Name:

Command ===>
F1=Help      F2=Main Menu  F3=Return  F4=Commands   F5=Refresh       F6=Roll
             F8=Page 2     F9=Page 3                F11=Interfaces  F12=Cancel
```

Figure 152. TCP/IP SNMP Stack View: System Panel

From the panel shown in Figure 152, press F11. The TCP/IP Stack View: Interfaces panel is displayed with the interfaces defined for your TCP/IP stack.

```
FKXK282M     TCP/IP for 390 SNMP Stack View: Interfaces          NTV9D

 INTERFACES for:
 NMPIPL27
             Status
 IF GWY  Desired Actual   IP Address       Description
1   N ACTIVE   ACTIVE                   Loopback Device
|_ 2   N ACTIVE   ACTIVE  127.0.0.1        Loopback
3   N ACTIVE   ACTIVE                   Channel to channel Device
|_ 4   Y ACTIVE   ACTIVE  1.23.45.67       Channel to channel (3088)









Command ===>
F1=Help   F2=Main Menu  F3=Return   F4=Commands    F5=Refresh        F6=Roll
                        F9=Details                 F11=Connections  F12=Cancel
```

Figure 153. TCP/IP SNMP Stack View: Interfaces Panel

To display interface details, tab to an interface, and press F9. The interface detail panel, shown in Figure 154 on page 166, is displayed.

```
FKXK28MK     TCP/IP for 390 SNMP Stack View: Interfaces          NTV9D
 INTERFACE DETAILS for:
 NMPIPL27
IF Name    :  TCPLNK9D                   IP ADDRESS:  1.23.45.67
Device Base Number:   270     on IF:   3
Description:  Channel to channel (3088)

_ Desired Status:  ACTIVE      Actual Status:  ACTIVE

Interface Type       =  channel(70)
Link Type            =  ctc(2)
Max Datagram Size    =  32760            Interface Speed      =  450000
Last Status Change   =  2787             TCP Connections      =  N/A
Network Mask         =  255.0.0.0        Reassemble Max Size  =  0
IF Specific          =  0.0
Connector Present    =  NO(2)          _ Link Traps Enabled   =  YES(1)
High Speed  =  3,500,000 - 4,499,999   _ Accept Any Packets   =  NO(2)


Set Community Name:

Command ===>
F1=Help    F2=Main Menu   F3=Return               F5=Refresh        F6=Roll
           F8=Statistics  F9=Gateway              F11=Connections  F12=Cancel
```

Figure 154. TCP/IP SNMP Stack View: Interfaces (Detail) Panel

IPTRACE Command

Note: This function no longer requires AON. To use this function, issue the IPTRACE command. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

Use the IPTRACE command to do diagnostic traces to help resolve TCP/IP problems. The following traces are available:

- Component trace is used to trace data processing problems between the client and the server.
- IP packet trace is used for IP data flow problems and copies IP packets as they are received or sent.
- OSA packet trace is used for Open Systems Adapter (OSA) data flow problems and copies OSA packets as they are received or sent.

If your IP trace diagnostics are not customized, add the following statement to the CNMSTUSR or C*xx*STGEN member for the remote domain for which you want to trace packets that flow in and out of the remote service point, where *rmsp* is the remote service point to trace. For information about changing CNMSTYLE statements, see *IBM Tivoli NetView for z/OS Installation: Getting Started*.

```
auxInitCmd.OBEY=FKXERINI rmsp YES UNIX
```

This change takes effect the next time the NetView program is started. If you want the change to take effect immediately, issue the command.

If you want to use an external writer, it must be established before you use IP trace. The trace data is written to the writer. See *z/OS MVS Diagnosis: Tools and Service Aids* for more information about creating source JCL for an external writer, or for more details about trace functions.

Accessing the IPTRACE Command

Issue the IPTRACE command from the command line. When you issue IPTRACE with no parameters, information about the local stack is displayed in the FKXK2A01 panel (Figure 156 on page 168). For information about the fields on the panel, press F1 to see the online help.

If you issue the `IPTRACE *` command, all known stacks are displayed in the FKXK2A00 panel (Figure 155). From this panel, you must select the stack that you want to trace. When you select a stack, the FKXK2A01 panel (Figure 156 on page 168), which provides information about the selected stack, is displayed.

```
FKXK2A00          TCP/IP for 390 IPTrace Control Center



Service Point/      Proc          NetView      Trace
Stack               Name          Domain       Status
NMP101              TCPIP         LOCAL        PKT/ACT OSA/ACT
NMP217              TCPIP         NTVE1        OSA/ACT

Command ===>
F1=Help      F2=Main Menu   F3=Return                 F6=Roll
F7=Backward  F8=Forward                               F12=Cancel
```

Figure 155. TCP/IP IPTrace Control Center Panel

Fields displayed in blue are not active and cannot be selected. Active entries are highlighted in green. To select a stack, tab to it, and press Enter; the FKXK2A01 panel (Figure 156 on page 168) is displayed. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A01         IPTrace Control Center                        NTVF9

Service Point/Stack: NMP101           Proc: TCPIP         Domain: LOCAL

                      Status/Owner    Start                For       Writer
 _  CTRACE    SYSTCPIP  NONE/NA        NA                   NA        *NONE*

 _  PKTTRACE  SYSTCPDA  ACTIVE/OPER3   2008-05-09-16:42:38  NA        *NONE*

 _  OSATRACE  SYSTCPOT  ACTIVE/NA      NA                   NA        *NONE*




Command ===>
F1=Help      F2=Main Menu   F3=Return    F5=Refresh     F6 =Roll
F7=Backward  F8=Forward                                 F12=Cancel
```

Figure 156. IPTrace Control Center Panel

To select a trace, type any non-blank character next to the trace that you want and press Enter.

- If you select CTRACE (component trace), see "Component Tracing."
- If you select PKTTRACE (IP packet trace), see "IP Packet Tracing" on page 172.
- If you select OSATRACE (OSA packet trace), see "OSA Packet Tracing" on page 178.

Component Tracing

When you select CTRACE for a service point with no scheduled tracing, the FKXK2A12 panel (Figure 157) is displayed. For a service point with active or delayed tracing, the FKXK2A10 panel (Figure 161 on page 172) is displayed. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A12      TCP/IP for 390 CTRACE Control  SYSTCPIP          A55NV

Service Point/Stack: TVT2009         Proc: TCPIP            Domain: LOCAL

 Delay Start Until: YYYY-MM-DD-HH.MM.SS              On Task: JOEF____

 Set a Timer for HH.MM.SS                            Writer:  CTTCP__




_  LISTS (IPAddrs, Ports, Job Names, ASIDs )




Command ===>
F1=Help    F2=Main Menu     F3=Return       F4=Start Trace          F6 =Roll
                                            F10=Options             F12=Cancel
```

Figure 157. CTRACE Control Panel: FKXK2A12

Before you begin a trace, provide the following information on the FKXK2A12 panel:

- You can specify IP addresses, IP ports, job names, and address space identifiers (ASIDs) that are to be traced. To do that, select the LISTS field; see "Specifying IP Addresses, IP Ports, Job Names, and Address Space Identifiers for the Component Trace."
- You must specify options for the trace. To do that, press F10; see"Specifying Options for the Component Trace" on page 170.
- You must decide if the trace is to begin immediately or is to be scheduled for a later date or time. This cannot be done until the trace options are specified. See "Starting or Scheduling the Component Trace" on page 170.

Specifying IP Addresses, IP Ports, Job Names, and Address Space Identifiers for the Component Trace: When you select the LISTS field, the FKXK2A11 panel displays the IP addresses and submasks component trace filters currently set for this stack. If the CTRACE status is ACTIVE, all component trace filters currently set are collected and displayed. When the CTRACE status is in DELAY mode, all global variables for component trace filters that are set for a delayed start are displayed. When the trace is inactive, the FKXK2A11 panel looks similar to the panel shown in Figure 158, and you can edit the IPADDRs/Mask(Prefix) fields. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A11      TCP/IP for 390 CTRACE Control  SYSTCPIP       A55NV
Service Point/Stack: TVT2009    Proc: TCPIP         Domain: LOCAL

IPADDRs/Mask(Prefix)
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Command ===>
F1=Help      F2=Main Menu   F3=Return                          F6=Roll
             F8=Ports/Jobs                                   F12=Cancel
```

Figure 158. CTRACE Control Panel: FKXK2A11

When the trace is inactive, you can also edit the IP ports, job names, and ASID fields. To do that, press F8 (Ports/Jobs) to go to the FKXK2A1A panel (Figure 159 on page 170). Select the option you want to view or change, and press F3 after the option is changed. For more information about trace options, see *z/OS Communications Server IP: Guide*. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A1A      TCP/IP for 390 CTRACE Control  SYSTCPIP       A55NV
Service Point/Stack: TVT2009    Proc: TCPIP         Domain: LOCAL

Ports
____  ____  ____  ____  ____  ____  ____  ____
____  ____  ____  ____  ____  ____  ____  ____

Job Names
_______  _______  _______  _______  _______  _______
_______  _______  _______  _______  _______  _______
_______  _______  _______  _______

ASIDs
____  ____  ____  ____  ____  ____  ____  ____
____  ____  ____  ____  ____  ____  ____  ____



Command ===>
F1=Help      F2=Main Menu   F3=Return                          F6=Roll
F7=IPADDRs                                                    F12=Cancel
```

Figure 159. CTRACE Control Panel: FKXK2A1A

Specifying Options for the Component Trace: Pressing F10 displays the FKXK2A14 panel (Figure 160). The Options field lists the defined options. You can select them individually or select ALL to select all of them. At least one option must be selected. The options cannot be changed after the trace is scheduled. After selecting the trace options, press F3 to return to the FKXK2A12 panel.

Note: If you select ALL, all options except Serial, Storage, and Timer are selected. These options degrade performance if you choose all of them simultaneously.

```
FKXK2A14      TCP/IP for 390 CTRACE Control  SYSTCPIP          A55NV


OPTIONS:

_   ALL        _   ALLMIN      _   ACCESS      _   AFP         _   ARP
_   CLAW       _   CONFIG      _   CSOCKET     _   DLC         _   EID
_   ENGINE     _   FIREWALL    _   ICMP        _   IN          _   INIT
_   INTERNET   _   IOCTL       _   IPADDR      _   IPSEC       _   LATCH
_   LCS        _   MESSAGE     _   MINIMUM     _   MISC        _   ND
_   NONE       _   OETCP       _   OEUDP       _   OPCMDS      _   OPMSG
_   PASAPI     _   PFS         _   PFSMIN      _   PING        _   POLICY
_   PORT       _   QUEUE       _   RAW         _   ROUTE       _   RW
_   SERIAL     _   SMTP        _   SNMP        _   SOCKAPI     _   SOCKET
_   STORAGE    _   SYSTEM      _   TC          _   TCP         _   TCPMIN
_   TELNET     _   TELNVTAM    _   TIMER       _   TN          _   UD
_   UDP        _   VTAM        _   VTAMDATA    _   WORKUNIT    _   XCF



Command ===>
F1=Help    F2=Main Menu     F3=Return                          F6 =Roll
                                                              F12=Cancel
```

Figure 160. CTRACE Control Panel: FKXK2A14

Starting or Scheduling the Component Trace: After you select options on the FKXK2A14 panel, you can start a trace on the FKXK2A12 panel (Figure 157 on page 168) in any of these ways:

- To start the trace immediately, press F4 (Start Trace).
- To delay the start of the trace, specify the date or date and time that tracing is to begin in the Delay Start Until field. The time must be specified in a 24-hour format. If the date portion YYYY-MM-DD is omitted and the input HH.MM.SS is earlier than the current time, the trace starts on the next day at the input time. For example, if the current time on the system clock is 9:33 a.m. and you specify 07.45.00 as the time to begin component tracing, the trace is scheduled to begin the following day at 7:45 a.m.
- To specify how long the trace is to run, specify a time in the Set a Timer for field. If you leave the Set a Timer for field blank, the trace runs until it is manually stopped.

If you want the trace to run on another task, enter any valid operator ID (as defined in DSIOPF) in the On Task field, which is valid only for delayed traces.

Note: If you specify another operator ID, that operator must be logged on at the time the trace runs.

The Writer field contains the source JCL to create an external writer where trace data is stored. The writer must be established before the trace runs. For more information about creating source JCL for an external writer, see *z/OS MVS Diagnosis: Tools and Service Aids*. The writer name for component tracing can be customized. Copy the following statement to the CNMSTUSR or C*xx*STGEN member, and then change it to the appropriate name. For information about changing CNMSTYLE statements, see *IBM Tivoli NetView for z/OS Installation: Getting Started*. If the NetView program has been started, issue the RESTYLE COMMON command to pick up the change.

```
COMMON.EZLTCPcTRACEwriter = new_CTTCP   // AON TCP component writer name
```

After you finish setting options, press F4 to begin or schedule the trace. The trace can take several minutes to run because of system processing. The trace might also begin a couple of minutes past the specified time, depending on system processing. When an immediate trace is successfully scheduled, a message similar to the following message is displayed in the FKXK2A01 panel:

```
FKX400I CTRACE SCHEDULED FOR SP TVT2009 BY OPERATOR JOEF
```

For a delayed trace, the FKX401I message is displayed.

Displaying an Active Component Trace: To view the details of an active or delayed component trace, select CTRACE from the FKXK2A01 panel (Figure 156 on page 168). The FKXK2A10 panel (Figure 161 on page 172) is displayed.

```
FKXK2A10      TCP/IP for 390 CTRACE Control  SYSTCPIP       A55NV
Service Point/Stack: TVT2009      Proc: TCPIP        Domain: LOCAL
Start Time: 2007-10-04-14:19:18                      Duration: NA
Timer ID: NONE                                       Writer:   CTTCP

Active Options:
ALL









_  LISTS (IPAddrs, Ports, Job Names, ASIDs )

Command ===>
F1=Help      F2=Main Menu   F3=Return   F4=Stop Trace             F6 =Roll
                                                                 F12=Cancel
```

Figure 161. CTRACE Control Panel: FKXK2A10

Stopping an Active or Canceling a Delayed Component Trace: To stop an active trace or to cancel a delayed trace, press F4 (Stop Trace) on the FKXK2A10 panel (Figure 161). When you press F4, the system can take several minutes to respond because of system processing.

When an active trace is successfully stopped, the FKX403I message is displayed. When a delayed trace is successfully canceled, the DSI205I message is displayed.

IP Packet Tracing

When you select PKTTRACE, the FKXK2A22 panel (Figure 162 on page 173) is displayed. If SYSTCPDA is not shown as ACTIVE, type a character next to the interface to trace, for example, TCPIPLINK, and press F4 (Start SYSTCPDA) to start the data collection by z/OS Communications Server. After data collection starts, SYSTCPDA is shown as ACTIVE, the interface status changes to ON, and the options change. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A22      PKTTRACE  Control  SYSTCPDA  ACTIVE     for NVDomain: LOCAL
                                                          z/OS    : V1R9
Service Point/Stack: NMP101    TCPNAME: TCPIP
PKTS: ACTIVE       On Task: TCPPAUTO     GTF: NO

Start Time: 2008-05-09-16:57:06                      Writer:  *NONE*

 Options: 1-START/ADD 2-STOP  3-VIEW PACKETS
                                                          _____Ports_____  Record
  Infc/Link     Stat Prot IP Address/Prefix              Src  PortNm Dest  Count

_  TCPIPLINK     ON  *    *                              *     *     *     8
_  TCPIPLINKB    OFF *    *                              *     *     *     0
_  TCPIPLINK6    OFF *    *                              *     *     *     0









FKX400I PKTTRACE SCHEDULED FOR SP NMP101 BY OPERATOR OPER3
Command ===>
F1=Help      F2=Main Menu   F3=Return  F4=Stop SYSTCPDA  F5=Refresh  F6=Roll
F7=Backward  F8=Forward     F9=Assist  F10=PKTS Management          F12=Cancel
```

Figure 162. PKTTRACE Control Panel

Optionally, you can set filters (by pressing F9) and manage the packets by pressing F10); for more information, see "Setting Filters for and Managing an IP Packet Trace" on page 176.

Starting and Stopping an IP Packet Trace: To start an IP packet trace, type 1 next to the interface name (for example, TCPIPLINK) on the FKXK2A22 panel (Figure 162), and press Enter. To stop an IP packet trace, type 2 next to the interface name on the FKXK2A22 panel, and press Enter.

Viewing IP Packet Trace Data: To display IP packet trace data, type 3 next to the interface name on the FKXK2A22 panel, and press Enter to go to the FKXK2A24 panel (Figure 163 on page 174). For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A24              Display Packet Control                    LOCAL

 Service Point/Stack: NMP101   Proc: TCPIP     Infc Name: TCPIPLINK


 LAddr *

 RAddr *

 PORTNUM *          LPort: *       RPort: *      Protocol 1  1-ALL
                                                             2-TCP
                                                             3-UDP
 Time: Start  *                                              4-OSPF
       End    *                                              5-      (Number)


 MaxRecs: 1  1-Last   100       Truncate:  65535
             2-First



Command ===>
F1=Help                     F3=Return    F4=View Packets             F6=Roll
             F8=Extended Options                                     F12=Cancel
```

Figure 163. Display Packet Control Panel

Set any display options needed on the FKXK2A24 panel, and press F4 (View Packets) to go to the FKXK2A26 panel (Figure 164) to display packets. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A26      PKTTRACE  SUMMARY                                 NTVF9
                                                                More:+
 DP   Nr hh:mm:ss.mmmmmm IpId    Seq_num    Ack_num  Wndw Flags
 IU22456 17:02:51.672076 0000 protocol=UDP
                         F1778580 00010001 *1.e..... .w......*
 OU22455 17:02:51.671244 8A2C protocol=UDP
                         F1770100 00010000 *1....... .w......*
 OT22454 17:02:45.513074 8A2B  379439144 3454140397 32768 ACK PSH

 IT22453 17:02:45.513031 DED8 3454140396  379439144 32768 ACK PSH

 IU22452 17:02:36.548436 0000 protocol=UDP
                         A8068580 00010001 *y.e..... ........*
 OU22451 17:02:36.547755 8A2A protocol=UDP
                         A8060100 00010000 *y....... ........*
 IU22450 17:02:36.106447 0000 protocol=UDP
                         AAB88580 00010001 *..e..... ........*
 OU22449 17:02:36.105802 8A29 protocol=UDP
                         AAB80100 00010000 *........ ........*


 Command ===>
 F1=Help                 F3=Return     F4=Details  F5=Refresh         F6=Roll
 F7=Backward F8=Forward  F9=Commands               F11=Right         F12=Cancel
```

Figure 164. PKTTRACE SUMMARY Panel: FKXK2A26

Press F11 (Right) to display the rest of the data in the FKXK2A27 panel (Figure 165 on page 175). For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A27      PKTTRACE  SUMMARY                                  NTVF9
                                                                  More:+
DatLn Source/Destination
  296 9.42.4.253-53
      9.42.45.101-22679
   47 9.42.45.101-22679
      9.42.4.253-53
    0 9.42.45.101-1026
      9.42.45.217-4022
    0 9.42.45.217-4022
      9.42.45.101-1026
  296 9.42.4.253-53
      9.42.45.101-22677
   47 9.42.45.101-22677
      9.42.4.253-53
  296 9.42.4.253-53
      9.42.45.101-22675
   47 9.42.45.101-22675
      9.42.4.253-53


Command ===>
F1=Help                F3=Return     F4=Details  F5=Refresh         F6=Roll
F7=Backward F8=Forward F9=Commands   F10=Left                       F12=Cancel
```

Figure 165. PKTTRACE SUMMARY Panel: FKXK2A27

From either the FKXK2A26 panel or the FKXK2A27 panel, tab to a particular packet and press F4 (Details) to see the details of the selected packet on a panel similar to the one shown in Figure 166. If necessary, press F11 to shift to the right to see the rest of the data (and F10 to shift back to the left).

```
CNMKWIND OUTPUT FROM  Packet Detail                          LINE 0 OF 81
*------------------------------ Top of Data -------------------------------*
 z/OS TCP/IP Packet Trace Formatter, (C) IBM 2000-2006, 2007.052

**** 2008/05/09
RcdNr Sysname  Mnemonic Entry Id   Time Stamp    Description
----- -------- -------- -------- --------------- ------------------------------

--------------------------------------------------------------------------------
22456 NMP101   PACKET   00000004 17:02:51.672076 Packet Trace
 From Interface    : TCPIPLINK        Device: QDIO Ethernet    Full=324
  Tod Clock        : 2008/05/09 17:02:51.672076                Intfx: 5
  Sequence #       : 0                Flags: Pkt
  Source           : 9.42.4.253
  Destination      : 9.42.45.101
  Source Port      : 53               Dest Port: 22679 Asid: 0030 TCB: 00000000
 IpHeader: Version : 4                Header Length: 20
  Tos              : 00               QOS: Routine Normal Service
  Packet Length    : 324              ID Number: 0000
  Fragment         : DontFragment     Offset: 0
  TTL              : 62               Protocol: UDP            CheckSum: F6F3 F
  Source           : 9.42.4.253
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==>
```

Figure 166. IP Packet Detail Panel

From either the FKXK2A26 panel or the FKXK2A27 panel, tab to a particular packet and press F9 (Commands) to go to the FKXK2A28 panel (Figure 167 on page 176), which lists commands that you can use for the selected packet. For information about using the commands, press F1 to see the online help.

```
FKXK2A28      PKTTRACE  SUMMARY  COMMANDS                    NTVF9
                                                                  U
DP   Nr hh:mm:ss.mmmmmm IpId    Seq_num   ****************************
IU22456 17:02:51.672076 0000 protocol=UDP |    Command               |
                        F1778580 00010001 |                          |
OU22455 17:02:51.671244 8A2C protocol=UDP |    1. Ping     (RAddr)   |
                        F1770100 00010000 |    2. TraceRte (RAddr)   |
OT22454 17:02:45.513074 8A2B  379439144 3 |    3. Hostnames          |
                                          |    4. Connections        |
IT22453 17:02:45.513031 DED8 3454140396   |    5. SNMP     (RAddr)   |
                                          |    6. SNMP     (Stack)   |
IU22452 17:02:36.548436 0000 protocol=UDP |                          |
                        A8068580 00010001 |                          |
OU22451 17:02:36.547755 8A2A protocol=UDP |                          |
                        A8060100 00010000 | F1=Help       F3=Return  |
IU22450 17:02:36.106447 0000 protocol=UDP | F6=Roll       F12=Cancel |
                        AAB88580 00010001 ****************************
OU22449 17:02:36.105802 8A29 protocol=UDP
                        AAB80100 00010000 *........ ........*
```

Figure 167. PKTTRACE SUMMARY COMMANDS Panel

Also from the FKXK2A24 panel (Figure 163 on page 174), you can request more specific information by pressing F8 (Extended Options), which opens the FKXK2A25 panel (Figure 168). From this panel, you can request detailed packet data based on the options that you specify. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A25      Display Packets Control Extended Options          NTVF9

 Service Point/Stack: NMP101   Proc: TCPIP     Infc Name: TCPIPLINK

  1  1-Summary   1  1-Local   1  1-PortSel   1  1-Segment    LineSize: 80
     2-Full         2-GMT        2-Both         2-NoSegment  Cleanup:  500
     3-Short                     3-Ascii
     4-Tally                     4-Ebcdic
                                 5-Hex

 Format:    1-Detail     Stats:    1-Summary    Basic:    1-Detail
            2-Summary              2-Detail               2-Summary

 Reassem: 65535 , 1  1-Summary     Session:    1-Detail        1-Dump  65535
                     2-Detail                  2-State
                     3-NoReassem               3-Summary

 Streams: 128   ,    1-Summary
                     2-Detail


Command ===>
F1=Help                    F3=Return     F4=Display Packets         F6=Roll
F7=Query Opts                                                       F12=Cancel
```

Figure 168. Display Packets Control Extended Options Panel

Setting Filters for and Managing an IP Packet Trace: To set optional filters or to see more detail for an interface, press F9 (Assist) on the FKXK2A22 panel (Figure 162 on page 173) to go to the FKXK2A29 panel (Figure 169 on page 177). Make any changes that are needed, and press F3 to return. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A29          PKTTRACE  Control Assistant

Service Point/Stack:  NMP101      Proc:  TCPIP        Domain:  LOCAL

INFC/LINK Name:  TCPIPLINK


Options:

IP Address/Prefix:
 *

Ports
 Source:  *        Destination: *        PORTNUM:      *

Length: FULL                      Protocol: 1  1-ALL(*)
                                               2-TCP
                                               3-UDP
                                               4-ICMP
                                               5-Number


Command ===>
F1=Help      F2=Main Menu   F3=Return                              F6=Roll
                                                                 F12=Cancel
```

Figure 169. PKTTRACE Control Assistant Panel

To optionally manage the NetView PKTS function, press PF10 (PKTS Management) on the FKXK2A22 panel (Figure 162 on page 173) to go to the FKXK2A23 panel (Figure 170 on page 178). You can use this panel to start and stop the collection of packet data. Make any changes that are needed, and press F3 to return. For information about the fields on the panel, press F1 to see the online help.

Note: Instead of using this panel, you can use the PKTS command. To start collecting packet trace data, use the PKTS START command; for more information about starting the data collection, see *IBM Tivoli NetView for z/OS Installation: Configuring Additional Components*. You can then use the PKTS QUERY commands to retrieve the collected data based on filtering criteria you specify, for example, all packets transmitted during a certain period of time. Alternatively, instead of using this panel, you can use statements in the CNMSTUSR or C*xx*STGEN member; for information about changing CNMSTYLE statements, see *IBM Tivoli NetView for z/OS Installation: Getting Started*.

```
FKXK2A23          NetView PKTS Management        PKTS Status: ACTIVE
                                                      Domain:LOCAL
    Start with Storage Size:        M

_   Stop

_   Stopcoll

    Define TCPName: TCPIP        OPID: TCPPAUTO

_   Purge
    Intfname *
    LAddr    *
    RAddr    *
                                              Protocol 1  1-All
    LPort *      RPort *      PORTNUM *                   2-TCP
        Time: Start *                                    3-UDP
              End   *                                    4-OSPF
                                                         5      (Number)


Command ===>
F1=Help                    F3=Return                          F6=Roll
                                                              F12=Cancel
```

Figure 170. NetView PKTS Management Panel

OSA Packet Tracing

When you select OSATRACE, the FKXK2A30 panel (Figure 171 on page 179) is displayed. If SYSTCPOT is not shown as ACTIVE, type a character next to the interface to trace, for example, OSAA, and press F4 (Start SYSTCPOT) to start the data collection by z/OS Communications Server. After data collection is started, SYSTCPOT is shown as ACTIVE, the interface status changes to ON, and the options change. For information about the fields on the panel, press F1 to see the online help.

Note: z/OS V1R11 Communications Server or later is required for OSA packet trace. The OSA SNMP subagent must be active to control OSA traces.

```
FKXK2A30      OSATRACE  Control  SYSTCPOT  ACTIVE     for NVDomain: LOCAL
                                                            z/OS    : V1R11
 Service Point/Stack: TVT2007   TCPNAME: TCPIP7
 OPKTS: ACTIVE      On Task: AUTOOPKT   GTF: NO

 Start Time:                                          Writer:  *NONE*

  Options: 1-START   2-STOP  3-VIEW PACKETS

    OSA Port  Stat/ Length Data      Record     Time  Discard   Nofilter
              Auth
  _ OSA1      OFF   224    1024      2147483647 10080 EXCEPTION NONE
              UNKNOWN      0         0          0     0
  _ OSAA      ON    224    1024      2147483647 10080 EXCEPTION ALL
              LOGICAL      0         172        12    164
              NEW   224    1024      2147483647 10080 EXCEPTION NONE




 Command ===>
 F1=Help                    F3=Return  F4=Stop SYSTCPOT  F5=Refresh  F6=Roll
 F7=Backward  F8=Forward  F9=Filters    F10=PKTS Management          F12=Cancel
```

Figure 171. OSATRACE Control Panel

Optionally, you can set filters (by pressing F9) and manage the packets by pressing F10); for more information, see "Setting Filters for and Managing OSA Packet Trace" on page 182.

Starting and Stopping an OSA Packet Trace: To start an OSA packet trace, type 1 next to the OSA port name (for example, OSAA) on the FKXK2A30 panel (Figure 171), and press Enter. To stop an OSA packet trace, type 2 next to the interface name on the FKXK2A30 panel, and press Enter.

Viewing OSA Packet Trace Data: To display OSA packet trace data, type 3 next to the interface name on the FKXK2A30 panel (Figure 171), and press Enter to go to the FKXK2A34 panel (Figure 172 on page 180). For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A34              Display OSA Packet Control                LOCAL

 Service Point/Stack: TVT2007  Proc: TCPIP7
  OSA Port Name: OSAA


 Time: Start  *
       End    *


 MaxRecs: 1  1-Last   100       Truncate:  65535
             2-First









Command ===>
F1=Help                    F3=Return    F4=View Packets             F6=Roll
            F8=Extended Options                                     F12=Cancel
```

Figure 172. Display OSA Packet Control Panel

Set any display options needed on the FKXK2A34 panel, and press F4 (View Packets) to go to the FKXK2A36 panel (Figure 173) to display packets. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A36      OSA TRACE PACKETS SUMMARY                       D52NV
                                                                 :+
DP   Nr hh:mm:ss.mmmmmm IpId    Seq_num    Ack_num  Wndw Flags
IO 6317 14:05:03.638377 D22D DISCARD=1115 (Unknown)
                        0201002C C0096B01 *....{.,. ...,..k.*
IO 6316 14:05:03.638375 D22D DISCARD=1068 (GMAC TABLE EMPTY)
                        0201002C C0096B01 *....{.,. ...,..k.*
IG 6314 14:04:56.125070 D229 DISCARD=1068 (GMAC TABLE EMPTY)

IG 6312 14:04:55.019146 D228 DISCARD=1068 (GMAC TABLE EMPTY)

IO 6311 14:04:53.629588 D225 DISCARD=1115 (Unknown)
                        0201002C C0096B01 *....{.,. ...,..k.*
IO 6310 14:04:53.629585 D225 DISCARD=1068 (GMAC TABLE EMPTY)
                        0201002C C0096B01 *....{.,. ...,..k.*
IO 6309 14:04:43.624203 D21F DISCARD=1115 (Unknown)
                        0201002C C0096B01 *....{.,. ...,..k.*
IO 6308 14:04:43.624201 D21F DISCARD=1068 (GMAC TABLE EMPTY)
                        0201002C C0096B01 *....{.,. ...,..k.*


Command ===>
F1=Help                 F3=Return     F4=Details  F5=Refresh         F6=Roll
F7=Backward F8=Forward                            F11=Right         F12=Cancel
```

Figure 173. OSA TRACE PACKETS SUMMARY Panel: FKXK2A36

Press F11 (Right) to display the rest of the data in the FKXK2A37 panel (Figure 174 on page 181). For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A37      OSA TRACE PACKETS SUMMARY                          D52NV
                                                                    :+
DatLn Source/Destination
   44 9.42.42.132
      224.0.0.5
   44 9.42.42.132
      224.0.0.5
    0 9.42.42.132
      224.0.0.5
    0 9.42.42.132
      224.0.0.6
   44 9.42.42.132
      224.0.0.5
   44 9.42.42.132
      224.0.0.5
   44 9.42.42.132
      224.0.0.5
   44 9.42.42.132
      224.0.0.5


Command ===>
F1=Help                F3=Return     F4=Details  F5=Refresh         F6=Roll
F7=Backward F8=Forward               F10=Left                       F12=Cancel
```

Figure 174. OSA TRACE PACKETS SUMMARY Panel: FKXK2A37

From either the FKXK2A36 panel or the FKXK2A37 panel, tab to a particular packet and press F4 (Details) to see the details of the selected packet on a panel similar to the one shown in Figure 175. If necessary, press F11 to shift to the right to see the rest of the data (and F10 to shift back to the left).

```
CNMKWIND OUTPUT FROM  Packet Detail                          LINE 0 OF 53
*------------------------------ Top of Data -------------------------------*
 z/OS TCP/IP Packet Trace Formatter, (C) IBM 2000-2008, 2008.210

**** 2009/01/19
RcdNr Sysname  Mnemonic Entry Id   Time Stamp    Description
----- -------- -------- -------- --------------- ------------------------------

--------------------------------------------------------------------------------
 6317 TVT2007  OSAENTA  00000007 14:05:03.638377 OSA-Express NTA
 From Interface    : EZANTAOSAA                              Full=64
  Tod Clock        : 2009/01/19 14:05:05.493685
 Frame: Device ID  : N/A              Sequence Nr: 33701       Discard: 1115 (U
  Segment #        : 0                Flags:  In Nta Lpar L3 Dscrd
  Source           : 9.42.42.132
  Destination      : 224.0.0.5
  Source Port      : 0                Dest Port: 0     Asid: 0000 TCB: 00000000
 IpHeader: Version : 4                Header Length: 20
  Tos              : 00               QOS: Routine Normal Service
  Packet Length    : 64               ID Number: D22D
  Fragment         :                  Offset: 0
  TTL              : 1                Protocol: OSPFIGP        CheckSum: D384 F
TO SEE YOUR KEY SETTINGS, ENTER 'DISPFK'
CMD==>
```

Figure 175. OSA Packet Detail Panel

Also, from the FKXK2A34 panel (Figure 172 on page 180), you can request more specific information by pressing F8 (Extended Options), which opens the FKXK2A35 panel (Figure 176 on page 182). From this panel, you can request detailed packet data based on the options that you specify. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A35      Display OSA Packets Control Extended Options      NTVF9

 Service Point/Stack: NMP101   Proc: TCPIP     OSA Port Name: OSAA

  1  1-Summary   1  1-Local   1  1-PortSel   1  1-Segment    LineSize: 80
     2-Full         2-GMT        2-Both         2-NoSegment  Cleanup:  500
     3-Short                     3-Ascii
     4-Tally                     4-Ebcdic
                                 5-Hex

 Format:    1-Detail     Stats:    1-Summary    Basic:    1-Detail
            2-Summary              2-Detail               2-Summary

 Reassem: 65535 , 1  1-Summary     Session:    1-Detail        1-Dump  65535
                     2-Detail                 2-State
                     3-NoReassem              3-Summary

 Streams: 128   ,    1-Summary
                     2-Detail


Command ===>
F1=Help                     F3=Return     F4=Display Packets         F6=Roll
F7=Query Opts                                                        F12=Cancel
```

Figure 176. Display OSA Packets Control Extended Options Panel

Setting Filters for and Managing OSA Packet Trace: To set optional filters or to see more detail for an interface, press F9 (Filters) on the FKXK2A30 panel (Figure 171 on page 179) to go to the FKXK2A31 panel (Figure 177). Make any changes that are needed, press F4 to update the filters, and then press F3 to return. For information about the fields on the panel, press F1 to see the online help.

```
FKXK2A31      OSATRACE  Filters  SYSTCPOT  ACTIVE     for NVDomain: LOCAL
                                                          z/OS    : V1R11
Service Point/Stack: TVT2007         Proc: TCPIP7

OSA Port Name: OSAA                  Clear Filters: NO   (YES/NO)

-----------------------------------------------------------------------
|Protocol | Ethernet |  Port  |  Device   | VLAN ID |  Mac Address   |
|         | Type     |        |  ID       |         |                |
|         |          |        |           |         |                |
|  TCP    | _______  | 00020  | ________  |  ____   | ____________   |
| _______ | _______  | 00021  | ________  |  ____   | ____________   |
| _______ | _______  | _____  | ________  |  ____   | ____________   |
| _______ | _______  | _____  | ________  |  ____   | ____________   |
| _______ | _______  | _____  | ________  |  ____   | ____________   |
| _______ | _______  | _____  | ________  |  ____   | ____________   |
| _______ | _______  | _____  | ________  |  ____   | ____________   |
| _______ | _______  | _____  | ________  |  ____   | ____________   |
-----------------------------------------------------------------------


Command ===>
F1=Help                     F3=Return   F4=Update Filters            F6=Roll
            F8=IP Addesses                                           F12=Cancel
```

Figure 177. OSATRACE Filters Panel: FKXK2A31

To set optional IP address filters for the interface from the FKXK2A31 panel, press F8 (IP Addresses) to go to the FKXK2A32 panel (Figure 178 on page 183). For information about this panel, press F1 to see the online help. After you make your changes, press F3 until you return to the FKXK2A30 panel.

Note: Pressing F7 (Other Filters) displays the FKXK2A31 panel (Figure 177).

```
FKXK2A32     OSATRACE  Filters  SYSTCPOT  ACTIVE     for NVDomain: LOCAL
Service Point/Stack: TVT2007   TCPNAME: TCPIP7           z/OS    : V1R11

 IP Address(es) Use up to 8 IPv4 and 8 IPv6 (one IP Address per line)
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Command ===>
F1=Help                    F3=Return    F4=Update Filters          F6=Roll
F7=Other Filters                                                 F12=Cancel
```

Figure 178. OSATRACE Filters Panel: FKXK2A32

To optionally manage the NetView PKTS function, press PF10 (PKTS Management) on the FKXK2A30 panel (Figure 171 on page 179) to go to the FKXK2A33 panel (Figure 179). You can use this panel to start and stop the collection of packet data. Make any changes that are needed, and press F3 to return. For information about the fields on the panel, press F1 to see the online help.

Note: Instead of using this panel, you can use the PKTS command, or you can use statements in the CNMSTUSR or C*xx*STGEN member; for information about changing CNMSTYLE statements, see *IBM Tivoli NetView for z/OS Installation: Getting Started*.

```
FKXK2A33          NetView PKTS Management        PKTS Status: ACTIVE
                  for PSOURCE=OSA                     Domain:LOCAL
    Start with Storage Size:        M

 _  Stop

 _  Stopcoll

    Define TCPName: TCPIP7       OPID: AUTOOPKT

 _  Purge
    Portname *

        Time: Start *
              End   *









Command ===>
F1=Help                    F3=Return                          F6=Roll
                                                              F12=Cancel
```

Figure 179. OSATRACE NetView PKTS Management Panel

Part 4. AON Customization

Chapter 18. Introducing AON Customization

The Automated Operations Network (AON) provides a comprehensive set of programs that can be customized and extended to provide network automation. The following components of AON provide consistent automation across multiple network protocols:

- SNA Automation (AON/SNA)
- TCP/IP Automation (AON/TCP)

AON intercepts alerts and messages that indicate problems with network resources. AON attempts to recover failed resources and monitor resources until they recover. After a resource has recovered, the components of AON keep a record of the resource failures to track recurring network problems.

To automate network functions, AON provides facilities for:

- Online access to centralized information
- Automated problem determination and recovery actions
- User-written routines and user-tailored panels
- Online tutorials and product information through the operator interface.

The following sections describe the programs that enable AON to automate z/OS networks.

Centralized Access to Information

AON enables users to gain access to network information from panels and issue commands to multiple systems from a single terminal. This centralized control is provided by:

- Dynamic Display Facility (DDF)
- Focal-point services
- NetView operator interface

Dynamic Display Facility (DDF)

The DDF is the central focus of resource status information. It displays network resources currently being acted on by AON in an exception based hierarchical panel display. As you add new resources to your network, DDF can automatically reflect those resources without requiring you to change AON control file entries. AON also updates message notifications held by the command facility (NCCF).

The DDF enterprise-wide resource display provides real-time, exception-oriented status monitoring. An operator at the focal-point NetView can view the status of multiple networks from the DDF panels. AON dynamically updates DDF panels with resource status information. Multiple programs can update DDF with resource status without concern for the sequence or priorities posted by other programs. Many operators can view DDF and receive updates without having an impact on the network.

AON provides default settings for DDF to represent the status of your network resources. Default DDF settings display only resources that require operator intervention. The mark function enables operators to take responsibility for a failed

resource that requires operator intervention. DDF is updated to indicate who is working on the problem. When failed components recover, DDF automatically removes them from the display.

DDF displays are color-coded to indicate the status of the network components. The color indicates the severity of a failure. If AON detects a problem with a resource, it displays the resource in red, pink, or yellow (default color definitions). Typically, a failure displayed in red is more severe than a failure displayed in yellow. Green (or not displayed) indicates that the resource status is normal.

You can customize DDF settings, including colors. For example, by making a change to the control file you can make DDF display all resources instead of just those that require intervention.

For more information on customizing and using DDF, see Chapter 19, "Understanding Dynamic Display Facility (DDF) Design," on page 197 and subsequent chapters.

NetView Operator Interface

With the NetView operator interface to AON, users can:

- Issue commands
- Receive responses for functions provided by AON and other NetView facilities

Operators can enter commands either in line mode (on any NetView command line) or in full-screen mode. Full-screen mode provides easy-to-use command pop-up windows.

Additionally, NetView management console (NMC) operators can access an AON window to display automated resource recovery information and control file information for SNA resources.

Focal-Point Services

You can specify one domain as the focal point in a multidomain network. AON routines forward notification messages from multiple hosts to a single focal-point host. This enables a network operator to receive all the network notifications at a single console.

To support focal points, you define routes, called *gateways*, from one NetView to another. AON forwards automation notifications, commands, and responses through these gateways.

To implement focal-point services, you define a hierarchical domain structure composed of a focal-point domain and distributed domains. You can also define a backup for the focal-point host, for situations when the primary focal-point host is unavailable. Through focal-point services, you can:

- Enable operators to send commands and receive responses through the gateways. This eliminates the need for personal NetView-NetView task (NNT) sessions for each operator.
- Manage the Resource Access Control Facility (RACF®) passwords for gateway automation operators
- Set up and initiate automated operator NNT sessions
- Display the status of gateway automation operators and user NNT sessions

Automated Recovery

This section describes the AON generic recovery processes. AON provides generic automated recovery processes used by the components of AON, which enable you to focus on other areas of operations. AON automation provides the following benefits:

- Fast recovery
- Great network availability
- Automatic responses to predefined messages
- Reminder notification of unavailable resources or resources that are in manual recovery mode
- Limited operator intervention
- AON categorization recovery as critical or non-critical
- More time for the operations staff to work in other areas where automation is not currently available

Although AON can help you automate and manage several different types of networks, the tasks required to automate these networks are very similar in nature. There are different methods of getting resource status in each type of network, but the basic structure of the automation is essentially the same.

AON includes routines that perform similar tasks on different types of networks. This means that the automation process for systems network architecture (SNA), Advanced Peer-to-Peer Networking (APPN), or Transmission Control Protocol/Internet Protocol (TCP/IP) resources is the same, although the actual programs that perform the automation steps might be different. For example, if a resource fails in a SNA or TCP/IP network, information about the resource (such as resource type, connectivity, and status) must be gathered before automated recovery can continue for that resource. Each of these network types has a different program that gathers resource information, but they are called and processed in the same manner by the AON automation routine.

The benefits of having common automation routines are:

- Code reliability
- Transfer of skill across networks (because the process is the same for the different types of networks)
- Easier problem determination

AON automates network operations such as resource recovery. This section provides an overview of how AON facilitates recovery, and describes the tools it uses to accomplish automation of network operators, including:

- Automation table
- Automated tasks
- Logging
- Providing generic failure and recovery routines
- Sending messages to the notification operators when further action is required
- Sending records to the automation log for tracking purposes

AON supports network resource recovery by monitoring critical resources and taking automated action based on tailored criteria. Each automation component recovers specific types of resources. For example, SNA automation recovers SNA (VTAM) resources. AON reacts to adverse conditions of network resources and notifies operators of these conditions, when appropriate.

Recovery criteria can be set based on resource type, resource naming convention, explicit resource name, or network-wide settings. You can select a variety of parameters and options to control when and how recovery takes place.

The AON control file contains automation criteria. There are two ways to update the control file, dynamically or statically:

- You can update the control file dynamically through the POLICY command interface or through the AON operator interface. These changes remain in effect until you reload the control file or until the current NetView-started tasks end.
- You can update the control file statically with a system editor, such as the Interactive System Productivity Facility (ISPF). After editing the control file, you can use the POLICY command to reload the control file, reinitialize AON, or recycle your NetView environment.

Automation and Status Logs

To improve problem determination productivity, AON uses automation logs and status logs to record the automation process and status of the network resources.

The status log tracks:

- Last 10 failures of a resource, with the time stamp
- Current automation status and threshold exceptions
- Last operator notified about a resource or one that took action on a resource

Users can issue the AON DSPSTS command to display status log information. AON provides a facility (DBMAINT) to maintain this VSAM status file.

The AON automation log records all automation activity. When a resource becomes unavailable or when the resource becomes available again, AON writes availability records to the log. These records indicate whether the action was caused by automation, the Help Desk function, or by an operator. You can issue the AON NLOG command to view the automation log.

NetView Log

AON writes entries to the NetView log for all significant events relative to the control file. This includes operator messages, internal events, and errors within the control file.

Automation Notification

AON provides you with a notification policy that can be customized to do the following types of operator notification:

- Issue a message.
- Generate an alert or resolution to the hardware monitor.
- Update the DDF.
- Send an event to the IBM Tivoli Enterprise Console®.
- Send an e-mail request.
- Generate a beeper request.

Operators using NetView management console can request Alert History to view alerts generated by AON. AON also sets the `Automation in Progress` status so you can see that automation is attempting to recover the failed resource. Failed resources that cannot be recovered can be seen in the Operator Intervention Network view (OIV).

Automation Table

NetView enables you to issue commands based on any incoming message or Management Services Unit (MSU). You can specify criteria that must be satisfied before running a program. The criteria can include the presence of specific message text data, resource names, other message attributes, or specific MSU data.

AON provides a predefined message table structure (included in DSITBL01) with each component adding prescribed messages, or MSUs, and criteria. When any of these prescribed messages and conditions occur, the AON generic failure or recovery routines are invoked to take action. Actions are defined in the AON option definition tables. In some cases, the automation table directly drives a command list.

Automation Operators

The multiple automation operator design enables AON to divide its workload among several, separately defined automated operators by using the concurrent processing capability of NetView. All AON automation operators are started during initialization and must be active at all times.

The automation operators are identified by unique names corresponding to their responsibilities. For example, some of the automation operators supplied with AON include:

AIPOPER
Sets and resets the AIP (Automation In Progress) operator status bit in RODM. This bit causes a display pattern to be placed on the object in NetView management console. RODM AIP operators issue the commands necessary to update resource objects in RODM views with the AIP operator status. These operators are also used in the management of the OIV processing.

ALRTOPER
Sends alerts and resolutions to NetView over an LU 6.2 session.

BASEOPER
Provides backup for other automation operators.

DVIPOPER
Used for DVIPA polling processes.

GATOPER
The outbound gateway operator for automation notification forwarding.

INFOPER
Serializes the updates to the inform log.

MSGOPER
Formats and issues AON notifications and DDF updates.

NETOPER
Initiates routines based on the NetView automation table and AON generic failure and recovery routines.

NV6KOP
Used for Tivoli NetView for AIX automation

OIVOPER
An optional operator task used by the Operation Intervention View (OIV) function. When enabled, automatically deletes resources from the OIV at specified intervals. Only resources with the display status of satisfactory (129) are removed.

TCPOPER
Used for TCP/IP automation

TRAPOPER
Used for trap automation processes

WKSTOPER
Sends and receives commands and responses between AON and a workstation with the interface installed.

X25OPER
Used by X25 automation processes

For more information, refer to the *IBM Tivoli NetView for z/OS Administration Reference*.

Notification Operators

Notification operators are operators identified (in NTFYOP control file entries) to receive *messages* generated by AON. Notifications are necessary to understand and operate the network. They must be routed to the notification operators or the automation operators.

In a distributed network, notification operators are defined at the focal-point domain. Notification operators can also be defined at the distributed domain. If they are defined at both, notifications are forwarded to notification operators at both the focal point and distributed domains.

If the host that creates the automation notification is not the focal-point domain, the message is forwarded to the focal-point domain. In a single NetView environment, the domain is its own focal point.

When the notification arrives or is generated at the focal-point host, this notification is sent to the notification operators and can be "frozen" on the operator's screen. AON enables you specify the types of messages that are frozen on the operator's screen. When notifications are frozen, operators can use the DM command to remove them from the screen.

The notification operators are defined in the control file by operator name, operator description, and message class. For example:

```
NTFYOP OPER1,OPER='OPERATOR 1',CLASS=10
```

The class of the notification is compared to the class of each defined notification operator. Each notification operator with a class matching the class of the automation notification receives the notification. For example, all AON notifications have a class of 90. Therefore, any notification operators defined with CLASS=90 receive all notifications.

Thresholds (SNA Only)

AON tracks resource failures and recoveries in a status file. If the number of errors exceeds a defined threshold over a period of time (which is defined in the THRESHOLDS control file entry), AON alerts the notification operator that the resource is experiencing multiple errors and continues recovery attempts. For critical thresholds, AON stops recovery attempts.

AON uses three types of threshold definitions:

Critical
AON uses critical thresholds to stop automated recovery. AON deactivates the resource and notifies the notification operators. Automated recovery is stopped until an operator reactivates the resource.

Frequent
AON uses frequent thresholds to indicate recurring errors that might warrant an operator's attention. When a resource exceeds a frequent threshold, automated recovery continues, but AON sends a message to the notification operators and makes an entry in the automation log.

Infrequent
AON uses infrequent thresholds to indicate that a resource is experiencing random or intermittent errors. Automated recovery continues, but AON sends a message to the notification operators and makes an entry in the automation log. When a resource fails and one of these thresholds is exceeded, AON sends a notification to the defined AON notification operator.

Large-scale Thresholding

AON uses the LSTHRESH (large scale thresholding) control file entry to count network-wide events of a particular type, and then sets a threshold on the number of times the event can happen over specific period of time.

User Exits

AON is designed to fulfill most automated recovery needs. However, an installation can have particular automation requirements that need to be met. AON provides user exits that you can code for specific recovery processing, monitored intervals, threshold checking, and SNA resource information gathering.

You set user exit values in the control file. The user exits are run from certain AON common routines.

For more information on user exits, see Chapter 27, "AON User Exits," on page 389.

System Console

AON uses the NetView write-to-operator with reply (WTOR) facility to communicate with and solicit responses from the system operator. Likewise, a system operator can run AON routines and commands from the system console by preceding the command with the subsystem designation assigned to NetView.

Database Maintenance Facility (DBMAINT)

AON provides a database maintenance facility (DBMAINT) that performs database maintenance for the NetView hardware monitor and session monitor. You can also use DBMAINT to purge records from the AON status file. This database maintenance includes the deletion of records prior to a specified date and the reorganization of the VSAM database.

DBMAINT uses the ENVIRON SETUP entry in the AON control file to correctly perform database maintenance. The ENVIRON SETUP control file entry must match the way the VSAM database was allocated, or errors occur.

You can use the DBMAINT facility from a full-screen operator interface panel or you can schedule it to run on an automation operator station task. The latter can

be achieved by building a Timer entry in the AON control file that runs DBMAINT at a specific time and date. This process automates database and file maintenance. If also enables you to schedule database maintenance during non-peak hours of operation.

Tailored Routines and Displays

You can expand the AON functions to meet additional automation needs unique to your network systems. You can do this by:

- Tailoring the EZLCFG01 control file
- Using the common routines provided with AON

Tailoring the EZLCFG01 Control File

NetView loads the DSIPARM member EZLCFG01 control file during initialization. This file contains values such as the notification operator IDs, the automation operator IDs, threshold values for resources, monitoring values, and recovery values. In most cases you can change the control file values without restarting NetView, because the new values become effective as soon as the AON control file is reloaded.

The data in the control file is organized by keywords, and therefore is independent of the program language or operating system. You can set values for individual resources, resource types, or system-wide defaults. This reduces the need for generating a set of variables to contain the information needed for each individual resource. You can input your own data in the AON control file to have a common depository for information used by programs on your network.

When you first install AON, system programmers customize control file entries for their network needs.

For more information, see the *IBM Tivoli NetView for z/OS Automation Guide*.

Using the Common Routines Provided with AON

AON includes routines that you can use to code network automation extensions. These routines provide easy-to-use generic functions for expanding automation capabilities beyond those supplied and supported by AON. You can use these generic functions to reduce development time when you create procedures or extend those provided.

Common routines perform automated actions such as transferring information and checking the control file. User-written programs can call common routines from the message table, control file, or an extended routine to accomplish a required task.

For more information on common AON routines, see Chapter 25, “Coding Common Routines,” on page 317.

Cross-Domain Logon

With AON cross-domain logon (CDLOG), you can log on to all or a select group of domains. CDLOG enables you to select which domains you want.

If CDLOG is unable to establish a session with the domain you selected, it displays the message received when attempting to start the session. After trying to set up sessions with other NetView domains, CDLOG indicates the status of all the domains in the domain list.

To use the AON/SNA Help Desk for resources in another domain, you must define the CDLOG entry. The SNA Help Desk determines which domain owns a resource. For the help desk to do this, however, you must be able to log on to all the domains known to your NetView. Automatic logon has two types of logon procedures:

- Automatic mode
- Semiautomatic mode

Automatic mode takes the operator ID and password from the control file and logs on to the selected domains. Semiautomatic mode requires operator action to select domains and provide passwords.

The AON remote gateway (RGWY command) requires CDLOG definitions to start RMTCMD sessions. Several AON functions use the remote gateway sessions.

Chapter 19. Understanding Dynamic Display Facility (DDF) Design

The Dynamic Display Facility (DDF) enables you to identify and focus on a specific problem in the network. The DDF functions enable you to alter or extend your DDF installation. This chapter describes the structure and processing of DDF:

- Understanding the hierarchical display of DDF
- Defining dependencies
- Defining the priority and color of the resources
- Updating status
- Defining panels
- Defining multiple systems
- Implementing DDF
- Defining the contents of DDF
- Understanding the flow of DDF
- Starting and stopping DDF
- Loading panels
- Loading tree structures
- Using the definition procedure

Note: Most of the examples used in this chapter are specific to Systems Network Architecture (SNA) resources, but the concepts apply to all AON automation components. To customize DDF to suit your environment, modify one or more members in DSIPARM and DDF panels in CNMPNL1. Sample members and panels are provided. Those samples contain references to domain CNM01. You cannot substitute system symbolics within any of those samples. Instead, you can use the EZLEISP1 utility shipped in CNMCLST. For more information, refer to the *IBM Tivoli NetView for z/OS Installation: Configuring Additional Components*.

Setting up the Dynamic Display Facility for AON

The Dynamic Display Facility (DDF) enables you to identify and focus on a specific problem in the network. DDF uses colors to represent the status of various network resources. DDF can track the error, warning, action, or informational states of network resources. DDF uses tree structures to implement the hierarchical display of status information. Although DDF can display the status of all network resources, you can tailor DDF to display only resources that have an error.

To facilitate the installation of DDF, the distribution tape provides samples to set up a typical DDF implementation. This implementation reflects DDF updates for a single domain (no focal point implementation).

You can use three types of definitions to set up DDF. Each of these types has its own file or files. The definition types are:

- Entries in the control file
- Tree structures (one file per domain)
- Panel characteristics (one file per panel)

The sample control file and panels are set up to run for domain CNM01. If your domain ID is different, change all occurrences of CNM01 to your domain ID in the following members:

- All members whose name starts with EZL (such as EZLCFG01 and EZLTREE)
- All members whose name starts with FKVPN (for AON/SNA)
- All members whose name starts with FKXPN (for AON/TCP)

Understanding the Hierarchical Status Display

DDF uses colors to represent the status of various network resources. DDF can track the error, warning, action, or informational states of network resources. Although DDF can display the status of all network resources, you can tailor DDF to display only resources that have an error. This helps you focus on network problems rather than the entire network and save central processing unit (CPU) time.

DDF displays the status of resources (active or inactive). Each type of status is displayed in a different color. For example, inactive resources are red and active resources are green. For more information, see "Defining Default Colors for Status Components (EMPTYCOLOR)" on page 236.

You can tailor DDF to display the status of all resources of a particular type. If you use this design, DDF displays each resource type in a different color. For example, DDF might display a Network Control Program (NCP) problem in red and a line problem in pink. See "Displaying Network Status on a Single Panel" on page 257 for instructions about tailoring DDF to display by resource type.

DDF presents a hierarchical status display. Figure 180 on page 199 illustrates a sequence of sample SNA-specific DDF panels, moving from the domain to the resource level.

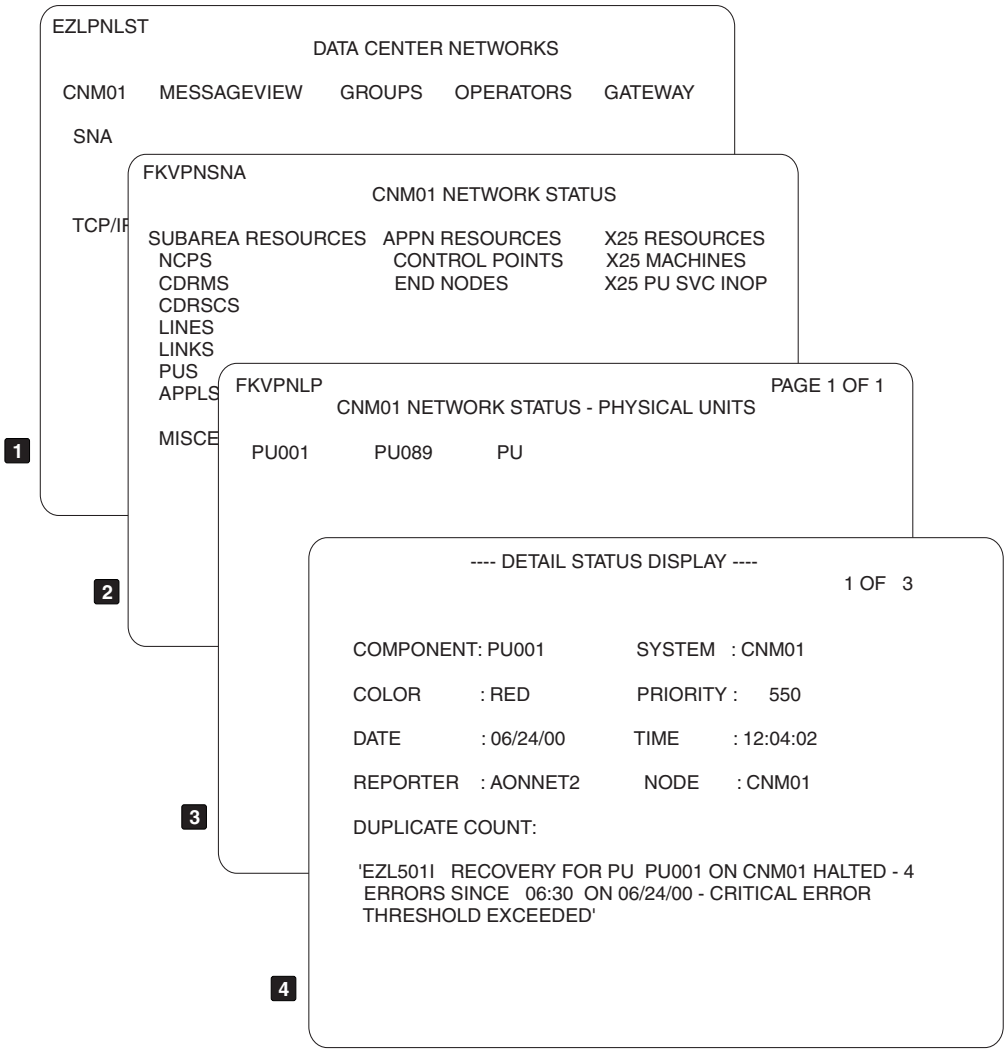


Figure 180. Sample DDF Panel Flow of SNA Resources

In Figure 180 you can see:

1 The Data Center Networks panel is the first DDF panel. In Figure 180, **SNA**, and **TCP/IP** represent the SNA and TCP/IP resources in the domain, CNM01. To see the types of SNA resources defined to CNM01, move the cursor to **SNA** and press the down key, **F8**.

2 All the monitored SNA resource types within network CNM01 are displayed on the CNM01 Network Status panel. To see the names of the physical units defined to CNM01, move the cursor to **PUS** and press the down key, **F8**.

3 The next panel shows the names of the physical units that are experiencing problems. DDF shows each monitored resource in the color of its status. For example PU001 is shown in red if the status is INACTIVE, which requires operator intervention for recovery. To see the detail record, move the cursor to **PU001** and press the Detail key, **F2**.

4 The status details record for PU001 is shown on the Detail Status Display. The physical unit PU001 requires operator intervention because a critical threshold has been reached and automation has stopped.

When you select a problem for analysis, press **F2** (the DDF MARK command) to inform others that you are working on the problem. Also, before you resolve a problem, check DDF to determine whether someone is already working on the problem.

AON uses many different programs to update resource status in DDF regardless of the sequence or priorities posted by other programs. As AON automation resolves the problems, DDF removes the resources from the display.

Defining Dependencies

DDF uses tree structures to implement the hierarchical display of status information. A tree structure starts with the system name as the root node and a level number of 1. The leaves of the tree represent the monitored resources, and the level numbers reflect which resources depend on each other. DDF generic values can also represent the leaves. Figure 181 shows the tree structure provided with the AON/SNA component and includes member EZLTREE in the DSIPARM. This example also shows the order of dependency.

```
/* NETWORK: CNM01  */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SNA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
          6 EN
        5 X25
          6 X25MCH
```

Figure 181. DDF Tree Structure

Color in the tree structure is based on the order of dependencies. To consolidate the status of monitored network resources at the root node, specify the DDF parameter PROPAGATE UP. Figure 181 shows how DDF reflects any color changes for LINE on LINE, SNA, NETWORK, SYSTEM, and CNM01. The color of the root node reflects the most important or critical status in a network operations center. If all the monitored resources are green, or active and not displayed, DDF shows the root node in green on the Data Center Network panel.

Defining the Priority and Color of the Resources

If more than one panel of information is available, DDF places 1 of *n* field in the upper right corner of the first Detail Status Display. On any series of detail status displays, DDF displays the most critical status color first. If more than one display has the same status color, DDF displays the most recent first.

Figure 182 shows three of these panels. This example shows that DDF has fourteen status display panels.

```
          ---- DETAIL STATUS DISPLAY ----
                                                    2 OF   14

 COMPONENT: LINE1                SYSTEM   : CNM01

 COLOR    : PINK                 PRIORITY :      260

 DATE     : 06/24/00             TIME     : 12:59:07

 REPORTER : AONNET1              NODE     : CNM01

 DUPLICATE COUNT:

  EZL506I  LINE LINE1 ON CNM01 INACTIVE - RECOVERY MONITORING
           HAS BEEN INITIATED
```

```
          ---- DETAIL STATUS DISPLAY ----
                                                    6 OF   14

COMPONENT: MK34RSCS             SYSTEM   : CNM01

COLOR    : TURQUOISE            PRIORITY :      460

DATE     : 06/24/00             TIME     : 12:58:41

REPORTER : AONNET1              NODE     : CNM01

DUPLICATE COUNT:

 EZL507I REMINDER: CDRSC MK34RSCS ON CNM01 HAS BEEN UNRECOVERABLE
         FOR 1 MIN.
```

```
          ---- DETAIL STATUS DISPLAY ----
                                                    8 OF   14

COMPONENT: EZLAPPL              SYSTEM   : CNM01

COLOR    : GREEN                PRIORITY :      900

DATE     : 06/24/00             TIME     : 12:19:13

REPORTER : AUTO1                NODE     : CNM01

DUPLICATE COUNT:

 AON INITIALIZATION ENTRY FOR RESOURCE TYPE APPL
```

Figure 182. Sample Detail Status Displays

In Figure 182, notice that the pink and turquoise panels precede the green status panel. During DDF initialization, DDF assigns colors to specific priority ranges as defined in DSIPARM member EZLINIT. DDF orders Detail Status Displays by priority and assigns the following priority ranges to these colors:

Red Priority 100 to 199
Pink Priority 200 to 299
Yellow Priority 300 to 399
Turquoise Priority 400 to 499
Green Priority 500 to 599

When a new status is added, DDF issues a DDFADD command with the appropriate priority. For example, when the status descriptor with the priority 350 is added DDF displays yellow.

Status descriptors are connected to the status component in ascending order of priority. Therefore, if DDF assigns two status descriptors for PU with priorities of 120 and 150, DDF displays the one with the priority of 120 first. The PU is displayed in red. If a status component has multiple status descriptors with equal priorities, the status descriptors are chained off the status component in order of arrival time. Use the DDFDEL command to delete status descriptors.

Updating Status

To define the status and types used to set priority and color, place the definitions in the control file. When an automation event occurs, AON logging routines scan the control file for the DDF entry for that status or type. DDF uses the information from the control file and issues a DDFADD request. Table 1 shows the status, color, and priority as provided with the AON base control file entries. The TCP/IP components add more DDF status types.

Table 1. Examples of DDF Status Defaults (EZLCFGDS)

Resource Status	Color Defaults	Priority
ACT*	GREEN+	550
CON*	GREEN+	550
IIN*	RED	160
INA*	RED	150
INO*	RED	160
NEV*	YELLOW	360
PAC*	PINK	260
PCT*	PINK	260
UP	GREEN+	550
STOP	RED	150
RES*	TURQUOISE	460
RCV*	GREEN	550
REAC*	PINK	270

Note:
+ Indicates that the status of resources with the default of green display with a REQ=NOADD option.

If the DDF status contains a CLEAR=Y, REQ=NOADD, and DDF posts a resource at that status, DDF removes the existing descriptor and does not add the new descriptor. Thus, DDF no longer displays the resource name.

If DDF uses resource status for color determination, code both Virtual Telecommunications Access Method (VTAM) status and automation status. Use

wildcard characters to reduce the number of entries required. The NETSTAT command for DDF update uses VTAM status when you define DDFREFRESH as Y in the ENVIRON SETUP DDF control file. The current network status output from NETSTAT primes DDF.

Dynamic Updates

DDF uses automation status for dynamic updates during network automation activity. If you define the NETSTAT CHKAUTO parameter as Y, AON checks the automation flags for the resource before adding them to DDF. If this check determines that automation is off for the resource, DDF does not add the resource.

For example, when DDF sets PU001 to an INACTV state, the logging routines scan the control file for the INA* entry for DDF and generate a DDFADD request with a priority of 150. PU001 is displayed in red on the DDF status panel. After DDF sets PU001 to an ACTIVE state, the logging routines scan the control file for the active state DDF entry and generate a DDFDEL request. DDF then deletes PU001 from the DDF status panel.

Problem Resources

If a program detects a warning message for LINE02 on CNM01, DDF issues a DDFADD command to add a status descriptor for LINE02. The status display for LINE02 on system CNM01 now indicates a problem with LINE02. If you specify the DDF PROPAGATE UP parameter, the CNM01 field also reflects this.

Occasionally, a more serious problem might arise. The routine that detects this problem updates DDF with a status descriptor of a lower priority number. Because DDF links status descriptors in order of priority, the LINE02 status now reflects the status descriptor color of the more serious problem. After you resolve the more serious problem, the program detecting the resolution of the problem issues a DDFDEL command to remove LINE02 from the display.

Defining Status Panels

AON defines DDF status statements for status panels, in the CNMPNL1 data set and embeds the definitions in the EZLPNLS member with %INCLUDE. However, the DDF formats and internally builds the Detail Status Display.

If you define status components in the panel definitions, also define them in the corresponding tree structure. However, not all the status components defined in the tree structure require a corresponding entry on the Detail Status Display. In Figure 181 on page 200, the NETWORK status component is only a pseudo entry and is not defined on any DDF Detail Status Display.

You can customize the DDF status panels to reflect any environment. For example, you can define a panel to show the status of all the networks on all CPUs within the network operations center. The network operator then views the panel to determine the status of any of the network resources in the complex.

Defining Multiple Systems

You can define multiple NetView domains to DDF. You must first implement AON focal-point services for the target system DDF status update on the focal-point DDF. For more information on focal-points, refer to *IBM Tivoli NetView for z/OS Administration Reference*.

In a multidomain environment, define a tree structure for each domain in the EZLTREE member of the DSIPARM data set on the designated focal-point DDF. Provide a unique root name for each systems tree structure, and match the focal-point root name with the ENVIRON SETUP SYSNAME entry in the control file. Also, code an entry for the SYSNAME parameter.

Because each root name is unique in a multiple systems environment, DDF uniquely addresses any status component on a system defined to the focal-point DDF. By adding the status component as a prefix to the root component name, DDF performs this addressing as the following example shows:

```
ROOT_COMPONENT.STATUS_COMPONENT (for example, CNM01.PU)
```

Similarly, AON routines add a prefix to DDF status descriptors shipped from the target system to the focal-point DDF with the root name of the target system.

Implementing DDF

When defining resources to DDF, you can explicitly define every network, gateway, domain, and resource in the DDF tree and panels. However, this technique has a disadvantage. As the number of resources tracked by AON increases, DDF maintenance grows more complex. To simplify this maintenance, AON provides a generic implementation of DDF that requires you to define only the group identifier, not the individual resources. For example, if you display resources using the generic definitions, the DDF tree requires only resource types. If you use this method, it is not necessary to define all network resources or all resource types known to this system (for example, to the PU level).

Using Generic Implementation

Generic implementation takes advantage of three functions within DDF:

- Storing detail records by priority
- Adding detail records using the default status component
- Displaying records using the status descriptor number

Use the default status component when a request to ADD, DELETE, or QUERY for the actual resource name fails. For example, if you add a component such as CNM01.PU001(RESOURCE) when PU001 is not in the tree, DDF attempts to add the component to the generic component of RESOURCE.

The relative position of the detail record in the detail record chain under a component determines the status descriptor number. Each component consists of detail records that were added directly to that component and all detail records with subordinate levels. For example, consider the following tree:

```
/*   SYSTEM: CNM01    */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 NETWORK
      4 RESOURCE
```

The DDFADD command for this tree is:

```
DDFADD CNM01.PU001(RESOURCE),IN=/PU001/
```

When you issue the DDFADD command, DDF adds the entry to the resource because PU001 is not defined in the tree.

When you request the detail records for the generic resource, DDF displays the detail records for all components added using the generic component RESOURCE and PU001. The DDFQRY command is:

```
DDFQRY CNM01.RESOURCE
```

Alternatively, you can code the panel like this:

```
SF(CNM01.RESOURCE,04,05,16,N, , ,nn)
```

When you request the detail records for NETWORK, DDF not only displays the detail records added directly to NETWORK as well as detail records added directly to generic component RESOURCE.

```
DDFQRY CNM01.NETWORK
```

Alternatively, you can code the panel like this:

```
SF(CNM01.NETWORK,04,05,16,N, , ,nn)
```

DDF arranges detail records in priority order under each component.

Complete the following steps to define your network to DDF using the generic component:

1. Define the generic components to the tree as the following example shows:

   ```
   1 CNM01
     2 SYSTEM
       3 NETWORK
         4 RESOURCE
   ```

2. Use the generic component in the tree to display the detail records at the specified positions on the panel. The empty status text field, coded as `ST( )`, causes DDF to display the INFO field of the DDFADD command for the detail record. If a descriptor with a descriptor number of 11 does not exist, DDF shows only 10 records and the status text field displays is empty.

   With this method, resources display in order of the priority of the condition of the resource. For example, if you use the DDF statements in the EZLCFG01 sample, DDF assigns the highest priority to red and the lowest to green. The following example shows a panel displaying a status of 12 network resources. This panel displays the highest priority error in the upper left position and the resources are listed in rows across the panel:

   ```
   /* DEFINE CNM01 NETWORK STATUS PANEL */
   P(EZLPNL1,24,80,SYSTEM,SYSTEM, , , )
   TF(01,27,57,WHITE,NORMAL)
   TT(CNM01 NETWORK STATUS)
   SF(CNM01.NETWORK,04,05,16,N, , ,01)
   ST( )
   SF(CNM01.NETWORK,04,25,36,N, , ,02)
   ST( )
   SF(CNM01.NETWORK,04,45,56,N, , ,03)
   ST( )
   SF(CNM01.NETWORK,04,65,76,N, , ,04)
   ST( )
   SF(CNM01.NETWORK,06,05,16,N, , ,05)
   ST( )
   SF(CNM01.NETWORK,06,25,36,N, , ,06)
   ST( )
   SF(CNM01.NETWORK,06,45,56,N, , ,07)
   ST( )
   SF(CNM01.NETWORK,06,65,76,N, , ,08)
   ST( )
   SF(CNM01.NETWORK,08,05,16,N, , ,09)
   ST( )
   ```

```
SF(CNM01.NETWORK,08,25,36,N, , ,10)
ST( )
SF(CNM01.NETWORK,08,45,56,N, , ,11)
ST( )
SF(CNM01.NETWORK,08,65,76,N, , ,12)
ST( )
TF(24,01,48,T,NORMAL)
TT(PF1=HELP 2=DETAIL 3=END 4=DIS 5=CY 6=ROLL 7=UP)
TF(24,51,79,T,NORMAL)
TT(        10=LF 11=RT 12=TOP)
EP
```

This technique gives you the advantage of first seeing the list of resources with the most critical problems. DDF determines resource panel position according to the order and priority of the problems. AON ships examples of components using this feature in the following members of CNMPNL1:

- EZLPNLS
- EZLPNLTY
- EZLPNLST
- EZLPNL1
- FKVPNL21

With DDF you can define generic values for your environment. Multiple generic values can apply to one message added to DDF to help organize network data in DDF. For example, you can test the RESTYPE message processing field to see whether it contains a valid generic value for DDF on this system. AON checks the ENVIRON DDF DDFGENERIC statements in the control file to verify generic values.

The DDFGENERIC RESTYPE VALUE=(*restype*,...) statement defines valid generic values in the control file. Samples provided with AON categorize DDF by resource type. For each valid generic value, define a panel which can display status descriptors added under this generic. In this case, `SF (CNM01.PU,04,05,16,N,...)` displays components for the PU generic. `SF(CNM01.NETWORK,14,05,16,N,...)` also displays components for the PU generic because the tree hierarchy shows that NETWORK is higher than PU.

Specific Implementation of DDF

If you define your network to DDF with the specific method, DDF displays resource names in a fixed position on the DDF panels. When DDF records a detail record for the resource, a resource name changes color. When no detail records exist for the resource, DDF shows the resource name in the status text field as blue, which is considered an empty color.

Note: When using the specific implementation of DDF, do not use REQ=NOADD in any DDF status definition in the control file.

Because large networks require excessive effort and storage to define and maintain in DDF, reserve specific implementation for small networks.

Complete the following steps to define your network to DDF using the specific component:

1. Define resources to the tree as shown in the following example:

```
/*   NETWORK: CNM01
1 CNM01
  2 SYSTEM
    3 GATEWAY
```

```
3 NETWORK
  4 RESOURCE
  4 NCP01
  4 LINE01
  4 LINE02
  4 PU001
  4 PU02
  4 630-S
```

2. Define resources to the panel as shown in the following example:

```
/* DEFINE CNM01 NETWORK STATUS PANEL */
P(EZLPNL,24,80,SYSTEM,SYSTEM, , , )
TF(01,27,47,WHITE,NORMAL)
TT(CNM01 NETWORK STATUS)
SF(CNM01.NCP01,04,05,16,N, ,)
ST(NCP01)
SF(CNM01.LINE01,06,05,16,N, ,)
ST(LINE01)
SF(CNM01.LINE02,08,05,16,N, ,)
ST(LINE02)
SF(CNM01.PU001,10,05,16,N, ,)
ST(PU001)
SF(CNM01.PU02,12,05,16,N, ,)
ST(PU02)
SF(CNM01.630-S,14,05,16,N, ,)
ST(630-S)
TF(24,01,48,T,NORMAL)
TT(PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN)
TF(24,51,79,T,NORMAL)
TT(9=DEL   10=LF 11=RT 12=TOP)
EP
```

If you define the code as shown in the previous example, the DDF panel is similar to Figure 183. The resources are hard coded on the panel, so they are displayed at all times regardless of the status of the resources. This implementation differs from the default DDF implementation, which displays only resources with an exception status.

```
EZLPNL
                        CNM01 NETWORK STATUS

   NCPS

   CDRMS

   CDRSCS

   LINES

   LINKS

   PUS

   APPLS

   MISCELLANEOUS RESOURCES

   ALL RESOURCES

                                                              06/24/00 14:52
 ===>
PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN          10=LF 11=RT 12=TOP
```

Figure 183. Sample Panel Using Specific Implementation of DDF

Defining the Contents of DDF

Table 2 shows the elements that comprise DDF:

Table 2. Defining DDF Contents

Name	Type	Purpose
EZLTDDF	Task	Initializes DDF and maintains status information.
DDF	Command	Enters a DDF operator session.
DDFADD	Command	Adds status information.
DDFDEL	Command	Deletes status information.
DDFQRY	Command	Queries information.
DDFTREE	Command	Dynamically loads a tree member from the DSIPARM data set.
DDFPANEL	Command	Dynamically loads a panel member from the CNMPNL1 data set.
EZLINIT	Input file	Contains the initialization parameters defined with the statements described in "Defining Initialization Statements (EZLINIT)" on page 221. The EZLINIT member is in the DSIPARM data set.
EZLTREE	Input file	Contains the tree structures as described in "Defining the Panel Hierarchy (EZLTREE)" on page 218. This member can consist of a list of %INCLUDE statements that reference other members that contain tree structures. The format is %INCLUDE *member*, where *member* is the name of the member to include. The EZLTREE member is in the DSIPARM data set.
EZLPNLS	Input file	Contains the DDF panel parameters defined with the statements described in "Defining the Panel Statements (EZLPNLS)" on page 239. This member can consist of a list of %INCLUDE statements that reference other members that contain panel definitions. The format is %INCLUDE *member*, where *member* is the name of the member to include. EZLPNLS is in the CNMPNL1 data set.
panel_name	Input file	Contains the definition of a single panel. Name the member the panel name as defined with the PANEL statement.
tree_name	Input file	Contains the definition of a single tree structure. Name the member the root component name.
DDF	Control file entry	Defines status priority.
ENVIRON DDF	Control file entry	Defines DDF setup defaults for the system.
DDFGENERIC	Control file entry	Defines valid values for implementing a generic set of values for DDF.

Starting and Stopping DDF

During AON initialization, the EZLTDDF task loads the members that define panel format, navigation, and tree structures. The EZLINIT member defines parameters that are common to all DDF panels as well as basic initialization specifications such as the screen size, default function keys, and the initial screen displayed when a DDF session starts.

The EZLPNLS member defines parameters unique to specific panels, and the EZLTREE member defines the tree structures. These two members consist of either

tree structure and panel definitions for all DDF panels or %INCLUDE statements that point to members containing definitions of single panels or tree structures.

Using %INCLUDE statements enables you to reload all definition members besides EZLINIT, EZLTREE, and EZLPNLS without the DDFADD command. For more information, see "Loading Panels" and "Loading Tree Structures." To change panels or tree structure specifications defined in the EZLTREE and EZLPNLS members, stop DDF and restart it to load the new definitions.

To start DDF, issue one of the following commands from a NetView console:
- STARTEZL DDF
- START TASK=EZLTDDF

To stop DDF, issue one of the following commands from a NetView console:
- **STOPEZL DDF**
- STOP TASK=EZLTDDF

When you stop DDF, it loses all existing status descriptors because the computer stores them only in memory. If you define DDFREFRESH=YES in the ENVIRON SETUP statement of the EZLCFG01 member, you can use the NETSTAT command to access VTAM displays and to prime DDF with current network exception conditions when it initializes. If you do not set DDFREFRESH to YES, DDF updates the file when it detects new failures, and then processes and logs the MONIT intervals.

Loading Panels

Without restarting DDF, you can dynamically load panels using either of the following two methods:

- Use the DDFPANEL command. For more information about the DDF panel command, see the following section, "Loading Tree Structures" and "Loading a Panel Member (DDFPANEL)" on page 288.
- Use the PANEL statement. The PANEL statement parameters search for a panel that is not defined in the EZLPNLS member. DDF locates a member in the CNMPNL1 data set with the same name as the requested panel name. For more information about the PANEL statement and its parameters, see "Defining New Panels (PANEL)" on page 240.

Loading Tree Structures

To dynamically load tree structures with the DDFTREE command, a member must exist in the DSIPARM data set that is named the same as the panel name or the root component in the tree structure. DDF makes the panels loaded with the DDFPANEL command resident only. All others are loaded when an operator issues commands that calls for them. DDF does not use %INCLUDE statements.

For example, you can change the tree structure for the root component CNM01 and the panel named EZLPNL1. You can also define these elements in members other than the EZLTREE or EZLPNLS members. You can then use the following commands to load the new definitions:
- **DDFTREE EZLTREES,ADD**
- **DDFPANEL EZLPNL1,ADD**

These commands enable you to load a small number of panels during initialization and add or delete panel subsets when required. This can significantly decrease the number of panels that DDF recognizes at any one time.

When DDF loads a new tree and replaces the existing tree, DDF copies status descriptors with similar leaf names, in both trees, to the new tree. For more information, see "Loading Tree Members (DDFTREE)" on page 291.

Using the Definition Procedure

When you start a DDF session, use the following procedure to define the panels that DDF displays:

1. Define the component hierarchy as described in "Defining the Panel Hierarchy (EZLTREE)" on page 218. The EZLTREE tree contains tree structure definitions. Perform either or both of the following procedures:
   - Place all tree structure definitions in this member.
   - Use %INCLUDE statements to point to other members that contain definitions for entire tree structures.

   If you use %INCLUDE statements when you add and delete trees, use the same name for referenced members and the root component. Complete the trees, starting at level 1. DDF deletes trees by the root name and adds them by the DSIPARM member name.

   To load some tree structures during initialization and after DDF is started use the EZLTREE member to define those tree structure entries that you load during initialization. Then, use the DDFTREE command to load additional tree structures as needed. After you start DDF, put the tree structures in separate members. Name each member after the root component for which you define the tree structure.

   The following example shows a typical tree structure definition for AON/SNA:

```
/*   NETWORK : CNM01                                              */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
```

```
    6 EN
  5 X25
    6 X25MCH
    6 X25PU
```

In the preceding example, CNM01 is the root component. Embed this definition in the EZLTREE member or in a separate member named CNM01. "Defining the Panel Hierarchy (EZLTREE)" on page 218 describes tree structures in detail.

Define the initialization and common panel specifications as described in "Defining Initialization Statements (EZLINIT)" on page 221. The EZLINIT member defines parameters that are common to all DDF panels and basic initialization specifications such as:

- Screen size
- Initial screen shown when you start the DDF session
- Maximum operator logon limit
- Temporary error limit value
- Default function key definitions
- Detail function key definitions
- Detail function key descriptions
- Default priorities and colors

Define the panels as described in "Defining the Panel Statements (EZLPNLS)" on page 239. After you initialize DDF, use the EZLPNLS member to load the panel definitions. This member can contain the following:

- Definitions for all panels.
- %INCLUDE statements that point to separate members containing panel definitions.
- Combination of both panel definitions and %INCLUDE statements.
- Subset of panel entries that are loaded during initialization so that you can load additional panel definitions when needed. For more information, see "Loading Panels" on page 209.

The default 3270 screen size for DDF is 24 rows by 80 columns. The VTAM LOGMODE used for any DDF (NetView) 3270 work station must specify the default screen size of 24 x 80. The alternate screen size in the LOGMODE can specify any size supported by NetView. DDF uses the 3270 command Erase/Write to present its screens to the user, which uses the default screen size specified in the LOGMODE.

The following example shows a typical menu panel definition named EZLPNLST. Embed this definition in the EZLPNLS member or in a separate member named EZLPLNST.

```
P(EZLPNLST,24,80, , , , , )
TF(01,02,09,T,NORMAL)
TT(EZLPNLST)
TF(02,25,57,WHITE,NORMAL)
TT(DATA CENTER NETWORKS)
SF(CNM01.NETWORK,04,05,10,N, ,EZLPNL2)
ST(CNM01)
SF(CNM01.SYSTEM,04,17,30,N, ,EZLPNLO1)
ST(MESSAGEVIEW)
SF(CNM01.GROUPS,04,35,40,N, ,EZLPNLGR)
ST(GROUPS)
SF(CNM01.OPID,04,48,57,N, ,EZLPNLW0)
ST(OPERATORS)
SF(CNM01.GATEWAY,04,65,72,N, ,EZLPNLG)
ST(GATEWAY)
TF(24,01,48,T,NORMAL)
TT(PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN)
TF(24,51,79,T,NORMAL)
TT(        10=LF 11=RT 12=TOP)
PFK4()
PFK5()
PFK9()
EP
```

Figure 184. Menu Panel Definition

Table 3 provides a description for each statement in the preceding example.

Table 3. Menu Panel Definitions

Statement and Description
`P(EZLPNLST,24,80, , , , , )` This is the panel definition statement. The panel name is EZLPNLST, the length of the panel is 24, and the width of the panel is 80.
`TF(01,02,09,WHITE,NORMAL)` This is the text location statement used to define constant panel fields. This field starts on line 01, in position 02, and ends in position 09. The color of the field is white and the highlighting is normal.
`TT(EZLPNLST)` The text data statement (EXLPNLST) that specifies data that goes in the field just defined.
`TF(01,25,57,WHITE,NORMAL)` Text location statement for another constant field.
`TT(DATA CENTER NETWORKS)` Text data statement for the field just defined. Notice that TF and TT are grouped in pairs.
`SF(CNM01.NETWORK,04,05,10,N, ,EZLPNL2)` This statement defines the location of the status component field. The status component is CNM01, this field starts on line 04 in position 05 and ends in position 10. The highlight level is normal, and the next panel displayed when **F8** (Down) is pressed is EZLPNL2.
`ST(CNM01)` This text is displayed in the SF field. The field name is CNM01. Notice also that SF and ST are grouped in pairs.
`SF(CNM01.SYSTEM,04,17,30,N, ,EZLPNLO1)` Status field definition.

Table 3. Menu Panel Definitions (continued)

Statement and Description
ST(MESSAGEVIEW) Status text definition.
SF(CNM01.GATEWAY,04,65,72,N, ,EZLPNLG) Status field definition.
ST(GATEWAY) Status text definition.
TF(24,01,39,T,NORMAL) TT(1=HELP 2=DETAIL 3=RET 6=ROLL 8=DN) TF(24,40,79,T,NORMAL) TT(10=LF 11=RT 12=TOP) Here, TF and TT are used to display the function key definitions, which these are the defaults defined in EZLINIT. You can define function keys unique to this panel.
EP This is the end panel statement used to indicate that this is the end of definitions for this panel.

Figure 185 shows the panel that is displayed when you run the statements listed in Table 3 on page 212.

```
EZLPNLST
                        DATA CENTER NETWORKS

   CNM01       MESSAGEVIEW       GROUPS       OPERATORS        GATEWAY

                                                                 06/24/00 16:21:00
 ===>
PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN           10=LF 11=RT 12=TOP
```

Figure 185. Data Center Networks (EZLPNLST) Panel

Modifying the Control File for DDF

The EZLCFG01 sample control file requires minimal changes to set up DDF. You must, however, customize the definition of your NetView domain. Customize ENVIRON SETUP SYSNAME=CNM01 to reflect the system name you choose for AON. Use the NetView domain ID. The value is referred to as the SYSNAME in this document. The SYSNAME value is used during panel and tree installation.

In the sample implementation, the ENVIRON DDF statement is defined as follows:

```
ENVIRON DDF DDF=STATUS,DDFREFRESH=NO,DDFGENERIC=(RESTYPE),DDFAUTO=NO
```

Where:

DDF=STATUS
Causes the resource status to determine the color of the indicators in DDF.

DDFREFRESH=NO
Causes DDF to not be taken from current VTAM status only at DDF initialization. In some networks, the displays required to do this can cause an increase in CPU usage during initialization. If you want to do this, change this definition to DDFREFRESH=YES.

DDFGENERIC=(RESTYPE)
Causes DDF to group the resource status descriptors and display them by resource type.

DDFAUTO=NO
Causes DDF to display status changes for the resources regardless of whether the automation flag is on. If you do not want failures of non-automated resources posted to DDF, change this definition to DDFAUTO=YES.

Other control file definitions that influence DDF are the DDF and DDFGENERIC statements. Use the AON defaults for these definitions.

Modifying the EZLTREE Tree Structure

Tree structures define resources into hierarchical groups, with the domain as the highest component in the hierarchy.

The sample tree provided with AON enables DDF to display current problems in your networking environment, with minimal maintenance. Change domain CNM01 in the EZLTREE member to reflect your SYSNAME value (domain ID).

Modifying DDF Panels

The sample panels copied into the CNMPNL1 data set during installation set up a typical implementation of DDF. To activate DDF, edit the following panels, changing all occurrences of CNM01 to your domain ID (SYSNAME value on ENVIRON SETUP statement):

EZLPNLG	EZLPNLG1	EZLPNLL
EZLPNLOA	EZLPNLOB	EZLPNLO1
EZLPNLO2	EZLPNLST	EZLPNLTY
EZLPNL1	EZLPNL2	

If you want to use the sample DDF group, you need to change the domain ID in the following panels:

EZLPNLGR	EZLPNLLA	EZLPNLNY
EZLPNLSD	EZLPNLSF	EZLPNLAT
EZLPNLCA	EZLPNLC1	

To use the same operator signout panels, change the domain ID in the following panels:

EZLPNLW0 EZLPNLW1 EZLPNLW2

Adding AON/TCP and SNA to the Main DDF Panel

Complete the following sections to add the AON components to the main DDF panel.

Adding TCP to the Main DDF Panel

To display a TCP/IP selection on the main DDF panel, do one of the following:

- If you are using the EZLPNLST member as your main DDF panel (the first panel to display), add the following statements:

  ```
  SF (CNM01.TCPIP,10,10,17,N, ,FKXPNLT)
  ST (TCPIP)
  ```

  These statements are also in the FKXPNLST data set and you can copy them from there.
- If you are using the EZLPNLTY panel as your main DDF panel, add the following statements:

  ```
  SF (CNM01.TCPIP,10,10,17,N, ,FKXPNLT7)
  ST (TCPIP)
  ```

  These statements are also in the FKXPNLTY data set and you can copy them from there.

Note: Remember to update CNM01 to your domain ID.

Adding SNA to the Main DDF Panel

To use AON/SNA, add AON/SNA to the main DDF panel by doing one of the following:

- If you are using the EZLPNLST panel as your main DDF panel (the first panel to display), add the following statements:

  ```
  SF(CNM01.NETWORK,06,10,15,N, ,FKVPNSNA)
  ST(SNA01)
  ```

  These statements are also in the FKVPNLST data set and you can copy them from there.
- If you are using EZLPNLTY as your main DDF panel, add the following statements:

  ```
  SF(CNM01,NETWORK,06,10,15,N, ,FKVPNL1)
  ST(SNA)
  ```

  These statements are also in the FKVPNLTY data set and you can copy them from there.

Editing EZLPNLS

To customize the panel list, copy the following members into the bottom of EZLPNLS:

- FKXPNLS (TCP)
- FKVPNLS (SNA)

Chapter 20. Defining Dynamic Display Facility (DDF) Statements

Table 4 lists the members where Dynamic Display Facility (DDF) statements are defined. This figure also explains the purpose of each member and shows where to find more information about each member.

Table 4. Members Containing DDF Statements

Member	Purpose	Location of Heading
EZLTREE	Defines panel hierarchy	"Defining the Panel Hierarchy (EZLTREE)" on page 218
EZLINIT	Defines initialization statements	"Defining Initialization Statements (EZLINIT)" on page 221
EZLPNLS	Defines panel statements	"Defining the Panel Statements (EZLPNLS)" on page 239
EZLCFG01	Defines generics and status color relationships.	Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information.

Defining the Panel Hierarchy (EZLTREE)

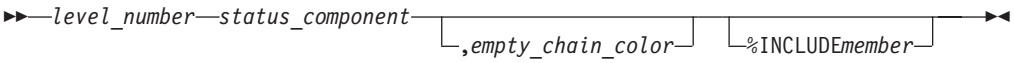
Purpose

The hierarchy for status color changes are defined in the EZLTREE member in the DSIPARM data set. When the status changes for a component, the corresponding color change extends up or down the tree to the higher or lower-level components. The level number assigned to each component determines the level. The entry in the EZLINIT member or the individual DDFADD command requests determines the type of propagation.

The following syntax diagram shows the level number entry.

Format

level_number



Parameters

empty_chain_color
Defines a color for the empty chain. You can use red, blue, turquoise, pink, green, yellow, or white. If DDF does not associate a status descriptor with a status component, the status component is displayed in this color on the DDF status panel. This entry is optional and can also be coded in the EMPTYCOLOR entry of the EZLINIT member. See "Defining Default Colors for Status Components (EMPTYCOLOR)" on page 236 for more details.

level_number
Defines a valid number between 1 and 99. A tree starts with a root level of 1.

status_component
Defines the resource for which status information is displayed. AON uses the resource name as defined in the control file. The status component entry for the root matches the ENVIRON SETUP SYSNAME entry in the control file.

%INCLUDE *member*
Includes members that contain EZLTREE statements, where *member* is the member name. Each included member must start with level 1 and must contain an entire tree structure.

Usage

The level numbers define the order of dependence. For an example, see Figure 186 on page 219. In that figure, NCP is defined to be dependent on NETWORK. Therefore, when a change occurs for an NCP, it is reflected on NCP, NETWORK, SYSTEM, and CNM01.

You cannot use duplicate status components within the same tree. Not all status components that are defined in the tree need to have a corresponding panel entry or a status descriptor associated with them. Each root name must be unique to avoid addressing conflicts. DDF can address each status component defined in the tree as follows:

```
root_component.status_component
```

Examples

Two separate AON/SNA trees, CNM01 and CNM02, representing two different networks are defined Figure 186. In this example, CNM01 is the focal point and CNM02 is the remote domain. In the EZLTREE member on CNM01, define a tree for both CNM01 and CNM02.

EZLTREE

Order of Dependency

```
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
          6 EN
        5 X25
          6 X25MCH
          6 X25PU
```

EZLTREE

Order of Dependency

```
1 CNM02
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
          6 EN
        5 X25
          6 X25MCH
          6 X25PU
```

Figure 186. DDF Tree Structure

Both trees start with level number 1 and each has a unique root name. They can have similar status component names, such as LINE, PU, and NCP. The corresponding entry for the root component in the control file on system CNM01 is:

```
ENVIRON SETUP,
        NETVIEW=NET,
        SYSNAME=CNM01,
```

⋮

Do not define the root component name CNM02 on the ENVIRON SETUP SYSNAME keyword in the control file for CNM01. Instead, define it in a similar way in the ENVIRON SETUP SYSNAME keyword in the control file for CNM02. Assuming that AON notification forwarding is established between CNM02 and CNM01, DDF adds a CNM02 prefix to all status components when status information is forwarded to CNM01. For example, it adds `CNM02.PU01 for PU01`. The EZLTREE member in the CNM02 system contains only the tree for CNM02.

Defining Initialization Statements (EZLINIT)

The EZLINIT member in the DSIPARM data set defines the DDF initialization parameters. You should use the defaults supplied in the EZLINIT member in DSIPARM.

Defining the Screen size (SCREENSZ)

Purpose

The SCREEN SIZE parameter defines the screen buffer size. This entry is optional. If you do not specify this parameter, AON uses a program default value of 3000.

The following syntax diagram show the screen size parameter.

Format

SCREENSZ

Parameters

number
Values can be in the range of 3000–9999.

Usage

For a larger screen buffer size, increase the *number* parameter.

Examples

```
SCREENSZ = 4000
```

Linking the Chain Detail Records (CHAIN)

Purpose

The CHAIN parameter defines whether the detail status is linked in descending order (last to most recent) or in ascending order (most recent to last).

The following syntax diagram shows the chain parameter.

Format

CHAIN

Parameters

A Link detail records within the same priority in ascending order.
D Link detail records within the same priority in descending order.

Examples

```
CHAIN = A
```

Defining the Initial Screen (INITSCRN)

Purpose

The INITSCRN parameter defines the initial panel that is displayed by DDF.

Format

INITSCRN

Parameters

panel
A valid alphanumeric name with maximum length of 8 characters.

Usage

If you change the initial panel as defined in the EZLPNLS member of the DSIPARM data set, also change the name in the INITSCRN entry.

Examples

```
INITSCRN = EZLPNLST
```

Defining the Number of Operators (MAXOPS)

Purpose

The MAXOPS parameter defines the maximum number of logged on operators that can use DDF. This entry is optional. If you do not specify this parameter, the default is 30.

Format

MAXOPS

Parameters

number

Values range from 1 to 99.

Usage

If the number of operators attempting to use DDF is more than the number defined in the MAXOPS parameter, AON denies the additional operators access to DDF. The dynamic update facility keeps an internal count of the operators that are logged on.

Examples

```
MAXOPS = 35
```

Propagating Status Upward (PROPUP)

Purpose

The PROPAGATE UP parameter defines whether status word text is sent up the status tree as a system default. This entry is optional. If you do not specify this parameter, the default is YES.

Format

PROPUP

Usage

Specify a value of YES. This parameter can be overridden with individual DDFADD requests. See "Adding Status Descriptors (DDFADD)" on page 281 for more information.

Propagating Status Downward (PROPDOWN)

Purpose

The PROPAGATE DOWN parameter defines whether status information is sent down the status tree as a system default. If you do not specify a value, the default is NO. This entry is optional.

Format

PROPDOWN

Usage

Specify a value of NO. This parameter can be overridden with individual DDFADD requests. See "Adding Status Descriptors (DDFADD)" on page 281 for more information. This entry is optional. If not coded, the default is NO.

Defining the Temporary Error Limit (TEMPERR)

Purpose

The TEMPERR parameter defines the maximum number of temporary input and output errors you can receive when trying to display a DDF panel. This entry is optional. If you do not specify a value, the default is 3.

Format

TEMPERR

Parameters

number
Values range from 3 to 99.

Usage

Use the value 5, which is provided in EZLINIT member in the DSIPARM data set.

Examples

```
TEMPERR = 5
```

Defining the Default Function Key Definitions (PFKnn)

Purpose

The PFK*nn* parameter defines the default function key settings. You cannot change F3.

Format

PFK

Parameters

nn Values range from 1 to 24.

command

The command is issued when the function key is pressed.

var

A variable or any text data passed with this command. Use the following variables as part of the command:

&CO or &COLOR
Identifies to the color of the detail entry.

&COMP
Identifies the component.

&COMPAPPL
Identifies the generic component within parentheses (for example, PU01(PU)). The generic component is shown only if the component was added using one.

&DA or &DATA
Identifies the actual message text.

&DATE
Identifies the date that the detail entry was added.

&HI or &HIGHLITE
Identifies the highlight level of the detail entry.

&IN or &INFO
Identifies the detail entry word text that is displayed on the status screen.

&PR or &PRIORITY
Identifies the priority of the detail entry.

&ROOT
Identifies the root or system.

&RV or &REFVALUE
Identifies the reference value of the detail entry.

&SENDERID
Identifies the reporter who submitted the detail entry.

&SNODE or &SENDERNODE
Identifies the node of the reporter who submitted the detail entry.

&SYSDATE
Identifies the system date.

&SYSTIME
Identifies the system time.

&TIME
Identifies the time that the detail entry was added.

Usage

You can redefine all of the function keys except F3.

Examples

In this example, the `DIS PU01` command is issued when F4 is pressed while the cursor is placed on the PU01 entry on the status screen:

```
PF4=DIS &INFO
```

Defining the Detail Function Key for the Detail Display (DPFKnn)

Purpose

The DPFK*nn* parameter defines the function keys that are unique to the detail panel.

Note: The function keys defined are active only when the detail panel is displayed and, therefore, override the default settings defined with the PFK*nn* statement.

Format

DPFK

Parameters

command
The command issued when the defined function key is pressed.

nn Values range from 1 to 24.

var
The variables passed along with the command when the defined function key is pressed.

The following variables can be used as the command:

&CO or &COLOR
Identifies the color of the detail entry.

&COMP
Identifies the component.

&COMPAPPL
Identifies the generic component within parentheses (for example, PU01(PU)). The generic component is shown only if the component was added by using the value of 1.

&DA or &DATA
Identifies actual message text.

&DATE
Identifies the date the detail entry was added.

&HI or &HIGHLITE
Identifies the highlight level of the detail entry.

&IN or &INFO
Identifies the detail entry word text that is displayed on the status panel.

&PR or &PRIORITY
Identifies the priority of the detail entry.

&ROOT
Identifies the root or system.

&RV or &REFVALUE
Identifies the reference value of the detail entry.

&SENDERID
Identifies the reporter who submitted the detail entry.

&SNODE or &SENDERNODE
Identifies the node of the reporter who submitted the detail entry.

&SYSDATE
Identifies the system date.

&SYSTIME
Identifies the system time.

&TIME
Identifies the time the detail entry was added.

Usage

You can tailor all of the functions except F3.

Describing Function Keys on the Detail Panel, Part 1 (DPFKDESC1)

Purpose

The DPFKDESC1 parameter defines the first part of the function key description that is displayed at the bottom of the detail panel. This text is concatenated with the text defined with the DPFKDESC2 statement.

Format

DPFKDESC1

Parameters

text

Up to 40 characters of data.

Examples

```
DPFKDESC1='PF1=HELP PF2=END PF3=RETURN'
```

Describing Function-Key Text on the Detail Panel, Part 2 (DPFKDESC2)

Purpose

The DPFKDESC2 parameter defines the second part of the PF key description that is displayed at the bottom of the detail display. This text is concatenated with the text defined with the DPFKDESC1 statement.

Format

DPFKDESC2

Parameters

text

Up to 40 characters of data.

Examples

```
DPFKDESC2='PF6=ROLL PF7=UP PF8=DOWN'
```

Defining Default Colors (DCOLOR)

Purpose

The DCOLOR parameter defines the appropriate color for a status descriptor that is outside of the defined priority and color ranges. This entry is optional. If you do not specify a value, the default is green.

Format

DCOLOR

Parameters

color

Blue, red, pink, green, turquoise, yellow, and white are valid colors.

Usage

Use the value WHITE, which is provided in the EZLINIT member in DSIPARM, and which does not conflict with existing status and color definitions.

Examples

```
DCOLOR = WHITE
```

Defining Default Colors for Status Components (EMPTYCOLOR)

Purpose

The EMPTY COLOR parameter defines the color that is displayed for a status component that has no status descriptor associated with it. This entry is optional. If you do not specify a value, the default is green.

Format

EMPTYCOLOR

Parameters

color

Blue, red, pink, green, turquoise, yellow, and white are valid colors.

Usage

Use the color BLUE, which is provided in the SEZLSENU member of EZLINIT, it does not conflict with existing status or color definitions. This parameter can be overridden in the EZLTREE member.

Examples

```
EMPTYCOLOR = BLUE
```

Defining Priority and Color Ranges (PRITBLSZ)

Purpose

The PRITBLSZ parameter defines the number of priority and color ranges defined by the PRIORITY entries. This entry is optional. If you do not specify a value, the default is 7.

Format

PRITBLS

Parameters

nn Valid number greater than 7

Usage

Use the number 12, which is provided with the EZLINIT member in DSIPARM.

Examples

```
PRITBLSZ = 12
```

Defining Color and Priority Ranges (PRIORITY)

Purpose

The PRIORITY parameter defines the relationship between colors and priority ranges. This entry is optional. If you do not specify values, the defaults are:

Color	Priority
Red	001 to 099
Pink	100 to 199
Yellow	200 to 299
Blue	300 to 399
Turquoise	400 to 499
White	500 to 599
Green	600 to 699

Format

PRIORITY

Parameters

color
Red, green, yellow, turquoise, pink, blue, and white are valid colors.

mmm
Valid number between 001 and 999 and equal to or greater than the value specified in *nnn*.

nnn
Valid number between 001 and 999.

Usage

Use the values provided with the EZLINIT member in DSIPARM.

Examples

```
PRIORITY=100,199,RED
PRIORITY=200,299,PINK
PRIORITY=300,399,YELLOW
PRIORITY=400,499,TURQUOISE
PRIORITY=500,599,GREEN
PRIORITY=600,699,BLUE
DCOLOR=WHITE
EMPTYCOLOR=BLUE
```

Defining the Panel Statements (EZLPNLS)

The EZLPNLS member in the CNMPNL1 data set defines the DDF status panels. The structure of each panel definition is as follows:

1. Beginning panel definition (PANEL)
2. Status component definition (STATUSFIELD and STATUSTEXT)
3. Text fields and data definition (TEXTTEXT and TEXTFIELD)
4. Function key definition unique to this panel (PFK*nn*)
5. End panel definition (ENDPANEL)

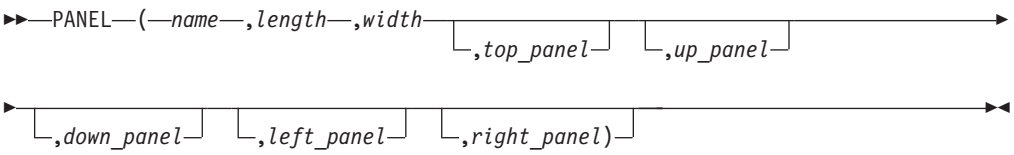
Defining New Panels (PANEL)

Purpose

The panel entry identifies the start of a new panel and its general attributes.

Format

PANEL



Parameters

down_panel
Defines the panel that displays when the DOWN command is issued or the appropriate function key is pressed.

left_panel
Defines the panel that displays when left panel function key is pressed or LEFT command is issued.

length
Defines the number of lines or rows on the screen. You must specify a numeric value.

name
Identifies a user-defined panel name up to 8 characters in length.

right_panel
Defines the panel that displays when the right panel function key is pressed or the RIGHT command is issued.

top_panel
Defines the panel that displays when the TOP command is issued or the appropriate function key is pressed.

up_panel
Defines the panel that displays when the UP command is issued or the appropriate function key is pressed.

width
Defines the number of columns on the screen. You must specify a numeric value.

Usage

The default initial panel name supplied with AON is called EZLPNLST. If you change this name, also change the definition in the EZLINIT member for the INITSCRN entry to reflect this. If you have more data than can be displayed on a single screen, you can define continuation panels with the *left_panel_name*, *right_panel_name*, and *down_panel_name* parameters.

The parameters are positional.

Examples

This example defines EZLPNSNA as the panel name:

```
PANEL(EZLPNSNA,24,80,EZLPNL1,EZLPNL1, , ,)
```

The length of the panel is 24 and the width is 80. The panel named EZLPNL1 is displayed when the TOP command is used and the panel named EZLPNL1 is displayed when the UP command is used. No entries are defined for the DOWN, LEFT, or RIGHT commands.

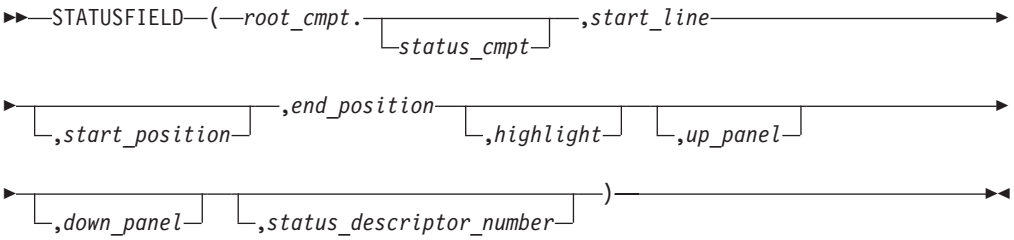
Locating the Status Component (STATUSFIELD)

Purpose

The STATUSFIELD entry defines the location of the status component on a panel and the panels that display when the UP and DOWN commands are used. A STATUSFIELD entry is always accompanied by a STATUSTEXT entry.

Format

STATUSFIELD



Parameters

down_panel
Defines the panel that is to be displayed if the Down function key is pressed.

end_position
Defines the column number in which the definition of the component ends. This is governed by the length of the text that is defined in the STATUSTEXT definition. For example, if you define LINE, the length of the STATUSTEXT is four and the end position is the start position plus three. See "Defining the Text Area (STATUSTEXT)" on page 245 for more information. You must have at least 2 bytes between the end position of one field and the beginning position of the next field for attribute bytes.

highlight
Defines the type of highlighting. You can use normal, blink, reverse, or underscore. Define highlighting as normal, although it can be overridden with individual DDFADD requests.

root_cmpt
Defines the root name as defined in the root node of the tree structure. You must specify the root (as opposed to the status component alone), because different systems can have status components with the same name defined in their respective tree structures. For example, the status component LINE is often used. Because the root and status component must always be unique, each status component in a tree structure can be uniquely identified by adding the root component entry as a prefix.

start_line
Defines the line number where the status component is displayed. The entry is numeric and within the range specified in the length parameter in the panel definition statement.

start_position
Defines the actual column number on the start line. The start line is specified above where the component is to be placed. There must be a minimum of 2 spaces between the ending position of one field and the beginning position of

the next field to allow for attribute type. For example, if the end position of the status field is in column 10, the start position of the next STATUSFIELD must be in column 13.

Note: You cannot start the component in position one because it always needs one leading byte.

status_cmpt
Defines the status component name as defined in the EZLTREE member. The maximum length is 8 characters.

status_descriptor_number
Defines the number of the status descriptor. Use a numeric value in the range of 1–999. Status descriptors are chained with the status component in ascending order of priority. A panel can be designed with the same status-component name defined in every STATUSFIELD entry. The status descriptor number specifies the status descriptor displayed in each field. For example, if you specified two STATUSFIELD entries for the same status component with status descriptor numbers 1 and 2 , the status descriptor with the higher priority is displayed in the status field with status descriptor number 1. The next higher priority status descriptor is displayed in the status field with status descriptor number 2.

You can add a letter that denotes the type of information to be displayed as a prefix for the status descriptor. If you do not add a prefix, you can provide text with individual DDFADD requests using the INFO keyword. See "Adding Status Descriptors (DDFADD)" on page 281 for more information. Valid description prefixes are:

C Displays the name of the component
D Displays the date the record was added
M Displays the message text
P Displays the priority of the record
R Displays the name of the root
S Displays the ID of the requester
T Displays the time the record was added
U Displays the number of duplicate records
V Displays the reference value of the requester
X Displays the domain of the requester

up_panel
Defines the panel that is to be displayed if the Up function key is pressed.

Usage

When designing a panel for any status component, make the end position greater than or equal to the start position; otherwise, unpredictable results can occur during DDF initialization.

The component start position is column 02.

Parameters are positional.

Examples

In this example, the LINES on CNM01 status component start on line 04 in column 10, end in column 14, have normal highlighting:

```
STATUSFIELD(CNM01.LINES,04,10,14,NORMAL, ,)
```

No entries are defined for the UP or DOWN commands.

Examples

In this example, the status component starts on line 02 in column 04, ends in column 11, and has normal highlighting:

```
SF(CNM01.SYSTEM,02,04,11,N,,EZLPNSNA)
```

No entries are defined for the UP panel and the EZLPNSNA entry is defined for the DOWN command.

Examples

In this example, three STATUSFIELD entries are defined for the same CNM01.PU status component:

```
SF(CNM01.PU,02,04,11,NORMAL, , ,01)
SF(CNM01.PU,03,04,11,NORMAL, , ,02)
SF(CNM01.PU,04,04,11,NORMAL, , ,03)
```

The highest priority status descriptor is displayed in the first entry, the next in the second, and so on.

Examples

In this example, three STATUSFIELD entries are defined for the same CNM01.RESOURCE status component:

```
SF(CNM01.RESOURCE,04,02,05,NORMAL, , ,P01)
SF(CNM01.RESOURCE,04,08,15,NORMAL, , ,C01)
SF(CNM01.RESOURCE,04,18,79,NORMAL, , ,M01)
```

The first status descriptor is displayed, with its priority in column 02, its component name in column 08, and its message text starting in column 18.

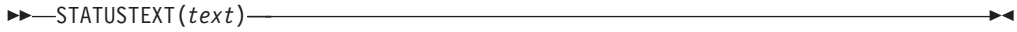
Defining the Text Area (STATUSTEXT)

Purpose

The STATUSTEXT entry defines the text data displayed in the STATUSFIELD entry. The value of this entry is normally the name of the status.

Format

STATUSTEXT



Parameters

text

Defines the data displayed for the status component defined in STATUSFIELD entry. The maximum length is 76 alphanumeric characters. Use the name specified for the status component, such as CNM01.LINE. The length of text determines the end position that is coded in the STATUSFIELD entry.

Usage

Each STATUSFIELD entry must have a STATUSTEXT entry associated with it.

The STATUSTEXT text can be overridden by individual DDFADD requests using the INFO keyword. See “Adding Status Descriptors (DDFADD)” on page 281 for more information.

Examples

In this example, the resource type LINE, on CNM01 displays as LINE on the status display panel:

```
STATUSFIELD(CNM01.LINES,04,10,13,NORMAL, ,)
STATUSTEXT(LINE)
```

Note: The end position in the STATUSFIELD reflects the length of resource line names.

Examples

In this example, the text is not specified for the STATUSTEXT entry for LINE:

```
STATUSFIELD(CNM01.LINE,10,15,25,NORMAL, , )
STATUSTEXT( )
```

You can use 12 characters for any text by the associated STATUSFIELD entry. Provide this text with individual DDFADD requests by using the INFO keyword.

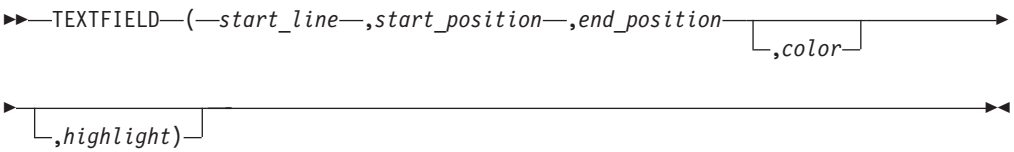
Defining Text Location (TEXTFIELD)

Purpose

This entry defines the location and attributes of fields that remain constant such as panel headings, field names, and function key designations.

Format

TEXTFIELD



Parameters

start_line
: Defines the line number on which the text field is displayed. The entry is numeric and within the range specified in the length parameter in the panel definition statement.

start_position
: Defines the column number on which the text field is placed.

end_position
: Defines the column number in which the data specified in entry TEXTTEXT ends. See "Defining Displayed Text (TEXTTEXT)" on page 247 for more details.

color
: Defines the color of the text. You can use blue, red, green, yellow, pink, turquoise, or white for the color to be displayed in the TEXTTEXT entry text.

highlight
: Defines the type of highlighting. You can use normal, blink, reverse, or underscore to determine the TEXTTEXT entry text display.

Usage

When designing a panel, for any TEXTFIELD, make the end position of the TEXTFIELD greater than, or equal to, the start position. Otherwise, unpredictable results can occur during DDF initialization.

The parameters are positional.

Examples

In this example, the TEXTFIELD is defined as being on line 1, starting in column 25, ending in column 57, white in color, and with normal highlighting:

```
TEXTFIELD(01,25,57,WHITE,NORMAL)
```

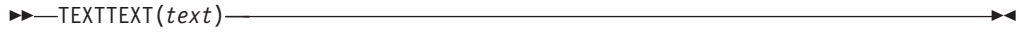
Defining Displayed Text (TEXTTEXT)

Purpose

The TEXTTEXT entry defines the data displayed in the corresponding TEXTFIELD entry.

Format

TEXTTEXT



Parameters

text

Defines the data displayed for the TEXTFIELD entry. The length of the data determines the end position that is coded in the TEXTFIELD entry. Maximum length is 72 alphanumeric characters.

Usage

Each TEXTFIELD entry must have a TEXTTEXT entry associated with it.

Examples

In this example, the text DATA CENTER NETWORKS displays on the status display panel in white:

```
TEXTFIELD(01,25,57,WHITE,NORMAL)
TEXTTEXT(DATA CENTER NETWORKS)
```

Examples

In this example, all the function key settings will be displayed on line 24 of the Status Display panel:

```
TF(24,01,48,TURQUOISE,NORMAL)
TEXTTEXT(PF1=HELP 2=DETAIL 3=END  6=ROLL 7=UP 8=DN)
TF(24,51,79,T,N)
TT(10=LF 11=RT 12=TOP)
```

Notice that two entries are coded for the same line number.

Defining Function Keys on the Status Panel (PFKnn)

Purpose

The PFK*nn* entry defines all of the function keys that are unique to this panel.

Format

PFK

Parameters

nn Values can range from 1 to 24.

command
The command is issued when the defined function key is pressed.

var
Variable can have the following values for this command:

&COMP
Identifies the component.

&COMPAPPL
Identifies the generic component within parentheses (for example, PU01(PU)). The generic component is shown only if the component was added using one.

&ROOT
Identifies the root or system.

&SYSDATE
Identifies the system date.

&SYSTIME
Identifies the system time.

&IN or &INFO
Identifies the detail entry word text that is displayed on the status panel.

&DATE
Identifies the date that the detail entry was added.

&TIME
Identifies the time that the detail entry was added.

&SENDERID
Identifies the reporter who submitted the detail entry.

&SNODE or &SENDERNODE
Identifies the node of the reporter who submitted the detail entry.

&DA or &DATA
Identifies the actual message text.

&RV or &REFVALUE
Identifies the reference value of the detail entry.

&PR or &PRIORITY
Identifies the priority of the detail entry.

&CO or &COLOR
Identifies to the color of the detail entry.

&HI or &HIGHLITE
Identifies the highlight level of the detail entry.

Usage

You can redefine all of the function keys except F3.

The definitions are active only when the status panel is displayed. The default settings defined with the initialization PFK*nn* statement are overridden.

F3 is always RETURN.

Examples

In this example, the `DIS PU01` command is issued when F4 is pressed with the cursor placed on the PU01 entry:

```
PFK4(DIS &INFO)
```

Defining the End of a Panel (ENDPANEL)

Purpose

The ENDPANEL entry identifies the end of a panel.

Format

ENDPANEL

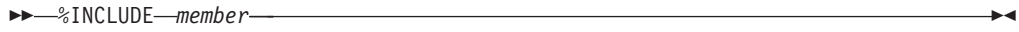
Including Additional Members %INCLUDE

Purpose

The %INCLUDE entry includes additional members that contain panel definitions statements.

Format

%INCLUDE



Parameters

member

Use this keyword to specify the name of a member that defines a panel using the panel statements described in this section. The member must reside on a data set referenced by DSIPARM.

Chapter 21. Implementing Dynamic Display Facility (DDF)

This chapter describes the implementation of Dynamic Display Facility (DDF) and shows samples. You can use these samples to customize the DDF displays for your environment. These samples:

- Display network status on multiple panels
- Display network status on a single-panel
- Define a MessageView display
- Implement DDF in a focal-point environment
- Use operator MARK panels
- Store a DDF update under multiple components
- Group resources in DDF

Each sample in this chapter shows how DDF panels are displayed when the sample is implemented, how DDF processes resource status, how you define the sample, and how to use it.

Displaying Network Status on Multiple Panels

When AON is shipped, a multiple panel display is sent as the default. This is the most useful display implementation. Figure 187 on page 254 shows a multiple panel display with numbered panels. The panels are described in the following section.

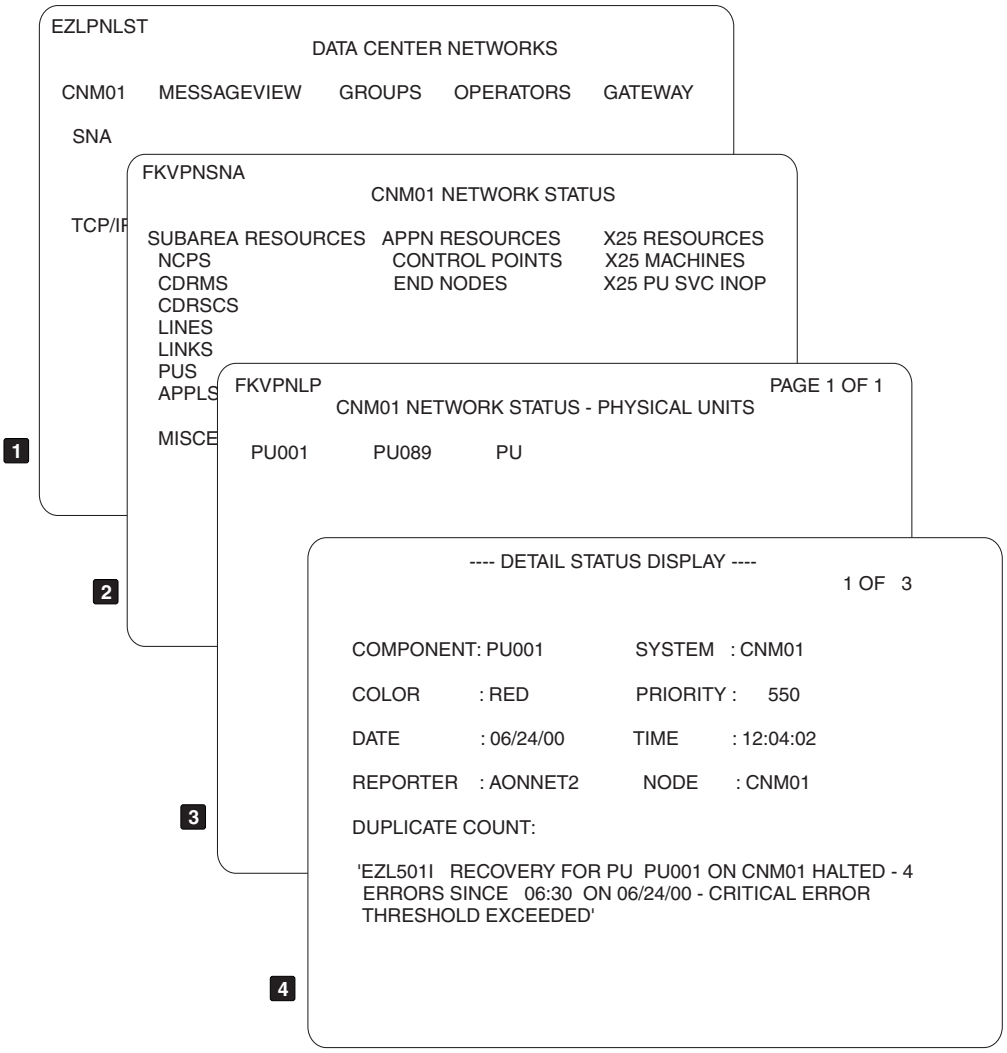


Figure 187. Displaying Network Status on Multiple Panels

1 The Data Center Network panel is the first DDF panel. In Figure 180 on page 199, **SNA** and **TCP/IP** represent the SNA, and TCP/IP resources in the domain CNM01. To see the types of SNA resources defined to CNM01, move the cursor to **SNA** and press the down key, **F8**.

2 All the monitored SNA resource types within network CNM01 are displayed on the CNM01 Network Status panel. To see the names of the physical units that require operator attention defined in CNM01, move the cursor to **PUS** and press the down key, **F8**.

3 The next panel shows the names of the physical units that are experiencing problems. DDF shows each monitored resource in the color of its status. For example, PU001 is shown in red if the status is INACTIVE and requires operator intervention for recovery. To see the detail record, move the cursor to **PU001** and press the detail key, **F2**.

4 The status details record for PU001 is shown on the Detail Status Display. The physical unit, PU001, requires operator intervention because a critical threshold has been reached and automation has stopped.

Multiple programs can update DDF at the same time with resource status without concern for the sequence or priorities posted by other programs. As AON automation resolves the problems, the resources are removed from DDF.

Use the DDF MARK function to show that a problem is being addressed. To mark a problem, display the Detail Status Display for the problem and press **F2**.

The operator ID is appended to the message at the bottom of the detail panel. When other users view DDF, their panel shows that someone is working on that particular problem. The MARK function eliminates the possibility of duplicated effort. The MARK and UNMARK commands are explained in "Using Operator MARK Panels" on page 267.

Understanding the Multiple Panel Display Function

The AON member EZLTREE contains entries for specific VTAM resource types, including NCP, LINES, and CDRMs when AON/SNA is installed. When a network problem occurs, AON adds a problem descriptor to DDF with the appropriate VTAM resource type. These problems propagate up the hierarchy that is defined in the EZLTREE member. AON arranges the problems in EZLTREE in order of severity. The highest level component reflects the most severe problem.

DDF displays network problems in a series of panels. AON provides a high-level system panel, an intermediate resource type panel, and a unique panel for each resource type. The high-level panel (EZLPNLST) shows the status of the problem with the highest priority in the system. The intermediate panel (FKVPNSNA) shows the color of the status of problem with the highest priority for unique resource types. Finally, the unique resource type panels show all resource names for a given resource type in order of the priority of the problem.

Defining Multiple Panel Displays

The following SNA-specific example requires these CNMPNL1 and DSIPARM members:

EZLTREE
: Tree

EZLPNLST
: Main DDF menu panel

FKVPNSNA
: Resource Type menu panel

FKVPNLA
: APPLs panel

FKVPNLN
: NCP panel

FKVPNLC
: CDRM panel

FKVPNLD
: CDRSC panel

FKVPNLL
: LINES panel

FKVPNLM
: LINKS panel

FKVPNLP
: PU panel

FKVPNLR
: Resource (MISC--unrecognized resource type)

FKVPNL21
All Resources menu panel
EZLPNLG
Gateway panel
EZLPNL01
MESSAGEVIEW panel (First)
EZLPNL02
MESSAGEVIEW panel (First Down)
EZLPNL0A
MESSAGEVIEW panel (Right)
EZLPNL0B
MESSAGEVIEW panel (Right Down)
FKVCFGDS
Control file DDF status statements
FKVPNAC
AON Control Point panel
FKVPNAE
APPN End Nodes panel
FKVPNA1
All APPN Resources panel
FKVPNLX1
X25 All Resources panel
FKVPNLX2
X25 Machines panel
FKVPNLX3
X25 Inop SVCs panel

The following sections describe how to customize the samples.

Updating the EZLTREE Member

Update the EZLTREE tree root name CNM01 to the name that is coded in your ENVIRON SETUP SYSNAME parameter. Refer to the following:

```
/*   NETWORK : CNM01                          */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
```

```
  6 EN
5 X25
  6 X25MCH
  6 X25PU
```

Updating the EZLCFG01 Member

To update the EZLCFG01 member:

1. In the ENVIRON SETUP definition in EZLCFG01, customize the SYSNAME value to reflect your domain ID. The SYSNAME can be any 5-character name used to identify this NETWORK domain. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information on tailoring the ENVIRON SETUP statement.
2. Set the DDF parameter in the ENVIRON DDF statement to DDF=STATUS if you want DDF to assign problem priority based on resource status. The DDF panel display shipped with AON is assigned by status.

Updating the EZLPNLS Member

To update the EZLPNLS member:

1. For AON/SNA, ensure %INCLUDE statements for the panels listed previously are present and not commented out.
2. Edit each of the panel samples and change all occurrences of CNM01 to the SYSNAME defined in the ENVIRON SETUP SYSNAME definition in EZLCFG01.

Updating the EZLINIT Member

Ensure the INITSCRN parameter is set to EZLPNLST.

Displaying Network Status on a Single Panel

In addition to viewing network status on multiple panels, you can view network status on a single panel.

Figure 188 on page 258 shows a single-panel display. The panels are described in the definition list that follows the figure.

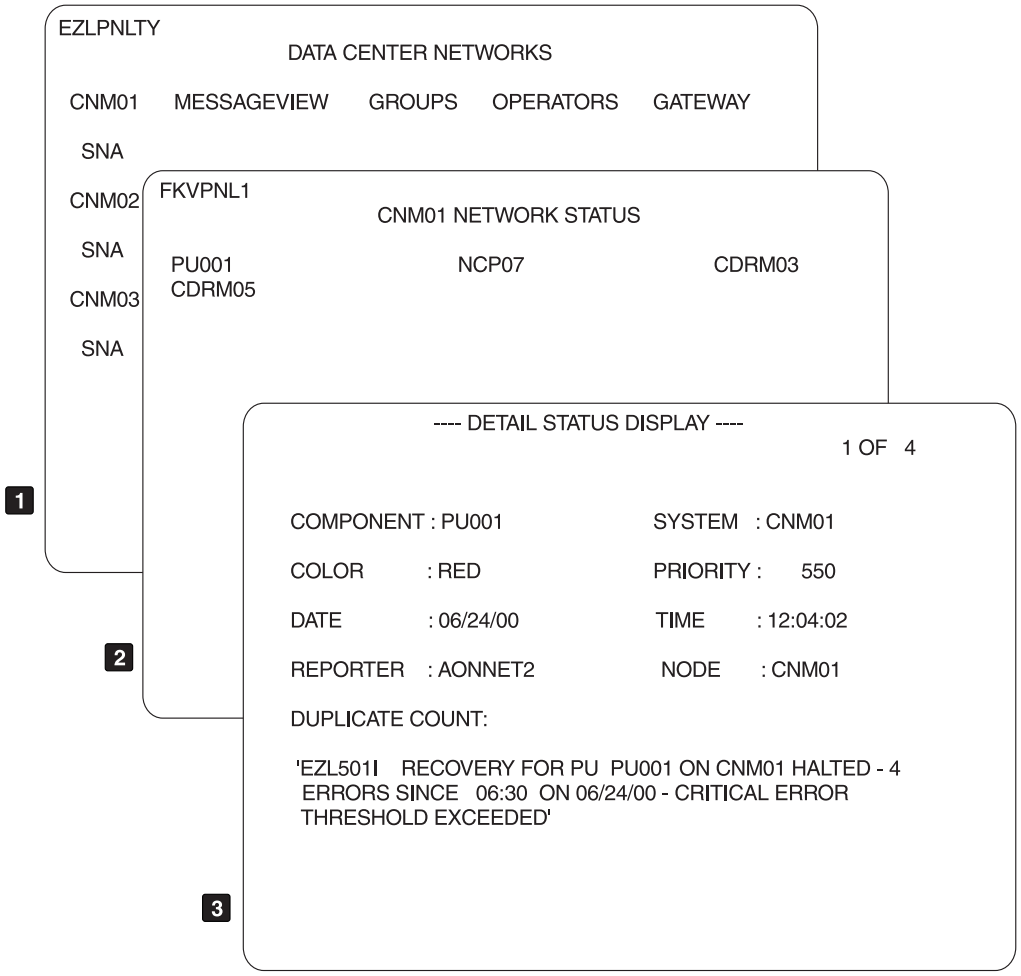


Figure 188. Displaying Network Status on a Single Panel

1 The Data Center Network panel is the main panel from which you can display a number of unique networks. This is the first panel displayed when you invoke DDF. The NetView domains that send notifications to this DDF are CNM01, CNM02, and CNM03. For this example, suppose that CNM01 is highlighted in red, indicating an error status. The operator moves the cursor to CNM01 and presses F8 to move down in the hierarchy and display the CNM01 Network Status panel.

2 All resources requiring operator attention are color-coded by status. All resources in the network are displayed on this panel. You can customize the keys on this panel in EZLINIT "Defining Initialization Statements (EZLINIT)" on page 221.

The resource name that is displayed in the upper left corner has the highest priority of current problems. In this example, PU01 has the problem with the highest priority. PU01 is in red because the status is INACTIVE and requires operator intervention for recovery. The operator uses the Tab key to move the cursor to PU01 and presses F2 to display the Detail Status Display.

3 The Detail Status Display describes a problem for status descriptor PU01. PU01 requires operator intervention because a critical threshold was reached and automation stopped. To see only SNA resource failures (EZLPNL1), move the cursor to SNA and press F8.

Note that the Detail Status Display has function keys for the DDF commands, MARK (F2) and UNMARK (F10). With MARK, an operator can assign a status error to his ID from the Detail Status Display. The MARK and UNMARK commands are explained in "Using Operator MARK Panels" on page 267.

Understanding How Single-panel Displays Work

The AON member EZLTREE contains entries for specific VTAM resource types, including NCP, LINES, and CDRMS. In EZLTREE, all these VTAM resource types are defined one level lower than the AON component NETWORK. When a problem occurs in the network, AON adds a problem descriptor to DDF, using the appropriate VTAM resource type. When a problem is added using the resource type, it propagates up the tree so that the component NETWORK contains all network-related problems.

AON provides a single panel that shows, in priority order, all the resource names in the network that have problems. The panel uses the component name NETWORK to display all the network-related problems.

The priority of the problem is determined by what is coded on the ENVIRON DDF statement. If DDF=STATUS is coded, the VTAM status determines the priority of the problem. Resources that are inactive have the highest priority and are red. Resources with pending status have a lower priority and are pink or turquoise. Active resources are not displayed.

When DDF=TYPE is coded, the resource type that has the problem determines the priority. For example, if an NCP is inactive or pending, the problem has high priority and is red. If a PU has an error condition (inactive or pending), the problem has a lower priority and is yellow.

Defining Single Panel Displays

The values shipped in the samples are the default DDF values. The required members are:

EZLTREE
: Tree

EZLCFGDS
: Control File DDF status definitions

EZLPNLTY
: Network View Panel

EZLPNL1
: Resource View Panel

EZLPNLG1
: Gateway View Panel

EZLPNL03
: MessageView Panel First

EZLPNL04
: MessageView Panel Right

EZLPNL0C
: MessageView Panel Down

EZLPNL0D
: MessageView Panel Right

FKVPNL1
: SNA Network View panel

Updating the EZLTREE Member

Update the EZLTREE tree root name CNM01 to the SYSNAME defined in the ENVIRON SETUP statement of the control file. Refer to the following example:

```
/*   NETWORK : CNM01                              */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
          6 EN
        5 X25
          6 X25MCH
          6 X25PU
```

Updating the EZLCFG01 Member

To update the EZLCFG01 member:

1. In the ENVIRON SETUP definition in EZLCFG01, customize the SYSNAME value to reflect your domain ID. The SYSNAME can be any 5-character name used to identify this NETWORK domain.
2. Set the DDF parameter in the ENVIRON DDF statement to:
   - DDF=STATUS if you want DDF to assign problem priority based on resource status.
   - DDF=TYPE if you want DDF to assign problem priority based on resource type.

Updating the EZLPNLS Member

To update the EZLPNLS member:

1. For AON/SNA, ensure that the %INCLUDE statements for the panels listed previously are present and not commented out.
2. Edit each of the panel samples and change all occurrences of CNM01 to the SYSNAME defined in the ENVIRON SETUP SYSNAME definition in EZLCFG01.

Updating the EZLINIT Member

In the EZLINIT member, change the INITSCRN parameter to EZLPNLTY.

Updating the EZLPNL1 Member

```
/* DEFINE CNM01 NETWORK STATUS PANEL */
P(EZLPNL1,24,80,EZLPNLTY,EZLPNLTY, , , )
TF(01,02,09,T,NORMAL)
TT(EZLPNL1)
TF(02,27,57,WHITE,NORMAL)
TT(CNM01 NETWORK STATUS)
SF(CNM01.NETWORK,04,05,16,N, , ,01)
ST( )
SF(CNM01.NETWORK,04,25,36,N, , ,02)
ST( )
SF(CNM01.NETWORK,04,45,56,N, , ,03)
ST( )
SF(CNM01.NETWORK,04,65,76,N, , ,04)
ST( )
:
SF(CNM01.NETWORK,20,25,36,N, , ,30)
ST( )
SF(CNM01.NETWORK,20,45,56,N, , ,31)
ST( )
SF(CNM01.NETWORK,20,65,76,N, , ,32)
ST( )
TF(24,01,52,T,NORMAL)
TT(PF1=HELP 2=DETAIL 3=END 4=DIS 5=CY 6=ROLL 7=UP 8=DN)
TF(24,53,79,T,NORMAL)
TT( 9=DEL 10=LF 11=RT 12=TOP)
EP
```

The tree shows NETWORK to be a level higher than any descriptors added using RESOURCE or under a resource type generic, for example CNM01.PU01(PU). The problem descriptors are propagated up to the status field of CNM01.NETWORK. All descriptors for the NETWORK are displayed on this panel.

If your network has more than 32 resources in an exception condition, duplicate this panel, customize the panel name, and add 32 to the descriptor count on each status field definition. This number causes descriptors 33 through 64 to display on this panel. Update the PANEL definition statement in EZLPNL1 to reflect a RIGHT panel with your new panel name (see “Defining the Panel Statements (EZLPNLS)” on page 239). Customize PANEL statement of your new panel to point LEFT to EZLPNL1.

Defining a MessageView Display

The following sample scenarios demonstrate MessageView. MessageView illustrates the use of status descriptor information types (refer to STATUSFIELD). Every detail descriptor is displayed on the panel along with its date, time, resource name, and message text. This panel provides a quick view of the DDF current descriptors. Figure 189 on page 262 shows a sample MessageView display.

```
EZLPNLO1               AON: MessageView

                    Resource    Message text
 07/03/01  08:20:25  NTV9D-O   1 'EZL563E ERROR ACCESSING CNM01 OUTBOUND GATEWA
 07/03/01  08:20:25  NTV74-O   1 'EZL563E ERROR ACCESSING CNM01 OUTBOUND GATEWA
 07/03/01  08:40:59  GULLIVER  1 'EZL507I REMINDER: IPHOST GULLIVER ON NMPNETV1
 07/03/01  08:29:21  DUMMYSRV  1 'EZL507I REMINDER: IPNAMESERV DUMMYSRV ON NMPN
 07/03/01  08:24:56  IPL10INF  1 'EZL507I REMINDER: IPINFC IPL10INFC ON NMPNETV
 07/03/01  08:24:56  GULL1     1 'EZL507I REMINDER: IPINFC GULL1 ON NMPNETV1 HA
 07/03/01  08:24:56  TNGUY     1 'EZL507I REMINDER: IPTN3270 TNGUY ON NMPNETV1
 07/03/01  08:22:17  NMPIPL27  1 'EZL506I SP NMPIPL27 ON NMPIPL27 INACTIVE - RE
 07/03/01  08:22:16  NMPIPL25  1 'EZL506I SP NMPIPL25 ON NMPIPL25 INACTIVE - RE
 07/03/01  08:22:11  NMP217    1 'EZL506I SP NMP217 ON NMP217 INACTIVE - RECOVE
 07/03/01  08:22:09  NMP190    1 'EZL506I SP NMP190 ON NMP190 INACTIVE - RECOVE
 07/03/01  08:21:58  MNOSHX1   1 'EZL506I SP MNOSHX1 ON MNOSHX1 INACTIVE - RECO
 07/03/01  08:37:41  NCP01     1 'EZL507I REMINDER: NCP NCP01 ON CNM01 HAS BEEN
 07/03/01  08:26:04  TESTPU    1 'EZL507I REMINDER: PU TESTPU ON CNM01 HAS BEEN
 07/03/01  08:25:47  TA1T1046  1 'EZL507I REMINDER: LU TA1T1046 ON CNM01 HAS BE
 07/03/01  08:25:08  LINE1     1 'EZL507I REMINDER: LINE LINE1 ON CNM01 HAS BEE


                                                          07/03/01 08:47:37
 ===>
PF1=HELP 2=DETAIL 3=RET           6=ROLL 7=UP 8=DN  9=DEL        11=RT 12=TOP
```

Figure 189. Message View Panel

The following example shows how the MessageView panel is defined.

```
/*   MESSAGEVIEW DISPLAY                        */
/*****************************************************************/
P(EZLPNLO1,24,80,EZLPNLST,EZLPNLST,EZLPNLO2, ,EZLPNLOA)
TF(01,02,09,T,NORMAL)
TT(EZLPNLO1)
TF(01,27,60,Y,NORMAL)
TT(AON: MessageView)
TF(03,22,29,T,N)
TT(Resource)
TF(03,34,45,T,N)
TT(Message text)
SF(CNM01.SYSTEM,04,02,09,N, , ,D01)
ST( )
SF(CNM01.SYSTEM,04,12,19,N, , ,T01)
ST( )
SF(CNM01.SYSTEM,04,22,29,N, , ,C01)
ST( )
SF(CNM01.SYSTEM,04,32,79,N, , ,M01)
:
:
TF(24,01,52,T,NORMAL)
TT(PF1=HELP 2=DETAIL 3=RET    6=ROLL 7=UP 8=DN)
TF(24,53,79,T,NORMAL)
TT( 9=DEL        11=RT 12=TOP)
PFK4()
PFK5()
EP
```

In this case, the D01 status descriptor locates the date of the first descriptor in the chain. T01 locates the time, C01 locates the component (usually resource name) and M01 locates the message text of the same descriptor.

Implementing DDF in a Focal Point Environment

You can customize DDF to display the status of multiple networks at a focal point AON. You can implement notification forwarding from the distributed host to the focal point host.

In a focal point environment, DDF must be defined the same for each domain. The control file for each domain in a focal point environment reflects either ENVIRON DDF,DDF=STATUS or ENVIRON DDF,DDF=TYPE if this code is defined on the focal points.

Viewing a Focal-point Environment

Figure 190 shows focal-point implementation.

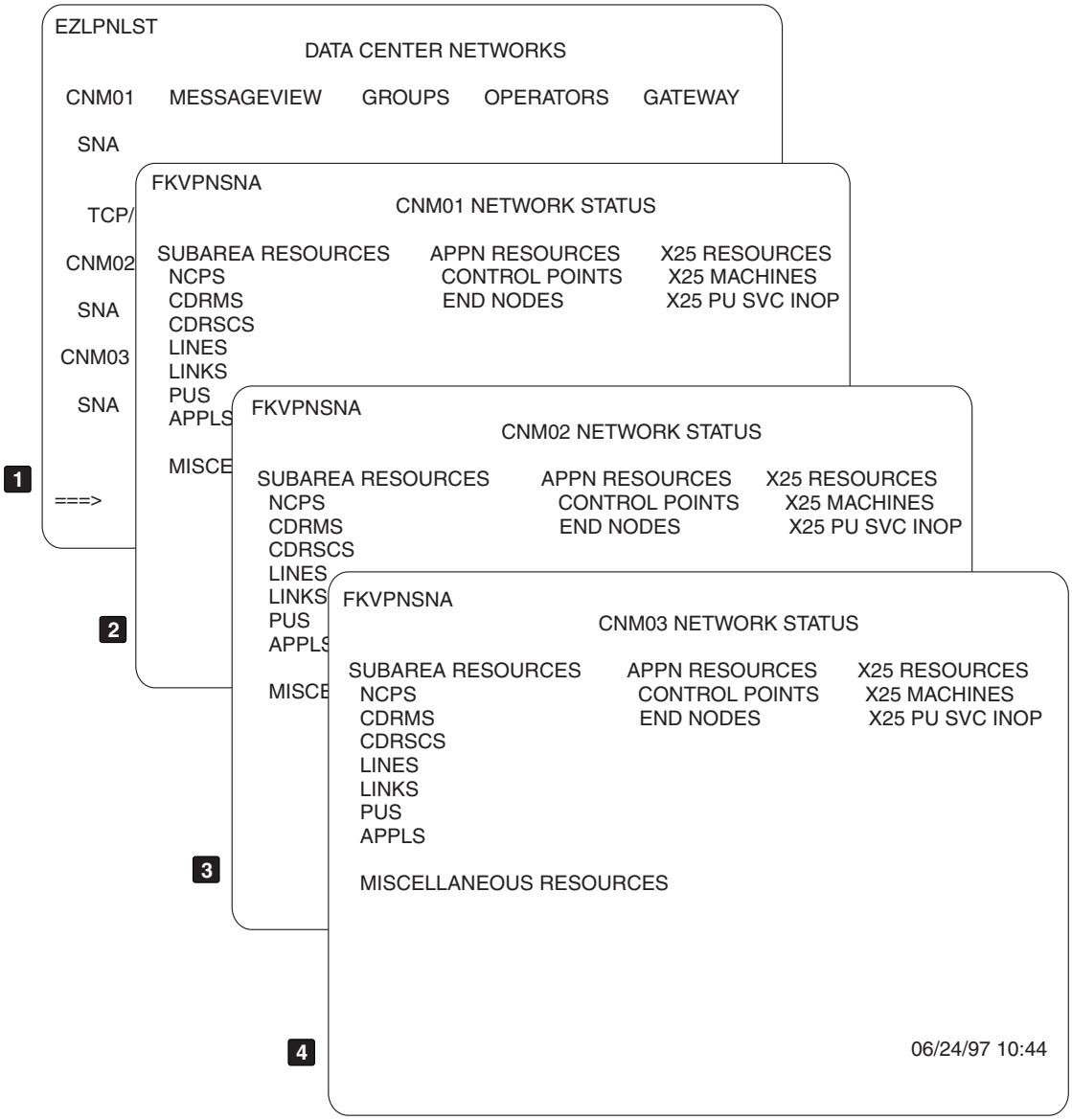


Figure 190. Focal-Point Implementation

For an explanation of each panel in Figure 190, match the numeric callouts (for example, 1) beside the following paragraphs with the callouts beside each panel in Figure 190.

1 The Data Center Networks panel is the main panel from which you can display a number of unique networks. This is the first panel that is displayed when DDF is invoked. The NetView domains sending

notifications to this DDF are CNM01, CNM02, and CNM03. This example shows which panels are displayed when you select any of the domains from the Data Center Network panel.

2 All the monitored resource types within domain CNM01 are displayed on the CNM01 Network Status panel. This panel is tailored to display only resources in domain CNM01.

3 All the monitored resource types within domain CNM02 are displayed on the CNM02 Network Status panel. This panel is tailored to display only resources in domain CNM02.

4 All the monitored resource types within domain CNM03 are displayed on the CNM03 Network Status panel. This panel is tailored to display only resources in domain CNM03.

Understanding How a Focal Point Environment Works

AON forwards DDF updates to the focal point. At the focal point, define a tree structure for each domain in the EZLTREE member, so that DDF can determine how to store the update. This update works the same as it did on the originating domain.

To display the update, create unique panels for each domain. Use unique panel names and change the root name coded inside the panels to the root name specified on the originating system.

Defining How a Focal-point Environment Works

The values shipped in the sample in your DSIPARM data set contain the default DDF values.

Updating the EZLTREE Member

1. Copy EZLTREE to a new member, EZLTRE01.
2. Create new tree members for CNM02 and CNM03.
3. Copy EZLTRE01; change the member name and 01 root name.
4. Edit and change EZLTREE, so that EZLTREE contains only the includes for the new members. When completed, the members look like this:

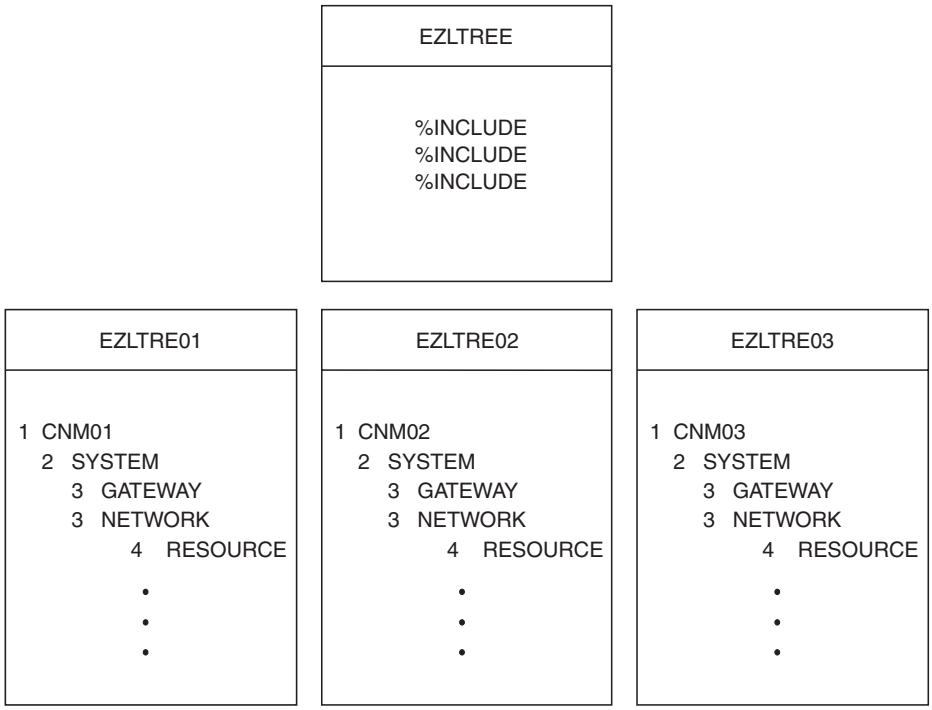


Figure 191. EZLTREE Members

Updating the EZLPNLS Member

Create unique copies of existing panels for each domain. This requires some naming convention for the panels. In this example, the naming convention used is *xxxx*P, where *xxxx* is the domain ID. Depending on how you have chosen to display the network status, you must select one of the following sets of panels:

- AON/SNA multiple-panel display
- Single-panel display

For an AON/SNA multiple-panel display, select one of the following sets of panels:

EZLTREE
: Tree

EZLPNLST
: Main Panel

FKVPSNA
: Resource Type menu panel

FKVPNLA
: APPLs menu panel

FKVPNLN
: NCP menu panel

FKVPNLC
: CDRM menu panel

FKVPNLD
: CDRSC menu panel

FKVPNLL
: LINES menu panel

FKVPNLM
: LINKS menu panel

FKVPNLP
PU menu panel
FKVPNLR
Resource (MISC—unrecognized resource type)
FKVPNL21
All Resources menu panel
EZLPNLG
Gateway menu panel
EZLPNL01
MESSAGEVIEW menu panel First
EZLPNL02
MESSAGEVIEW menu panel Down
EZLPNL0A
MESSAGEVIEW menu panel Right
EZLPNL0B
MESSAGEVIEW menu panel Down
FKVPNAC
AON Control Point panel
FKVPNAE
APPN End Nodes panel
FKVPNA1
All APPN Resources panel
FKVPNLX1
X25 All Resources panel
FKVPNLX2
X25 Machines panel
FKVPNLX3
X25 Inop SVCs panel

For single-panel display, select one of the following sets of panels:
EZLTREE
Tree
EZLPNLTY
Network View Panel
EZLPNL1
Resource View Panel
EZLPNLG1
Gateway View Panel
EZLPNL03
Message View Panel First
EZLPNL04
Message View Panel Right
EZLPNL0C
Message View Panel Down
EZLPNL0D
Message View Panel Right
FKVPNL1
SNA Resource View Panel

To update the EZLPNLS member:

1. Create unique panels for CNM02.

   Copy all panels for your display method, changing the panel name from EZLPNL*xx* to CNM02P*xx*. For example, change EZLPNL1 to CNM02P1. Within each copied panel, change all occurrences of CNM01 to CNM02 and change all occurrences of EZLPNL*xx* to CNM02P (the EZLPNLTY and EZLPNLST—

names must remain unchanged inside the panel). Commands assigned to DDF function keys might not be valid for resources in remote networks. Remove function key definitions that are not appropriate.

2. Create unique panels for CNM03.

   Copy all panels for your display method, changing the panel name from EZLPNL*xx* to CNM03P*xx*. For example, change EZLPNL1 to CNM03P1. Within each copied panel, change all occurrences of CNM01 to CNM03, and change all occurrences of EZLPNL*xx* to CNM03P (except EZLPNLTY and EZLPNLST—these names must remain unchanged inside the panel). Commands assigned to DDF function keys might not be valid for resources in remote networks. Remove any function key definitions that are not appropriate.

3. Add pointers from the Main Data Centers panels to the new panels.

   For multiple panel display, add the following to EZLPNLST:

   ```
   ST(CNM02.NETWORK,04,09,18,N, ,CNM02P2)
   SF(CNM02)
   ST(CNM03.NETWORK,06,09,18,N, ,CNM03P2)
   SF(CNM03)
   ```

   For single-panel display, add the following to EZLPNLTY:

   ```
   ST(CNM02.NETWORK,04,09,18,N, ,CNM02P1)
   SF(CNM02)
   ST(CNM03.NETWORK,06,09,18,N, ,CNM03P1)
   SF(CNM03)
   ```

When DDF is started, the CNM01 network status is primed. As the gateways to CNM02 and CNM03 are established, the DDF status for those networks are forwarded to CNM01. If CNM02 or CNM03 are lost, the descriptors are deleted for that network and a COMMLOST entry is added to indicate that the network status is no longer current.

Using Operator MARK Panels

AON provides two commands for tagging each DDF detail panels with an operator ID. These commands are MARK (**F2**) and UNMARK (**F10**). With these commands, an operator can select network problems from DDF for analysis.

Figure 192 on page 268 illustrates operator MARK panels.

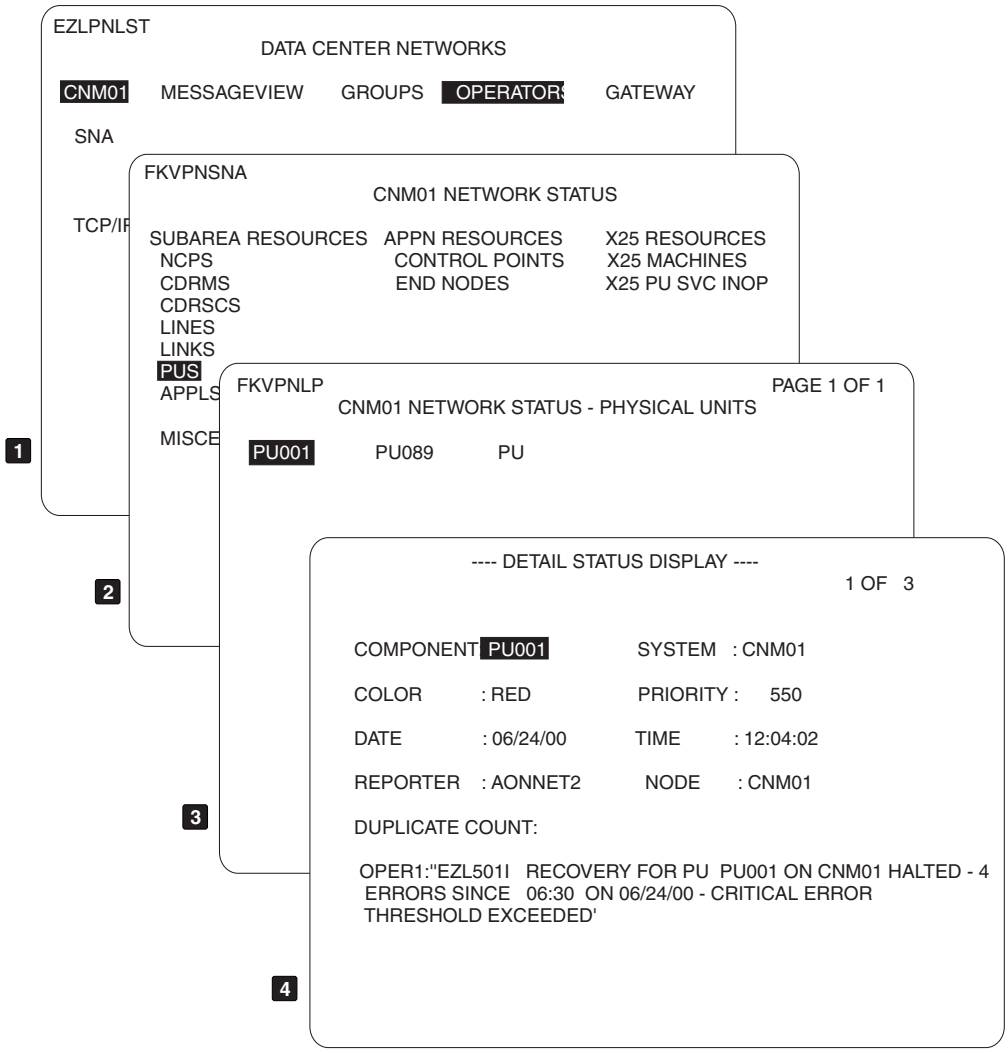


Figure 192. Operator MARK Panels (Part 1 of 2)

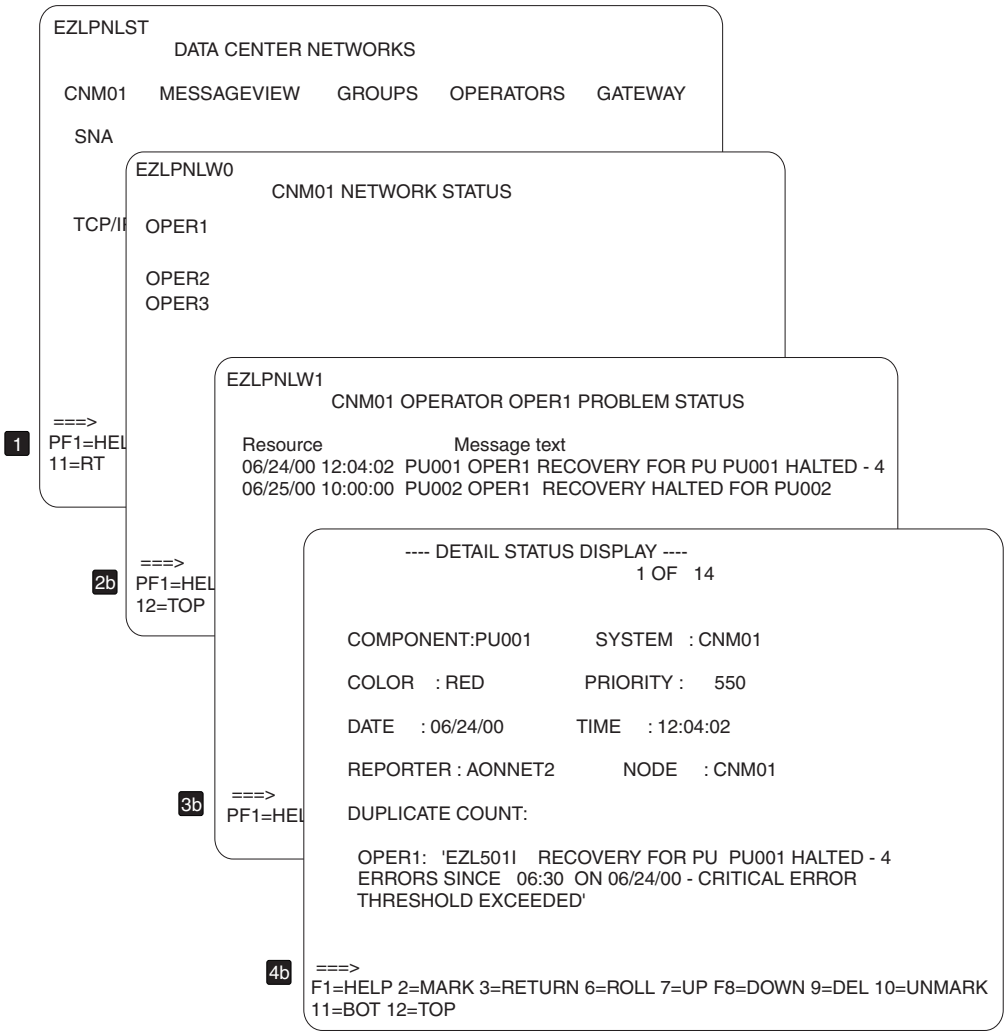


Figure 192. Operator MARK Panels (Part 2 of 2)

For an explanation of each panel in Figure 192 on page 268, match the numeric callouts beside the panels (for example, **1**) with the following paragraphs:

4b To mark a problem, display the Detail Status Display for the problem and then press **F2**. This action appends the operator's ID to the message at the bottom of the detail panel shown in **4b** .

1 and 2b
Marking a DDF problem also causes DDF to display the problem in reverse video, both on the Detail Status Display and on the upper level panels, as shown in **1** and **2b** .

If problems are being handled by an operator, they are marked. Other operators can choose unmarked problems for analysis; thereby, preventing duplicate effort.

Understanding Operator MARK Panels

Because the status is displayed in reverse video, operators know at a glance the most severe problems are being addressed. In addition, because the problem is time-ordered, operators know which problems have been outstanding the longest.

From these DDF panels, operators use function keys to recycle the resource to which the cursor points, display those resources, mark descriptors, unmark descriptors, and delete descriptors. NetView commands work from these command lines.

Defining Operator MARK Panels

To define operator mark panels update the EZLTREE member used for your DDF with the operator ID appropriate for your DDF installation. To add operator IDs for the DDF MARK function, update EZLTREE:

```
/*   NETWORK : CNM01                                                */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
      4 OPER2
      4 OPER3
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
          6 EN
        5 X25
          6 X25MCH
          6 X25PU
```

When DDF deletes descriptors at the NETWORK level, it also deletes them from the panel of the operator. Define each operator ID having independent panels in the EZLTREE member.

Grouping Resources in DDF

Group resources in DDF by site, application, customer base, company, or by any other criterion. Figure 193 on page 271 shows a sample DDF group.

```
EZLPNLST
                        DATA CENTER NETWORKS

   CNM01       MESSAGEVIEW       GROUPS       OPERATORS        GATEWAY

     SNA

      TCP/IP

                                                    06/24/00 16:21:00
 ===>
PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN           10=LF 11=RT 12=TOP
```

Figure 193. DDF Panel Showing GROUPS

To view the resources in this DDF group, move the cursor to GROUPS and press Enter. Figure 194 shows the resources defined to GROUPS. This sample DDF group is by geographical area.

```
EZLPNLGR
                          CNM01 NETWORK GROUP STATUS


   CALIFORNIA

   NEW YORK

   ATLANTA

                                                  06/24/00 09:46:00
 ===>
PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN           10=LF 11=RT 12=TOP
```

Figure 194. Sample DDF Group Panel

Grouping Resources for Specific Requirements

The DDFGROUP control file entry groups DDF resources for display. For example, you can group dissimilar DDF resources by geographic location.

Using DDFGROUP statements, AON supports wild cards in DDFGROUP lists and places resources in multiple groups. During initialization, the EZLEAC11 program creates DDFRES control file entries from the DDFGROUP control file entries. To determine which groups are defined for a given resource, check only the DDFRES control file entries. DDF resources are updated under both the applicable DDFGENERIC and DDFGROUP matches.

The syntax of the DDFGROUP control file entry is:

```
DDFGROUP groupname,
         LIST=(res1,res2,...resn)
         LIST=(res1,res2,...resn)
         LIST=(res1,res2,...resn)
         LIST=(res1,res2,...resn)
```

groupname
The name of this group of DDF resources.

Note: You must use *groupname* in EZLTREE and the panel used to display members of this group. Multiple DDFGROUP statements for the same *groupname* are valid.

LIST
The list of resources in the group. Wild cards are supported in resource names. You can create multiple lists. Each complete definition list must be on a single line.

Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for information about DDFGROUP syntax.

The EZLEAC11 program creates the DDFRES control file entries during startup in this format:

```
DDFRES res1,GROUP=(group_name1,group_name2,...group_namen)
```

Note: AON creates all DDFRES control file entries.

The following sample list illustrates the format of DDFGROUP control file entries that create a group of resources according to city:

```
DDFGROUP LA,LIST=(SALA*,GWATLA,GWLANY,GWSFLA,GWSDLA)
DDFGROUP SANDIEGO,LIST=(SASD*,GWATSD,GWSDNY,GWSFSD,GWSDLA)
DDFGROUP SANFRAN,LIST=(SASF*,GWATSF,GWSFNY,GWSFSD,GWSFLA)
DDFGROUP NEWYORK,LIST=(SANY*,GWATNY,GWSFNY,GWSDNY,GWLANY),
DDFGROUP NEWYORK,LIST=(IMSNY1,IMSNY2,IMSNY3)
DDFGROUP ATLANTA,LIST=(SAAT*,GWATNY,GWATSF,GWATSD,GWATLA),
                 LIST=(CICSAT1,CICSAT2)
```

Some of the DDFRES control file entries that the EZLEAC11 program creates from the above example are:

```
DDFRES SALA*,GROUP=(LA)
DDFRES GWATLA,GROUP=(LA,ATLANTA)
DDFRES GWLANY,GROUP=(LA,NEWYORK)
DDFRES GWSDLA,GROUP=(LA,SANDIEGO)
DDFRES GWSFLA,GROUP=(LA,SANFRAN)
```

In this example, SALA* is defined in group LA and SALACICS is defined in SANDIEGO. Therefore, when SALACICS is added to DDF, it is displayed under the SANDIEGO group only, not under the LA group. However, if SALACICS is explicitly defined in LA, then SALACICS is added to DDF under both SANDIEGO and LA.

In this example, the Gateway nodes (GWsa1sa2) are defined in both of the cities they are connecting. Each city has a subarea associated with it by naming convention; therefore defining SAsa_id* is sufficient to assign all resources in the city to the city status panel. As a result, gateways are displayed in several city panels as shown in Figure 195 on page 273. NEWYORK and ATLANTA are also responsible for associated applications shown in Figure 195 on page 273.

```
EZLPNLNY                                                PAGE 1 OF 1
                  NEW YORK CITY NETWORK STATUS

   GWATNY              GWLANY
```

```
EZLPNLAT                                                PAGE 1 OF 1
                  ATLANTA CITY NETWORK STATUS

   GWATLA              GWATNY
```

Figure 195. NEWYORK and ATLANTA Groups

Defining DDF Groups

The following sample definitions are based on the DDFGROUP control file entries shown in Figure 195. These definitions are located in DSIPARM.

Before you create DDF groups, consider your network and how you want the DDF panels to display. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* to code the DDFGROUP control file entries.

Updating the EZLTREE DSIPARM Member

To update EZLTREE, add DSIPARM member *group_name* to the EZLTREE member. Use a level 3 element that is not subordinate to NETWORK, so the same message is not displayed in MESSAGEVIEW multiple times (one for each resource type and DDF group). The following example tree is valid:

```
/*   NETWORK : CNM01                          */
1 CNM01
  2 SYSTEM
    3 GATEWAY
    3 GROUPS
      4 CALIF
        5 LA
        5 SANFRAN
        5 SANDIEGO
      4 NEWYORK
      4 ATLANTA
    3 OPID
      4 OPER1
    3 NETWORK
      4 RESOURCE
      4 SNA
        5 SA
          6 NCP
          6 LINE
          6 LINKSTA
          6 CDRM
          6 CDRSC
          6 PU
          6 LU
          6 SESSION
          6 APPL
          6 ERR
        5 APPN
          6 CP
          6 EN
        5 X25
          6 X25MCH
          6 X25PU
```

Figure 196. Example EZLTREE Member

Updating DDF Menus

To merge the new DDF panels into existing DDF panels, update the main panel menu, EZLPNLST, where you see CNM01, MESSAGEVIEW, and GATEWAY.

EZLPNLST is shown in Figure 197 on page 275.

```
EZLPNLST
                        DATA CENTER NETWORKS

   CNM01       MESSAGEVIEW       GROUPS       OPERATORS        GATEWAY

     SNA

      TCP/IP

                                                          06/24/00 16:21:00
 ===>
PF1=HELP 2=DETAIL 3=END        6=ROLL 7=UP 8=DN           10=LF 11=RT 12=TOP
```

Figure 197. EZLPNLST Panel with DDF Group

EZLPNLGR displays the Network Group Status Panel shown in Figure 198:

```
EZLPNLGR
                          CNM01 NETWORK GROUP STATUS


   CALIFORNIA

   NEW YORK

   ATLANTA

                                                        06/24/00 16:21:00
 ===>
PF1=HELP 2=DETAIL 3=END      6=ROLL 7=UP 8=DN      10=LF  11=RT    12=TOP
```

Figure 198. EZLPNLGR Panel Showing a List of Cities

To view the CALIFORNIA subgroups, use the EZLPNLCA indicator panel shown in Figure 199 on page 276.

```
EZLPNLCA
                        CALIFORNIA NETWORK STATUS SUMMARY

   LOS ANGELES

   SAN FRANCISCO

   SAN DIEGO









   ALL CALIFORNIA RESOURCES

                                            06/24/00 16:21:00
 ===>
PF1=HELP 2=DETAIL 3=END      6=ROLL 7=UP 8=DN      10=LF 11=RT 12=TOP
```

Figure 199. EZLPNLCA Panel for CALIFORNIA Group

Creating Generic Display Panels for DDF Groups

Creating a generic panel for each new group, enables operators to see resources saved under them. The following is a generic panel:

```
/*********************************************************************/
/* DEFINE CNM01 NETWORK STATUS PANEL                                 */
/*  NEWYORK        STATUS DISPLAY                                    */
/*                                                                   */
/*********************************************************************/
/* APAR#         DATE                 DESCRIPTION                    */
/* ---------- --------  ------------------------------------------- */
/*                                                                   */
/*********************************************************************/
P(EZLPNLNY,24,80,EZLPNL2,EZLPNL2, ,)
TF(01,02,09,T,NORMAL)
TT(EZLPNLNY)
TF(02,21,59,WHITE,NORMAL)
TT(CNM01 NEW YORK CITY NETWORK STATUS)
TF(01,65,77,BLUE,NORMAL)
TT(PAGE 1 OF 1)
SF(CNM01.NEWYORK,04,05,16,N, , ,01)
ST( )
SF(CNM01.NEWYORK,04,25,36,N, , ,02)
ST( )
SF(CNM01.NEWYORK,04,45,56,N, , ,03)
ST( )
:
TF(24,01,52,T,NORMAL)
TT(PF1=HELP 2=DETAIL 3=END 4=DIS 5=CY 6=ROLL 7=UP 8=DN)
TF(24,53,79,T,NORMAL)
TT( 9=DEL 10=LF 11=RT 12=TOP)
EP
/*********************************************************************/
```

The generic group panels for ATLANTA, SANDIEGO, LA, and SANFRAN look just like this one for CALIFORNIA except all occurrences of NEWYORK would be changed to the correct group name and the name of the panel would be updated.

Updating the EZLPNLST CNMPNL1 Member

To improve DDF performance, include new panels created for DDF groups in the EZLPNLS member of the CNMPNL1 data set for preloading. The DDF group sample panels provided with AON in the CNMPNL1 data set are:

- EZLPNLAT
- EZLPNLCA
- EZLPNLCI
- EZLPNLGR
- EZLPNLLA
- EZLPNLNY
- EZLPNLSF

Chapter 22. Issuing Dynamic Display Facility (DDF) Commands

AON routines use these commands to update the DDF status information from within DDF. If additional status information is required, use the following commands to update the DDF status information:

DDF Displays DDF or a particular DDF panel

DDFADD
Adds a status descriptor to a component

DDFCLEAR
Clears DDF

DDFDEL
Deletes a status descriptor from DDF

DDFPANEL
Loads a panel member

DDFQRY
Queries the status of specific status descriptors

DDFTREE
Loads a tree member

MARK
Marks a DDF resource with an operator ID

UNMARK
Removes an operator ID from a DDF resource

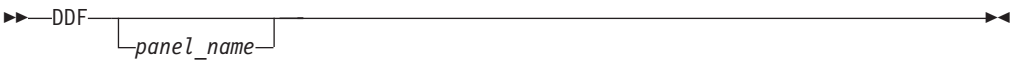
Using the Dynamic Display Facility (DDF)

Purpose

The DDF command shows a color-coded status panel for the resources that are currently being acted upon by AON or require operator intervention for recovery. You can also use the DDF command to display a specific DDF panel.

Format

DDF



Parameters

panel_name
The name of the panel displayed in the upper left corner of the screen. Use this parameter to view a specific DDF panel.

Usage

- The workstation from which you enter the DDF command must support 3*x*79 Terminal Extended Attributes, which are blue, red, pink, green, turquoise, yellow, and white for color and blink, reverse video, and underscore for highlighting.
- If you enter **DDF** without the *panel_name* parameter, the main DDF panel is displayed. (The panel name for this panel is EZLPNLST.)
- The DDF command operates in full-screen mode only.

Examples

To display the panel named FKVPNSNA when AON/SNA is installed, type the following:

```
DDF FKVPNSNA
```

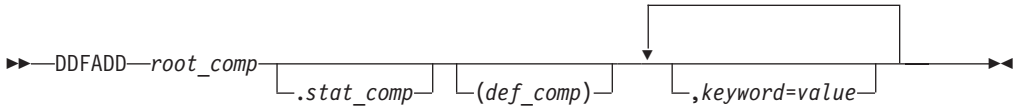
Adding Status Descriptors (DDFADD)

Purpose

The DDFADD command issues a request to the EZLTDDF task to add a status descriptor to a status component with data supplied by a calling program, a command list, or NetView command facility (NCCF) operator. The date and time are provided automatically.

Format

DDFADD



Note: You can specify more than one *keyword=value* pairs.

Parameters

def_comp
The element in the DDF tree that organized DDF descriptors into groups. This element is usually a resource type, service point name, or group name defined in DDFGROUP control file entries. For example, you can define CNM01.LINE99(LINE) where CNM01 is the *root_comp*, LINE99 is the *stat_comp*, and LINE is the *def_comp*.

keyword=value
The status information that is necessary to add a status descriptor. In general, the only keywords that are needed are reference value, priority, and data. Valid values are:

COlor = {Red | Blue | Turquoise | Green | Pink | Yellow | White}
Specifies color. If this is not specified, color is based on priority.

DAta =*text*
Specifies that text can be user or message data with a maximum length of 240 characters. Data can be composed of one or more lines. Each line of data can be delimited to produce a formatted display. Delimiters can be any unique character that does not occur in the text. Delimiters between lines must be doubled. For example:

```
DA=#LINE1-DATA #### LINE2-DATA #### LINE3-DATA #
```

Causes the following to display on the status descriptor data field:

```
LINE1-DATA
LINE2-DATA
LINE3-DATA
```

DataType = {OTH | MSG}
MSG specifies that message data is to be displayed on the status descriptor. OTH specifies that the data field contains user defined data.

HighL = {Normal | Blink | Reverse | Underscore | Panel}
If this is not specified, highlighting is determined by the panel definition.

INfo= *text*
Specifies the information displayed on DDF status panel in the STATUSTEXT field with a maximum length of 80 alphanumeric characters. The text must be delimited. Delimiters can be any unique character that does not occur in the text. The length of the text field must be within the range specified by the start and end positions in the corresponding STATUSFIELD entry. See "Locating the Status Component (STATUSFIELD)" on page 242 for more information.

PRiority= *value*
Specifies a valid number within the range specified in the EZLINIT file. If the field is not specified, a program default priority of 999 is used.

PropDwn ={Yes | No}
Specifies propagation downward. If this is not specified, propagation down is governed by entry in the EZLINIT file.

ProplvLD = {* | *root_comp.stat_comp*}
An asterisk (*) specifies that the status is to be propagated to the leaves of the tree. If a status component is specified, the status is only propagated down the leaves until, and including, the specified status component.

ProplvLU = {* | *root_comp.stat_comp*}
An asterisk (*) specifies that the level to which the status is to be propagated is the root of the tree. If a status component is specified, the status is only propagated up to, and including, the specified status component.

PropUp = {Yes | No}
Specifies propagation upward. If this is not specified, propagation up is governed by the entry in the EZLINIT file.

RefValue= *value*
Specifies reference value, which must be alphanumeric, with a maximum length of 20 (for example RV=NCP01).

root_comp
The root component name that is defined in the root node of the tree structure. The root component is required because different systems can have status components with the same name defined in their respective tree structures. The root component must be unique, therefore, each status component in a tree structure can be uniquely identified by prefixing it with the root component entry.

stat_comp
A valid resource name or resource type, as defined in the EZLTREE member, which can contain up to 8 characters.

Usage

If the data supplied in the DDFADD command exactly matches an existing descriptor in the chain, the new descriptor is not added.

With AON, status changes are logged in the automation log. The AON common logging routines provide the data for the DDFADD command and issue the DDFADD command. Any resource that is monitored by AON is automatically updated. User applications can also call the common logging routines to add DDF descriptors. The logging routines refer to the control file for status and priority information. See Chapter 19, "Understanding Dynamic Display Facility (DDF) Design," on page 197 for more details.

Examples

```
DDFADD CNM01.NCP001(NCP),RV=NCP001,PR=550,DT=MSG,
       DA='EZL509I NCP001 IS UNAVAILABLE (REPORTED BY AUTNET1)'
```

In this example, a status descriptor is added for NCP001 on CNM01 with a priority of 550. NPC001 is green on the status panel because priority 550 is in the green color range.

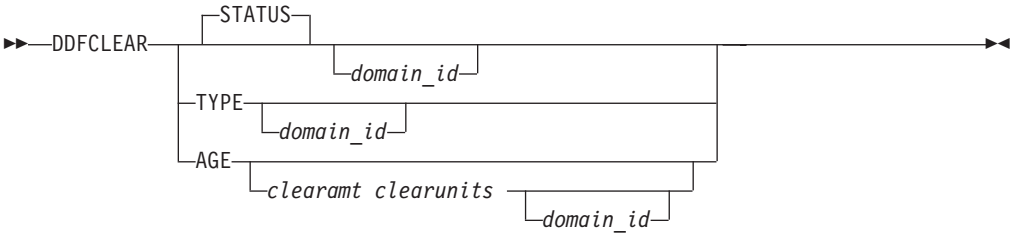
Clearing DDF (DDFCLEAR)

Purpose

The DDFCLEAR command deletes DDF elements based on resource. DDFCLEAR is a synonym for EZLEADCL.

Format

DDFCLEAR



Parameters

AGE
Deletes elements from DDF based on the age of the DDF element. A date and time stamp are stored into DDF when an element is added to DDF. This date and time are compared to the current date and time. If the difference exceeds the amount of DAYS or HOURS specified, the record is deleted. If you specify AGE with no other parameters, then the following command is issued:

```
DDFCLEAR AGE 5 DAYS current_domain_id
```

clearamt
The number of days or hours to be used for an age threshold for deleting DDF records in long-lived NetView systems. This number must be a whole number. If you are deleting records by hours of age, the number is in the range of 0 — 24. If you are deleting by days, any number is valid up to 999. Because all DDF elements are kept in storage, they do not survive a recycle of NetView. For this reason, the AGE option is useful only in environments where NetView has continuous availability for more than a week. If you issue DDFCLEAR AGE with no other parameters, the default value used is 5 days.

clearunits
Either DAYS or HOURS. All records whose DDF date is older than *clearamt* DAYS or *clearamt* HOURS is deleted. If no value is specified, DAYS is the default. If you specify HOURS, also specify a *clearamt* value because the parameters are positional.

domain_id
The NetView domain ID to be evaluated for extraneous elements. The domain ID must match one of the level 1 values in EZLTREE. For a single domain DDF, this is usually the current domain ID. Check the value of the control file entry ENVIRON SETUP SYSNAME to determine this value. For a focal-point DDF representing several NetView domains, this value can be the EZLTREE root name or the ENVIRON SETUP SYSNAME value set up on any of the distributed systems. If no domain ID is provided, the current NetView domain ID is used.

STATUS
Deletes records based on VTAM status. If you issue DDFCLEAR with no parameters, the default command issued is:

```
DDFCLEAR STATUS current_domain_id
```

STATUS = DDF records are deleted based on the VTAM status of the resource in the DDFname, in the format *domainid.resname(restype_generic)*. The resource is displayed with a D NET command. If the resource cannot be displayed, the DDF element is *not* deleted. If the resource cannot be displayed, AON assumes the resource is unavailable such as NCPs and switched major nodes.

If the resource status matches a DDF status, that DDF element is deleted. If the resource has REQ=NOADD defined for it, the wild cards in the ENVIRON DDF statements are evaluated. For example, AON default DDF statements provide for status of ACT* and CON* as REQ=NOADD. If DDFCLEAR were run and some LUs were found among the DDF elements that now had an active status (because of activating the PU,SCOPE=U), the LUs are deleted from DDF.

TYPE
Deletes records based on resource type. TYPE = DDF records are deleted based on the VTAM resource type of the resource in the DDFname (usually in the format *domainid.resname(restype_generic)*. The resource is displayed with a D NET command. If the resource cannot be displayed, the DDF element is *not* deleted. If the resource is assumed to be nondisplayable, a problem is indicated such as NCPs and switched major nodes. If the resource type matches a DDF type that has REQ=NOADD defined for it, the DDF element is deleted. Wild cards in the ENVIRON DDF statements are evaluated.

For example, AON default DDF statements provide for type of LU as REQ=NOADD. If DDFCLEAR were run and some LUs were found among the DDF elements that had *any* status, the LUs are deleted from DDF.

Usage

Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information about the ENVIRON DDF control file entries.

Examples

To clear all DDF records based on status, issue:

```
DDFCLEAR
```

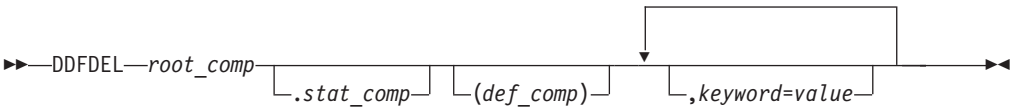
Deleting Status Descriptors (DDFDEL)

Purpose

The DDFDEL command deletes status descriptors. Each status descriptor in the chain is compared against the data specified on the DDFDEL command. If each specified element in the command matches the data, the status descriptor is removed from the chain. The parameters supplied with the DDFDEL command can include wildcard characters. An asterisk (*) takes the place of a single character or, if used at the end of the field, indicates that the rest of the string should be automatically matched. If a keyword is not specified on the command, it is considered to be matched by any other value.

Format

DDFDEL



Note: You can specify more than one *keyword=value* pairs.

Parameters

def_comp
The element in the DDF tree that organized DDF descriptors into groups. This element is usually a resource type, service point name, or group name defined in DDFGROUP control file entries. For example, you can define CNM01.LINE99(LINE) where CNM01 is the *root_comp*, LINE99 is the *stat_comp*, and LINE is the *def_comp*.

keyword=value
Describes the status information that is necessary to delete a status descriptor. Valid values are:

COlor = {Red | Blue | Turquoise | Green | Pink | Yellow | White}
Specifies a color.

DAta =*text*
Specifies user or message data with a maximum length of 240 characters.

DataType = {OTH | MSG}
MSG specifies that message data in the status descriptor is in message format. OTH specifies that the data field contains user defined data.

HighL = {Normal | Blink | Reverse | Underscore | Panel}
Specifies highlighting. If highlighting is specified in the DDFDEL command, it must be the same as that of the existing status descriptors, otherwise they are not deleted. Let highlight default, because it is considered to be matched by any other value.

INfo= *text*
Displays the information in the STATUSTEXT field, with a maximum length of 80 alphanumeric characters. The text must be delimited. Delimiters can be any unique character that does not occur in the text.

PRiority= *value*
Specifies the priority, which must be a valid number within the range specified in the EZLINIT PRI entry.

PropDwn ={Yes|No}
Specifies propagation downward. If this is not specified, propagation down is governed by entry in the EZLINIT file.

RefValue= *value*
Specifies a reference value, which must be alphanumeric, with a maximum length of 20 characters (for example RV=NCP001).

SOurce= *value*
Specifies the operator under whom the DDFADD request was issued. This is the REPORTER field on the Detail Status Display panel.

root_comp
The root component name that is defined in the root node of the tree structure. The root component is required because different systems can have status components with the same name defined in their respective tree structures. Because the root component must always be unique, each status component in a tree structure can be uniquely identified by using a prefix with the root component entry.

stat_comp
Valid resource name or resource type that is defined in the EZLTREE member up to 8 characters.

Usage

Use a wildcard character (*) with a single DDFDEL command to delete multiple status descriptors.

Examples

In this example, any status descriptor for NCP001 on CNM01 with a reference value of NCP001 is deleted. Because no other keywords are used, no other criteria are used to determine a match:

```
DDFDEL CNM01.NCP001,RV=NCP001
```

Examples

In this example, any status descriptors for NCP001 on CNM01 that have a reference value in the range of 100–190 are deleted:

```
DDFDEL CNM01.NCP001,RV=1*0
```

Examples

In this example, any status descriptors for NCP001 on CNM01 that have a reference value beginning with R and a priority beginning with the number 3 are deleted.

```
DDFDEL CNM01.NCP001,RV=R*,PR=3*
```

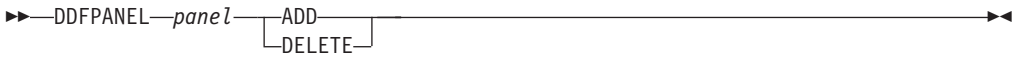
Loading a Panel Member (DDFPANEL)

Purpose

The DDFPANEL command dynamically loads a panel member from the DSIPARM data set or deletes a panel member.

Format

DDFPANEL



Parameters

panel
The name of the member the contains the panel to be loaded. The panel name and the member name must match.

Usage

When DDF is started, only the EZLPNLS panel definitions are loaded. Panels loaded with the DDFPANEL command are not reloaded during EZLTDDF initialization. If you add panels dynamically, restart DDF, Add the panels again. If you update a panel and want the updated version to be displayed by DDF, use the DDFPANEL command to replace the current copy of the panel.

Examples

The following command loads member NEWPANEL into memory, which gives you access to the panel defined in this member:

```
DDFPANEL NEWPANEL,ADD
```

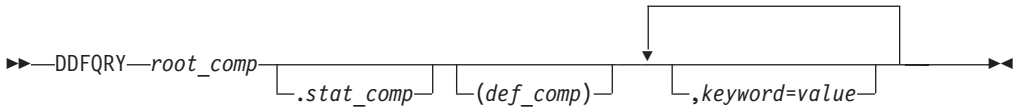
Querying Status Descriptors (DDFQRY)

Purpose

The DDFQRY command queries the status of specific status descriptors. Parameters specified with the DDFQRY command can include wildcard characters. Asterisks (*) take the place of a single character or, if used at the end of the field, indicate that the rest of the string are automatically matched. If a keyword is not provided on the command, any value is considered a match.

Format

DDFQRY



Note: You can specify more than one *keyword=value* pairs.

Parameters

root_comp
The root component name that is defined in the root node of the tree structure. The root component is required because different systems can have status components with the same name defined in their respective tree structures. Because the root component must be unique, each status component in a tree structure can be uniquely identified by using a prefix with the root component entry.

stat_comp
Valid resource name or resource type (*def_comp* value) that is defined in the EZLTREE member. You can use up to 8 characters.

def_comp
The element in the DDF tree that organized DDF descriptors into groups. This element is usually a resource type, service point name, or group name that is defined in DDFGROUP control file entries. For example, define CNM01.LINE99(LINE) where CNM01 is the *root_comp*, LINE99 is the *stat_comp*, and LINE is the *def_comp*.

keyword=value
Describes the status information that can be used to query status descriptors. Valid values are:

RefValue = *value*
Specifies reference value, which must be alphanumeric, with a maximum length of 20 characters (for example, RV=NCP001).

INfo = *text*
Specifies information text, which must be alphanumeric, with a maximum length of 80 characters. The text must be delimited. Delimiters can be any unique character that does not occur in the text (for example, IN='TAPE001').

PRiority = *value*
Specifies the priority, which must be a valid number within the range specified in the EZLINIT entry PRIORITY (for example, PR=330).

COlor = {Red | Blue | Turquoise | Green | Pink | Yellow | White}
Specifies color. Status descriptors with the specified color are displayed if all other keyword values match.

HighL = {Normal | Blink | Reverse | Underscore | Panel}
Specifies highlighting. Status descriptors with the specified highlighting are displayed if all other keyword values match.

SOurce = *value*
Specifies the operator ID that issued the DDFADD command. The ID can be a maximum length of 8 alphanumeric characters. This value is displayed in the status descriptor field.

DataType = {OTH | MSG}
Status descriptors with the specified data type value are displayed if all other keyword values match.

DAta = *text*
Status descriptors with the same data text are displayed if all other keyword values match.

Usage

Use a wildcard character with a single DDFQRY command to view multiple status descriptors. AON uses DDFQRY to query DDF status information so that it can be forwarded from a distributed domain to a focal-point domain.

Examples

In this example, status descriptors for NCP001 on CNM01 with a reference value of NCP001 are displayed:

```
DDFQRY CNM01.NCP001,RV=NCP001
```

Because no other keywords are used, an automatic match is assumed.

Examples

In this example, status descriptors for NCP001 on CNM01 that have a reference values in the range of 100 — 190 are displayed:

```
DDFQRY CNM01.NCP001,RV=1*0
```

Examples

Display all status descriptors saved with a *def_comp* value of NCP:

```
DDFQRY CNM01.NCP
```

Examples

Display all status descriptors for the system CNM01:

```
DDFQRY CNM01
```

Loading Tree Members (DDFTREE)

Purpose

The DDFTREE command dynamically loads a tree member from the DSIPARM data set or deletes a tree member from storage.

Format

DDFTREE

Parameters

tree
The name of the member that contains the tree structure to be loaded

Usage

The tree member can refer to other tree members with the %INCLUDE keyword. When a new tree is loaded to replace the existing tree, status descriptors that have similar *leaf* names in both trees are copied to the new tree.

When DDF is started, only the EZLPNLS panel definitions are loaded. Panels loaded with the DDFPANEL command are not reloaded during EZLTDDF initialization. If you add panels dynamically and restart DDF, add the panels again.

The DDFTREE command adds trees at the 01 or root level. Trees added exist with other trees in the EZLTREE member, unless the tree added has the same root as one that already exists. If the tree being added already exists in DDF, the current tree is replaced by the new one. You can replace only complete trees.

The member name of the tree and root of the tree must be the same for the DDFTREE command to replace a tree.

Examples

The following command loads member NEWTREE into memory, which gives you access to the tree structure defined in this member:

```
DDFTREE NEWTREE,ADD
```

Assigning a Problem to an Operator in DDF (MARK)

Purpose

The MARK command assigns a DDF entry to an operator. Specify the data used to identify the DDF entry and the ID of the operator to be assigned to the entry.

Format

Parameters

opid
The ID of the operator to whom this entry is to be assigned

root_comp
The root component name that is defined in the DDF entry to be assigned

rv The resource name that is displayed in the RefValue field of the DDF entry to be assigned

Usage

The *root* and *rv* parameters are required to issue this command from a command line. If the *opid* parameter is not specified, DDF assigns the entry to the operator ID issuing the MARK command.

If the entry to be signed out is already signed out no action is taken. Before attempting to reassign the entry to another operator, issue the UNMARK command. When assigned, a resource remains assigned during recovery monitoring, as long as the operator who marked the resource is logged on. If the operator assigned to the resource logs off, the next recovery monitoring timer causes the resource to be unassigned.

Examples

To assign the DDF entry for NCP001 under the domain CNM01 to the operator OPER1, issue:

```
MARK CNM01.NCP001(OPER1)
```

Removing an Operator Assignment in DDF (UNMARK)

Purpose

The UNMARK command removes a DDF assignment entry from the specified operator. The data used to identify the DDF entry and the ID of the operator to be removed must be specified.

Format

UNMARK

Parameters

operator_id
The operator ID assigned to this DDF entry

root_comp
The root component name that is defined in the DDF entry to be unmarked

rv The resource name that is displayed in the RefValue field of the DDF entry to be unmarked

Usage

- The *root* and *rv* parameters are required. If you do not specify the *operator_id* parameter, the UNMARK command uses your operator ID as the default.
- If you issue the UNMARK command for a DDF entry that is not assigned to an operator, the UNMARK command takes no action.
- Each automation function has a syntax for specifying the name of the resource to be displayed (RV).

Examples

To remove the operator ID, OPER1, from the DDF entry NCP001 under CNM01:

```
UNMARK CNM01.NCP001(OPER1)
```

Chapter 23. Creating Customized Procedures

Before you begin to write automation procedures for your network, become familiar with writing and interpreting NetView command list programs. Refer to *IBM Tivoli NetView for z/OS Programming: REXX and the NetView Command List Language* for more information.

AON automation functions enable you to build and expand network automation. AON automation functions provide selected recovery routines and the ability to expand the recovery using common routines. To extend the automation capability functions of AON automation you can write programs or extend control file definitions. You can write extensions to:

- Check the status of network components using VTAM commands before taking action.
- Perform variable substitution for commands and replies with information obtained from the incoming message or from additional solicited information.
- Check automation settings for a resource, resource type, or network before taking action.
- Check specific error codes and take corrective action depending on the error code.
- Coordinate multiple independent messages into a single automated response.
- Create specialized operator dialogs.
- Check thresholds for events in a specified interval.

Interface user-written extensions with the common routines in AON when possible. Common routines provide the following benefits:

- Less code has to be written, reducing the development time
- Portability of the code if all installation unique information is maintained in the control file
- Consistent network management interface

Also note the following functions and features:

- Messages with HDRMTYPE='Y' are sent directly to the system console and cannot use the automation by the program operator interface (POI) to NetView. To circumvent this, use the SSI interface.
- Unsolicited VTAM messages sent to the operating system console (such as IST931I) are also sent to NetView by the POI if the PPOLOG start option is in effect. Message automation occurs when messages enter the NetView address space through the SSI task or through an operator task.
- You must define a subsystem interface (SSI) address space for the NetView component on which AON is running. This enables AON to submit jobs for log maintenance, and to respond to console messages other than those from NetView. When you define the SSI, check your message processing facility list (MPFLST) in PARMLIB and ensure that all messages you want to automate can pass to and from NetView.

How Programs Use AON Control File Routines

The common routines enable a user-written program the capability to interface to the control file, status file, and log file with a minimum amount of coding. Functions, such as determining whether automation is available from the control file, are supported through the common routines.

To invoke a program that performs automated functions, use one of the following methods:

- Issue the program from the NetView automation table.
- Have the operator enter the program name or a synonym for the program.
- Have a higher level program call a lower level program.
- Issue a program with a timer.
- Issue a program with the NetView EXCMD command.

Invoking a program from the NetView automation table is commonly used for passive monitoring.

How a program is invoked and what function the program performs determines which AON routines the program calls. This section contains information that is applicable to all programs written to use the AON common routines, but the format and description is most applicable to programs which are invoked from the NetView automation table. The basic AON program:

- Performs program initialization processing.
- Checks recovery automation.
- Performs program unique processing such as THRESHOLDING and MONIT.
- Notifies operators of intervention required.
- Logs automation activity.

See Figure 200 on page 297 for the basic AON program flow.

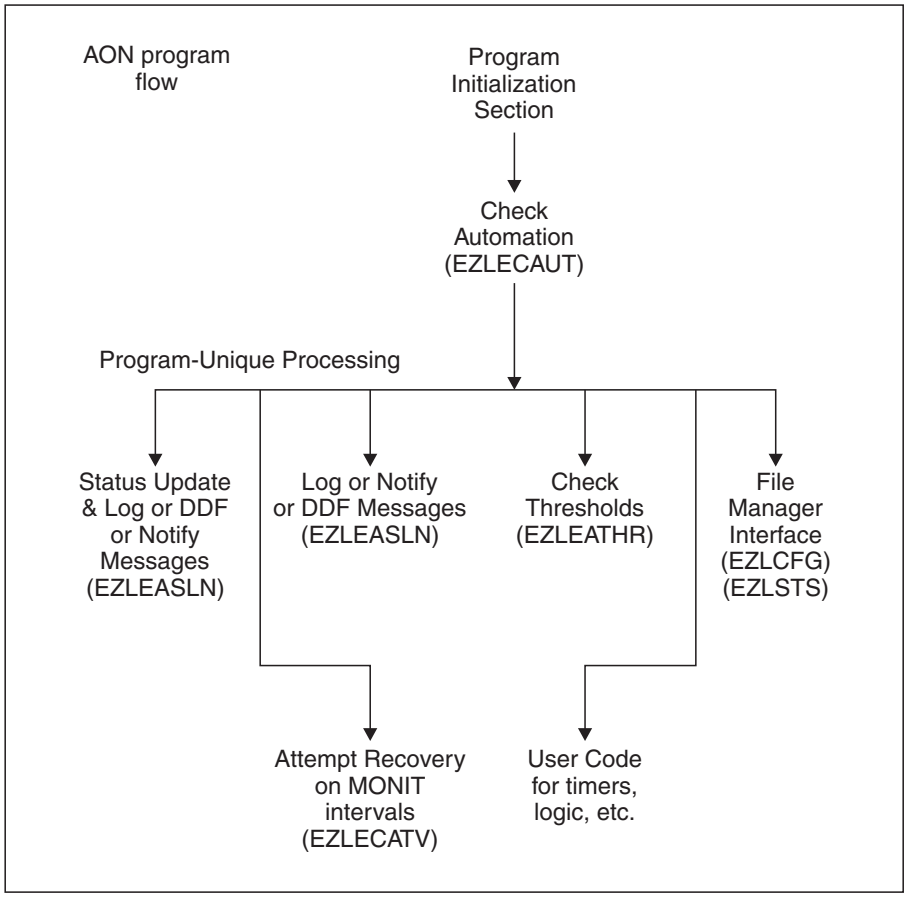


Figure 200. Basic AON Command List Flow

Performing Program Initialization Processing

Initialization processing:

- Identifies the program with an &IDENT=*name* variable.
- Declares the common global variables (CGLOBALs) and task common global variables (TGLOBALs) that are used.
- Issues debugging messages, if AONTRACE is turned on.
- Validates the program was properly invoked.
- Forces the program to be run under a specific operator.
- Saves the NetView message parameters in case the program uses the NetView WAIT statement.

These tasks are not required in user-written programs. However, to perform complex processing logic or to simplify the coding process, you might need to perform several of these housekeeping routines.

The identify step simplifies the coding of the message logging and notification routines. Declaring task global variables (TGLOBALs) and common global variables (CGLOBALs) is necessary if you need to use any of them. The AONTRACE function is useful in problem determination. Validating that the command was properly issued is useful to stop the operator from accidentally running the program. The validation can also be accomplished through NetView

command authorization. If you use the NetView WAIT statement and still want to access the original message text or control information, save the variables.

See the coding in "Sample AON Extended Module" on page 299, the supplied extended programs, or the *IBM Tivoli NetView for z/OS Programming: REXX and the NetView Command List Language* for further information about coding the initialization sections.

Determining If Automation Is Available

This step must always be performed by programs which are invoked from the automation table. The step is accomplished by calling the `EZLECAUT` common routine. The routine checks the `RECOVERY` policy definitions to make sure the automation flags enable automation. These checks eliminate the risk of automating messages for resources that should not be automated or for which automation is turned off.

Performing Program Unique Logic

The program unique logic can be any combination of AON common routines and user-written code. The requirements to be met and the functions to be performed determine the structure and content of the program. Several possible common routines and user-written code sections are:

- Activating resources
- Starting resource monitoring with or without reactivation attempts
- Logging messages and sending notifications
- Checking threshold values
- Interfacing with the file manager
- Writing user code for:
  - Issuing inquiries and checking answers
  - Setting common global variables (CGLOBALs) and task global variables (TGLOBALs) to control processing
  - Setting timer delays for reinitiating processing

Activating resources

You can activate VTAM resources by issuing an AON common routine, EZLEVACT.

The routine is necessary when an INACTIVE message is received and a user-written program is handling the message. VTAM commands or NetView commands can be used to assist in this.

Recovery and reminder monitoring

You can use recovery and reminder monitoring by issuing an EZLECATV or EZLESRMD AON common routine. These routines use the `MONIT` policy definitions. The EZLECATV routine starts monitoring the resource status and, if necessary, tries to recover the resource. The EZLESRMD routine monitors the resource and notifies operators, but does not start recovery.

Updating status, DDF, logs, or sending notifications

You can update status, DDF, logs, or send notifications by invoking the EZLEASLN common routine. The EZLEASLN common routine also generates alerts, based on your `NOTIFY` policy definitions.

This routine logs a message to the automation log (NLOG), DDF, and the NetView log (NETLOG). If you specify STATUS=YES, the status file is updated with the current automation status and acting operator. If you specify NOTIFY=YES on the EZLEASLN invocation, an operator notification is sent to all notification operators.

Checking thresholds

You can check thresholds, defined with the THRESHOLD policy definition, by invoking an EZLEATHR AON common routine.

This routine is used if it is necessary to track and maintain a threshold count. A threshold is used to change the recovery action based upon the threshold level that was exceeded. The common routine also records the current date and time as a new error to the status file.

Interfacing with the file manager

You can interface with the file manager by using the file manager interface commands.

The commands are used if you need to access uniquely defined entries in the control file or want to directly inquire or update the status file.

Several file manager interface commands exist. See Chapter 24, "Using AON Command Processors," on page 303 for more information.

User code for issuing inquiries and checking answers

You can write user code to issue inquiries and check answers by using NetView or z/OS commands to check the value or status of some non-VTAM owned resource, system component, or subsystem before continuing.

Refer to the WAIT command in *IBM Tivoli NetView for z/OS Programming: REXX and the NetView Command List Language* for more information.

User code for setting CGLOBALs and TGLOBALs to control processing

You can write user code for setting CGLOBALs and TGLOBALs to control processing by using NetView commands to set a flag indicating progress, message counts, and other various indicators that must be kept from one occurrence of a message or event to the next.

Refer to the discussion of CGLOBALs and TGLOBALs in *IBM Tivoli NetView for z/OS Programming: REXX and the NetView Command List Language* for more information.

User code for setting timer delays for reinitiating processing

You can write user code for setting timer delays to reinitiate processing by using NetView commands.

Use this code when a program must reissue itself or another program after a given time period to perform additional processing. One example is in the active monitoring of failed network resources.

Refer to the discussion of AT, AFTER, and DELAY commands in the *IBM Tivoli NetView for z/OS Command Reference Volume 1 (A-N)* for more information.

Sample AON Extended Module

This section describes the AON extended module that tries to recover the resource name that is passed to it. The module uses a subset of the AON common routines. The notes following the example refer to portions of the module and the AON common routines that are described in "How Programs Use AON Control File Routines" on page 296.

```
/*********************************************************************/
/*                                                                   */
/*  (C) Copyright IBM Corp 1997, 2001. All rights reserved.          */
/*                                                                   */
/*********************************************************************/
```

```
/*                                                                   */
/*     DESCRIPTION:  THIS CLIST WILL ATTEMPT TO RE-ACTIVATE THE FAIL */
/*                     RESOURCE.                                     */
/*     WHERE CALLED: INVOKED FROM THE MESSAGE TABLE BY USER CODED    */
/*                     MESSAGE TABLE ENTRY SENDING RESOURCE NAME ONL */
/*                                                                   */
/*   ITS PURPOSE IS TO REACTIVATE THE RESOURCE AUTOMATICALLY.  IT    */
/*   ALSO INFORMS NCCF ALERT OPERATORS IF THE RESOURCE CAN NOT BE    */
/*   ACTIVATED.  IT WILL ALSO CHECK THRESHOLDS SET BY THE CUSTOMER   */
/*   TO INFORM THE ALERT OPERATORS OR TERMINATE RECOVERY.            */
/*                                                                   */
/*-------------------------------------------------------------------*/

 trace off

 Parse source . invok ident .
 parse upper arg ArgString

 Parms = ArgString

/*-------------------------------------------------------------------*/
/* Entry Trace Call                                                  */
/*-------------------------------------------------------------------*/
 1  'GLOBALV GETC EZLTRACED EZLTRACEO.'Opid()||,/* Trace Variable */
           ' NETOPER NETOPER2 BASEOPER'
If Substr(EZLTRACED,1,4) <> 'NONE' Then  /* If not NONE ...    */
  Do
 2    'EZLTRACE ENTRY 'ident argstring                 /* Entry trace  */

   interpret 'trace' EZLTRACER
  End
OperTrace = Substr(Value('EZLTRACEO.'Opid()),1,2)


 Return_Code = 0

 /* If opid is valid then process, else route to BASEOPER autotask   */

 if opid() = Netoper2 | opid() = Netoper | opid() = Baseoper then
   Call PROCESS
 Else
  Do                                          /* route recovery */
    /* 'EZLEASCD AON Baseoper EZLEAGEN 'Parms                    */
 3     'AONCMD 'Baseoper' EZLEAGEN 'Parms
    Return_Code = 9
  End                                         /* route recovery */

 Call Leave_Now


PROCESS:
 Resname  = Parms
 4  'EZLEAGRN 'Resname
 'GLOBALV GETT RESTYPE RESSTAT '
 /* Issue EZL509I - resource UNAVAILABLE message   */
 5  'EZLEASLN NOTIFY=Y,STATUS=Y,'|| ,
      'AON,INACTV,EZLEAGEN,EZL509,'date("U")','|| ,
       substr(time(),1,5)','Resname','Restype','domain()
 Call ChkAuto
Return

/*-------------------------------------------------------------------*/
/*  PERFORM AUTOMATION                                               */
/*-------------------------------------------------------------------*/

CHKAUTO:
 /* Call the Check_Auto routine to check the RECOVERY Policy         */
```

```
6  'EZLECAUT' Resname Restype
 if Rc ¬= 0 then                              /* don't auto resource? */
   Call EXIT0
7  'EZLEACKT' Resname                           /* Ck for exist timer  */
 if Rc = 1 then                               /* If timer exists?    */
   Call EXIT1
 if substr(Resstat,1,3) = 'ACT' then          /* if resource is ACT  */
   Call EXIT0
 if substr(Resstat,1,3) = 'CON' then          /* If resource is CONCT*/
   Call EXIT0

/* Call Thresholding routine to check the INFREQ/FREQ/CRIT Thresholds*/
8  'EZLEATHR' Resname','Restype',OPTION=SNA'
 if Rc = 0 then                               /* thresh ok?      */
   Call RECOVERY                              /* attempt recovery */
 else
   'VARY NET,ID='Resname',INACT,F'            /* inactivate it  */
Return

/*--------------------------------------------------------------------*/
/*     ATTEMPT RECOVERY OF THE RESOURCE.                              */
/*--------------------------------------------------------------------*/

RECOVERY:
9 "EZLECATV" Resname","Restype",0,"date('U')","substr(time(),1,5)
Call EXIT0

EXIT0:
  Return_Code = 0
  Call Leave_Now

EXIT1:
  Return_Code = 1
  Call Leave_Now
/*--------------------------------------------------------------------*/
/* Exit Trace Call                                                    */
/*--------------------------------------------------------------------*/
Leave_now:
 /* If Domain E/E trace is 'ON' or Oper E/E trace 'ON' ...     */
 If Substr(EZLTRACED,1,2) = 'ON' |,           /* If Domain on ..*/
    (Substr(EZLTRACED,1,3) = 'OFF' & OperTrace = 'ON') Then
   'EZLTRACE EXIT 'Ident Return_code          /* Call Exit Trace      */
 Exit Return_code
```

1 The common global variables and task global variables are defined.

2 EZLTRACE is called to perform AON standard entry tracing.

3 This section of code ensures the module is running under an automated operator, and if not, sends the command to the NETOPER or BASEOPER automation operator to run.

4 Common routine EZLEAGRN is called to get resource information.

5 An EZL509I message is logged regarding the availability of the resource.

6 The common routine EZLECAUT is called to verify that automation is enabled. The resource type and status is set from this module. If the recovery flag is on, the recovery module runs.

7 The existence of a timer for this resource is checked. If a timer exists with timer ID equal to the resource name, recovery is already in effect for this resource through another means. If recovery is already in effect, the program (command list) exits.

8 The resource is analyzed to determine whether a critical threshold has been exceeded. If it has, the resource is forced into the inactive state and the module exits.

9 EZLECATV is called to initiate recovery for the resource and continue recovery monitoring based on MONIT intervals.

Chapter 24. Using AON Command Processors

AON provides command processors to interface with the control file, status file, or automation log. These command processors update and retrieve data contained in the control file, status file, or automation log. AON provides the following command processors:

Control File Interface Command (EZLCFG)

Purpose

Use the EZLCFG command to load, display, and modify the control file entries. You can also use the command to display the status of the control file function or to perform a syntax check on the control file member. Before you can display panels and modifications, you must load the control file into storage. After they are loaded, the panels and modifications affect an in-storage version of the control file, providing a temporary update facility. To permanently change the control file member, edit the DSIPARM data set, and reload.

Note: There are certain restrictions when you update the control file. Command updates to entries in the control file cannot be performed online if the control file entry is longer than 200 characters. This is a NetView restriction. To code an entry that is longer than 200 characters, change the configuration file and reload it.

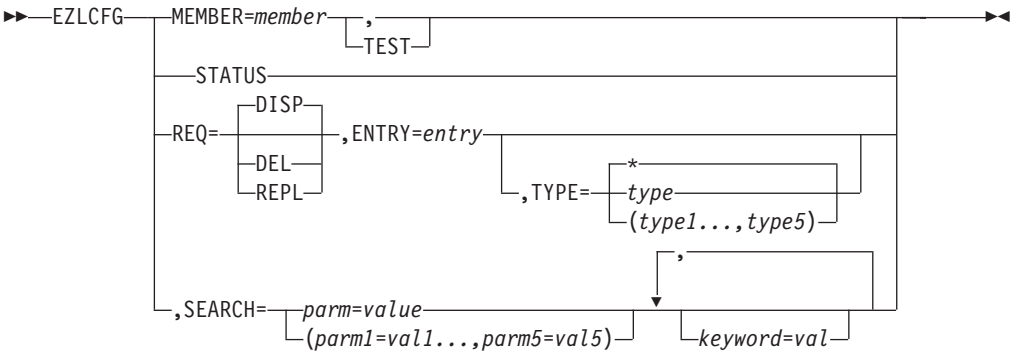
The control file entries are keyword oriented and, therefore, independent of the NetView command list language or the operating system. Modifications or displays using the EZLCFG command capitalize upon the use of these keywords to retrieve entries for individual resources, resource types (such as all NTFYOPS), or system wide defaults. This keyword structure decreases the need to generate command list variables that contain information for each resource.

The EZLCFG command functions both as an operator command and a command list interface to the control file.

Note: Use of the EZLCFG command is discouraged. Use the POLICY command. The EZLCFG command is still available for migration purposes. For additional information on the POLICY command refer to the *IBM Tivoli NetView for z/OS Automation Guide*.

Format

EZLCFG



Note: You can specify more than one *keyword=value* pairs.

Parameters

ENTRY
Specifies the entry field of the control file. The entry-name must be 1 to 32 characters, without embedded blanks, commas, or quotation marks.

MEMBER
Specifies the member name containing the control file entries. This member is loaded into storage for subsequent use. The member must exist in a data set that is concatenated with the data sets in the DSIPARM DD statement.

Using EZLCFG MEMBER=member might cause problems since all policy files to be loaded are defined in the CNMSTYLE member and are loaded using the POLICY command.

To load or test the control file, enter EZLCFG MEMBER=*member*[,TEST].

REQ
Specifies the type of request. DISP (display) is the default request if not entered. DEL (delete) and REPL (replace) must be entered when performing that function. REPL adds an entry if one does not exist.

SEARCH
Valid only when used with REQ=DISP. Searches all entries specified by ENTRY and TYPE for a match where *parms=value* defines the data to be associated with the specified ENTRY and TYPE fields. The *parm* can be any character data, without embedded blanks, commas, or quotation marks. The character (=) and the *value* must immediately follow the *parm*. The *value* can have embedded quotation marks, commas, and blanks as long as single quotation marks or parentheses are around the *value*. The parms=*value* field has a restriction of 70 characters.

When multiple search arguments are specified, an implied logical 'OR' operation is performed. Entries that match one of the search arguments are shown.

AON defines a number of ENTRY, TYPE and parms=*value* fields. The JOB=*jobname* parameter in the resource control file entry is an example of the parms=*value* field.

STATUS
Displays the name of the logical policy file loaded, or a message stating that the control file function is inactive.

For display, delete, replace, or add requests:

TEST
Enables the user to perform very simple syntax checking of a control file member. Entries are not verified.

Note: MEMBER is the only operand allowed with TEST.

TYPE
The type field on the control file. The default TYPE field is an asterisk (*) which is allowed only for DISP (display) commands. The specification of asterisk (*) returns all the type fields associated with a given entry name. For example, all resource entries or all NTFYOP entries.

You can specify up to five types of DISP, DEL, and REPL requests when performing the command. Only the first type found in the list of types is affected by the command.

When specified, *type* must be 1 to 32 characters, without embedded blanks, commas, or quotation marks.

Usage

The following wildcard characters can be used:

* Multiple character wild card

% Single character wild card

For example, both PU0* and PU%% matches for PU01. SEARCH=(AUTO=*) matches for entries containing the AUTO parameter. ENTRY=ENVI* matches for all entries starting with ENVI.

When an EZLCFG REQ=DISP command is entered that requests a certain ENTRY with a one or more specific TYPEs, it searches for those types in the order they were specified in the command. When the first match is found, the information is returned to the requestor as a multiline message. If there are no matches, it performs a final search with a type-name of DEFAULTS for that ENTRY. If there is still not a match, a message is returned to the requestor. If the *type-name* of DEFAULTS is found, that information is returned to the requestor.

When performing a display, if a specific TYPE is found, it is treated as a COMPLETE entry. Only that specific entry is displayed.

To replace an existing entry, type the entire new entry. The REPLACE command is treated as a COMPLETE entry. The existing entry and the replacement entry do not merge. This replacement process has a limitation on the length of the REPLACE command. The maximum length command is 240 characters. When you attempt to replace a control file entry, the replacement entry can be no greater than 200 characters. To do a large replace command, use the INPUT 3 NetView command to expand your command buffer.

KEYWORD=*value* operands in the control file can be no longer than a single line.

Note: The control file member must be placed in storage using the PIPE INSTORE command. Prior to placing the item in storage, the SUBSYM stage must be invoked to resolve system symbolics. Failure to perform these actions prior to the EZLCFG call results in the stored version being used. Therefore, without invoking the SUBSYM stage, any changes to the control file on the DASD are ignored.

All policy definitions are loaded into NetView storage using PIPE INSTORE. If you make changes to your policy files in DSIPARM, you can use POLICY REQ=LOAD to reload you new policy definitions and remove the existing policy definitions.

Usage:

The POLICY command supports all functions that EZLCFG performs except the search function. Use the POLICY command whenever possible.

Messages

The following messages are issued during the successful operation of the EZLCFG command.

For the test function (TEST):

```
EZL026I TEST OF THE CONTROL FILE MEMBER "member-name" WAS UNSUCCESSFUL
```

For the status function (STATUS):

```
EZL005I MEMBER member-name CURRENTLY BEING USED FOR THE CONTROL FILE
```

For delete and replace commands:

```
EZL001I REQUEST "request" WAS SUCCESSFUL
```

For DISPLAY commands:

```
EZL111I AUTOMATION CONFIGURATION DISPLAY - ENTRY= entry-name
EZL112I ACTIVE TYPE= type-name  , DESIRED TYPE= type-name1 ...
EZL113I DATA IS parms=value
EZL002I END
```

Note: Multiple EZL113I messages might be displayed after an EZL112I command and where the *type-name* is an asterisk (*). When the type is omitted or specified as an asterisk (*), the DESIRED TYPE is not displayed on the EZL112I message. For example, the following can occur:

```
EZL111I AUTOMATION CONFIGURATION DISPLAY - ENTRY= NTFYOP
EZL112I ACTIVE TYPE= NETOP1
EZL113I    DATA IS OPER='OPER 1'
EZL113I    DATA IS CLASS=(10,40)
EZL112I ACTIVE TYPE= NETOP2
EZL113I    DATA IS CLASS=(10)
EZL002I END
```

The following messages are issued if the entry or member name was not found or the request failed.

For load function (MEMBER=):

```
EZL042I MEMBER member-name NOT FOUND
```

For the test function (TEST):

```
EZL027I THE FOLLOWING ERRORS ENCOUNTERED IN PROCESSING MEMBER member-name
EZL023A FIELD "KEYWORD='VALUE('" CONTAINS UNBALANCED PARENTHESIS
EZL029I ENTRYA TYPEA,KEYWORD='VALUE('
EZL028I member-name ERROR DISPLAY
EZL004I PROCESSING FAILED FOR "EZLCFG MEMBER=member-name" COMMAND
EZL026I TEST OF THE CONTROL FILE MEMBER "member-name" WAS UNSUCCESSFUL
```

For the status function (STATUS):

```
EZL040I CONTROL FILE INACTIVE
```

For the delete and DISPLAY commands:

```
EZL041I UNABLE TO FIND type name
```

Note: The REPLACE command adds an entry for a message if one does not exist.

Any messages beginning with EZL0 other than those previously documented must be considered an error situation.

Examples

This example contains the command that displays the RECOVERY flag for PU01. The control file entry is:

```
RECOVERY PU01,AUTO=Y,NOAUTO=(TUESDAY,10:00,12:00)
```

The command is:

```
EZLCFG REQ=DISP,ENTRY=RECOVERY,TYPE=PU01
```

The response is:

```
EZL111I AUTOMATION CONFIGURATION DISPLAY - ENTRY= RECOVERY
EZL112I ACTIVE TYPE= PU01       , DESIRED TYPE= PU01
EZL113I    DATA IS AUTO=Y
EZL113I    DATA IS NOAUTO=(TUESDAY,10:00,12:00)
EZL002I END
```

In this example, a RECOVERY flag exists for the PU01 resource. The operator or command list processes the command to display the entry and the associated response is a multi-line message.

Examples

This example shows a command to display the RECOVERY flag for PU0. The control file entries are:

```
RECOVERY DEFAULTS,AUTO=Y,NOAUTO=(MONDAY,10:00,12:00)
RECOVERY PU01,AUTO=Y,NOAUTO=(TUESDAY,10:00,12:00)
```

The command is:

```
EZLCFG REQ=DISP,ENTRY=RECOVERY,TYPE=PU01
```

The response is:

```
EZL111I AUTOMATION CONFIGURATION DISPLAY - ENTRY= RECOVERY
EZL112I ACTIVE TYPE= PU01       , DESIRED TYPE= PU01
EZL113I DATA IS AUTO=Y
EZL113I DATA IS NOAUTO=(TUESDAY,10:00,12:00)
EZL002I END
```

The previous example causes no change in the displayed data. Although a DEFAULTS flag exists, data from the different RECOVERY types (PU01 and DEFAULTS) do not merge.

Examples

This example contains a command to display the RECOVERY flag for PU01. The control file entry is:

```
RECOVERY DEFAULTS,AUTO=Y,NOAUTO=(MONDAY,10:00,12:00)
```

The command is:

```
EZLCFG REQ=DISP,ENTRY=RECOVERY,TYPE=PU01
```

The response is:

```
EZL111I AUTOMATION CONFIGURATION DISPLAY - ENTRY= RECOVERY
EZL112I ACTIVE TYPE= DEFAULTS   , DESIRED TYPE= PU01
EZL113I    DATA IS AUTO=Y
EZL113I    DATA IS NOAUTO=(MONDAY,10:00,12:00)
EZL002I END
```

The pervious example shows the EZL112I message with the found *type-name* (ACTIVE) as DEFAULTS, but the requested *type-name* (DESIRED) is PU01. This occurs because there was no RECOVERYPU01 flag, therefore the EZLCFG command automatically searches for a *type-name* of DEFAULTS. For this example, a RECOVERY DEFAULTS entry existed; therefore that information was displayed.

Assuming a DEFAULTS entry did not exist, the command would have resulted in an EZL041I UNABLE TO FIND TYPES... message.

Examples

This example contains a command to display the RECOVERY flag for PU01 or PU, depending on which one exists. The control file entry is:

```
RECOVERY PU,AUTO=Y
```

The command is:

```
EZLCFG REQ=DISP,ENTRY=RECOVERY,TYPE=(PU01,PU)
```

The response is:

```
EZL111I AUTOMATION CONFIGURATION DISPLAY - ENTRY= RECOVERY
EZL112I ACTIVE TYPE= PU  , DESIRED TYPE= PU01
EZL113I    DATA IS AUTO=Y
EZL002I END
```

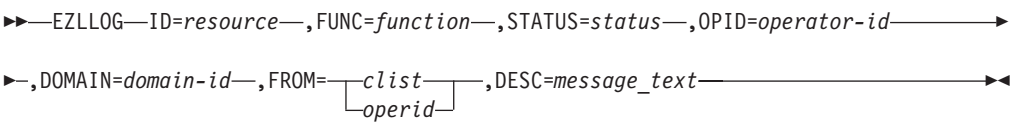
The EZL112I message shows that the *type-name* found (ACTIVE) is PU, the requested types (DESIRED) were PU01 and PU. The EZLCFG command searched first for the RECOVERY PU01 flag; when none was found, the command searched for the RECOVERY PU flag.

Log File Interface Command (EZLLOG)

The EZLLOG function is used to update and view the automation log. The syntax of the EZLLOG function is:

Format

EZLLOG



Parameters

DESC
Description text to be written in log record. The format is

DESC=*msgno text*

Where the variables are:

msgno
Number of the message that generated the log entry.

text
Free-form text describing the log event.

The maximum length is 240 bytes.

DOMAIN
Originating domain ID

FROM
Name of the command list or operator that generated the record to the log.

FUNC
Feature that wrote this record. The function entries in the automation log indicate which function in network automation wrote the record.

This field can be any 4 characters.

ID Resource associated with this log record

OPID
Requesting operator ID.

STATUS
Automation status of the resource. For a list of the status codes, see "Status File Interface Command (EZLSTS)" on page 313.

Usage

The log records are:

- Availability records
- Information records
- Errors and debug records

Use availability records to create an availability trend report. AON writes records to the log when a resource becomes unavailable or when the resource becomes available again.

Information records describe the activities of the automation process. These are the AON tracking records.

Errors and debug records are written when an error has occurred (for example, wait time-out) or when the debugging feature is in effect.

The EZLLOG and EZLALOG commands, and the EZLTLOG task are:

EZLALOG
This command is run as a data services command. The EZLALOG command writes the record to the automation log file and returns messages to the requestor indicating the success or failure of the request.

EZLLOG
This command can be issued from the operator's terminal, program, or another command processor. EZLLOG performs syntax checking necessary before sending the request to the automation log task (EZLTLOG). Such errors as, valid length and required parameters are checked. If it detects errors, it returns a message explaining the error to the originator of the request.

EZLTLOG
This task handles the necessary interfaces to perform the NetView facilities. When EZLTLOG receives the internal function request (IFR) from EZLLOG, it issues the appropriate command, in this case EZLALOG.

To start the automation log task, the following command must be entered on the operator command line of a NetView screen or from the NetView initial startup program using STARTEZL:

```
STARTEZL LOG
```

The following messages display when the task has been initiated:
DSI166I EZLTLOG IS ACTIVATED BY *operator_ID*
DSI530I EZLTLOG : DST IS READY AND WAITING FOR WORK

Examples

The command list writes a record to the automation log indicating that a resource has recovered. This example is for illustrative purposes and might not reflect current AON code:

```
'GLOBALV GETC DOMAINID'
ReqDomid = Domainid

Ezlstatus  = 'ACTIV'

Ezlmsgtxt = ezlemsg('EZL504','N',Clsnm,Resname,Restype)

if Nlogname = '' then
  Nlogname = SUBSTR(Resname,1,8)

if Nlogfunc = '' then
  if LENGTH(Ezltower) <= 4 then
    Nlogfunc = Ezltower
  else
    Nlogfunc = SUBSTR(Ezltower,1,4)

if pos('/',clsnm) > 0 then
```

```
    parse var clsnm clsnm '/' .

if length(clsnm) > 8 then
    clsnm = substr(clsnm,1,8)

'TRAP AND SUPPRESS MESSAGES ONLY EZL006I EZL009I EZL01* EZL020I '||,
  'EZL030I DSI002I CNM421I'
Logcmd = 'EZLLOG '||,
  'ID='Nlogname',FUNC='Nlogfunc',OPID='Reqopid',DOMAIN='||,
  Reqdomid',FROM='Clsnm',STATUS='Ezlstatus',DESC='Ezlmsgtxt

Logcmd = LEFT(Logcmd,240)
Logcmd
```

The previous command results in the following entry in the automation log:

```
EZL504I HOST AVOSTIN IS AVAILABLE (REPORTED BY NTC0PUN6)
```

If you page to the left in the automation log, you see the following:

```
13:44:31 EZLERECV AUTMSG2  NV6K  NORMAL   AVOSTIN  CNM01
```

Status File Interface Command (EZLSTS)

Purpose

Use the EZLSTS command to add, display, change, and delete the status file records. The records are maintained in a VSAM data set. The EZLSTS command interfaces with the VSAM file to maintain control information vital to AON. The critical information maintained is:

- Automation status
- Whether an error threshold has been exceeded
- Time and date information for error conditions. All entries use GMT timestamps.

The EZLSTS command functions as an operator command and as a command list interface to the status file.

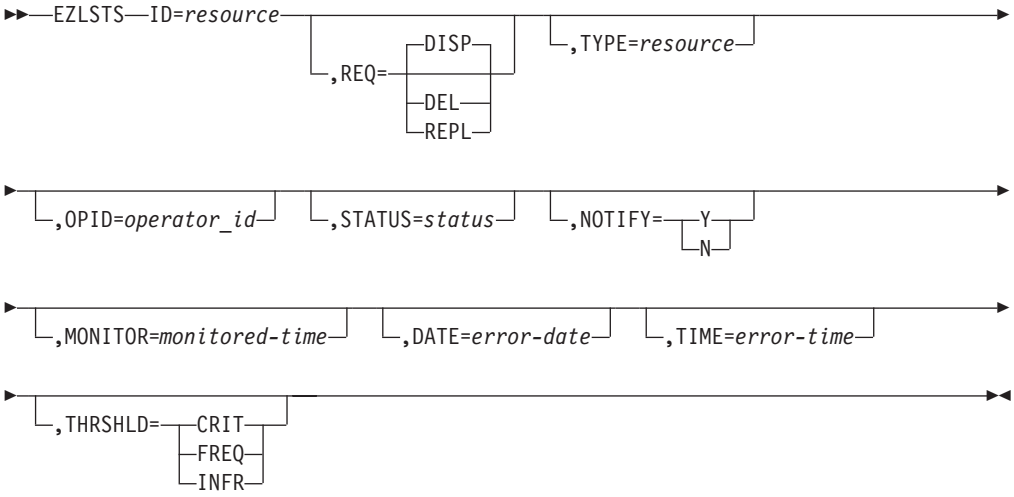
Note: Restrict the use of EZLSTS as an operator command, because this command can modify any field on the status file, and incorrect use can lead to unpredictable results.

Every field defined in the status file is updated by certain automation routines. User-written command lists must use common routines to perform the updates, to ensure proper updating of all the fields. Use the EZLSTS command only to display information.

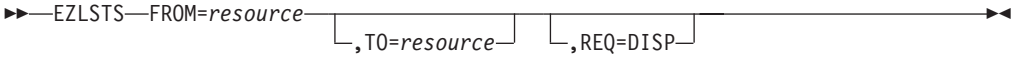
Format

Use the following syntax for adding, updating, displaying, or deleting a single entry:

EZLSTS



Use the following for displaying multiple records:



Parameters

DATE=*error-date*
Specifies the date of this error time stamp being recorded, in MM/DD/YY format. Date is used for threshold purposes.

FROM=*resource*
Specifies the 16-character resource ID that is the starting key when displaying multiple status file records. This resource is the resource name for resource records.

ID=*resource*
Specifies the 16-character resource ID that is the key to the status file record. This ID is the resource name for resource records.

MONITOR=*monitored-time*
Specifies the time a monitor or status change command was issued in HH:MM format. Time is in military time (00:00 to 23:59).

NOTIFY={Y | N}
Specifies whether a notification message was sent to the operator for a specified condition.

OPID=*operator_id*
The NetView operator ID which requested or is performing the status update. If not supplied, the EZLSTS command uses the current operator ID. This is only applicable when the STATUS parameter is used.

REQ={DISP | DEL | REPL}
Specifies the type of request. DISP (display) is the default request if not entered. DEL (delete) and REPL (replace) must be entered when performing that function. REPL adds a record if one does not already exist.

STATUS=*status*
Specifies the resource status. The parameter can be any valid status value. The following is a list of valid status codes generated by AON automation:

ACTIVE	Resource is active.
ERRORS	Command list error conditions.
INACTV	Resource is inactive.
INRCVY	Resource is in recovery.
IUSER	Resource deactivated by user.
MANUAL	Manual intervention is required.
NCPDMP	NCP dump has a reply to (AON/SNA only).
NCPRLD	NCP reload has a reply to (AON/SNA only).
RCVAUT	Resource recovered by AON automation.
RCVSYS	Resource recovered by the system.
REACTV	Reactivation process enabled.
RECVRY	Resource currently being recovered by automation.
REMIND	Reminder processing enabled.
REMTRM	Reminders halted; reminder intervals exceeded.
TRACKS	Command list tracking records.
TREACT	Recovery halted; reactivation intervals exceeded.
TTHRS	Resource recovery ended by automation thresholds.
TUSER	Resource recovery ended by user.

THRSHLD={CRIT | INFR | FREQ}
Specifies the threshold which has been exceeded. Used for operator monitoring of thresholds.

TIME=*error-time*
Specifies the time of this error time stamp being recorded, in HH:MM format. Time is used for threshold purposes.

TO=*resource*
Specifies the 16-character resource ID that is the ending key when displaying multiple status file records. If not specified, the value defaults to the same key as the FROM parameter. This resource is the resource name for resource records.

TYPE=*resource*
Specifies the 10-character resource type for display and summary purposes. This value is the resource type for the specific resource. For example, physical units are represented by PU and NCPs are represented by NCP. Other values can be defined, if desired.

Usage

If a user-written command list performs a replace and update function, only those fields that need replacing have to be specified. No change occurs to the other fields on the status file. The EZLSTS command has a maximum length of 240 characters, so a REPLACE/UPDATE command is limited to the 240 characters.

Messages

The following messages are issued during the successful operation of the EZLSTS command. For the DELETE and REPLACE commands, a message such as the following is issued:

```
EZL001I REQUEST "request" WAS SUCCESSFUL FOR "resource"
```

For the DISPLAY commands, the following messages are issued for PU01:

```
EZL150I STATISTICS DISPLAY REQUESTED FOR PU01
EZL151I ID= PU01  , TYPE= PU        , STATUS= ACTIV
EZL152I LAST UPDATE BY OPERATOR AUTNET2
EZL153I LAST THRESHOLD EXCEEDED - INFR
EZL155I OPERATOR NOTIFIED: Y , TIMERSET:
EZL156I LAST STATUS CHANGE DATE= 01/06/00 , TIME= 13:41, OPID= AUTNET2
EZL157I LAST MONITORED DATE= 01/06/00 , TIME= 13:41
EZL160I   ERROR COUNT     DATE      TIME
EZL161I           01    01/06/00    13:35
EZL161I           02    01/06/00    13:40
EZL002I END
```

Note: For DISPLAY commands, EZL160I and EZL161I messages that contain error time stamp information can be replaced with EZL159I if error timestamp information does not exist.

Messages are issued if the entry or member name is not found. For the DELETE and DISPLAY commands, a message such as the following is issued:

```
EZL041I UNABLE TO FIND RECORD "resource"
```

Note: The REPLACE command adds an entry if one does not exist, so successful message would result.

Any message beginning with EZL0, other than those previously documented, is an error.

Examples

A command that displays the status record for PU01 follows:

```
EZLSTS REQ=DISP,ID=PU01
```

The response follows:

```
EZL150I STATISTICS DISPLAY REQUESTED FOR PU01
EZL151I ID= PU01     , TYPE= PU         , STATUS= ACTIV
EZL152I LAST UPDATE BY OPERATOR AUTMSG
EZL153I LAST THRESHOLD EXCEEDED - INFR
EZL155I OPERATOR NOTIFIED: Y , TIMERSET:
EZL156I LAST STATUS CHANGE DATE= 05/06/00 , TIME= 09:17, OPID= AUTNET2
EZL157I LAST MONITORED DATE= 05/06/00 , TIME= 09:17
EZL160I   ERROR COUNT     DATE      TIME
EZL161I           01    05/06/00    14:21
EZL002I END
```

The operator or command list processes the command to display the entry, and the associated response is a multiline message.

Examples

The following command adds or replaces the PU01 status value:

```
EZLSTS REQ=REPL,ID=PU01,STATUS=INACT
```

The response follows:

```
EZL001I REQUEST "REPL" WAS SUCCESSFUL FOR "PU01   "
```

Chapter 25. Coding Common Routines

Common routines provide easy-to-use generic functions for expanding automation capabilities beyond those provided and supported by AON. These generic functions can be used to reduce development time when creating procedures or extending those provided.

Transferring information and checking the control file are examples of tasks where common routines are applicable. A user-written routine calls one of these routines from the message table, control file, or extended routine to perform a specific task.

AON also provides user exits that can be called by the common routines. User exits perform functions such as syntax or threshold checking.

Table 5 lists the common routines described in this section.

Table 5. AON Common Routines

Name	Usage
CGLOBAL	"Using the Common Global Variable Command Processor (CGLOBAL)" on page 319
EXIST	"Querying Command Availability (EXIST)" on page 320
EZLEATDF	"Calculating Time (EZLEATDF)" on page 321
EZLE1UFW	"Forwarding User Messages (EZLE1UFW)" on page 322
EZLEACKT	"Checking the Timer (EZLEACKT)" on page 323
EZLEAGEN	"Recovering Generic Resources (EZLEAGEN)" on page 324
EZLEAGRN	"Getting Resource Information (EZLEAGRN)" on page 325
EZLEASLN	"Updating the Status File and Logging Messages (EZLEASLN)" on page 327
EZLEATHR	"Checking Thresholds (EZLEATHR)" on page 331
EZLECALL	"INFORM Action (EZLECALL)" on page 335
EZLECATV	"Using Active Monitoring and Recovery (EZLECATV)" on page 336
EZLECAUT	"Checking Automation (EZLECAUT)" on page 338
EZLEFAIL	"Processing Generic Failures (EZLEFAIL)" on page 339
EZLEMCOL	"Setting Panel Message Color (EZLEMCOL)" on page 345
EZLEMSG	"Formatting Panel Messages (EZLEMSG)" on page 346
EZLENFRM	"Driving the Inform Policy (EZLENFRM)" on page 347
EZLENTFY	"Notify Policy List (EZLENTFY)" on page 348
EZLERAIP	"Setting the AIP User Status Bit (EZLERAIP)" on page 349
EZLERCMD	"Routing Commands over Cross-Domain Sessions (EZLERCMD)" on page 351
EZLERECV	"Recovering Resources (EZLERECV)" on page 352
EZLERGWY	"Routing Commands to Other NetView Domains (EZLERGWY)" on page 354
EZLEROUT	"Routing NNT Cross-Domain Logon Information (EZLEROUT)" on page 356
EZLERTVE	"Retrieving AON Information (EZLERTVE)" on page 358
EZLESRMD	"Issuing Resource State Reminders (EZLESRMD)" on page 360
EZLESTOP	"Stopping Cross-domain Sessions (EZLESTOP)" on page 361

Table 5. AON Common Routines (continued)

Name	Usage
EZLESTRT	"Starting Cross-domain Sessions (EZLESTRT)" on page 362
EZLEVACT	"Activating VTAM Resources (EZLEVACT)" on page 364
EZLEVINA	"Deactivating VTAM Resources (EZLEVINA)" on page 365
EZLEVMOV	"Moving VTAM Resources (EZLEVMOV)" on page 366
EZLSMSU	"Sending MSUs to an MS Transport Application (EZLSMSU)" on page 367
EZLTRACE	"Running Entry and Exit Traces (EZLTRACE)" on page 369
FKVESYNC	"SNA Resource Automation (FKVESYNC)" on page 378
FKXECNVT	"SNMP RFC Conversion (FKXECNVT)" on page 371
FKXETRA1	"Syntax of FKXETRA1 Program" on page 375
IPCMD	"TCP/IP Command Support (IPCMD)" on page 373

Using the Common Global Variable Command Processor (CGLOBAL)

Purpose

The CGLOBAL routine displays the names and value associated with common global variables. Running the CGLOBAL routine displays the message EZL016I containing the name of the common global variable and the message EZL017I containing the value associated with the common global variable.

Format

CGLOBAL

Parameters

varname
The specific name of a global variable or a name pattern with wildcard characters (* or %)

Examples

Issuing **CGLOBAL domainid** returns the following messages:

```
EZL016I NAME  = DOMAINID
EZL017I VALUE = CNM01
EZL002I END
```

The message EZL017I shows that `CNM01` is the value associated with the common global variable `domainid`.

Examples

Issuing **CGLOBAL *time** returns the following messages:

```
EZL001I C *T
EZL016I NAME  = CNMSTYLE.NPDA.ALT_ALERT
EZL017I VALUE = DOMAIN
EZL016I NAME  = CNMIP.DNSTIMEOUT
EZL017I VALUE = 5
EZL016I NAME  = FKXIPSTAT
EZL017I VALUE = DETAIL
EZL016I NAME  = CNMSTYLE.NLDM.LUCOUNT
EZL017I VALUE = 4000
EZL016I NAME  = CNMSTYLE.NRM.STATUS.INACT
EZL017I VALUE = UNKNOWN
EZL016I NAME  = CNMSTYLE.REXEC.PORT
EZL017I VALUE = 512
EZL016I NAME  = CNMSTYLE.RSH.PORT
EZL017I VALUE = 514
.
.
.
EZL002I END
```

The EZL016I messages show all of the command global variables that end with the characters `time`. The EZL017I messages show the values associated with each command global variable.

Querying Command Availability (EXIST)

Purpose

EXIST determines whether the specified command is available and sets a return code as its response. Only libraries in the DSICLD or STEPLIB concatenation are searched. The command must be a valid command list, REXX program, or NetView command processor.

Format

EXIST

Parameters

command
Name of a command

Return codes

0 Valid command
4 Operator is not authorized to issue the command
8 Error (incorrect command name or no command specified)
16 Not found

Examples

The following REXX fragment is an example of how you can use EXIST:

```
/* Check to see if BLOG command is installed, and call if found */
'EXIST BLOG'
 ExistRC = RC
 if ExistRC = 0 then
    do
       'BLOG'
    end
```

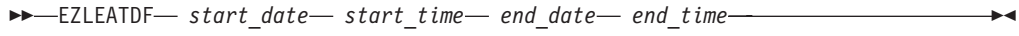
Calculating Time (EZLEATDF)

Purpose

The EZLEATDF routine calculates the difference between two date and time stamps and returns the values in TGLOBALs in terms of days, hours, minutes, and time. Keep the parameters for the EZLEATDF routine in the same order as they are shown in the following syntax diagram.

Format

EZLEATDF



Parameters

end_date	Later date (in *mm/dd/yy* format)
end_time	Later time (in *hh:mm* format)
start_date	Earliest date (in *mm/dd/yy* format)
start_time	Earliest time (in *hh:mm* format)

Return codes

0	Program processed successfully.
5	Parameters are not valid.

Flags

TIMEDIFF	The number of hours and minutes between start and end (after the difference in days is calculated)
DAYSDIFF	The number of days between start date and end date
HOURDIFF	Total hours and minutes between start date and end date (in *hh:mm* format)
MINDIFF	Total minutes between start time and end time *((hh*60) + mm)*. To express the total difference in minutes, add the HOURDIFF global (converted to minutes) to the MINDIFF value.

Examples

This program call:

```
EZLEATDF 06/23/00 06:28 06/24/00 15:50
```

Sets the following task global variables:

```
TIMEDIFF = 09:22
DAYSDIFF = 2
HOURDIFF = 57:22
MINDIFF  = 3442
```

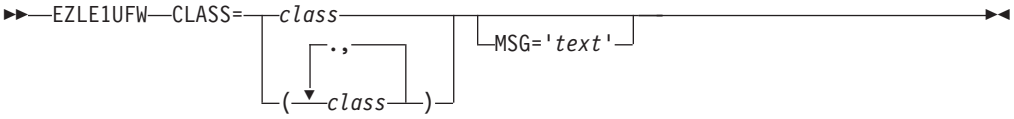
Forwarding User Messages (EZLE1UFW)

Purpose

The EZLE1UFW routine forwards messages to an AON focal-point domain.

Format

EZLE1UFW



Parameters

CLASS=*class*
Specifies message classes used to determine which notification operators receive this message. You can specify up to ten message classes. There are no default message classes. The AON notification classes are in the range 00—99. The different notification classes are described in *IBM Tivoli NetView for z/OS Messages and Codes Volume 2 (DUI-IHS)*.

Note: The classes must be the same as those defined with the NTFYOP control file entry, as described in Chapter 24, "Using AON Command Processors," on page 303.

MSG='*text***'**
Specifies the text used for this message. If not coded, the text in the message buffer is used. Although this variable is usually optional, it is required if not called from the automation table.

Return codes

0 Program (command list) processed correctly.
1 Processing error was encountered.

Usage

The MSG parameter cannot be used for multiline messages.

Examples

The following example sends individual messages for each line in the multiline response:

```
IF MSGID='IST075I'
THEN EXEC(CMD('EZLE1UFW CLASS=20')ROUTE(ALL*));
```

Checking the Timer (EZLEACKT)

Purpose

The EZLEACKT routine determines whether a timer exists and stores pertinent timer data in task global variables (TGLOBALs).

Format

EZLEACKT

Parameters

timerid
Specifies the ID of the timer being searched for. Typically, for AON recovery efforts, this is the resource name.

Return codes

0 Timer does not exist.
1 Timer exists.

Flags

EZLTIMCM Command to be issued under timer ID
EZLTIMDT Date the timer would pop
EZLTIMOP Operator under which the timer would run
EZLTIMTM Time of day the timer would pop

Usage

The EZLEACKT routine is used primarily to determine if automation is already in effect for a resource with an existing timer ID, such as timers from MONIT intervals.

Recovering Generic Resources (EZLEAGEN)

Purpose

EZLEAGEN is a generic module that can do the following:

- Attempt resource recovery
- Check error thresholds
- Check automation recovery flag
- Check resource status
- Initiate recovery on MONIT intervals

Format

EZLEAGEN

Parameters

resource
The resource to be recovered

Usage

This routine is provided as a model for user-written modules extending AON techniques. The EZLEAGEN module can be started by sending it a valid VTAM resource name.

Examples

See “Sample AON Extended Module” on page 299 to see how EZLEAGEN is coded.

Getting Resource Information (EZLEAGRN)

Purpose

The EZLEAGRN routine retrieves VTAM information on a resource through a VTAM display command and stores the data in task global variables (TGLOBALs).

Format

EZLEAGRN

Parameters

res_name
The name of the VTAM resource to be displayed

Return codes

0 Resource values assigned
1 Module error

Flags

Table 6 lists the EZLEAGRN routine TGLOBALs.

Table 6. TGLOBALs for EZLEAGRN

TGLOBAL	Description	Retrieved from VTAM message
RESTYPE	Resource type	IST075I
RESSTAT	Resource status	IST486I
RESMAJ	Resource's major node	IST134I or IST081I
RESLINE	Resource's higher node-line	IST081I
RESNODE	Resource's adjacent major node	IST391I
RESPU	Resource's higher node controller	IST135I
RESSA	Resource's subarea	IST484I
RESSW	Resource's switched major node	IST136I
RESNET	Resource's network ID	IST075I or IST1043I

Usage

VTAM resource types are translated into the following standard automation resource categories:
LU Logical unit
PU Physical unit
PU LCL*
LINE Line
PU PU*
NCP PU T4/5

NCP CA Major Node
CDRM
CDRMs
LINK Link Station
CP Control Point

All other resource types remain the same. If the resource cannot be displayed in VTAM, a resource type of DEFAULTS is issued and message EZL208I is logged.

The EZLEAGRN routine gathers information about SNA resources. However, your installation might require you to tailor the information gathered by the EZLEAGRN routine. You can code user exits to alter this information. You can update values for the EZLEAGRN routine with the EXIT05 parameter of the ENVIRON EXIT control file entry. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information about the ENVIRON EXIT entry.

Updating the Status File and Logging Messages (EZLEASLN)

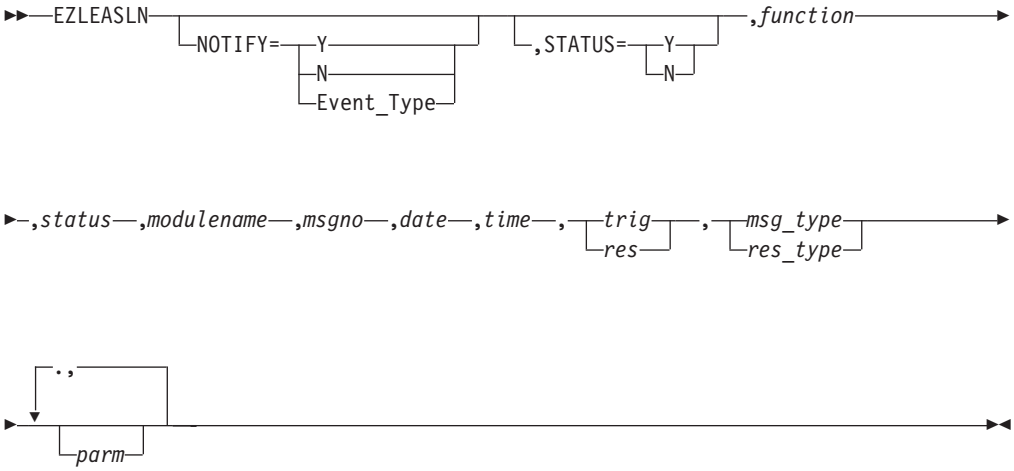
Purpose

The EZLEASLN routine updates the AON status file, logs associated messages in the AON log file and NetView log, and issues notifications. The content of the log or notification message depends on the message ID and the variable data that is placed in the message.

This routine can only be initiated by another module or by a command processor. Keep the parameters for the EZLEASLN routine in the same order that they are shown in the following syntax diagram. Even though you do not use some of the parameters, include the comma delimiters as if those parameters were in the routine.

Format

EZLEASLN



Parameters

date
The date the message was logged. Use the NetView variable, *&DATE* or REXX function date ('U').

function
Defines the AON component that wrote the message. The function can be:
- AON
- APPN
- IP390
- NVAIX
- SA
- SNA
- SNBU
- TCPIP
- X25

modulename
Specifies the name of the module or program that is issuing the message. This parameter is used in the AON log, by the tracking and problem determination processes.

msgno
Specifies the number of the message to be issued.

msg_type | res_type
Specifies the resource type or the general cause for the message being issued. For errors and tracking information, the message type is typically ERR or ERROR. The message type can also be INFO, INIT, or similar indicative values.

The *msg_type* variable can be a maximum of 10 characters in length.

NOTIFY
Specifying Y enables notifications to an operator and message forwarding of some event. Specifying Y queries the NOTIFY Policy based on ResName and ResType.

Specifying N does not notify anyone, it only logs the message to DSILOG.

Specifying Event_Type queries the NOTIFY Policy for the type of event such as:

- CRITTHRS
- REMIND
- NOMOMONS
- NAMESERV

parms
User parameters are message-dependent fields that fill in the message content. Up to 5 user parameters can be coded, but a restriction of 240 characters in the EZLEASLN call can reduce the actual number of parameters that can be coded.

STATUS
Specifying Y enables updates to the status file with the following data:
- RESSTAT
- RESTYPE
- OPID

status
Specifies the resource status. This value updates the information in the status file and logs it in the AON log. The following is a list of some of the valid status codes generated by automation:

ACTIVE	Resource is active.
ERRORS	Command list error conditions.
INACTV	Resource is inactive.
INRCVY	Resource is in recovery.
IUSER	Resource deactivated by user.
MANUAL	Manual intervention is required.
NCPDMP	NCP dump has been replied to (AON/SNA only).
NCPRLD	NCP reload has been replied to (AON/SNA only).
RCVAUT	Resource recovered by AON automation.
RCVSYS	Resource recovered by the system.

REACTV	Reactivation process enabled.
RECVRY	Resource currently being recovered by automation.
REMIND	Reminder processing enabled.
REMTRM	Reminders halted; reminder intervals exceeded.
TRACKS	Command list tracking records.
TREACT	Recovery halted; reactivation intervals exceeded.
TTHRS	Resource recovery ended by automation thresholds.
TUSER	Resource recovery ended by user.

time
The time the message was logged. Use the NetView variable, *&TIME* or REXX function *TIME('U')*.

{*trig* | *res*}
Specifies the ID of the resource or the specific cause for the message being issued. For errors and tracking information, the message trigger typically is the command that caused the error message to be issued. The message trigger can also be the operator ID, a parameter keyword, a control file keyword, or other similar indicative information.

The *trig* variable can be a maximum of 8 characters in length and cannot contain spaces.

Return codes

0	Message request processed successfully.
4	An error has occurred. Browse the log for further details.
9	Message request has been routed to a MSGOPER autotask.

Usage

The EZLEASLN routine can perform the following functions:
- Message logging
- Status update and message logging
- AON notification processing based on the NOTIFY policy

Use the EZLEASLN routine when logging messages. Messages produced by calling this routine are not displayed at operator stations if NOTIFY=N is specified.

It can also be used to display a message to the operator. Messages produced by calling this routine are displayed at a NetView terminal, if an authorized notify operator is logged on, or at the z/OS system console if the notify operators are not logged on. These messages are forwarded to the focal point before being displayed.

Use the EZLEASLN routine when you change the resource status, and notification of that change is to be displayed to the operator. The current status in the AON status file is changed by this routine.

The field values passed to EZLEASLN are evaluated against the DDFGENERIC control file entry definitions that guide DDF updates. The following fields, sent to EZLEASLN, are evaluated for DDF generic values:

EZLEASLN parameter	**DDF generic field**
function	*func*
status	*status*
resource	*res_name*

res_type	*res_type*
parms1...parms5	*opt1...opt5*

The function value sent is used for the function value for evaluating DDFGENERIC statements.

The parameters passed to the EZLEASLN routine are dependent on the format of the message. Some messages have more parameters than others. AON messages are shipped in object code format for improved performance. To determine the number of inserts in a message, view the online help for the message. The message inserts are passed as `user parms` on the call to EZLEASLN.

Examples

This example shows how to issue a simple status update message. The INACTIVE message has been received for LINE01. The message to be issued, EZL531I, indicates the new status value.

The message text for EZL531I follows:

```
EZL531I &4 &3 IS INACTIVE DUE TO OPERATOR &5 INTERVENTION
```

The module to call EZLEASLN is:

```
USERSLN  module
     &CGLOBAL ABC XYZ ... ...
     &TGLOBAL
*
*    Perform check automation
*
     EZLECAUT LINE01
⋮
     &IF &RETCODE EQ 0 &THEN &GOTO -AUTOOK
     &EXIT
-AUTOOK
     EZLEASLN NOTIFY=Y,STATUS=Y,AON,INACTV,USERSLN,EZL531,&DATE,
              &TIME,LINE01,LINE,OPER1

⋮
     &EXIT
```

The user-written module calls EZLECAUT to determine if automation is valid. If the return code greater than zero (0), automation is not permitted. If it is 0, the routine continues.

After it is determined that NetView automation is in effect, EZLEASLN is called. The *function* parameter is AON, indicating automation activity triggered the message. *Status* is INACTV, denoting the new status for LINE01. This status value is placed in the AON status file. The *modulename* is USERSLN.

The message number EZL531 is suffixed by an I to build a message identifier of EZL531I. EZL531I is inserted at beginning of the message text.

The date and time are coded as &DATE and &TIME.

The resource is coded as LINE01 (VTAM resource name). The resource type is coded as LINE (VTAM resource type), which is &4.

The first user parameter is OPER1. It replaces &5 in the message text.

Checking Thresholds (EZLEATHR)

Purpose

The EZLEATHR routine checks the number of errors recorded in the status file against a preset error threshold. It also supports the recording of the error date and time on the status file.

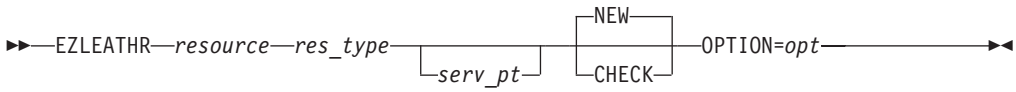
The EZLEATHR routine searches the automation control file for the applicable threshold of a specific resource. The routine then obtains the error status information from the status file and determines whether any of the three definable thresholds have been exceeded. If a threshold is exceeded, AON issues an error message and an appropriate return code is generated.

This routine can be issued only by another module or by a command processor.

Keep the parameters for the EZLEATHR routine in the same order as they are shown in the following syntax diagram. Use commas or spaces as delimiters.

Format

EZLEATHR



Parameters

NEW | CHECK
Specifies whether a new error is added to the error status information. If you specify NEW or use the default, an error is added to the error status information, then the thresholds are checked. If you specify CHECK, the thresholds are checked based on the existing error information and no new information is added. If you specify NEW or CHECK, place the parameter in the fourth position.

opt
Specifies the AON automation component issuing this request. The list of options follow:
- AON
- APPN
- IP390
- NVAIX
- SA
- SNA
- SNBU
- TCPIP
- X25

resource
Specifies the name of the resource for which thresholds are be checked. This resource name can be a generic resource type or any user-defined name up to 8 characters long. The resource name is required and must be the first parameter.

res_type
Specifies the type of the resource. The *res_type* parameter can be any user-defined name up to 10 characters long. The resource type is required and must be the second parameter.

serv_pt
Specifies the name of the TCP/IP service point controlling the specified resource. If specified, *serv_pt* must be the third parameter. If not specified, the default is the NetView DomainID.

Return codes

0 No threshold has been exceeded.
1 Infrequent threshold has been reached.
2 Frequent threshold has been reached.
3 Critical threshold has been reached.
4 Incorrect parameters were used in the call.
5 Time-out or other error occurred.

Usage

The EZLEATHR routine accesses the control file to check the THRESHOLD entries and the status file to check the current status of the resource.

You can modify values for the EZLEATHR routine by defining them in the EXIT06 parameter of the ENVIRON EXIT control file entry. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information. AON uses the values on the ENVIRON EXIT control file entry unless you define a THRESHOLDS control file entry for the specific resource.

The EZLEATHR routine is used primarily to track error conditions that can be recursive. Because EZLEATHR tracks the errors, AON can notify operators of the recursive situation before it causes problems. After a critical threshold exception, AON deactivates resources to stop the recursive error and recovery.

A maximum of 10 errors can be stored in each record in the status file. These errors are stored in order of date and time-of-error. No details about the error are stored.

The VSAM key to the status file is built from the 8-character VTAM resource name. Only one status file record exists for each resource.

Each resource name in the status file must be unique; therefore, select your resource names carefully.

The EZLEATHR routine searches for the threshold in a predefined sequence to find the appropriate threshold. For a description of the threshold search sequence, refer to the *IBM Tivoli NetView for z/OS Administration Reference*.

AON is designed to fulfill most needs of thresholds automation processing. However, your installation might require you to tailor threshold automation processing. You can code AON user exits for threshold values for a specific resource. These values are specified on the THRESHOLDS statement or on the ENVIRON EXIT control file entry.

Examples

This example shows the relationship between the EZLEATHR routine and the automation control file. The threshold to be checked is a user-defined name, PU001. The user module checks the thresholds by calling the EZLEATHR routine.

The automation control file entry is:

```
THRESHOLD PU001,CRIT=(8,02:00),FREQ=(4,04:00),INFR=(4,08:00)
```

The module to call the EZLEATHR routine is:

```
USERTHR  module
     &CGLOBAL ABC XYZ ... ...
     &TGLOBAL ABC XYZ ... ...
     EZLECAUT ...    check whether automation allowed and set

⋮
-AUTOOK
     EZLEATHR PU001 USER NEW
     &IF &RETCODE EQ 0 &THEN &GOTO -OKSOFAR
     &IF &RETCODE EQ 1 &THEN &GOTO -EXCEEDINFR
     &IF &RETCODE EQ 2 &THEN &GOTO -EXCEEDFREQ
     &IF &RETCODE EQ 3 &THEN &GOTO -EXCEEDCRIT
     otherwise, an error occurred, RC=4/5, log error msg
     &EXIT
-OKSOFAR
     perform whatever actions may be required if no thresholds
     have been exceeded
     &EXIT
-EXCEEDINFR
     perform whatever actions may be required if infrequent
     thresholds have been exceeded
     &EXIT
-EXCEEDFREQ
     perform whatever actions may be required if frequent
     thresholds have been exceeded
     &EXIT
-EXCEEDCRIT
     perform whatever actions may be required if critical
     thresholds have been exceeded.
     &EXIT
```

The THRESHOLD entries in the automation control file defined a critical threshold as 8 errors occurring in 2 hours, frequent threshold as 4 errors in 4 hours and infrequent threshold as 4 errors in 8 hours.

The user-written module initiates the EZLEATHR routine using resource name, resource type, and NEW. The error information is added to the status file and the thresholds are checked.

Upon return to the user-written module the *&RETCODE* value is checked. If the value indicates that a critical threshold has been exceeded, the module stops recovery, which is consistent with the message issued by the EZLEATHR routine.

Examples

This example shows a REXX command list that uses the EZLEATHR routine:

```
/* REXX example of EZLEATHR usage */

/* Check thresholds */

 'EZLEATHR 'Resource' USER NEW'
 Thr_rc = Rc
```

```
select
  when Thr_rc = 0 then                                /* None exceeded*/
    do
      /* Actions for no threshold exceeded */
      exit
    end
  when Thr_rc = 1 then                                /* Infrequent   */
    do
      /* Infrequent Actions */
      exit
    end
  when Thr_rc = 2 then                                /* Frequent     */
    do
      /* Frequent Actions   */
      exit
    end
  when Thr_rc = 3 then                                /* Critical     */
    do
      /* Critical Exceeded, */
      /* terminate recovery */
      exit
    end
  Otherwise
    do
      'MSG LOG, ERROR: RETURN CODE 'Thr_RC' FROM EZLEATHR 'Resource
      exit
    end
end
```

INFORM Action (EZLECALL)

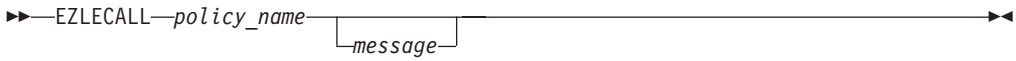
Purpose

EZLECALL is a REXX routine that generates an immediate INFORM action based on the notification policy. Enter the name of the individual or group policy to contact, and any message text required. EZLECALL does require that an INFORM/CONTACT policy entry exists for this purpose.

The INFORM command is a command synonym (CMDSYN) for EZLECALL.

Format

EZLECALL



Parameters

policy_name
Specifies the name of the INFORM policy or group name to use, which determines the individuals to contact.

message
Specifies the message to be sent to the contact. The message must be consistent with the CONNECTION type specified in the INFORM policy. If no message is provided, the default INFORM message or the message specified in the INFORM policy is used.

Examples

This example shows how the operator can issue an inform for the policy NITEOPS. The text following the policy is sent in an e-mail or to an alpha-pager.

```
INFORM NITEOPS PLEASE CALL THE OFFICE IMMEDIATELY
```

Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for additional information on how to set up your INFORM policy statements.

Using Active Monitoring and Recovery (EZLECATV)

Purpose

The EZLECATV routine tries to recover VTAM resources through the VTAM VARY INACT and VARY ACT commands at intervals specified in the MONIT control file entry. Recovery attempts continue until the resource becomes active, interval settings have been exhausted, automation is turned off, or an operator issues a command for that resource (VARY INACT or VARY ACT). If the notify flag for the interval is **Y**, the EZLECATV routine issues a reminder notification.

```
EZL507I resname HAS BEEN UNRECOVERABLE FOR duration
```

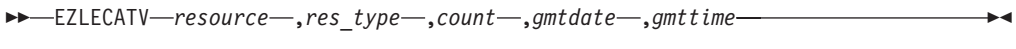
At the first interval, message EZL506I issues:

```
EZL506I  restype resname ON location
         INACTIVE - RECOVERY MONITORING HAS BEEN INITIATED
```

Keep the parameters for the EZLECATV routine in the same order as they are shown in the following syntax diagram.

Format

EZLECATV



Parameters

resource
Resource name.

res_type
Resource type.

count
MONIT interval count of interval just run. Valid values are 0 through 99.

gmtdate
Date of original failure that initiated recovery. The date is given in Greenwich mean time (GMT).

gmttime
Time of original failure that initiated recovery. The time is given in Greenwich mean time (GMT).

Usage

Link stations and CDRM are not inactivated during recovery. All other resources are deactivated with a VARY INACT,F command to clear pending states. Activations are done with SCOPE=U for PUs and higher nodes. SCOPE=ONLY is used for LUs and CDRMs. Recovery is stopped if the resource becomes unknown to VTAM in consideration of dynamic CDRSCs. A timer is scheduled at the next MONIT interval with an ID of the resource names.

To tailor reminder interval automation processing code AON user exits for specific MONIT intervals for a resource. Set default exit values for EZLECATV on the MONIT statement or on the ENVIRON EXIT control file entry. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information about the

ENVIRON EXIT entry.

Checking Automation (EZLECAUT)

Purpose

The EZLECAUT routine checks recovery automation flags on the RECOVERY control file entry to determine whether automation is in effect for a resource.

Format

EZLECAUT

Parameters

res_name
The name of the resource for which to check automation settings

res_type
Type of resource being checked

Return codes

0 Automation is in effect.
1 Automation is not in effect.
2 Automation is defined, but not in effect because of a NOAUTO window.
4 Parameters that are not valid.

Usage

If a NOAUTO parameter is found, calculations determine whether the current time is within the NOAUTO window. The return code is set accordingly.

You can set defaults for the EZLECAUT routine by defining the EXIT07 parameter of the ENVIRON EXIT control file entry. To tailor recovery automation processing, code AON user exits for specific recovery processing.

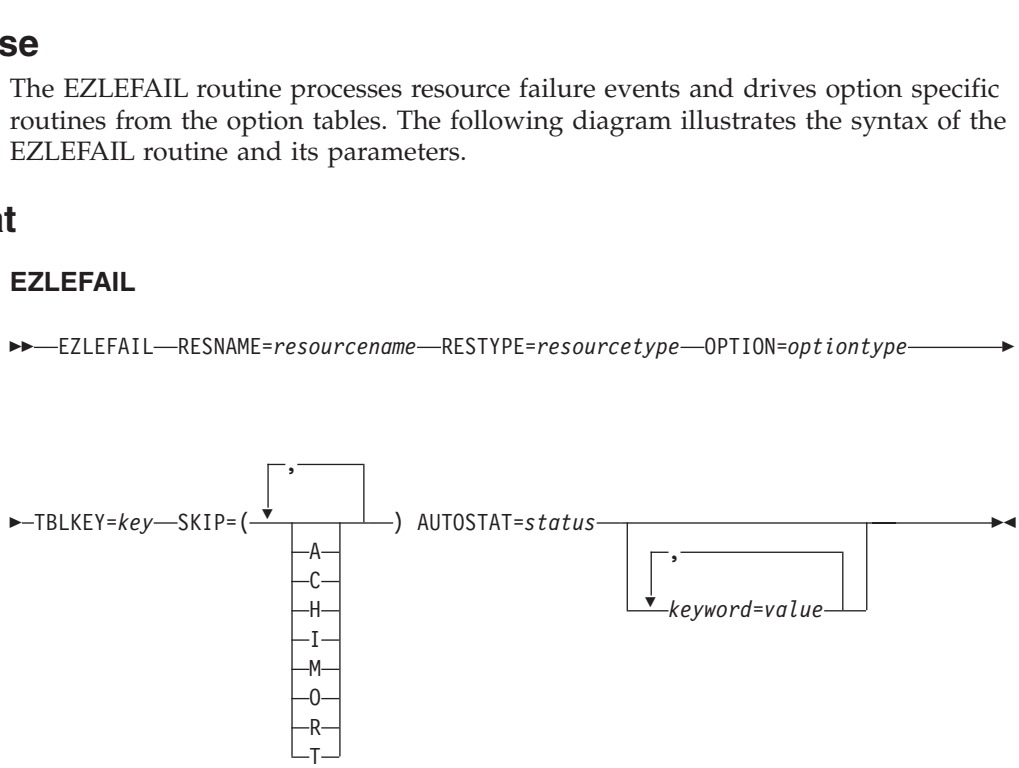
Processing Generic Failures (EZLEFAIL)

Purpose

The EZLEFAIL routine processes resource failure events and drives option specific routines from the option tables. The following diagram illustrates the syntax of the EZLEFAIL routine and its parameters.

Format

EZLEFAIL



Parameters

RESNAME
Specifies the resource name.

RESTYPE
Specifies the resource type.

OPTION
Specifies the automation component:
- APPN
- IP390
- NVAIX
- SA
- SNA
- SNBU
- TCPIP
- X25

TBLKEY
Specifies unique handling for the event. The EZLEFAIL routine gets optional processing values from the TBLKEY parameter. If you do not specify the TBLKEY parameter for the EZLEFAIL routine, no optional processing or notification occurs. The values on the TBLKEY parameter specify keywords found in the option definition tables. In the option definition table, the keywords define the actual processing values used for optional processing. AON saves the TBLKEY values in the *outmsgid* and *spec_function* variables. Message EZL509I is the default *outmsgid*. The value of TBLKEY is in the following format:

tblkey_value=(*outmsgid*,*spec_function_call*)

For example, the EZLEFAIL routine is called with:

```
EZLEFAIL OPTION=SA MSGPRMS=(OPID) TBLKEY=IST105I RESNAME=resname
```

The EZLEFAIL routine gets the values specified on the IST105I keyword in the option definition table. In the option definition table, the values on the IST105I keyword are:

```
IST105I=(EZL531,FKVEAIDA(resname restype))
```

The EZLEFAIL routine issues the EZL531I message and runs FKVEAIDA as a function sending the current value of *resname* (resource name) and *restype* (resource type) for optional processing. An optional processing program performs automation or processing unique to the resource or failure. No optional processing is done and no message is issued if SKIP=(0) is specified on the EZLEFAIL call.

The EZLEFAIL routine issues message EZL509I or EZL510I to all logs and to DDF. EZL509I is issued for resources that continue to be unavailable when EZLEFAIL runs. EZL510I is issued for resources that have been recovered and are in an active state when EZLEFAIL runs. Operators do not receive these messages. These messages are not issued if SKIP=(A) is specified on the EZLEFAIL call.

SKIP
Specifies which processing to ignore:

A Availability message is skipped.

C Check automation processing is bypassed.

H Do not check higher node status.

I Do not gather resource-specific information.

M Option-specific message processing (TBLKEY value) is bypassed.

O Option-specific processing (specified by TBLKEY value) is bypassed.

R Recovery attempt processing is bypassed. Setting the AIP operator status is also bypassed.

T Threshold processing is skipped.

AUTOSTAT
Specifies the status.

keyword=*value*
Any valid keyword and value.

Return codes

00 EZLEFAIL completed successfully.
02 AON initialization has not completed, issue EZL003E.
03 Missing parameters, issue EZL203I.
04 Incorrect parameters: issue EZL204I.
05 Wait time expired: issue EZL205I.
06 Command failed: issue EZL206I.
07 NOVALUE variable found.
08 REXX syntax failure.
09 Initialization shipped to automation operator.
10 Can not find resource type/owning option.

11 Check recovery, option not enabled.
12 Check recovery, higher node down.
13 Check recovery, automation flag off.
14 Check recovery, resource in available state.
15 Check recovery, recovery timer exists.
16 Automation is defined, but not in effect because of a NOAUTO window.
21 Check thresholding: infrequent routine RC>0.
22 Check thresholding: frequent routine RC>0.
23 Check thresholding: critical routine RC>0.
30 Optional processing routine RC>0.

Examples

The following example illustrates how you can call EZLEFAIL from the automation table:

```
IF MSGID='IST285I'
   & TEXT = . 'DUMP OF ' RESNAME ' FAILED - PERMANENT' .
   & HDRMTYPE = 'Q'
   THEN
     EXEC(CMD('EZLEFAIL OPTION=SA RESTYPE=NCP'
              ' RESNAME=' RESNAME
              ' SKIP=(C,T,R)'
              ' TBLKEY=IST285IO AUTOSTAT=NCPDUMP')
          ROUTE(ALL *));
```

The automation flag is not checked, threshold analysis is not performed, and recovery is not initiated. The status sent to DDF is NCPDUMP and IST205I. A keyword in the option definition table specifies any additional message or program to be called.

Examples

This example shows AON/SNA automation being driven for VTAM message IST105I when a resource fails. EZLEFAIL is called out of the automation table for the AON/SNA subarea (SA) option. Other parameters passed to EZLEFAIL include TBLKEY that identifies an option definition table key to use for recovery of the resource. Additional Information is retrieved from the option definition table during the failure processing.

```
IF TEXT =  'IST105I' resname 'NODE' . & HDRMTYPE = 'Q'
   THEN
     EXEC(CMD('EZLEFAIL OPTION=SA MSGPRMS=(OPID) '
              'TBLKEY=IST105I '
              'RESNAME='resname));
```

Examples

This example shows AON/SNA automation is driven for VTAM message IST619I when a resource fails. EZLEFAIL is called out of the automation for the AON/SNA subarea option. The option definition table key for additional recovery information and processes is IST619I. Additional information is retrieved from the option definition table during the failure processing.

```
IF MSGID='IST619I'
   & TEXT = . 'ID = ' resname ' FAILED' .
   & HDRMTYPE = 'Q'
   THEN
     EXEC(CMD('EZLEFAIL OPTION=SA TBLKEY=IST619I '
              ' RESNAME=' resname )
          'SKIP=(R)' ROUTE(ALL *));
```

Managing Automation Tables (AUTOCMD/EZLEF002)

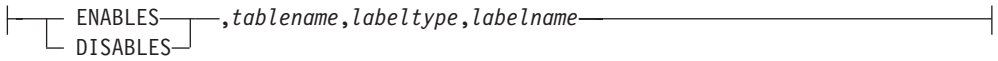
Purpose

The AUTOCMD routine is used to enable, disable, insert, and get the status of automation tables. The following diagram illustrates the syntax of the AUTOCMD routine and its parameters.

Format

AUTOCMD

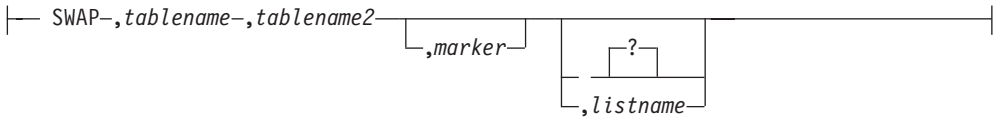
Statement:



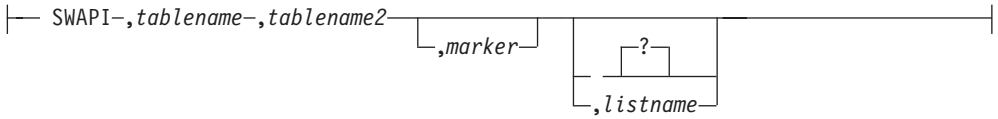
Single Table:

Insert:

SWAP:



SWAPI:



Status:

```
├─ STATUS──,tablename──────────────────────────────────────────────────────┤
```

Statusm:

```
├─ STATUSM──,marker──────────────────────────────────────────────────────┤
```

Command	Synonym
AUTOCMD	EZLEF002

Parameters

ENABLES
Activates multiple automation tables.

DISABLES
Deactivates multiple automation tables.

ENABLE
Activates a single automation table.

DISABLE
Deactivates a single automation table.

INSERT
Loads an automation table in the position specified.

SWAP
Replaces an automation table with another automation table.

SWAPI
Replaces an automation table with another automation table and reestablishes all disabled elements.

STATUS
Returns the status of the specified table.

STATUSM
Returns the status of the table with the specified marker.

tablename
Specifies the name of the automation table to be affected by the chosen keyword.

tablename2
Specifies the name of the automation table that replaces *tablename*.

labeltype
Specifies the type of label to be altered as follows:
- LABEL
- ENDLABEL
- BLOCK
- GROUP
- SEQUENCE

labelname
Specifies a label name, which consists of 1–16 character label or 1–8 character sequence numbers in the automation table.

position
Specifies the position of the table to be loaded. The position specification follows:

1..n	The numerical position of the table.
FIRST	The table loads in the first position.
LAST	The table loads in the last position.
marker	Specifies a unique identifier associated with the table being loaded. Markers can be 1–8 characters in length and are optional.
listname	Specifies a unique name for the listing member associated with the automation table. A list name can be 1–8 characters. If the listing name is omitted, a unique name is created and a listing is generated, automatically. However, if *NONE* is provided as a parameter, then no listing is generated. This is considered an override. No informational messages are generated regarding an override of the listing with *NONE*.

Return codes

For STATUS and STATUSM, the return codes are as follows:

0 The search for the automation table or marker was successful.

4 The search for the automation table was not successful or an error occurred.

For all other return codes are as follows:

0 The request completed successfully.

n The request failed. The error message can be found in the common global variable EZLERRMSG. The common variable stem EZLAUTOR contains messages generated by the request.

Usage

When loading or swapping tables that replace or become the automation table used by AON, it is necessary to update the EZLMSGTBL and EZLMSGLST global variables with the table name and listing name respectively. If AUTOMAN removes the AON table, then these variables are automatically reset.

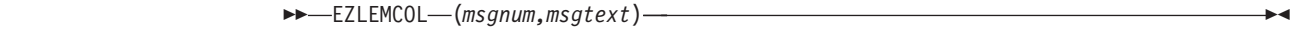
Setting Panel Message Color (EZLEMCOL)

Purpose

Use EZLEMCOL to set panel variable attributes for non-AON messages such as VTAM and NetView messages.

Format

EZLEMCOL



Parameters

msgnum
Message number

msgtext
Message text

Usage

EZLEMCOL can also be called as a command.

Color settings are:
Information message
White
Warning message
White
Error message Yellow
Action message
Red

Examples

Following is a sample of REXX code using EZLEMCOL:

```
$ErrorMsg = EZLEMCOL(MsgId,MsgTxt)  /* set panel variable     */

'GLOBALV GETT EZLMSGCOLR'          /* get color attribute(s) */
$ERRORMSG = 'EZLMSGCOLR          /* set panel attribute(s) */
```

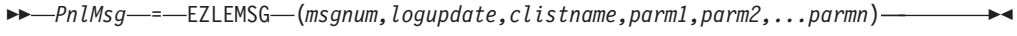
Formatting Panel Messages (EZLEMSG)

Purpose

EZLEMSG is a REXX function that builds messages to be sent to operators while they are viewing an AON panel.

Format

EZLEMSG



Parameters

PnlMsg
The panel variable used to display the message. Upon return from EZLEMSG this variable is set to the complete message text with inserts included.

msgnum
Identifies the message to display.

logupdate
If *Y*, the message is passed back from the function call and is also be logged to the NetView log. If *N*, the message is returned from the function call and is not logged.

clistname
Used to identify the program issuing the message. This is required and issued if an error occurs to properly identify the failing program.

parm1
First insert for the message. This is optional.

parm2
Second insert for the message. This is optional.

parmn
Last insert for the message. This is optional.

Usage

The default message prefix is EZL. If you generate messages with other prefixes, code the prefix plus the message number. The parameters (*parm1* through *parmn*) are optional and are only required if the message substitutes variable information into the message text as a message insert.

Examples

Following is a sample of REXX code using EZLEMCOL:

```
PnlMsg = EZLEMSG(901,'N',ident,sel,'1','5')
```

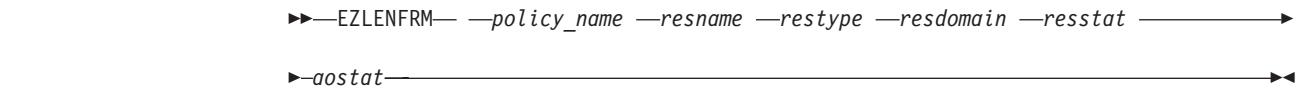
This statement sets the variable *PnlMsg* equal to the text of message EZL901I with inserts of the value of variable sel, 1, and 5:

```
PnlMsg = SELECTION 6 IS INVALID.  TYPE A NUMBER BETWEEN 1 AND 5
```

Driving the Inform Policy (EZLENFRM)

Format

EZLENFRM



Purpose

EZLENFRM is a REXX routine called by the AON notification policy when an inform action is required. EZLENFRM can also be invoked by non-AON routines. EZLENFRM checks the inform policy, issues the inform actions, and logs the action, if indicated. All parameters are required and can be substituted in the resulting inform message.

Parameters

aostat
Automation status of the failing resource

policy_name
Specifies which INFORM policy or group name to use when determining who to contact.

resdomain
The domain of the failing resource

resname
The failing resource name

resstat
The status of the failing resource

restype
The failing resource type

Examples

This example shows an invocation of EZLENFRM for policy NITEOPS. A CDRM that is down has reached the end of its monitoring intervals. The NITEOPS policy is consulted and appropriate actions is taken.

```
EZLENFRM NITEOPS NTB6MVS CDRM PACDR NOMOMONS
```

Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information about setting up INFORM policy statements.

Notify Policy List (EZLENTFY)

Purpose

EZLENTFY is a REXX routine called to query the AON Notify Policy for a given event type, resource, or resource type.

Format

EZLENTFY

Parameters

event_type
Query Notify Policy based on the type of event such as CRITTHRS.

resname
Query Notify Policy based on the resource name. Wild cards are supported.

restype Query Notify Policy based on the resource type.

Usage

If any Notify Policy keywords are set to *NO*, they are not displayed in the Notify Policy List. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for additional information on the NOTIFY statement.

The Notify Policy List can be null. Any caller must be prepared to avoid issuing notifications with a null Notify Policy List.

The following INFORM Policy Names are not valid:

- MSG
- ALERT
- TEC
- DDF

EZLENTFY creates two task global variables:

- EZLNTFYLIST containing the list of notification actions. The format of the list is (Notify1, Notify2, ..., NotifyN)
- EZLNTFYTYPE containing the NOTIFY policy statement used.

User Exit (EXIT10) Functions:

- Override NOTIFY policy based on other criteria, such as your own notify policy database.
- Implement other notifications such as fax.

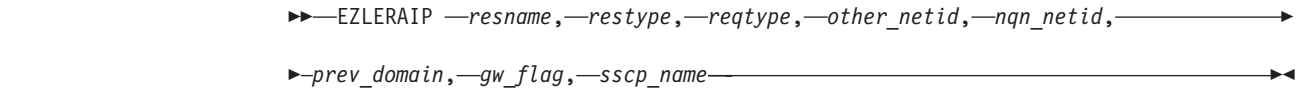
Setting the AIP User Status Bit (EZLERAIP)

Purpose

EZLERAIP is a REXX routine that enables the setting and resetting of the Automation in Progress (AIP) user status bit for resources being monitored or viewed in NetView management console (NMC). This routine handles the routing of the request to the domain specified in the control file. On the target domain, EZLERAIP routes the request to the appropriate AUTAIP autotask for processing. This routine can also update the Operator Intervention View (OIV) status, see the request types (*reqtype*) for specific information.

Format

EZLERAIP



Parameters

gw_flag
When set to Y causes the AIP operator status to update for both the NCP and Gateway NCP resources. Otherwise, only the NCP resource changes.

nqn_netid
The NETID of a resource as specified in its network qualified name.

other_netid
The NETID of the resource if owned by another domain.

prev_domain
An internal parameter that is filled in by the EZLERAIP call when it reroutes the request to the specified RODMDOM. All other calls must omit this parameter.

reqtype
The operation to be performed. The following values are supported:

RESET
Resets the AIP status for the resource.

RESET/OIV
Resets the AIP status and adds the resource to the Operator Intervention View.

SET Sets the AIP status for the resource.

SET/OIV
Sets the AIP status and removes the resource from the Operator Intervention View.

resname
The name of the resource.

restype
The *restype* parameter must be one of the following:
- CDRM
- LINE

- LINKSTA
- NCP
- PU

sscp_name
The VTAM SNA node name of the reporting VTAM. This is required only when the resource is owned by another VTAM domain.

Usage

- Commas are required between each of the parameters.

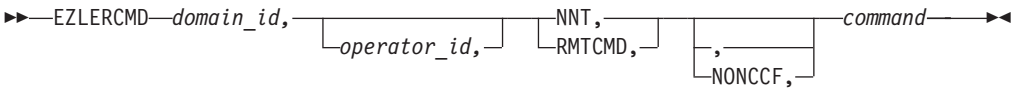
Routing Commands over Cross-Domain Sessions (EZLERCMD)

Purpose

EZLERCMD is a REXX routine that routes commands over cross-domain sessions. Both NetView-NetView Task (NNT) and remote command (RMTCMD) session types are supported.

Format

EZLERCMD



Parameters

domain_id
Domain to which the command is sent.

operator_id
Operator to issue the command. This parameter is for RMTCMD sessions only.

NNT
Specifies that the session the command is routed over is an NNT session.

RMTCMD
Specifies that the session the command is routed over is an RMTCMD session.

NONCCF
If specified, the command is issued following CMD HIGH. Otherwise, it is issued following CMD HIGH NCCF.

command
The command and parameters to be routed.

Usage

The *operator_id* variable is required for RMTCMD sessions, but not for NNT sessions. No verification is performed on the command. It is routed as is to the target domain. If the specified operator is not logged onto the target domain, NetView establishes an RMTCMD session and issues the command upon session initialization. Ensure that the specified operator is logged on to the target domain before calling EZLERCMD.

Examples

This example routes the LIST STATUS=OPS command over the active NNT session to domain CNM01.

```
EZLERCMD CNM01,,NNT,,LIST STATUS=OPS
```

Examples

This example shows how to route the LIST STATUS=OPS command over the RMTCMD session to OPER1 on domain CNM01.

```
EZLERCMD CNM01,OPER1,RMTCMD,,LIST STATUS=OPS
```

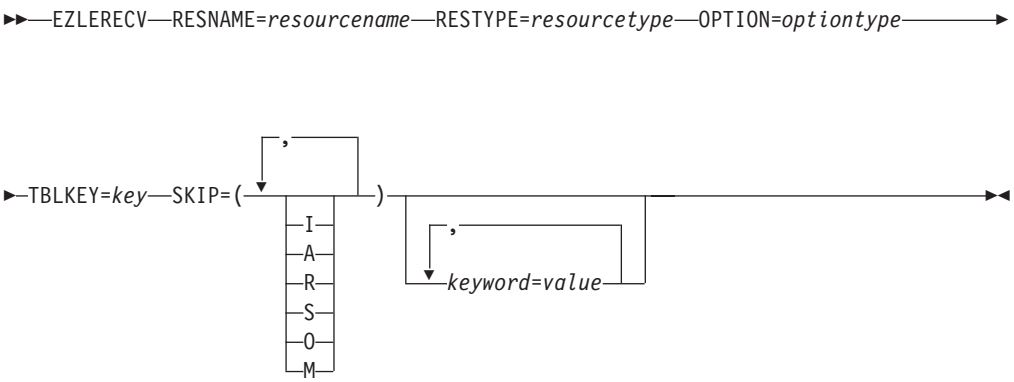
Recovering Resources (EZLERECV)

Purpose

The EZLERECV routine is called for resource recovery and drives option specific routines from the option tables. The following diagram illustrates the syntax of the EZLERECV routine and its parameters. The AIP operator status is also cleared each time EZLERECV is called for a given resource.

Format

EZLERECV



Parameters

RESNAME
Specifies the resource name.

RESTYPE
Specifies the resource type.

OPTION
Specifies the automation option.

TBLKEY
Specifies unique handling for the event.

The EZLERECV routine gets optional processing values from the TBLKEY parameter. If you do not specify the TBLKEY parameter for the EZLERECV routine, no optional processing or notification occurs. The values on the TBLKEY parameter specify keywords found in the option definition tables. In the option definition table, the keywords define the actual processing values used for optional processing. AON saves the TBLKEY values in the *outmsgid* and *spec_function* variables. Message EZL504I is the default *outmsgid*. The value of TBLKEY is in the following format:

tblkey_value=(*outmsgid*,*spec_function_call*)

For example, if the EZLERECV routine is called with:

```
EZLERECV OPTION=SA MSGPRMS=(OPID) TBLKEY=IST093I RESNAME=resname
```

The EZLERECV routine gets the values specified on the IST093I keyword in the option definition table. In the option definition table, the values on the IST093I keyword are:

```
IST093I=(EZL517,FKVEAIDA(resname restype resstat opid))
```

The EZLERECV routine issues the EZL517I message and runs FKVEAIDA as a function sending the current value of *resname* (resource name) and *restype* (resource type) for optional processing. An optional processing program performs automation or processing unique to the resource or failure. No optional processing is done and no message is issued if SKIP=(0) is specified on the EZLERECV call.

The EZLERECV routine issues message EZL504I to all logs and to DDF. Operators do not receive this message. This message is not issued if SKIP=(A) is specified on the EZLERECV call.

SKIP
Specifies which processing to ignore:

I Do not gather resource-specific information.

A Skip availability message.

R Bypass recovery stop processing.

S Skip active monitoring restart.

O Bypass option-specific processing (specified by TBLKEY value).

M Bypass option-specific message processing (TBLKEY value).

keyword=*value*
Any valid keyword and value.

Return codes

00 EZLERECV completed successfully.
03 Missing parameters, issue EZL203I.
04 Incorrect parameters, issue EZL204I.
05 Wait time expired, issue EZL205I.
06 Command failed, issue EZL206I.
07 NOVALUE variable found.
08 REXX syntax failure.
09 Initialization shipped to automation operator.
10 Can not find resource type.
11 Option not enabled.
30 Optional processing routine RC>0.

Examples

This example shows that AON/SNA automation is driven for VTAM message IST093I when a resource is reactivated. EZLERECV is called from the automation table for the AON/SNA SubArea option with optional parameters, such as TBLKEY=IST093I, to identify additional information for the resource recovery actions from the AON/SNA option definition table. Additional information is retrieved from the option definition table during the recovery processing.

```
IF MSGID='IST093I'
   & TEXT = 'IST093I ' resname 'ACTIVE'
   THEN
     EXEC(CMD('EZLERECV OPTION=SA TBLKEY=IST093I '
          'RESNAME=' resname ' MSGPRMS=(OPID)')
          ROUTE(ALL *));
```

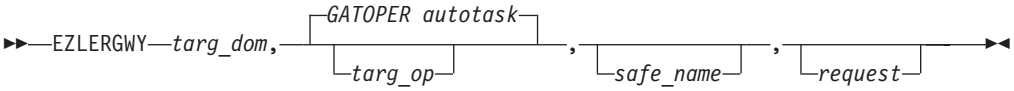
Routing Commands to Other NetView Domains (EZLERGWY)

Purpose

EZLERGWY is a REXX routine that uses the RMTCMD command to route commands to other NetView domains.

Format

EZLERGWY



Note: If *safe_name* is coded and contains data, *request* is optional.

Parameters

targ_dom
The target NetView domain to which to route the request.

targ_op
The target NetView operator ID to which to route the request. If not specified, the request is routed to the GATOPER autotask as defined in the CDLOG statements in EZLCFG01 in DSIPARM.

safe_name
The name of the safe in which to store the response or from which to get the command. If you specify DSILOG, the output is only logged to DSILOG. If not specified, the command is routed and no response is logged or returned to the caller.

request
The command to run.

Usage

To enable the remote gateway support, define CDLOG statements for the GATOPER autotask in each NetView domain. These statements are located in member EZLCFG01 in DSIPARM. Using these CDLOG definitions, AON establishes a RMTCMD session between the corresponding NetView domains. For more information, refer to the *IBM Tivoli NetView for z/OS Administration Reference*.

All parameters are positional and must be delimited by a comma. If you omit a parameter, use a comma to denote its absence.

No syntax checking or security checking is performed for the requested command.

To see the output from your command, specify a *safe_name* parameter. For debugging, specify DSILOG for the *safe_name* parameter.

If you are passing a command in the named safe (*safe_name*) parameter, make sure your program has placed data (the command) into the safe. If not, you receive message EZL203I. In this case, do not pass the command as a parameter.

Examples

The following causes the LIST command to be routed to domain NTV6D with the output being placed into a named safe called MYSAFE:

```
EZLERGWY NTV6D,,,LIST
```

Since no *targ_op* was specified, GATOPER autotask in NTV6D is used.

Examples

The following causes the LIST command to be routed to domain NTV6D. No output is returned to the calling program:

```
EZLERGWY NTV6D,,,LIST
```

Examples

The following shows how to invoke EZLERGWY when the command to run is contained in a safe. In this case, the command is `LIST DSILOG` and is passed to EZLERGWY in a safe called `MYSAFE`. EZLERGWY builds the command, runs it, and returns the responses back into `MYSAFE`:

```
...
Command.0=2
Command.1='LIST '
Command.2='DSILOG'
"PIPE STEM Command.|Safe MYSAFE"

"EZLERGWY NTV6D,,MYSAFE,"

"PIPE SAFE Mysafe|Stem Myvar."
Do i=1 to myvar.0
   Say 'Response to command=' Myvar.i
End
```

Using this example, you can send commands longer than 255 bytes (NetView command-line restriction) to remote NetView domains.

Examples

The following shows how to start a remote session from the GatOper (GATNTV6D) in domain NTV6D to domain NTVFE as RMTNTV6D:

```
CDLOG GATNTV6D,NTVFE,
      SESSTYPE=RMT,
      TARGOP=RMTNTV6D,
      INIT=YES,
       DESC='RMTCMD GATEWAY TO NTVFE'
```

TARGOP is optional for CDLOG and defaults to the same task name in the target domain. GATNTV6D is already be known to domain NTVFE as the NNT gateway task. Specify INIT=YES to start the session every time GATNTV6D logs on. DESC= is optional.

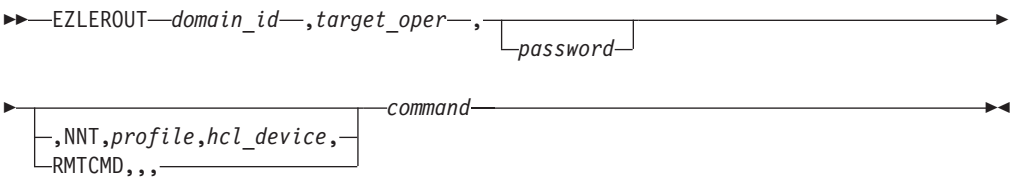
Routing NNT Cross-Domain Logon Information (EZLEROUT)

Purpose

EZLEROUT is a REXX routine that routes cross-domain logon information for NNT sessions and automates replies to NetView message DSI809A. You can also use EZLEROUT to route commands over RMTCMD sessions, similar to the EZLERCMD routine.

Format

EZLEROUT



Parameters

command
The command to be issued. Specifying YES for an NNT session runs the initial program defined in the operator logon profile, NNT-Profile. For RMTCMD sessions, this can be any valid NetView command or program (command list).

domain_id
The domain to which you are logging on.

hcl_device
The hard copy log device for the NNT session.

NNT
Specifies that you are logging onto an NNT session.

password
The password to use.

profile
The NNT session profile.

RMTCMD
Specifies that you are logging onto an RMTCMD session.

target_oper
The operator ID to which you are logging on.

Examples

This example shows how to route the LIST STATUS=OPS command over the active NNT session to domain CNM01. The routine uses the password OPERWORD, and the operator profile OPERPROF. The double-commas (,,) preceding the LIST STATUS=YES command indicate that the routine ignores the hard copy log device parameter.

```
EZLEROUT CNM01,,NNT,OPERWORD,OPERPROF,,LIST STATUS=OPS
```

Examples

This example shows how to route the LIST STATUS=OPS command over the RMTCMD session to OPER1 on domain CNM01.

```
EZLEROUT CNM01,OPER1,,RMTCMD,,,LIST STATUS=OPS
```

Retrieving AON Information (EZLERTVE)

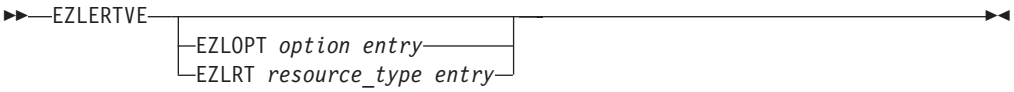
Purpose

The EZLERTVE routine retrieves data from AON option definition tables to use in automation modules.

Format

The following diagram illustrates the syntax of the EZLERTVE routine:

EZLERTVE



Parameters

entry
Option definition table keyword.

EZLOPT
Specifies the option (AON feature) common global variables from the option definition tables.

EZLRT
Specifies the resource type common global variables from the option definition tables.

option
Installed AON feature or suboption. Valid option names are:

AON AON base

APPN Advanced Peer-to-Peer Networking (APPN) suboption for AON/SNA

IP390 TCP/IP for z/OS suboption of AON/TCP

NVAIX
NetView for UNIX suboption for AON/TCP

SA Subarea suboption for AON/SNA

SNA AON/SNA automation feature

SNBU Switched network backup (SNBU) suboption for AON/SNA

TCPIP AON/TCP automation feature

X25 X.25 suboption for AON/SNA

resource_type
Any valid resource type supported by AON or its automation features.

Usage

The EZLERTVE routine must be called from a program, for example, REXX. The results are returned back to the calling program in a local variable, EZLERTVE.

The EZLERTVE routine accesses a variable name of *EZLOPT.option.entry* or *EZLRT.resource_type.entry* and returns the value of the common global variable.

If no value is found, EZLERTVE returns *N/A*.

Examples

The following is an example of EZLERTVE in a REXX procedure:

```
  opt_id=SNA
  Restype=PU

  /* Get message class for option and resource type */
'EZLERTVE EZLOPT' opt_id 'MSGCLASS'
  opt_class = EZLERTVE
  'EZLERTVE EZLRT' Restype 'MSGCLASS'
  rt_class = EZLERTVE

  if rt_class = "N/A" then
    rt_class = "00"

  if opt_class = "N/A" then
    opt_class = "00"
```

The EZLERTVE routine gets the variable EZLOPT.SNA.MSGCLASS and the variable EZLRT.PU.MSGCLASS.

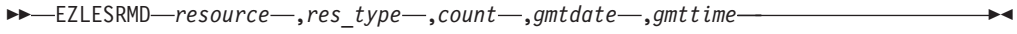
Issuing Resource State Reminders (EZLESRMD)

Purpose

The EZLESRMD routine checks the status of the resource and issues notifications if the resource is down. The resource is not recovered.

Format

EZLESRMD



Parameters

count MONIT interval count of the interval just run. Valid values are 0 through 99.

gmtdate
Date of the original failure that initiated recovery. The date given is in Greenwich mean time (GMT).

gmttime
Time of the original failure that initiated recovery. The time given is in Greenwich mean time (GMT).

resource
Resource name.

res_type
Resource type.

Usage

A timer is scheduled at the next MONIT interval that has the ID of the resource name.

Monitoring is discontinued if the resource becomes unknown to VTAM in consideration of dynamic CDRSCs.

Monitoring continues until the resource becomes active, interval settings have been exhausted, or automation is turned off. If the notify flag for the interval is **Y**, a notification is issued:

```
REMINDER - restype resname HAS BEEN DOWN FOR interval
```

At the first interval, message EZL506I is issued:

```
resname INACTIVE - ATTEMPTING RECOVERY - RECOVERY MAY BE
TERMINATED BY VARYING THE RESOURCE INACTIVE
```

The EZL540I message is issued when reminders are halted (`REMINDERS FOR restype resname HALTED - REMINDER THRESHOLDS UNDEFINED`).

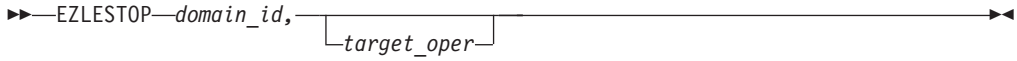
Stopping Cross-domain Sessions (EZLESTOP)

Purpose

EZLESTOP is a REXX routine supplied with AON to stop cross-domain NetView sessions. Both NNT and RMTCMD sessions are supported.

Format

EZLESTOP



Parameters

domain_id
Domain with which you have a session.

target_oper
Operator to be logged off. This is valid only for RMTCMD sessions.

Usage

EZLESTOP determines the type of session based on the parameters that are provided. If the target operator is specified, then EZLESTOP looks for a RMTCMD session and logs that operator off. If you do not specify a target operator, EZLESTOP stops your NNT session to the specified domain.

Return codes

0 Session was ended.

4 Unable to stop cross-domain session. Check task global variable, EXITMSG, for the message that was received.

5 Internal AON error. Call IBM Software Support.

7 Internal AON error. Call IBM Software Support.

8 Internal AON error. Call IBM Software Support.

Examples

This example logs operator OPER2T off a remote command (RMTCMD) session on domain CNM02.

```
EZLESTOP CNM02,OPER2T
```

Examples

This example shows how to log off your NetView-NetView task (NNT) session with domain CNM02.

```
EZLESTOP CNM02
```

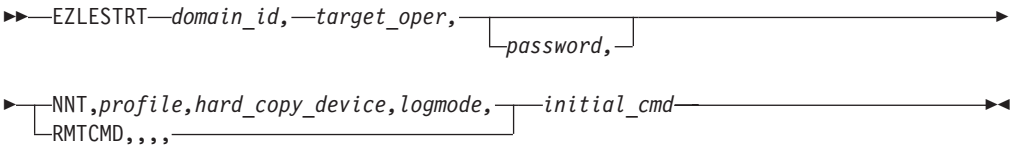
Starting Cross-domain Sessions (EZLESTRT)

Purpose

EZLESTRT is a REXX routine that starts cross-domain NetView sessions. The routine supports both NNT and RMTCMD type sessions.

Format

EZLESTRT



Parameters

domain_id
Target domain to start session.

hard_copy_device
NNT hard–copy log device to start.

initial_cmd
Initial program or command to issue. For an NNT session, *YES* runs the initial program that is defined in the operator's logon profile. For RMTCMD sessions, this can be any valid NetView command or program.

logmode
Log mode for NNT session.

password
NNT password.

NNT
Start a NetView-to-NetView Task session.

profile
NNT operator profile.

RMTCMD
Start a remote command session.

target_oper
Operator to be logged on.

Usage

Delimit all parameters with commas. If you do not specify a parameter, use two commas.

Return codes

0 Cross-domain session started.

4 Unable to start cross-domain session. Check the task global variable, EXITMSG, for the message that was received.

5 Internal AON error. Call IBM Software Support.

7 Internal AON error. Call IBM Software Support.

8 Internal AON error. Call IBM Software Support.

Examples

This example shows how to start a cross-domain RMTCMD session to CNM02 as OPER2T:

```
EZLESTRT CNM02,OPER2T,,RMTCMD,,,,OPER2IC
```

The first occurrence of double-commas (,,) means that no password is passed. Other parameters not being passed are the *profile, hard_copy_device,* and *logmode*.

Examples

This example shows how to start a cross-domain NNT session to CNM02 as OPER1 using a password of OPERPSWD and a logon profile of OPERPROF:

```
EZLESTRT CNM02,OPER1,OPERPSWD,NNT,OPERPROF,,,YES
```

No parameters are supplied for *hard_copy_device* and *logmode*. *YES* specifies to run the operator's initial program as defined in the profile OPERPROF when the session is established.

Activating VTAM Resources (EZLEVACT)

Purpose

Use the EZLEVACT REXX routine to reactivate VTAM resources. EZLEVACT issues a VARY NET,ACT command for a specified resource.

Format

EZLEVACT

Parameters

resource
The name of the VTAM resource to be activated.

Return codes

0 VARY ACT was successful.
8 WAIT error or resource is not known.
9 Security failure.
100 WAIT timeout.

Usage

EZLEVACT can be called from any NetView program or command processor.

Examples

The following example shows how to activate resource TA1P523A:

```
EZLEVACT TA1P523A
```

Deactivating VTAM Resources (EZLEVINA)

Purpose

Use the EZLEVINA REXX routine to deactivate VTAM resources. EZLEVINA issues a VARY NET,INACT,F command for a specified resource.

Format

EZLEVINA

Parameters

resource
The name of the resource to deactivate.

Return codes

0 VARY ACT was successful.
8 WAIT error or resource is not known.
9 Security failure.
100 WAIT timeout.

Usage

EZLEVINA can be called from any NetView program or command processor.

Examples

The following example shows how to deactivate resource TA1P523A:

```
EZLEVINA TA1P523A
```

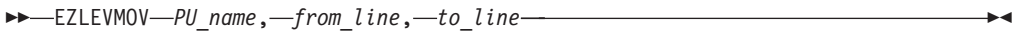
Moving VTAM Resources (EZLEVMOV)

Purpose

Use the EZLEVMOV REXX routine to move a PU from one line to another. EZLEVMOV issues a MODIFY NET,DR,TYPE=MOVE,FROM=*xxxx*,TO=*yyyy* command for a specified resource.

Format

EZLEVMOV



Parameters

from_line
The line to which the PU is currently attached

PU_name
The name of the PU to move

to_line
The line to which to move the PU

Return codes

0 MOVE was successful.

8 WAIT error, MOVE error, incorrect number of parameters.

9 Security failure.

100 WAIT timeout.

Usage

EZLEVMOV can be called from any NetView program or command processor. If you choose to move a PU, reactivate it after the move is complete. You can use the EZLEVACT for the reactivation.

Examples

The following example shows how to move PU TA1P523A from line TA1L5023 to line TA1L5024:

```
EZLEVMOV TA1P523A,TA1L5023,TA1L5024
```

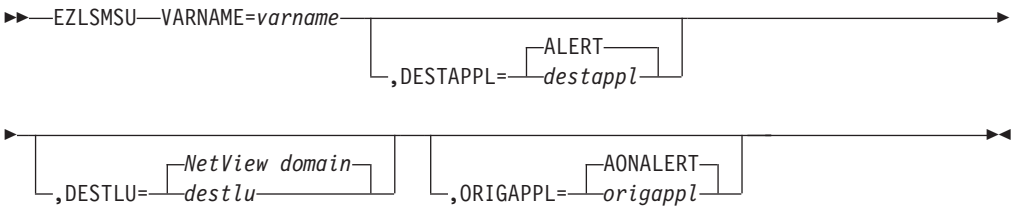
Sending MSUs to an MS Transport Application (EZLSMSU)

Purpose

EZLSMSU can be used to issue the NetView MS Transport send macro. To use EZLSMSU you must build a CP_MSU major vector and then invoke EZLSMSU to issue the send macro.

Format

EZLSMSU



Parameters

varname
Identifies the variable that contains a prebuilt CP_MSU. The variable is retrieved from your local variable pool. EZLSMSU does not perform data verification; it assumes that the CP_MSU was built correctly.

destappl
Identifies the destination MS application for the send. If you do not specify a destination, the default (ALERT) is used and the MSU is sent to the NetView hardware monitor.

destlu
Identifies the destination MS LU name for the send. For NetView applications, this is the NetView domain ID. If you do not specify a name, the default of the current NetView domain is used.

origappl
Identifies the application originating the send request. If you do not specify an application, the default (AONALERT) is used.

Usage

No checking is done on your MSU data. All major vectors, subvectors, and subfields must be built properly. For more information refer to the SNA formats. The data sent to the hardware monitor (DESTAPPL=ALERT) can be an alert, a resolution, or an MSU containing multiple alerts or resolutions. To be notified when a send fails, code an MS Transport application and specify it for the ORIGAPPL. AON registers the AONALERT MS application during initialization. To see an example of how to build a CP_MSU acceptable for EZLSMSU, browse the EZLEMSU AON program.

Return codes

EZLSMSU returns RC=0 if the MSU was sent to the NetView MS Transport. If an error occurs, EZLSMSU returns the return code received from NetView. The return codes are documented in *IBM Tivoli NetView for z/OS Programming: PL/I and C*.

Examples

The following example shows how to send the data built in the variable MSUDATA to the ALERT application (hardware monitor) running in your domain from the AONALERT application:

```
EZLSMSU VARNAME=MSUDATA
```

Examples

The following example shows how to send the MSU data contained in the variable MSUDATA to the MYAPPL application in domain CNM1A from the MYAPPL application in your current NetView domain:

```
EZLSMSU VARNAME=MSUDATA,DESTAPPL=MYAPPL,DESTLU=CNM1A,ORIGAPPL=MYAPPL
```

Running Entry and Exit Traces (EZLTRACE)

Purpose

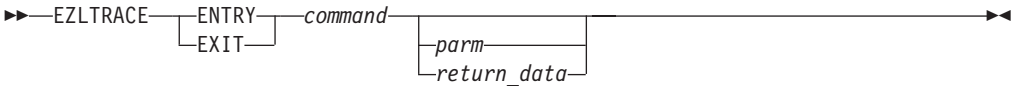
Use the EZLTRACE routine in modules and command processors to:
- Provide entry and exit tracing
- Control more detailed levels of tracing

Also, use this routine in your automation modules. Tracing is controlled at the operator panel.

Note: This function does not require AON.

Format

EZLTRACE



ENTRY
Indicates start of command
EXIT
Indicates end of command
command
The module being traced
parameters
Input parameters passed to command (entry)
return_data
Return values or return code (exit)

Usage

The *parameters* variables are written to the log when EZLTRACE ENTRY is run. The *return_data* variable is written to the log when EZLTRACE EXIT is run.

Local variables are set for use by either REXX or NetView command list language for detail tracing:
- EZLTRACEC - NetView command list program
- EZLTRACER - REXX
- Entry message
- Exit message

Examples

Use the EZLTRACE routine in a REXX procedure to trace entries:

```
parse source . Invoc Ident .
parse upper arg argstring
'EZLTRACE ENTRY 'ident argstring                    /* Entry trace  */
interpret 'trace' EZLTRACER
```

Examples

Use the EZLTRACE routine in a REXX procedure to trace exits:

```
ReturnCode = 4
'EZLTRACE EXIT 'ident ReturnCode                   /* Exit trace   */
exit ReturnCode
```

Examples

Use the EZLTRACE routine in AON to avoid calls to EZLTRACE when trace is set to NONE:

```
parse source . Invoc Ident .
parse upper arg argstring
'Globalv Getc EZLTRACED'
If Substr(EZLTRACED,1,4)<> 'NONE'
Then Do 'EZLTRACE ENTRY 'indent argstring
Trace Value(EZLTRACER)
End
```

Examples

Use the EZLTRACE routine in a NetView command list to trace entries:

```
MYCODE CLIST
     &CONTROL ERR
     &IDENT = MYCODE
*
     EZLTRACE ENTRY &IDENT &PARMSTR
     &CONTROL &EZLTRACEC
*
```

Examples

Use the EZLTRACE routine in a NetView command list to trace exits:

```
*
     &RETCODE = 99
     EZLTRACE EXIT &IDENT &RETCODE
     &EXIT &RETCODE
*
```

SNMP RFC Conversion (FKXECNVT)

Format

Use the FKXECNVT routine to read SNMP MIB RFCs and create entries that can be pasted into /etc/mibs.data.

FKXECNVT

Parameters

inddname
Specifies the data set pointer to the input SNMP MIB RFC.

mibddname
Specifies the data set pointer to the MIB OBJECT file.

outddname
Specifies the data set pointer of where to put the output mibs.data entries.

Usage

The input file to FKXECNVT must be in textual format. FKXECNVT reads the MIB RFC line by line, and does not handle files stored in string format. Maximum LRECL for all files used by FKXECNVT is 256.

Examples

```
FKXECNVT USER1.RFCDATA(TN3270E) USER.RFCDATA(TN32OUT)
NETVIEW.V5R2M0.CNMSAMP(FKXMOBJ)
```

This converts the MIB file named TN3270E to a mibs.data file called TN32OUT and uses FKXMOBJ from the NetView sample library as the base line for the conversion.

Messages

Following are error messages that can occur with the FKXECNVT function.

No Files

Explanation: No parameters were entered for this invocation.

Operator response: Retry the command specifying the Input, Output, and MIB files.

No Output File

Explanation: An output file name was not entered.

Operator response: Retry the command specifying the Input, Output, and MIB files.

No MIB Data File name was entered.

Explanation: Parameters were not entered for this invocation.

Operator response: Retry the command specifying the Input, Output, and MIB files.

Unable to allocate Input file indsn Return Code = RC

Explanation: The ALLOC command failed for file indsn.

Operator response: RC is the return code from the ALLOC command. Use this to determine why the allocate failed and resolve the problem and then retry the command.

Unable to allocate Output file outdsn Return Code = RC

Explanation: The ALLOC command failed for file outdsn.

Operator response: RC is the return code from the ALLOC command. Use this to determine why the allocate command failed, resolve the problem, and then retry the command.

Unable to allocate MIB Data file mibdata Return Code = RC

Explanation: The ALLOC command failed for file mibdata.

Operator response: RC is the return code from the ALLOC command. Use this to determine why the allocate command failed, resolve the problem, and then retry the command.

Unable to Read the MIB Data file, Received Return Code = RC

Explanation: The REXX EXECIO function failed with return code RC for the MIB data file.

Operator response: Use the RC to determine why the EXECIO function failed. Correct the problem and retry the command.

Unable to Write the Output file, Received Return Code = RC

Explanation: The REXX EXECIO function failed with return code RC for the Output file.

Operator response: Use the RC to determine why the EXECIO failed. Correct the problem and retry the command.

No valid records created for this RFC File

Explanation: FKXECNVT was unable to understand any objects in the input RFC file, so no converted records were created.

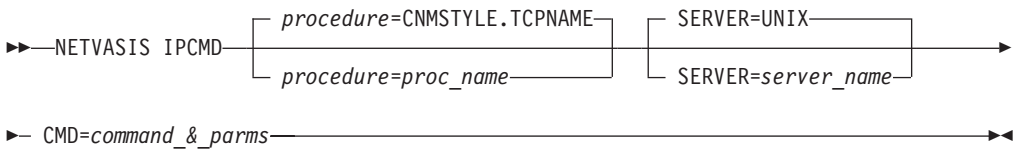
Operator response: Review the format of the RFC, and ensure it complies with the format restrictions defined in this book.

TCP/IP Command Support (IPCMD)

Format

Use the IPCMD routine to issue any TSO or UNIX command.

IPCMD



Parameters

procedure
Specifies the z/OS procedure. Valid values are PROC and STACK.

CMD
Specifies the TCP/IP command and parameters.

proc_name
Specifies the name of the z/OS procedure. The default is defined in the CNMSTYLE member with the common global variable TCPNAME. The value for TCPNAME is the *proc_name* of the TCP/IP stack. Refer to *IBM Tivoli NetView for z/OS Administration Reference* for more information about setting this value.

SERVER
Specifies the server name, either TSO or UNIX. The default is .

Usage

- Specify NETVASIS when entering UNIX commands or commands that are case sensitive.
- Parameters are not positional, but enter CMD=*command_&_parms* last to enable proper parameter parsing.
- The default stack and server can be changed by modifying the CNMSTYLE member. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information.

Examples

To use the UNIX server to ping host name localhost, using the default TCP/IP for z/OS stack name, enter the following command:

```
netvasis IPCMD CMD=oping localhost
```

The response is returned to the caller.

To use the first available TSO server to ping host name localhost, enter the following command:

```
netvasis IPCMD SERVER=TSO CMD=ping localhost
```

The response is returned to the caller.

Programmatic Interface for IP Trace

Format

IP Trace does not have a command-line interface. IP Trace uses an application programming interface and a series of common global variables that need to be set before invoking the IP Trace program. The following section provides information about these global variables. Refer to sample FKXETSMP shipped with the Tivoli NetView product for additional information.

To use IP Trace, the following required common global variables must be set.

For both Packet and Component Trace

FT.*sp*.*TARGET*

sp The service point or stack for which these global variables are set.

target The target system and stack where the trace commands are sent. The target is a stemmed variable, which consists of the NetView domain and TCP/IP procedure name of the stack, in the format DOMAIN.PROC for the stack defined by `sp`.

For Component Trace

FT.*sp*.CTRC.OPTS1
FT.*sp*.CTRC.OPTS2
FT.*sp*.CTRC.IPADD1
FT.*sp*.CTRC.IPADD2
FT.*sp*.CTRC.IPADD3
FT.*sp*.CTRC.IPADD4
FT.*sp*.CTRC.PORT
FT.*sp*.CTRC.JOBS
FT.*sp*.CTRC.ASIDS

sp The service point or stack for which these global variables are set.

OPTS1 A list of CTRACE options. You can enter up to 20 options, separated by commas.

OPTS2 A list of up to 20 additional component trace options.

IPADD1 A list of IP addresses. You can enter up to four addresses.

IPADD2 A list of up to four additional IP addresses.

IPADD3 A list of up to four additional IP addresses.

IPADD4 A list of up to four additional IP addresses.

PORT A list of up to 16 IP ports, in the range 0–65535.

JOBS A list of up to 16 z/OS job names, from 1–8 characters.

ASIDS A list of up to 16 z/OS address space identifiers, in the form of four hexadecimal numbers.

For Packet Trace

FT.*sp*.PKT.LINKS
FT.*sp*.PKT.OPT.*n*

This global variable contains a total count of optional globals defined for this service point. For example, if there are six FT.*sp*.PKT.OPT globals defined, the value of FT.*sp*.PKT.LINKS is 6. Any number of optional globals can be set for all links on a service point. Each of these globals contains the following format:

```
LinkName,Len,Proto,Ipadd,Subnet,DestPort,SourcePort
```

Note: Use one global for each service point. When using the 3270 interface, all of these global variables are managed automatically.

LinkName
The TCP/IP device name on the service point traced.

Len Specifies that a truncated portion of the IP packet can be traced. You can specify a length in the range 1–65535. The maximum value is FULL, which captures the entire packet.

Proto The protocol collecting data. Valid values are:
- Asterisk (*), which specifies that packets of any protocol are traced
- ICMP
- RAW
- TCP
- UDP
- *number* (in the range 0–255)

IPadd The IP address that is compared with both the source and destination addresses of inbound and outbound packets. If either the source or destination address of a packet matches the specified IP address, the packet is traced. If *IPadd* is blank or an asterisk (*) is specified, all IP addresses are traced.

Subnet The subnet mask that applies to the host and network portions of the IP address specified on the corresponding *IPadd*.

DestPort
The port number that is compared with the destination port of inbound and outbound packets. The port number is an integer in the range 1–65535. If the destination port of a packet is the same as the specified port number, the packet is traced. This comparison is only performed for packets using either the TCP or UDP protocol. Packets using other protocols are not traced. If *DestPort* is omitted, there is no checking of the destination port of packets. If an asterisk (*) is specified, packets of any protocol and any destination port are traced.

SourcePort
The port number that is compared with the source port of inbound and outbound packets. The port number is an integer in the range 1–65535. If the source port of a packet is the same as the specified port number, the packet is traced. This comparison is only performed for packets using either the TCP or UDP protocol. Packets using other protocols are not traced. If *SourcePort* is omitted, there is no checking of the source port of packets. If an asterisk (*) is specified, packets of any protocol and any source port are traced.

Syntax of FKXETRA1 Program

The format consists of the following:

```
FKXETRA1 sp,type,action,writer,chron_start_date_time,duration,operator
```

sp The service point ID. This variable directs FKXETRA1 to use global variables to properly set up the trace.

type The type of trace; CTRACE or PKT.

action To start (START) or stop (STOP) the trace.

writer The name of the source JCL used to create the external writer where trace data is stored. This is used for active and delayed traces. Refer to *MVS Diagnosis: Tools and Service Aids* for more information about creating source JCL for an external writer.

chron_start_date_time
The date and time to start the trace, in the format YYYY-MM-DD-HH.MM.SS. If no date and time is specified, the trace begins immediately. Refer to the CHRON command in the NetView online help for more information on the date and time format.

duration
The length of time the trace is to run, in the format HH.MM.SS. This is used for active and delayed traces. Refer to the CHRON command in the NetView online help for more information on the time format.

operator
The operator task on which to schedule a delayed trace timer for this request. A delayed timer can be set for a time when the requesting operator ID is not logged on to NetView, which causes the timer to fail. This option enables the user to specify the name of the task to be active at the designated time to allow for the successful completion of the task. The owner of the trace is still the original requestor.

Note: The task name must be defined in DSIPARM member DSIPOPF and can only be specified for delayed traces.

Usage

The IP Trace function utilizes many z/OS commands to control and manage TCP/IP component and packet traces. The following issues can effect the functionality of the AON IP Trace:

- Each task or operator requires a unique z/OS console to issue z/OS commands and receive command responses.
- The task with load module name CNMCSSIR must be active and receiving unsolicited messages.
- The time required to receive responses to IP trace commands can vary greatly. Customize the following statement in the CNMSTYLE member to set the time delay value (in seconds):

```
COMMON.EZLIPTraceJCLWait = 2 //AON wait time for source JCL errors response.
```

Examples

To start Packet Tracing for YOURHOST, we need to set up the following common global variables:

```
FT.YOURHOST.PKT.LINKS   =  3
FT.YOURHOST.PKT.OPT.1   =  LOOPBACK,FULL,*,*,255.255.255.255,*,*
FT.YOURHOST.PKT.OPT.2   =  TCPIPLINK,FULL,*,*,255.255.255.255,*,*
FT.YOURHOST.PKT.OPT.3   =  TCPIPLINKN000000,FULL,*,*,255.255.255.255,*,*
FT.YOURHOST.TARGET      =  LOCAL.TCPIP
```

To start a packet trace on this system, now, code the following within a REXX Clist:

```
/*SAMPLE CODE TO START PKT TRACE NOW */

'FKXETRA1 YOURHOST,PKT,START,PKTWRITER'

SAY 'PKT TRACE REQUEST ENDED WITH RC' RC

/* DISPLAY FKX MESSAGE, TOO        */
'GLOBALV GETT EXLMSGTXT'

SAY EZLMSGTXT

EXIT
```

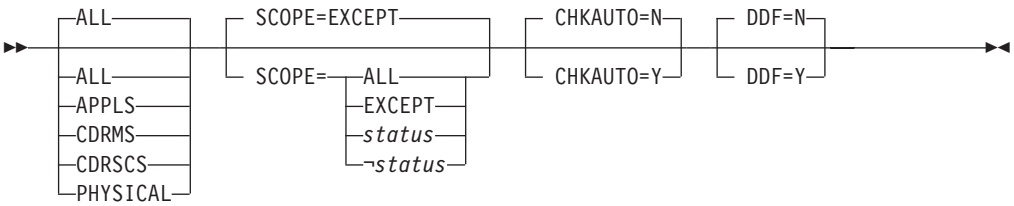
SNA Resource Automation (FKVESYNC)

Format

Quite often resources fail while NetView (or AON/SNA) is down. Because AON was not notified of the failure, AON automation routines do not request to recover the failed resources.

FKVESYNC is provided to assist you with automating your SNA resources. You can use FKVESYNC to determine which resources are down, and then drive AON automation routines to recover the failed resources.

FKVESYNC



Parameters

Defines which resource types to automate.

ALL
Automates all resources regardless of status. This is the default.

APPLS
Automates only the applications.

CDRMS
Automates only the cross-domain resource managers.

CDRSCS
Automates only the cross-domain resources.

PHYSICAL
Automates only the physical components. This includes NCPs, LUs, PUs, and switched nodes.

SCOPE
Defines the extent to which the resource is automated.

EXCEPT
Automates all resources that are currently not in an ACTIVE status. This is the default.

ALL
Automates all resources regardless of status.

status
Automates only resources with this status.

¬*status*
Automate all resources that do not have this status.

CHKAUTO
Determines if the resources displayed are to be checked against the recovery statements in the control file when calling the NETSTAT command. The default is N.

DDF Determines if the information is passed to the Dynamic Display Facility (DDF) when calling the NETSTAT command. The default is N.

Usage

- FKVESYNC must be called from operator written code that is driven when NetView is initialized.
- FKVESYNC uses the AON NETSTAT command to determine the status of your SNA resources. In large networks with many failed resources, this process can take some time and CPU cycles.

Examples

To check the status of all CDRMs, enter the following command:

```
FKVESYNC CDRMS

  CNM377I FKVESYNC : INPUT ACCEPTED AND BEING PROCESSED ...
   PLEASE WAIT
  EZL001I REQUEST NETSTAT WAS SUCCESSFUL FOR OPER4
```

This detects all of your failed CDRM resources and drives AON automation routines to attempt the recovery of each. When you see message EZL001I, then AON recovery has been driven for each failed resource.

Chapter 26. Tailoring Gateways and Focal Points

Gateways are inbound and outbound automated operators. Focal points are domains to which all notifications are forwarded. Gateways and focal points enable you to define the following:

- Focal point host
- Backup focal point host
- Intermediate host or hosts
- Distributed host or hosts
- Adjacent host environment or environments

The message/alert router forwards messages and alerts from multiple hosts to a single host. This enables a network operator to receive all the network alert messages at a single console. The message destination is controlled within control file entries. Routed messages contain host origination identification.

To enable notification forwarding for AON you must complete the following steps:

- Determine the notification forwarding hierarchy.
- Tailor the NetView definitions.
- Define the focal point and backup focal point entries.
- Define the outbound gateway operator entries.
- Add NetView outbound and inbound operator IDs.
- Implement the changes in a host-by-host approach.

Refer to the example following each step for more detail.

1. Determine the notification forwarding hierarchy.

   You must determine the relationship between the different systems in a notification forwarding network. You must designate a primary focal point where you can send the messages. You can designate a backup for the primary focal point for situations when the primary focal point is unavailable. You must define the connectivity between the hosts in a tree-structured hierarchy, so that all notification messages are forwarded up to the primary focal point.

   You should develop a chart depicting the notification forwarding hierarchy. Figure 201 on page 382 shows an example of a notification forwarding chart.

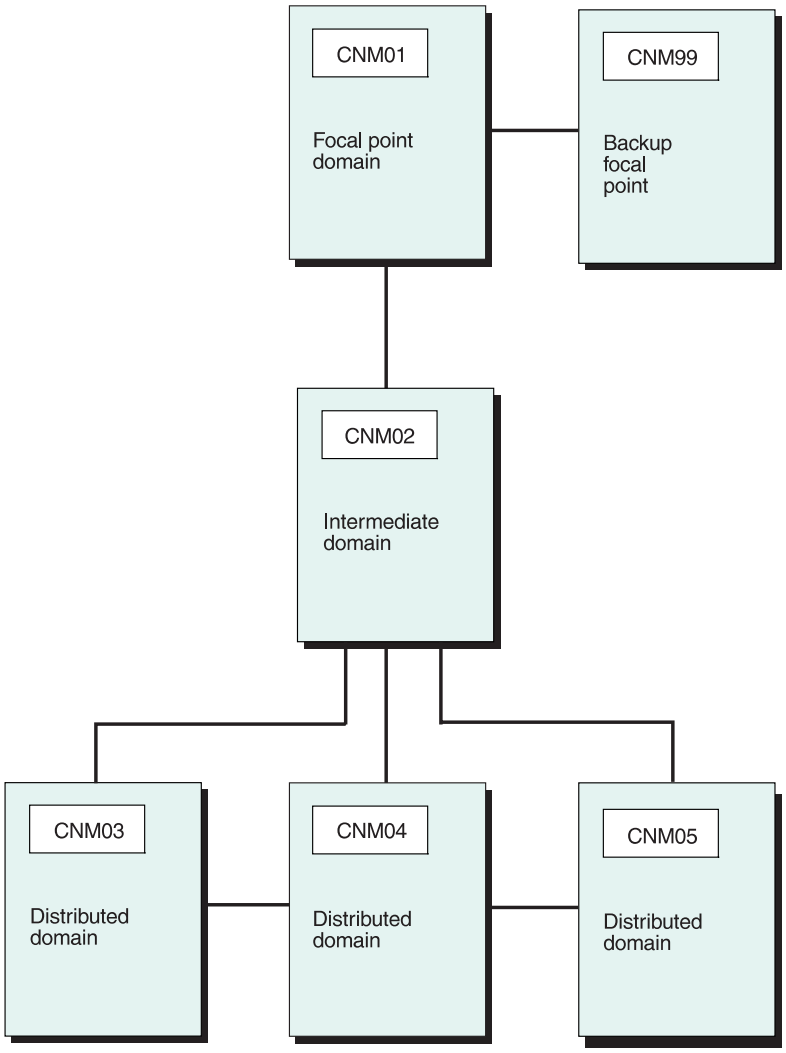


Figure 201. Notification Forwarding Hierarchy Chart Example

In this example, CNM01 is the primary focal point and CNM99 is the backup focal point. The backup focal point does not receive notifications unless the primary focal point is down. As soon as the primary focal point is operational and the gateway connections are reestablished, the backup stops receiving notifications.

2. Tailor the NetView definitions.

   Note: It is assumed that you have implemented all VTAM definitions required to permit cross-domain logons to remote NetView programs.

   Add an RRD statement (if one does not already exist) in the CNMSTYLE member for each host with which this host directly communicates. This definition supports notification forwarding.

3. Define the focal point and backup focal point entries.

   The focal point control file entry identifies the NetView domain where you forward the notification messages. Each focal point control file entry defines the final destination. Add a focal point definition control file entry to each distributed host.

   An example of a focal point definition entry is:

   ```
   FORWARD FOCALPT,PRI=CNM01,BKUP=CNM03
   ```

4. Define the outbound gateway operator entries.

   The outbound gateway operator establishes and maintains all of the outbound connections to the domains defined in the GATEWAY control file entries. The outbound gateway operator is defined in the AUTOOPS entry of the control file as GATOPER.

   ```
   AUTOOPS   GATOPER,ID=name
   ```

   The GATEWAY entries define the other domains with which a session should be established so that notification messages can be forwarded to or from these domains.

   ```
   GATEWAY   CNM02,DESC='NETVIEW CNM02',PASSWORD=password
   ```

   NetView-NetView (NNT) sessions are established to all the domains defined by attempting to log on to the inbound gateway operator of each domain. Each inbound gateway operator has the same operator ID as the sending outbound gateway operator.

5. Define NetView outbound and inbound operator IDs to the DSIOPF profile.

   Define the inbound and outbound operator IDs to support notification forwarding. A sample operator ID (GATCNM01) is provided.

   Define one outbound operator ID. The outbound operator ID is the ID defined in the AUTOOPS GATOPER control file entry in your domain.

   Define one inbound operator ID for each domain defined in a GATEWAY control file entry. For the inbound operator ID, use the ID defined in the AUTOOPS GATOPER control file entry in the other domains.

   Note: You must also specify the logon ID in the GATEWAY statement of the remote domain.

6. Implement the changes in one NetView host at a time.

   The notification forwarding implementation is best approached as a top-down implementation starting with the primary focal point, then the distributed hosts. This approach works best because the focal point is ready to handle the forwarded notifications when notification forwarding is enabled in the remote hosts.

   When using a top-down approach, if your installation has not implemented message forwarding, the messages at the remote hosts are displayed to notification operators at the remote hosts. After message forwarding is turned on, the messages are routed to the focal point and appropriately handled. Local notification operators, if any remain, are also notified appropriately.

AON Focal Point Compatibility

The following restrictions apply to the AON-supported focal point compatibility:

- AON does not support intermediate focal point domains. You can use full-function domains as intermediate routing domains, but AON does not act on data passing through an intermediate routing domain, and does not update DDF in the intermediate domain.
- Down-level distributed domains must be directly connected to the focal point domain. You cannot use any ADJNETV statements.
- Down-level domains might not act as an intermediate. You cannot specify them in the DOMAIN or ALTNETV parameters on any ADJNETV statement.
- Down-level focal point domains must have all distributed domains directly connected. You cannot use any ADJNETV statements.

- Down-level compatibility is provided to ease migration to current levels of gateway support. Down-level compatibility is not intended for long-term production operation. Migration of all domains to full-function support should be accomplished as quickly as possible.

Table 7 illustrates allowable communications setups. Wherever a down-level domain is connected to a full-function domain, the full-function domain should be AON. Wherever two full-function domains are connected, the full-function domains can be any supported full-function product.

Table 7. Communications Setup in Focal Point Domain Environment

Focal point support 1. DL(dn) ⟶ AON(fp) 2. AON(dn) ⟶ DL(fp) (except AON SolutionPac) 3. FF(dn) ⟶ FF(fp) 4. FF(dn) ⟶ FF(ir) ⟶ FF(fp)
SENDCMD support 1. DL ⟷ AON[2] 2. AON ⟷ DL[2] 3. FF ⟷ FF 4. FF ⟷ FF ⟷ FF 5. DL ⟷ AON ⟷ DL[3] 6. DL ⟷ AON ⟷ FF[2, 3] 7. FF ⟷ AON ⟷ DL[2, 3]

Notes:

1. The abbreviations in this table have the following meanings:
   AON Full-function domain (AON)
   FF Full-function domain
   DL Any down-level domain
   (dn) Distributed domain
   (fp) Focal point domain
   (ir) Intermediate routing domain
2. SENDCMD support for these is the same.
3. Not valid for focal point support.

Figure 202 illustrates a typical migration environment:

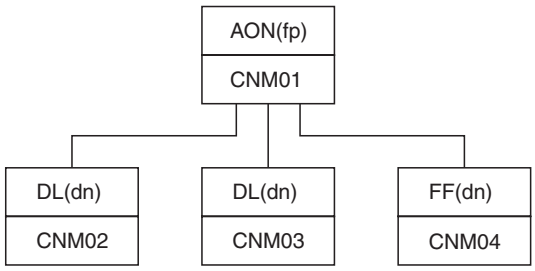


Figure 202. Typical Migration Environment

Table 8 on page 385 illustrates the focal-point and SENDCMD support for a typical migration environment.

Table 8. Focal–point and SENDCMD Support for Typical Migration Environment

Support type	Between domains	Communications setup
Focal point	CNM02 to CNM01	DL(dn) ⟶ FF(fp)
	CNM03 to CNM01	DL(dn) ⟶ FF(fp)
	CNM04 to CNM01	FF(dn) ⟶ FF(fp)
SENDCMD	CNM02 to CNM01	DL ⟷ FF
	CNM01 to CNM03	FF ⟷ DL
	CNM04 to CNM01	FF ⟷ FF
	CNM02 to CNM03 (through CNM01)	DL ⟷ FF ⟷ DL
	CNM02 to CNM04 (through CNM01)	DL ⟷ FF ⟷ FF
	CNM04 to CNM03 (through CNM01)	FF ⟷ FF ⟷ DL

Figure 203 shows one possible example of a full-function environment.

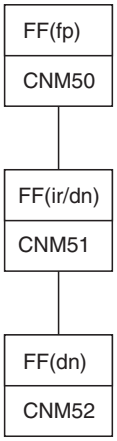


Figure 203. Example Full-function Environment Diagram

Table 9 lists focal-point and SENDCMD support for the full-function environment as previously illustrated.

Table 9. Focal-point and SENDCMD Support for Full-function Environment

Support type	Between domains	Communications setup
Focal point	CNM51 to CNM50	FF(dn) ⟶ FF(fp)
	CNM52 to CNM50 through CNM51	FF(dn) ⟶ FF(ir) ⟶ FF(fp)
SENDCMD	CNM51 to CNM50	FF ⟷ FF
	CNM52 to CNM50 through CNM01	FF ⟷ FF ⟷ FF

Sample definitions for this full-function environment for each domain follow:

- For domain CNM50:

```
AUTOOPS GATOPER,ID=GATCNM50
GATEWAY CNM51,PASSWORD=password
ADJNETV CNM52,DOMAIN=CNM51
```

- For domain CNM51:

```
AUTOOPS GATOPER,ID=GATCNM51
GATEWAY CNM50,PASSWORD=password
GATEWAY CNM52,PASSWORD=password
FORWARD FOCALPT,PRI=CNM50
```

- For domain CNM52:

```
AUTOOPS GATOPER,ID=GATCNM52
GATEWAY CNM51,PASSWORD=password
ADJNETV CNM50,DOMAIN=CNM51
FORWARD FOCALPT,PRI=CNM50
```

Notification Forwarding Example

Assume that the AON operator OUTMAN wants to forward a request (AON notify) to CNM02 from CNM01. The outbound gateway operator for CNM01 is Gating. The outbound gateway operator for CNM02 is Gating. The inbound gateway operator for CNM02 that receives notification messages from CNM01 is Gating.

The program sends the request to the CNM01 outbound gateway operator (GATCNM01). The outbound gateway operator determines if the request is for the CNM01 domain. In this example, it is not. The outbound gateway operator routes the request to the inbound gateway operator in domain CNM02 (GATCNM01) from domain CNM01. When the inbound gateway operator receives the request, it is sent to the outbound gateway operator for CNM02 (GATCNM02). The outbound gateway operator from CNM02 determines that the forwarded request is for this domain and issues the request. Refer to Figure 204.

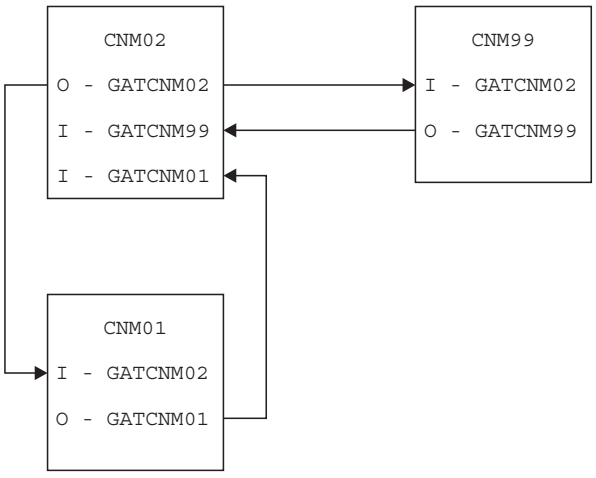


Figure 204. Notification Forwarding Example

Table 10 on page 387 lists the required control file entries for the domains illustrated in Figure 204.

Table 10. Required Control File Entries

Domain	Control file entry	Example
CNM01	AUTOOPS Automation operator	`AUTOOPS GATOPER,ID=GATCNM01`
	GATEWAY Forwarded domains and operator definitions	`GATEWAY CNM02,DESC='NEXT DOMAIN',` `PASSWORD=pswd`
	FORWARD FOCALPT Focal point definitions	`FORWARD FOCALPT,PRI=CNM99`
	ADJNETV Focal point definitions	`ADJNETV CNM99,DOMAIN=CNM02`
CNM02	AUTOOPS Automation operator	`AUTOOPS GATOPER,ID=GATCNM02`

	GATEWAY
	
	Forwarded domains and operator definitions
		`GATEWAY CNM99,DESC='NEXT DOMAIN',`
		`PASSWORD=pswd`
		
		`GATEWAY CNM01,DESC='DOWNSTREAM',`
		`PASSWORD=pswd`

	FORWARD FOCALPT Focal point definitions	`FORWARD FOCALPT,PRI=CNM99`
CNM99	AUTOOPS Automation operator	`AUTOOPS GATOPER,ID=GATCNM99`
	GATEWAY Forwarded domains and operator definitions	`GATEWAY CNM02,DESC='DOWNSTREAM',` `PASSWORD=pswd`
	FORWARD FOCALPT Focal point definitions	`FORWARD FOCALPT,PRI=CNM99`
	ADJNETV Focal point definitions	`ADJNETV CNM01,DOMAIN=CNM02`

Chapter 27. AON User Exits

With AON you can write user exits to tailor automation for a specific task. An exit can call any command, program, command list, or EXEC that can be issued from a NetView command line. Exits are processed by an automation operator, so processing restrictions that apply to automation operator-run programs also apply to exit programs. Refer to *IBM Tivoli NetView for z/OS Programming: REXX and the NetView Command List Language* for information about these restrictions.

User exits can both read and alter task global variables or return codes set by some common routines. These common routines guide further automation notification and logging or initiate activity based on failure or other conditions defined to AON. You can write exits that read and alter the task global variables and return codes when the following AON functions are issued:

- SNA resource information gathering (EZLEAGRN)
- Thresholds checking (EZLEATHR)
- Automation flag analysis based on recovery statements (EZLECAUT)
- Resource recovery attempts on MONIT intervals (EZLECATV)
- AON message issued to logs or operators
- NCP recovery

Exits invoked by common routines can be called with input parameters. Valid input parameters for exit routines include the task global variables available to the user exit (any of the task global variables listed in Table 12 on page 390 can be passed as a parameter by prefixing the task global variable name with an ampersand, thus creating a parameter such as &RESNAME or &RESTYPE, for example), user-defined literals, and the resource name sent to the common routine.

Exits to be called are defined in the control file. Default exits are coded on the ENVIRON EXIT entry. These exits are called every time the common routine is invoked. Table 11 identifies which routine calls which exit.

Table 11. Common Routines That Call Exits

Common routine	Policy entry that sets default	Control file entry that sets specific call
EZLEAGRN	ENVIRON EXIT (EXIT05)*	n/a
EZLEATHR	ENVIRON EXIT (EXIT06)*	THRESHOLDS
EZLECAUT	ENVIRON EXIT (EXIT07)*	RECOVERY
AON messaging	ENVIRON EXIT (EXIT08)*	n/a
EZLECATV	ENVIRON EXIT (EXIT09)*	MONIT
EZLENTFY	n/a	NOTIFY EXIT (EXIT10)
EZLENFRM	SETUP EXIT (EXIT11)+	n/a
EZLENFRM	SETUP EXIT (EXIT12)+	n/a
Note: Specific entries override the default entries. * Indicates that the entry is defined in the control file. + Indicates that the entry is defined in the Inform Policy member.		

You can also define different exits on the control file entry applicable to a particular resource or class of resources for each of the exit points (by using

wildcard characters or resource types in definitions). These are defined on the RECOVERY, THRESHOLDS, and MONIT entries for the resource. You can specify up to 10 exits for each common routine. If you specify more than one exit routine, each exit is called until the first nonzero return code is received from the user-written exit routine. When multiple exits are called, AON uses the task global variable values set by the series of exits, up to and including the last exit issued. Table 12 identifies the task global variable values set by exits.

Table 12. Task Global Variables Available to User Exits

Common Routine	Exit Number	Policy Entry	Task Global Variable	Exit Task Global Variable	Issued
EZLEAGRN	EXIT05	n/a	RESNAME RESTYPE RESEXT RESSTAT RESMAJ RESLINE RESNODE RESPU RESSA RESSW	EZLEAGRNRC	Before EZLEAGRN returns control to the calling program.
EZLEATHR	EXIT06	THRESHOLDS*	RESNAME RESTYPE EZLTRSHLD EZLCRIT EZLFREQ EZLINFR EZLNONE	EZLEATHRRC	After the type of threshold exceeded is determined.
EZLECAUT	EXIT07	RECOVERY*	RESNAME RESTYPE RESEXT RESSAT RESMAJ RESLINE RESNODE RESPU RESSA RESSW EZLTIMERD EZLNWINDOW	EZLECAUTRC	Each time the recovery flag is checked for a resource.
AON Messaging	EXIT08	n/a	EZLCONVERT EZLMSGTXT	n/a	When issuing an AON message.
EZLECATV	EXIT09	MONIT*	RESNAME RESTYPE RESSTAT RESMAJ RESLINE RESNODE RESPU RESSA RESSW EZLINTVL EZLMONIT	EZLECATVRC	Prior to deactivation of a resource.

Table 12. Task Global Variables Available to User Exits (continued)

Common Routine	Exit Number	Policy Entry	Task Global Variable	Exit Task Global Variable	Issued
EZLENTFY	EXIT10	NOTIFY*	RESNAME RESTYPE RESEXT RESSTAT RESMAJ RESLINE RESNODE RESPU RESSA RESSW EZLTIMERD EZLNWINDOW EZLNTFYTYPE EZLINTVL EZLMONIT EZLNTFYLIST EZLTRSHLD EZLCRIT EZLFREQ EZLINFR EZLNONE	n/a	Prior to any notification actions.
EZLENFRM	EXIT11	SETUP+	EZLPOLEX	n/a	Prior to consulting the inform policy.
EZLENFRM	EXIT12	SETUP+		n/a	Prior to calling the inform interface routine.
Attention: The task global variables contain data that guides AON recovery processing. Indiscriminate changes to the task global variables can cause unpredictable results. * Indicates that the entry is defined in the control file. + Indicates that the entry is defined in the Inform Policy member.					

During initialization common global variables are set for the default exits for each exit point. If the ENVIRON EXIT control file entry is modified, reload the control file. The new exit common global variable values are changed. Exit definitions on the THRESHOLDS, RECOVERY, or MONIT entries take effect immediately and do not require the control file to be reloaded when they are updated online.

RESNAME
Name of the resource

RESTYPE
Type of resource, such as PU or IPHOST

RESEXT
For SNA resources; contains data from an IST0751 message (Display NET response)

RESSTAT
Current automation status of the resource

RESMAJ
For SNA resources; the major node that the resource is attached to

RESLINE
For SNA resources; the line that the resource is attached to

RESNODE
For SNA resources; the name of the higher resource that the current resource is attached to

RESPU
For SNA resources; the physical unit that the resource is attached to

RESSA
For SNA resources; the subarea that the resource is in

RESSW
For SNA resources; the switched major node that the resource is attached to

EZLNTIMERD
The time interval until the end of a NOAUTO window

EZLNWINDOW
The name of the RECOVERY policy definition used when in a NOAUTO window

EZLNTFYTYPE
The type of notification, such as REMIND

EZLINTVL
For SNA resources; the current MONIT interval number

EZLMONIT
For SNA resources; the next MONIT interval number.

EZLNTFYLIST
The list of Notify Actions, such as MSG or DDF

EZLTRSHLD
Set to the type of threshold condition, such as CRIT, FREQ, INFR or NONE

EZLCRIT
Flag that is set to Y when a Critical Threshold condition has occurred (Y, N)

EZLFREQ
Flag that is set to Y when a Frequent Threshold condition has occurred (Y, N)

EZLINFR
Flag that is set to Y when an Infrequent Threshold condition has occurred. (Y, N)

EZLNONE
Flag that is set to Y when no threshold condition has occurred (Y, N)

EXIT01 - EXIT04 Processing During NCP Recovery

With NCP recovery, you can specify user exits to run during different stages. Four separate user exit statements are used for each of the four stages where an exit can be used.

EXIT01 User-defined command or command list. The program defined in EXIT01 runs after the dump message response. Sample exit routines are provided (FKVEX01 in CNMSAMP).

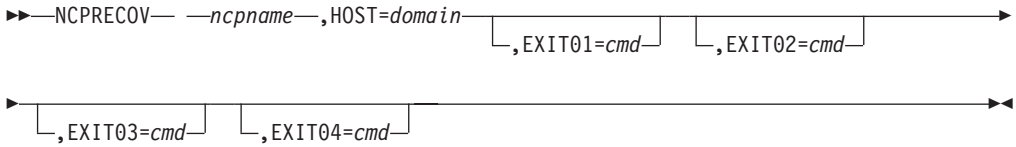
EXIT02 User-defined command or command list. The program defined in the EXIT02 exit runs after the dump is complete and the dump time exceeded timer is purged. Sample exit routines are provided (FKVEX02 in CNMSAMP).

EXIT03 User-defined command or command list. The program defined in the EXIT03 exit runs after the reload message response. Sample exit routines are provided (FKVEX03 in CNMSAMP).

EXIT04 User-defined command or command list. The program defined in the EXIT04 exit runs after the load is complete and the load time exceeded timer is purged. Sample exit routines are provided (FKVEX04 in CNMSAMP).

Format

NCPRECOV



command
Specifies an exit to be run or a command to be issued.

ncpname
Specifies the NCP for which these exits are being used.

Usage

To use these exits, copy them into your user library from the DSICLD data sets.

If response to the option to dump the NCP is specified as `N`, then EXIT02 is not run because no message is received, thus indicating that a dump is complete.

If response to the option to load the NCP is specified as `N`, then EXIT04 is not run because no message is received, thus indicating that a load is complete.

Variable parameters cannot be passed for these exits. For example, USERPGM &NCP is not valid.

Attention: The task global variable (TGLOBALs) contain data that guides AON/SNA recovery processing. Indiscriminate changes to these task global variables (TGLOBALs) can cause unpredictable results.

Examples

In the following example, AON runs the FKVEX01 exit when it replies to the request to dump message. AON runs the FKVEX02 exit when the dump is complete. AON runs the FKVEX03 exit when it responds to the reloading of the NCP. AON runs the FKVEX04 exit when it completes the reloading of the NCP.

```
NCPRECOV NCPABC,
         HOST=CNM01,DUMP=(Y,N),RELOAD=(Y,N),
         LINKSTA=123-S,DUMPSTA=123-S,
         LOADTIME=00:15,DUMPTIME=00:10,
         EXIT01=FKVEX01,
         EXIT02=FKVEX02,
         EXIT03=FKVEX03,
         EXIT04=FKVEX04
```

EXIT05 Processing (EZLEAGRN)

Purpose

Exit processing for EZLEAGRN is issued just before EZLEAGRN returns control to the calling program. AON gathers all information about a resource from a VTAM DISPLAY NET command and sets the following task global variables:

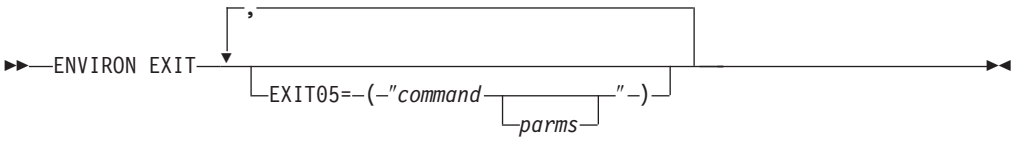
RESLINE The higher node line of the resource
RESMAJ The major node of the resource
RESNODE The adjacent major node of the resource
RESPU The higher node controller of the resource
RESSA The subarea of the resource
RESSW The switched major node of the resource
RESTYPE Resource type

Any of these task global variables can be altered. The return code passed to the calling program by EZLEAGRN can be set from a user exit. The EZLEAGRN return code does not guide automation activity in AON, but the attribute can be adjusted by the exit. The altered return code is set by the user exit and placed in the task global variable, EZLEAGRNRC.

EZLEAGRN exits can be defined only in the control file on the ENVIRON EXIT by the EXIT05 parameter. The previously mentioned task global variables can be passed to the exit by specifying the task global variable name preceded by an ampersand (&). The resource name can also be passed to the exit routine by specifying &RESNAME.

Format

ENVIRON EXIT



Parameters

command
Specifies the exit or command to be issued.

parms Specifies the parameters to be passed to the exit or the command to be issued.

Usage

A sample exit is provided in CNMSAMP member FKVEXT05.

Run all exits inline. Do not route exits to another task.

Code user exits to change any of the task global variables set by EZLEAGRN. These task global variables are set from the results of a VTAM DISPLAY command for the resource.

If any user-coded routines are written in REXX and a task global variable is changed, retrieve the new value by using the REXX 'GLOBALV GETT' statement.

Set task global variable EZLEAGRNRC in the user exit to alter the return code for EZLEAGRN.

All defined user exits are called in the order they are coded in the control file. All exits are issued until the user exit returns a nonzero return code. This return code is different from the return code set in task global variable EZLEAGRNRC.

EXIT05 can be used to change resource data used by AON or set additional task global variables from running other commands or message processing. For example, you can set up additional resource types to be used to guide recovery flags and DDF logging by analyzing the resource name and changing the RESTYPE task global variable.

Attention: The task global variables contain data that guides AON recovery processing. Indiscriminate changes to the task global variables can cause unpredictable results.

Examples

For this example, each time EZLEAGRN is issued, FKVEXT05 is issued and passed the value of RESNAME as the first parameter, the literal TEST as the second parameter, and the value of task global variable RESTYPE as the third parameter.

```
ENVIRON EXIT,EXIT05=("FKVEXT05 &RESNAME TEST &RESTYPE")
```

EXIT06 Processing (EZLEATHR)

Purpose

Exit processing for EZLEATHR is issued after EZLEATHR performs threshold analysis and before operator notifications have been issued. The resource name and type must be passed to EZLEATHR. AON sets the following task global variables in EZLEATHR:

EZLCRIT Indicates whether a critical threshold has been exceeded (Y,N)

EZLFREQ Indicates whether a frequent threshold has been exceeded (Y,N)

EZLINFR Indicates whether an infrequent threshold has been exceeded (Y,N)

EZLNOTIFY Specifies whether any operator notifications are to take place (Y,N)

EZLRECORD Specifies whether this error is to be saved in the status file (Y,N)

EZLTRSHLD Threshold exceeded value (NONE,CRIT,FREQ,INFR)

RESTYPE Resource type

The return code passed to the calling program by EZLEATHR can be set from EXIT06. The altered return code is set by EXIT06 and placed in the task global variable EZLEATHRRC. The return codes from EZLEATHR are used by calling programs to determine which threshold has been exceeded and if automation should continue.

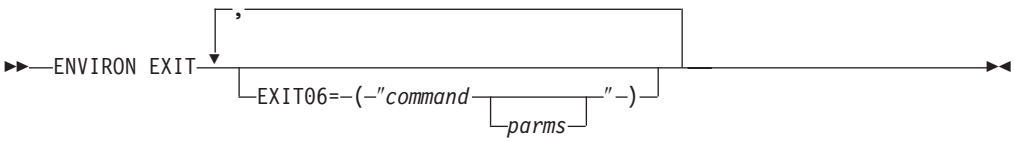
Table 13. EZLEATHR results

If EZLEATHR determines...	...then....
a critical threshold has been exceeded	a return code of 3 is passed back to the calling program.
a frequent threshold has been exceeded	a return code of 2 is passed back to the calling program.
an infrequent threshold has been exceeded	a return code of 1 is passed back to the calling program.

EZLEATHR exits can be defined in the control file on the ENVIRON EXIT by the EXIT06 parameter or on the THRESHOLDS control file entry. Task global variables can be passed to the exit by specifying the task global variable name preceded by an ampersand (&). Resource names can also be passed to the exit routine by specifying &RESNAME.

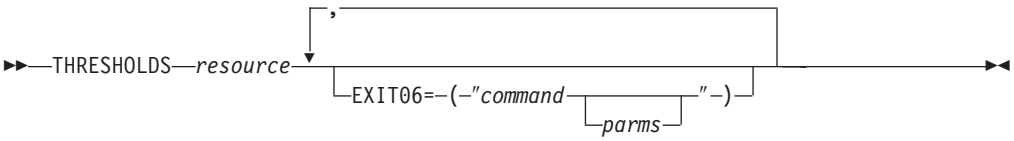
Format

ENVIRON EXIT



THRESHOLDS entry for the specific resource:

THRESHOLDS



Parameters

command
Specifies the exit or command to be issued.

parms Specifies the parameters to be passed to the exit or command to be issued.

Usage

A sample exit is provided in CNMSAMP member EZLEXT06.

Run all exits inline. Do not route exits to another task.

Code user exits to change any of the task global variables set by EZLEATHR.

If any user-coded routines are written in REXX and a task global variable is changed, retrieve the new value by the use of the REXX 'GLOBALV GETT' statement.

Set task global variable EZLEATHRRC in the user exit to alter the return code for EZLEATHR.

If an exit parameter is coded on the THRESHOLDS entry, the exits coded on the THRESHOLDS entry are issued.

All defined user exits are called in the order they are coded in the control file. All exits are issued until the user exit returns a non-zero return code. This return code is different from the return code set in task global variable EZLEATHRRC.

If the threshold exceeded type is altered, make the change in the EZLTRSHLD task global variable.

EXIT06 can be used to change the thresholding analysis results used by AON to guide automation and notifications based on thresholds exceeded. This might be desirable if there are no other factors influencing failure rates or resources which are not available to AON. EXIT06 can also perform some function based on thresholding exceptions, but not necessarily change the results of the analysis.

Attention: The task global variables contain data that guides AON recovery processing. Indiscriminate changes to the task global variables can cause unpredictable results.

Examples

For this example, each time the THRESHOLDS FLAG is checked for resource ABPU, EZLEXT06 is issued and passed the value of the task global variable RESNAME as the first parameter, the value of task global variable RESTYPE as the second parameter, and the type of threshold that was exceeded as the third parameter:

```
THRESHOLDS ABPU,
           CRIT=(4,00:12),
           FREQ=(4,01:00),
           INFR=(5,24:00),
           EXIT06=("EZLEXT06 &RESNAME &RESTYPE &EZLTRSHLD")
```

EXIT07 Processing (EZLECAUT)

Purpose

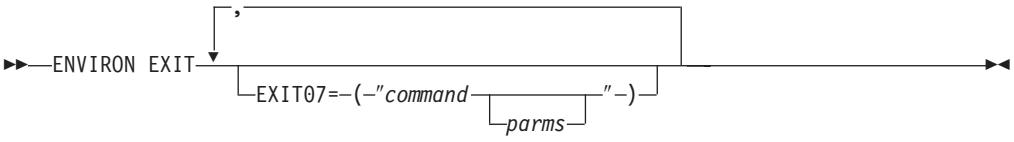
Exit processing for EZLECAUT is issued when AON checks the automation status of a resource. Automation status is set by analyzing the RECOVERY AUTO and NOAUTO parameters entries. However, if the EZLECAUT higher node of the resource is inactive, AON not analyze the RECOVERY entries. In this case, EXIT07 not be called. For example, if EZLECAUT is called with ABPU and the line ABLINE1 associated with ABPU is not in an active state, exit processing not be issued for resource ABPU.

AON uses the EZLECAUT return code to determine whether automation is on or off for the resource. A return code greater that zero (0) indicates automation should not occur. A return code of zero (0) indicates automation is to proceed. The return code passed to the calling program by EZLECAUT can be set from a user exit. The altered return code is set by the user exit and placed in the task global variable EZLECAUTRC.

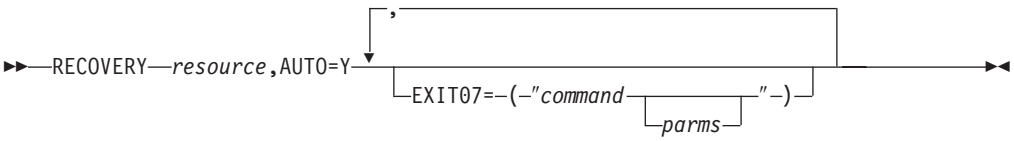
EZLECAUT exits can be defined in the control file on the ENVIRON EXIT by the EXIT07 parameter and the RECOVERY entry that applies to the resource. The previously mentioned task global variables can be passed to the exit by specifying the task global variable name preceded by an ampersand (&). The resource name can also be passed to the exit routine by specifying &RESNAME.

Format

ENVIRON EXIT



RECOVERY



Parameters

command Specifies the exit or command to be issued.

parms Specifies the parameters to be passed to the exit or the command to be issued.

resource Specifies the resource name.

Usage

A sample exit is provided in CNMSAMP member EZLEXT07.

Run all exits inline. Do not route exits to another task.

Code user exits to change task global variables set by EZLECAUT. These task global variables are set from the results of a VTAM DISPLAY command for the resource.

If any user-coded routines are written in REXX and a task global variable is changed, retrieve the new value by the use of the REXX 'GLOBALV GETT' statement.

Set task global variable EZLECAUTRC in the user exit to alter the return code for EZLECAUT.

If an exit parameter is coded on the RECOVERY entry, the exits coded on the RECOVERY entry be issued.

All defined user exits be called in the order they are coded in the control file. All exits are issued until the user exit returns a nonzero return code. This return code is different from the return code set in task global variable EZLECAUTRC.

A return code of zero from EZLECAUT indicates that recovery for this resource is to continue. Any other return code from EZLECAUT indicates that automation should stop.

If the parameters sent to EZLECAUT include the resource name, type and higher node name, EZLEAGRN is not called for the resource. If any of those parameters are missing, EZLEAGRN is issued to retrieve the resource type. As a result EXIT05 is issued for the resource. Standard AON processing sends only the resource name; therefore, each call to EZLECAUT and EXIT07 can cause an execution of EZLEAGRN and EXIT05.

You can use EXIT07 to influence the automation flag and AON recovery activity based on data not readily available to AON. For example, the EXIT checks a database, schedule, or issue commands to an other equipment manufacturer (OEM) device to further determine whether resource recovery is appropriate. EXIT07 can also initiate some activities that do not change the automation flag; however, that should occur only because AON has detected an error condition.

Attention: The task global variables contain data that guides AON recovery processing. Indiscriminate changes to the task global variables can cause unpredictable results.

Examples

For this example, each time the RECOVERY FLAG is checked for resource ABPU, EZLEXT07 is issued and passed the value of the task global variable RESNAME as the first parameter and the value of task global variable RESTYPE as the second parameter:

```
RECOVERY ABPU,
         AUTO=Y,
         EXIT07=("EZLEXT07 &RESNAME &RESTYPE")
```

EXIT08 Processing (AON Messaging)

Purpose

The AON messaging exit enables you to run your own program when an AON message is sent to operators. EXIT08 is defined on the ENVIRON EXIT entry and is specified by the EXIT08 parameter.

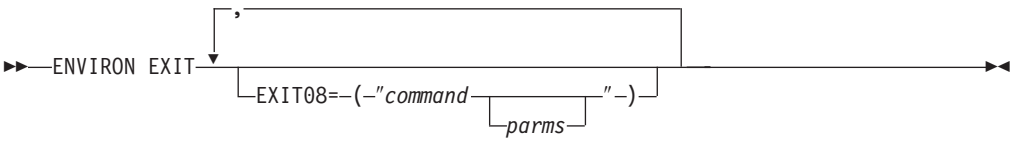
The AON messaging exit enables you to analyze the resource name and type and assign a new valid AON message class for this resource when an alert is to be sent to a focal point (either AON or the system operations component of System Automation for z/OS).

The resource name, type, and any user defined parameters can be passed to the user exit defined in the EXIT08 parameter. The parameters are received by the exit in the order that they are passed. A sample exit has been provided in CNMSAMP (EZLEXT08). The assigned message class or classes are stored in the task global variable EZLCONVERT. If multiple message classes are assigned, the classes must be separated by blanks. Any return code set by the user exit be ignored. The resource name and resource type can be passed to the exit by specifying the RESNAME and RESTYPE respectively.

You can also pass the message text using variable MSGTEXT,EZLMSGTXT or referring to the task global variable EZLMSGTXT in your program. Your program can then send the message to other operator notification devices like pagers or status boards. It can initiate a note in an electronic mail system. Most external notification devices have workstation interfaces that can be accessed from a service point. Some service points can be driven by NetView or z/OS commands issued from NetView programs.

Format

ENVIRON EXIT



Parameters

parms Specifies parameters that are to be passed to the exit routine

Usage

A sample exit is provided in CNMSAMP member EZLEXT08.

Run all exits inline. Do not route exits to another task.

All return codes from the user exit be ignored.

Return message classes in task global variable EZLCONVERT. Message classes are a maximum of 2 characters separated by blanks.

Attention: The task global variables contain data that guides AON recovery processing. Indiscriminate changes to the task global variables can cause unpredictable results.

Examples

In this example, EZLEXT08 is issued when a message is issued:

```
ENVIRON EXIT,EXIT08=("EZLEXT08 &RESNAME &RESTYPE")
```

EZLEXT08 is passed the values for resource name and resource type.

EXIT09 Processing (EZLECATV)

Purpose

Exit processing for EZLECATV is issued after the MONIT interval data is returned and before activation or deactivation of the resource occurs. You can set the following TGLOBALs to influence recovery in EXIT09:

EZLACT Change this value to specify whether to attempt to activate the resource. Valid values are yes (Y) and no (N). The default is yes (Y).

EZLINACT Change this value to specify whether to attempt to deactivate the resource. Valid values are yes (Y) and no (N). The default is no (N) for resource types of LINKSTA or CDRSC, otherwise the default is yes (Y).

EZLINTVL This value cannot be changed but can be passed to the exit. This TGLOBAL contains the number of the MONIT interval currently being processed.

EZLMONIT This value cannot be changed but can be passed to the exit. This TGLOBAL contains the MONIT value that is currently being run.

EZLNOTIFY Change this value to specify a different notify flag for the current MONIT interval (can suppress or force operator reminder notification on this interval).

EZLNXTINTVL Change this value to indicate whether MONIT intervals are to continue. The default is yes (Y).

EZLSCOPE Change this value to specify the scope parameter for VTAM VARY ACT command. The default scope value is U for NCPs, lines, and PUs.

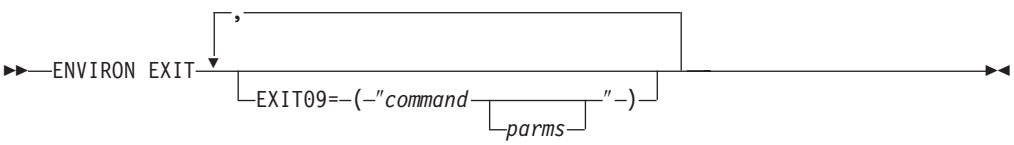
RESTYPE Change this value to change the resource type of the resource.

The return code passed to the calling program by EZLECATV can be set from EXIT09. The altered return code is set by the user exit and placed in the TGLOBAL EZLECATVRC. The return code from EZLECATV is not used by AON for automation.

EZLECATV exits can be defined in the control file on the ENVIRON EXIT or the MONIT entries by the EXIT09 parameter. The resource name and resource type can be passed to the exit by specifying the &RESNAME and &RESTYPE respectively.

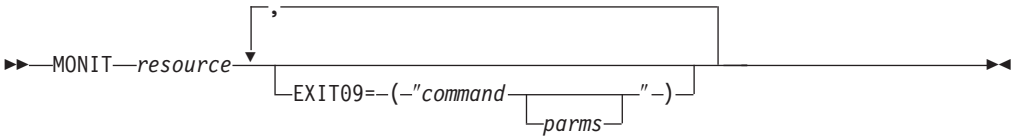
Format

ENVIRON EXIT



Special exit routines can be coded for specific resources on the MONIT entry for the specific resource MONIT.

MONIT



Parameters

command Specifies the exit to be run or the command to be issued.

parms Specifies the parameters to be passed to the exit or the command to be issued.

Usage

A sample exit is provided in CNMSAMP member FKVEXT09.

Run all exits inline. Do not route exits to another task.

Code user exits to change the TGLOBALs set by EZLECATV.

If any user-coded routines are written in REXX and a TGLOBAL is changed, retrieve the new value by using the REXX 'GLOBALV GETT' statement.

Set TGLOBAL EZLECATVRC in the user exit to alter the return code for EZLECATV.

All defined user exits be called in the order they are coded in the control file. All exits be run until the user exit returns a non-zero return code. This return code is different from the return code set in TGLOBAL EZLECATVRC.

EXIT09 can be used to change the way AON recovers a resource, or class of resources by setting the TGLOBALs. EXIT09 can be used to perform some function which is desirable each time a recovery interval is processed, but not necessarily change the AON recovery logic.

Attention: The TGLOBALs contain data that guides AON recovery processing. Indiscriminate changes to the TGLOBALs can cause unpredictable results.

Examples

In this example, on each MONIT interval for resource ABPU, FKVEXT09 be run and passed the value of the TGLOBAL RESNAME as the first parameter, the value of TGLOBAL RESTYPE as the second parameter, the number that represents the MONIT interval cycle as the third parameter, and the MONIT value for this interval:

```
MONIT ABPU,
      INTVL=(00:02,Y),
      INTVL=(00:04,N),
      EXIT09=("FKVEXT09 &RESNAME &RESTYPE &EZLINTVL &EZLMONIT")
```

EXIT10 Processing (EZLENTFY)

Purpose

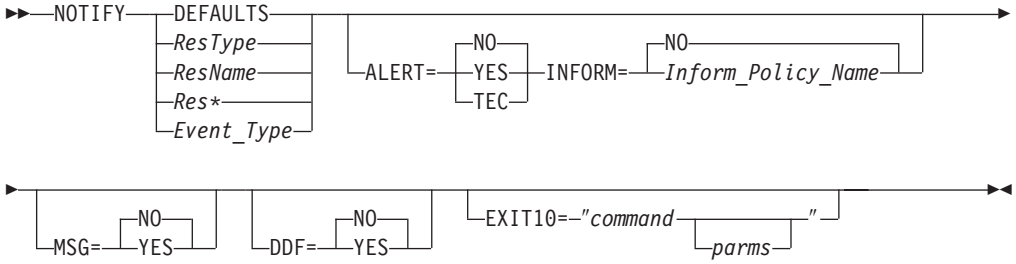
Exit processing for EZLENTFY is issued during AON notification processing. EZLENTFY builds a list of notification types which can be overridden in EXIT10. You can set the following task globals to influence how AON performs notification processing:

EZLNTFYLIST
This global variable contains a list of notification actions. The list can be one or more of the following:

- ALERT
- TEC
- MSG
- DDF
- Inform_Policy_Name

EZLNTFYTYPE
This global variable contains the type of notification requested. This can be a resource name, resource type (for example PU), or event type (for example CRITTHRS).

Format



Parameters

ALERT
Specifies when to generate MSU notifications. MSUs are required for Tivoli Enterprise Console events.

YES Specifies to generate an MSU.

NO Specifies do not generate an MSU. No is also the default.

TEC Specifies to generate an MSU so that the Tivoli Enterprise Console receive the notification.

command
Specifies the exit or command to be issued.

DDF Specifies how the DDF component is updated.

YES Log the event to DDF.

NO Do not log events to DDF. No is the default.

DEFAULTS
Notification policy at a system wide, or defaults, level

Event_Type
Event_Type can be one of the following:

ADPCONGEST
Adapter Congestion Threshold exceeded

BRGCONGEST
Bridge Congestion Threshold exceeded

CRITTHRS
Critical automation threshold exceeded

NAMESERV
NameServer Failure Threshold exceeded

NOMOMONS
No more monitoring intervals defined

REMIND
Reminder that a resource is still down

EXIT10
Is a user exit that enables the override of any of the notification actions.

INFORM
Specifies the use of pager/beeper or e-mail that is defined in the CONTACT entry statement of the Inform Policy. You can use different resources and resource types.

MSG Specifies whether to generate a message or not.

YES Specifies to display a message.

NO Specifies not to display a message. No is the default.

parms Specifies the parameters that are to be passed to the exit routine.

ResName
Notification policy based on a particular resource name

ResType
Notification policy based on a type of resource

Res* Notification policy based on a range of resource names

Usage

It is possible for EXIT10 to be driven without any notification policy defined. In that case, EZLNTFYLST be null. This would occur if the defined policy has been customized to not issue any notifications. The user exit can then enable particular notifications.

Examples

In the following example, CLIST TEXIT10 be called to override the existing notification policy in EZLNTFYLST for a specific resource:

```
NOTIFY PU0001,MSG=YES,DDF=NO,ALERT=TEC,INFORM=NO,EXIT10=TEXIT10 &RESNAME
```

EXIT11 and EXIT12 Inform Policy Processing

Purpose

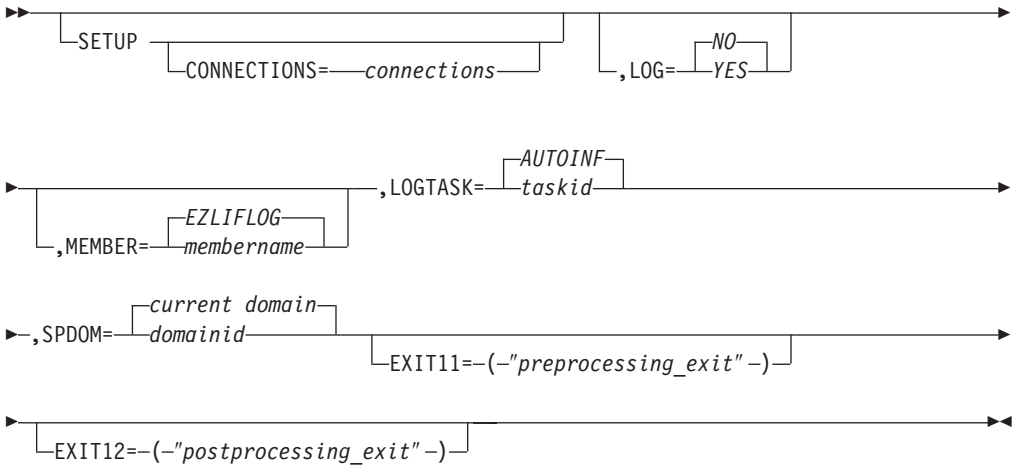
EXIT11 and EXIT12 enable you to alter the inform policy processing.

EXIT11 is called prior to inform policy processing and can be used to dynamically change the inform policy name, group name, or provide a list of policy or group names as needed to insure the appropriate contacts are made.

EXIT12 is called after inform policy processing and before invoking the interface specified in the policy, enabling the inform action to be changed.

Format

SETUP



Parameters

CONNECTIONS
A list of additionally supported connection types. If an interface supports FAX, then FAX must be added to the SETUP CONNECTIONS parameter. It is not necessary to add NUMPAGE, ALPHAPAGE, or EMAIL to this list.

EXIT11
EXIT11 is invoked prior to checking the in-storage inform policy information.

EXIT12
EXIT12 is called prior to invoking the interface specified in the inform policy.

LOG
Set the LOG keyword to YES if you want the INFORM Log enabled. When enabled, selected INFORM actions are logged, and this list can be displayed using the full screen AON function, ILOG. ILOG enables each INFORM action to be deleted, acknowledged, or reissued as needed. Because I/O is required, the default for SETUP LOG is NO. Actions caused by the use of the INFORM command are not logged.

LOGTASK
The INFORM log requires an autotask for the sequencing of all updates. If the log is enabled, the autotask indicated is started, or AUTOINF is started by default.

MEMBER
If LOG=YES is specified, then *membername* is the member that AON INFORM uses to write the log records. The records are written to the first data set name found in the DSILIST data set definition. If no member name is specified, EZLIFLOG is used by default. The write protection key >INFORM or the first line of the member starting in column 1 is written. Therefore, the INFORM log function overwrites only other INFORM logs.

postprocessing_exit
Specifies the post-processing exit for the inform policy. The parameters passed to EXIT12 are the same as those passed to the INTERFACE routine. For more information on the parameters that are passed, see "Usage."

preprocessing_exit
Specifies the pre-processing exit for the inform policy. For information on the parameters that are passed, see "Usage."

SPDOM
The domain ID of the network NetView that owns the INFORM service point or application. The current domain is the default.

Usage

When EXIT11 is called from EZLENFRM or a notification policy, it receives the policy name, resource name, resource type, domain ID, resource status, and automation status. When EXIT11 is called from EZLECALL or the INFORM command, it receives the policy name and the domain ID. The return codes that can be set by the exit are:

0 Continue normal inform policy processing.

4 Continue normal inform policy processing using changed information. This new information is specified using a task global variable EZLPOLEX which contains the value policy name or group name or list of common delimited policy and group names.

8 Discontinue processing. This enables linkage to other inform technologies without returning to this inform policy flow.

When EXIT12 is called prior to invoking the inform action routine, it receives information related to the inform action. Refer to the EZLENETF sample in the CNMCLST data set for a description and the format of these parameters. The return codes that can be set by the exit are:

0 Call the interface code as specified in the inform policy contact statement.

n Discontinue processing. Before returning this value you can call other interface routines directly.

EXIT13 Socket Monitoring

Purpose

EXIT13 enables you to prevent the STOP and ACTIVATE commands from being issued against a socket. It also enables you to override the STOP or ACTIVATE commands.

EXIT13 is called for both STOP and ACTIVATE processing.

Format

IPPORT

Usage

You can use Exit13 to prevent the STOP and ACTIVATE commands from being issued against a socket, or to override the STOP or ACTIVATE commands. Exit13 be called for both STOP and ACTIVATE processing. The input that is available to this exit includes the following task global variables:

FKX_Command
STOP or ACTIVATE command as coded in the socket policy

FKX_Delay
Delay time between STOP and ACTIVATE commands

FKX_Action
Identifies type of action, STOP or ACTIVATE

FKX_CmdType
Identifies the type of command z/OS, NETV, TSO, or UNIX

You can choose the following task global variables with this exit:

FKX_Command
Modifies the STOP or ACTIVATE command

FKX_Delay
Modifies the delay time between the STOP and ACTIVATE commands

FKX_CmdType
Modifies the type of command, z/OS , NETV, TSO, or UNIX

When zero (0) is the return code either the STOP or ACTIVATE command runs.

When a nonzero return code is received from the user exit, the STOP command not be issued, a DELAY is not valid, and the user exit attempt to process the ACTIVATE command. If the nonzero return code is for an ACTIVATE command, ACTIVATE not be attempted. AON recovery monitoring still occur.

EXIT14 SNMP MIB Polling

Purpose

EXIT14 is driven during SNMP MIB polling processing. AON/TCP has retrieved the status of a resource interface table (IFTable).

EXIT14 enables you to perform further processing, such as retrieving the IpAddr Table from the resource to correlate the interfaces of the resource with their IP addresses.

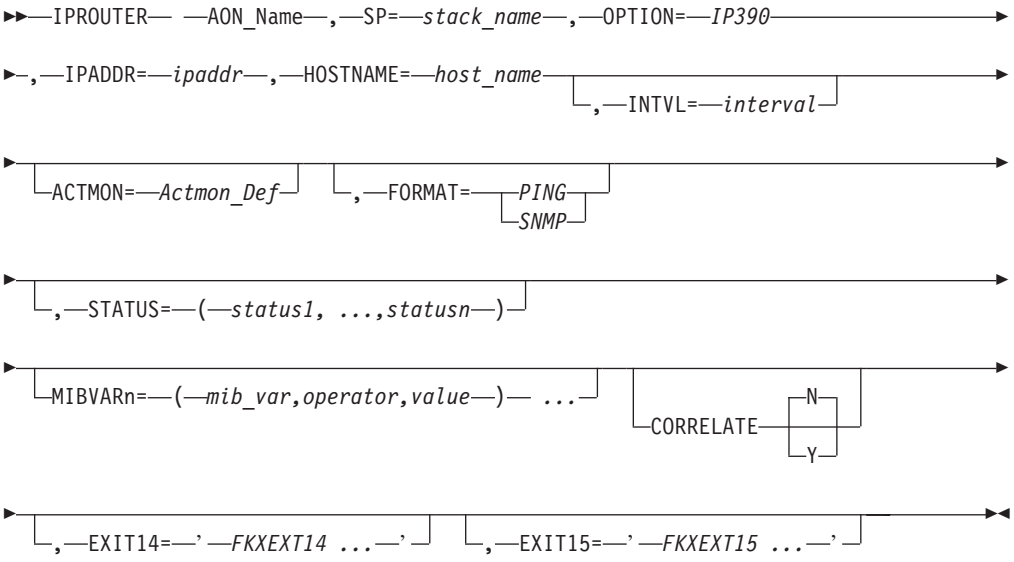
EXIT14 can be coded for any of the IP390 resource definitions in the following list. For complete syntax, refer to the *IBM Tivoli NetView for z/OS Administration Reference.*

- IPHOST
- IPINFC
- IPNAMESERV
- IPROUTER
- IPTN3270

Note: Because EXIT14 is used during SNMP MIB polling, specify FORMAT=SNMP on your resource definitions.

Format

IPROUTER



Parameters

ACTMON_Def
Defines active monitoring for groups of resources in the network. For additional information refer to the *IBM Tivoli NetView for z/OS Administration Reference.*

AON_Name
The unique name associated with the router that is used by AON/TCP.

CORRELATE Y | N
Set to Y for trap correlation of IPHOSTs/IPROUTERs/IPTN3270s and their respective interface. The CORRELATE parameter should only be set to Y for resources when SNMP is available. All known interfaces are used to correlate the status. Use the CORRELATE parameter only for interfaces installed on critical IPHOSTs or IPROUTERs. N is the default.

EXIT14
Defines additional processing of SNMP interface table. The default value is NONE. Invoked for FORMAT=SNMP.

EXIT15
Defines additional processing of user defined thresholds (MIBVAR). The default value is NONE.

FORMAT
Specifies one of the following options to be used to determine the resource status:

PING Pings the resource to check its status.

SNMP
Uses SNMP MIB polling to check the status of the resource.

HOSTNAME
Indicates the fully qualified TCP/IP host name, using up to 30 characters including dots. The *host_name* variable is case-sensitive. The following is an example of a host name:

```
mrpres.whitehouse.capital.usa
```

INTERVAL
Defines the monitoring interval in hh:mm format. This is required for proactive monitoring. If the interval is defined for IPSTAT but not specified monitoring not occur.

IPADDR
The IP address. Alphabetical characters are not valid.

MIBVARn
Multiple MIBVAR statements can be defined and are needed only for SNMP thresholding (requires FORMAT=SNMP).

OPTION=IP390
The only valid entry is IP390.

Stack_Name
The name of the z/OS stack to use for TCP/IP commands. This name is synonymous with the z/OS service point.

STATUS
Defines the expected (AON) status of the resource.

Examples

The following example defines ROUTER1 as part of the NYROUTERS policy grouping to be monitored every 15 minutes through SNMP MIB polling:

```
ACTMON    IP390,OPTION=IP390,INTVL=01:,STATUS=NORMAL
ACTMON    IPROUTER,OPTION=IP390,INTVL=00:30,STATUS=NORMAL
ACTMON    NYROUTERS,OPTION=IP390,INTVL=00:15,
          FORMAT=SNMP


IPROUTER  ROUTER1,
```

```
SP=NMPIPL10,
OPTION=IP390,
IPADDR=1.2.3.4,
HOSTNAME=yourhost.plant.floor.co,
ACTMON=NYROUTERS,
EXIT14=MYEXIT14
```

EXIT15 SNMP MIB Thresholding

Purpose

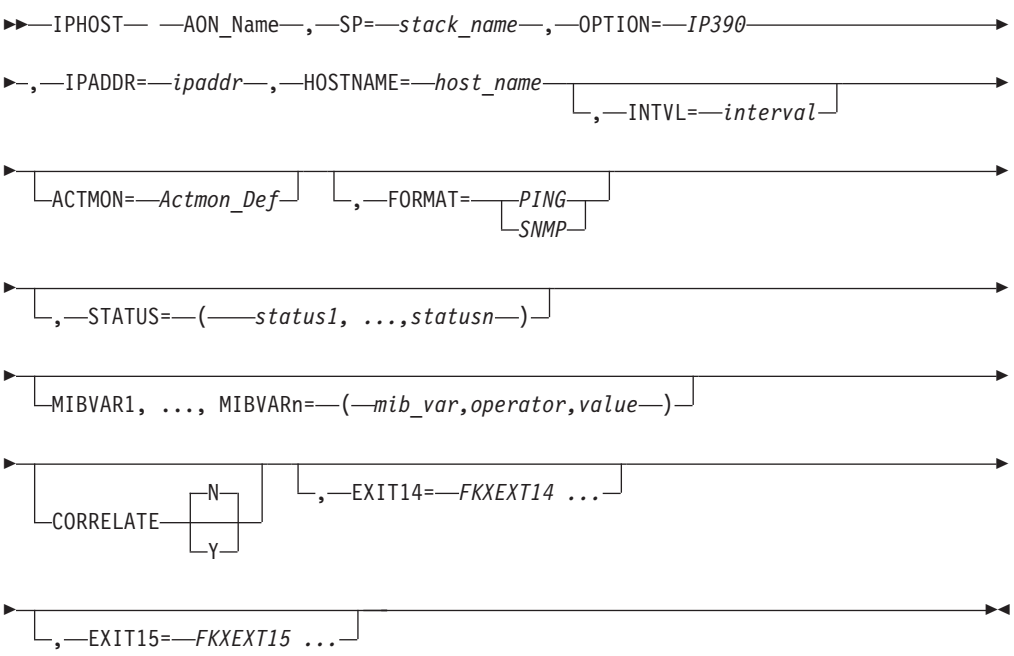
EXIT15 is driven during SNMP MIB Thresholding processing. AON/TCP has issued SNMP GET requests for each MIBVARx variable for a given resource.

EXIT15 enables you to perform further processing such as determining which MIB variable and value did not meet the threshold specification.

EXIT15 can be coded for any IP390 resource definition in the following list. For additional information refer to the *IBM Tivoli NetView for z/OS Administration Reference.*

- IPHOST
- IPINFC
- INPNAMESERV
- IPROUTER
- IPTN3270

IPHOST



ACTMON_Def
Defines active monitoring for groups of resources in the network. For additional information, refer to the *IBM Tivoli NetView for z/OS Administration Reference.*

AON_Name
The unique name associated with the TCP/IP host that is used by AON/TCP.

CORRELATE Y|N
Set to Y for trap correlation of IPHOSTs/IPROUTERs/IPTN3270s and their respective interface. The CORRELATE parameter should only be set to Y for resources when SNMP is available. All known interfaces are used to correlate the status. Use the CORRELATE parameter only for interfaces installed on critical IPHOSTs or IPROUTERs. N is the default.

EXIT14
Defines additional processing of SNMP interface table. The default value is NONE. Invoked for FORMAT=SNMP.

EXIT15
Defines additional processing of user defined thresholds (MIBVAR). The default value is NONE.

FORMAT
Specifies one of the following options to be used to determine the status of the resource.

PING Pings the resource to check its status.

SNMP
Uses SNMP MIB polling to check the status of the resource.

HOSTNAME
Indicates the fully qualified TCP/IP host name, using up to 30 characters including dots. The *host_name* variable is case-sensitive. The following is an example of a host_name:

```
mrpres.whitehouse.capital.usa
```

INTERVAL
Defines the monitoring interval in hh:mm format. This is required for proactive monitoring.

IPADDR
Consists of IP addresses up to 17 characters in length. Alphabetical characters are not valid.

MIBVAR1 – n
Multiple MIBVAR statements can be defined and is needed only for SNMP thresholding (requires FORMAT=SNMP).

MVS_Stack_Name
The name of the MVS stack to use for TCP/IP commands. This name is synonymous with the MVS service point.

OPTION=IP390
Only valid entry is IP390.

STATUS
Defines the expected (AON) status of the resource.

Example:

This example defines host yourhost for proactive monitoring using SNMP polling, looking for a status of NORMAL, THRESH*, or DEGR*:

```
ACTMON    IP390,OPTION=IP390,INTVL=01:00,STATUS=NORMAL


IPHOST  PKOCH,SP=NMPIPL10,
          OPTION=IP390,
          HOSTNAME=yourhost.yourcompany.com,
          INTVL=45
          FORMAT=SNMP,
          STATUS=(NORMAL,THRESH*,DEGR*),
          MIBVAR1=(tcpActiveOpens.0,LT,5000),
          MIBVAR2=(tcpInErs.0,GT,5),
          MIBVAR3=(lplnDiscards.0,EQ,1),
          MIBVAR4=(ipRoutingDiscards.0,GE,3),
          EXIT15=MYEXIT15
```

Chapter 28. AON Option Definition Tables

AON option definition tables specify programs that perform resource-dependent functions. The option definition tables also provide literals used by the AON operator interface to create menus containing only selections available in your installation. Each AON function has an option definition table. Some functions, such as AON/SNA, have several options, such as subarea, APPN, SNBU, and X25, that can be enabled independently. Option-specific definitions in the tables are found on the EZLOPT entries. Definitions that are resource-specific are on the EZLRT entries in the option definition tables.

How AON Uses Option Definition Tables

AON uses the EZLERTVE routine to access the option definition tables. For resource-specific definitions, the option definition tables include EZLRT entries. When the EZLERTVE routine is called to look up an EZLRT table value, it first looks for the keyword of the resource type. If the keyword does not exist for that resource type, EZLERTVE obtains the OPTION keyword for the resource type and looks up that keyword. If the keyword is not found there, and the option has an OPTION keyword, EZLERTVE continues looking for an entry in the parent definition of the option.

For example, if the EZLERTVE routine is called to find EZLRT CDRM RESINFO, it searches table EZLRT for resource type CDRM and keyword RESINFO. The EZLERTVE routine looks for RESINFO in the EZLRT CDRM parameter. If it is not found, the EZLERTVE routine obtains the OPTION value of SA from the EZLRT CDRM parameter. The EZLERTVE routine looks for RESINFO on the EZLOPT SA parameter. Again, if it is not found, the EZLERTVE routine gets the OPTION value of SNA from the EZLOPT SA parameter. The EZLERTVE routine looks for RESINFO on the EZLOPT SNA parameter. If it is still not found, the EZLERTVE routine returns N/A to the calling routine.

The first time RESINFO is found on any parameter, the value found there is returned to the calling routine and the EZLERTVE routine exits.

The option definition table uses a tree structure. AON uses the definition found at the lowest level as follows:

```
EZLOPT SNA → EZLOPT SA → EZLRT CDRM
```

For more information about EZLERTVE, see Chapter 25, “Coding Common Routines,” on page 317.

Displaying or Replacing a Definition

The values in the option definition tables are placed in NetView common global variables for fast access during automation. The common global variable format for resource type values is `EZLRT.resource_type.keyword`. The common global variable format for option values is `EZLOPT.option.keyword`. You can display these common global variables by selecting one of the options on the AON Common Global Editor panel shown in Figure 205 on page 420. To access this panel, type **CGED** and press **Enter**.

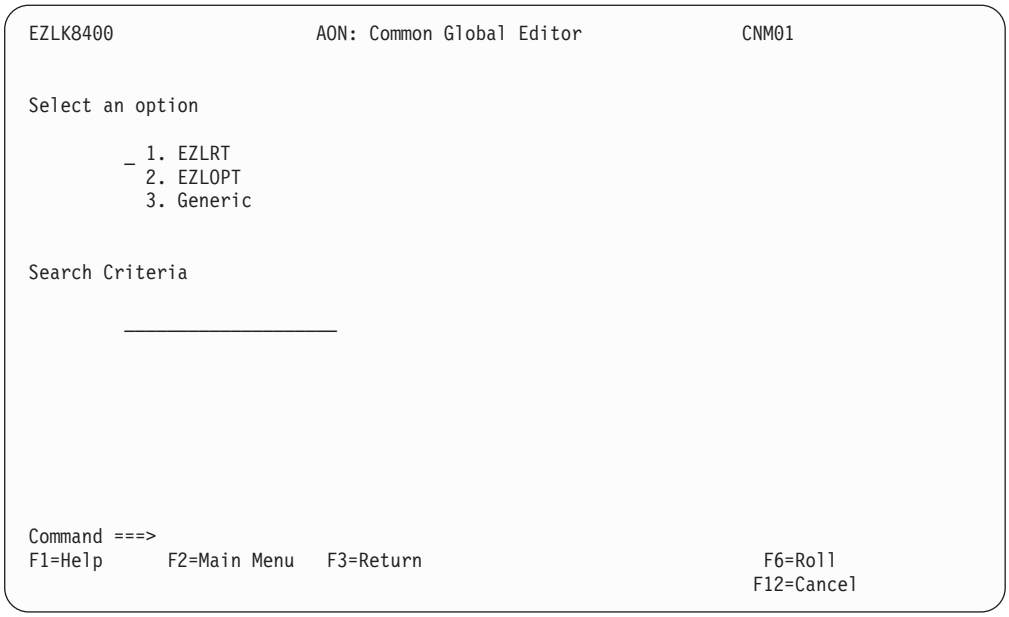


Figure 205. AON Common Global Editor Panel

Table 14. Display selection options

Values to display	What you select
All the resource type values	**1**
All the option values	**2**
User-specified values	**3** and type a search criterion. For example, `EZL*.*.IDENTIFY` lists all of the IDENTIFY routines defined by option or by resource type, as shown in Figure 206.

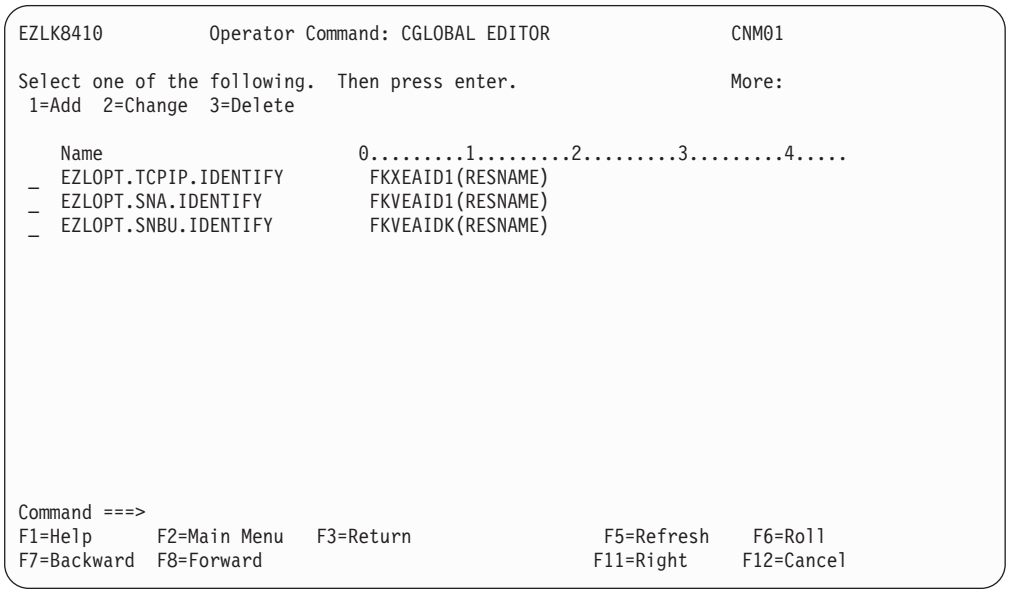


Figure 206. Operator Command: CGLOBAL EDITOR Panel

To change the value of an EZLOPT entry, use the change function on this panel and type over the current value with the new value. The value is changed immediately. It does not change the option definition table. If you reload your

option definition table or recycle NetView, the definition reverts to what is defined in the option definition table. If you need permanent changes, update the definition and replace it, as described in the next section, "Displaying or Replacing an Option Definition Table."

Displaying or Replacing an Option Definition Table

The AON option definition tables are kept in the NetView DSIPARM data set. You can browse or reload one of these tables into the common global variables used by the AON programs by using the AON Loader Tables panel. To display this panel, type the fast path **AON 1.8.6** and press **Enter**. The panel shown in Figure 207 is displayed.

```
EZLK8600                   AON: Loader Tables                     CNM01

Type one or more action codes. Then press enter.                  More:
  1=Browse 2=Reload

    Type       Table       Description                         Status

_   AON        EZLTABLE    AON Base
_   SNA        FKVTABLE    AON SNA Automation
_   TCPIP      FKXTABLE    AON TCP/IP Automation
_              ________

 Command ===>
F1=Help      F2=Main Menu   F3=Return                 F5=Refresh    F6=Roll
F7=Backward  F8=Forward                                           F12=Cancel
```

Figure 207. AON: Loader Tables Panel

The Loader Tables panel lists the tables that are currently loaded. In Figure 207, option definition tables are installed for the AON base and the SNA Automation and TCP/IP Automation features. The panel also contains a blank table-name entry field where you can type a table name not already listed on the panel. You can use the browse option to display the table in DSIPARM. If you select option 2, the table is retrieved from DSIPARM and the common global variables generated by the table are refreshed from the current table. Refreshing the table places the last load of the table into effect immediately.

Guidelines for Option Definition Table Entries

Follow the guidelines described in this topic to create or modify option definition table entries.

Defining Literals

Quotations are not valid unless the literal consists of more than one token. Semicolons (;) are not valid in literals. For example, `ENABLE=YES` has no semicolon.

Defining Text

Place text inside single quotation marks. Semicolons (;) are not valid. The following is an example:

```
CMD='"RECYCLE" RESNAME'
```

Defining Lists

Enclose lists in parentheses. A list can contain a space or comma delimiter, but cannot contain a semicolon (;) as a delimiter. The following is an example:

```
IST105I=(EZL531,FKVEAIDA(resname restype))
```

In the previous example, the first element in the list is a literal, and the second element is a function call.

Defining Function Calls

Code function calls in the following format:

```
keyword=function_name(parm1 parm2 parmn)
```

Spaces are not valid between the function name and the left parentheses. Enclose the parameter list after the function name in parentheses. An empty parameter list is indicated by (). Quotations are not valid in the program call. Use spaces as delimiters in the parameters in the list. Semicolons are not valid in function calls. If one of the parameters sent to the function is a literal, enclose the literal in double quotation marks, as follows:

```
Keyword=function_name(parm1  "lit2" parmn).
```

The function must return data in *keyword=variable* format or a numeric return code. Use spaces as delimiters in return data. Enclose values containing spaces in double quotation marks or parentheses.

For example, a RESINFO call for PU resolves to that defined for SNA: RESINFO=FKVEAID2(*resname*). If the resource name in the calling program is PU01, the function call resolves to `return_string = FKVEAID2(PU01)`.

In the previous example, the only parameter being sent to function FKVEAID2 is the name of the resource, what the variable *resname* contains in the calling program. The calling program must ensure that *resname* has a value. The returning data from FKVEAID2 is stored in *Return_string*. The *Return_string* would contain a data string such as the following:

```
'RESTYPE=PU HIGHNODE=LINE01 STATUS=INACT RESHIER="NCP01 NCP LINE01 LINE PU01 CTLR"'
```

If the returning data is numeric, it should be a return code.

Defining Command Calls

Command calls in option definition tables are enclosed entirely in single quotation marks. The input parameters should use spaces as delimiters for variable names and double quotation marks for literals. For example:

```
keyword='"program_name "var1 var2 ""lit1" var3'
```

A program should return only numeric return codes to the calling program.

In the next example, the program name is EZLECAUT; *resname* is a variable that takes on whatever value *resname* has in the calling program:

```
CHKAUTO='"EZLECAUT " resname " PU"'
```

PU is being sent as a literal. If the *resname* had the value of PU01, the call is:

```
   EZLECAUT PU01 PU
```

The program returns a return code for analysis by the calling routine. The program can also alter the common global variables or task global variables (TGLOBALs) used by the calling program to influence the processing in the calling program.

Common Global Variable Format

Common global variables are created in the following format:

```
Table_name.Entry.Kwx
```

Error Checking

The table loader stops if it encounters an error. Any common global variables created at that point are defined. AON checks for the following errors:

- Entry = ''.
- There are no keywords.
- There are no closing parentheses.
- Keyword values are uneven.
- A semicolon is missing after an entry.
- Value *x* exceeds the maximum amount of valid data in a common global variable (currently set at 255).
- The *option_definition_table* is not in the DSIPARM data set.
- The member is empty.

Error Return Codes

Error message 218 is issued for errors found by EZLEALDR after the syntax check. The following return codes are issued to help you determine the problem with the table being loaded:

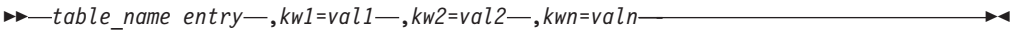
5 Missing entry ID
6 Missing key values
7 Missing key parameters
8 Uneven keyword in key value
9 Missing ending semicolon
10 Missing comma
11 Keyword value entry > 255

Format for Option Definition Table Entries

This topic illustrates the syntax of an option definition table entry and describes the parameters that can be used in option definition table entries.

table_name entry

table_name entry



Parameters

table_name
The name of the option definition table.

EZLOPT
The option definition table contains the automation definitions for an entire option or suboption. Define only those keywords that apply. The highest level option does not have an OPTION keyword. The OPTION keyword points to the higher level option of the suboption.

EZLRT
The resource type option definition table contains an entry for every valid resource type under any option or suboption. An OPTION keyword must be defined to identify the option that owns this resource type. There are no current provisions for resource types owned by multiple options.

entry
Option name or resource type under an option.

Option names (EZLOPT) are:

SNA This option provides automation definitions and programs for AON/SNA network operation and automation. This option is specifically for VTAM.

SA This suboption of AON/SNA provides automation definitions and programs for subarea SNA networks. Specifically, NCP, LINE, PU, LU, CDRMS, CDRSCs, and APPLs are included.

APPN This suboption of AON/SNA provides automation definitions and programs for Advanced Peer-to-Peer Networking (APPN) SNA networks. This option is specifically for control points (hosts), end nodes, and network nodes.

SNBU This suboption of AON/SNA provides automatic dial backup for failed PUs between two SNA subarea nodes.

X25 This suboption of SNA provides active monitoring of X25 components defined in NCP and NCP LUDRPOOL availability.

TCPIP This option provides drop-in tables for operating and monitoring of TCP/IP networks using simple network management protocol (SNMP) for network management.

IP390 This suboption of TCPIP provides tables for the operation and monitoring of IP resources using z/OS Communications Server IP.

NVAIX
This suboption of TCPIP provides tables for operating and monitoring TCP/IP networks managed by a Tivoli NetView for UNIX service point reporting to this IBM Tivoli NetView for z/OS.

Resource type names (EZLRT) are:

APPL	Option SNA; Suboption SA
STG	Option SNA; Suboption SA
CDRM	Option SNA; Suboption SA
CDRSC	Option SNA; Suboption SA
NCP	Option SNA; Suboption SA
LINKSTA	Option SNA; Suboption SA
LINE	Option SNA; Suboption SA
SESSION	Option SNA; Suboption SA
PU	Option SNA; Suboption SA
LU	Option SNA; Suboption SA
CP	Option SNA; Suboption APPN
CPCPSESS	Option SNA; Suboption APPN
SNBUPU	Option SNA; Suboption SNBU
X25MCH	Option SNA; Suboption X25
X25PU	Option SNA; Suboption X25
HOST	Option TCPIP; Suboption NVAIX
IPROUTER	Option TCPIP
INFC	Option TCPIP; Suboption NVAIX
LINK	Option TCPIP; Suboption NVAIX
NAMESERV	Option TCPIP; Suboption NVAIX
SERVER	Option TCPIP
SP	Option TCPIP
IPPORT	Option TCPIP; Suboption IP390
IPTELNET	Option TCPIP; Suboption IP390
IPHOST	Option TCPIP; Suboption IP390
IPINFC	Option TCPIP; Suboption IP390
IPNAMESERV	Option TCPIP; Suboption IP390
IPTN3270	Option TCPIP; Suboption IP390
IPCONN	Option TCPIP; Suboption IP390

kw1=val1
Keyword associated with the entry in the table.

Keyword names
Description

ACTMON='*program_call***'**
Called by the EZLERECV routine and AON initialization to actively monitor a network resource for availability. Do not use this routine to call EZLEFAIL when the monitored resource is not in an acceptable state. After calling EZLEFAIL, ACTMON should not reschedule itself because EZLEFAIL starts recovery monitoring and EZLERECV restarts this process when the resource is available again.

If the routine is in a normal status, the program should reschedule itself using the NetView AT or AFTER command.

This program should be called as a program because the results of the processed call and the return code is not checked. This process is particularly important to AON/SNA, APPN, and AON/TCP options.

AUTOVIEW='*program_call***'**
When AutoView is started, the presence of this definition adds the option on the AutoView option panel. If the option with this definition is selected by the user, the program is called to provide the user a custom information screen about the resource managed by that option.

CHKAUTO='*program_call***'**
This program is called to discover whether automated recovery, tracking, and notification should be performed for a resource. This program determines whether the resource is to be automated.

For most resources, the RECOVERY statement of the control file is processed to determine the value of the AUTO parameter and whether the current time is within an applicable NOAUTO window. It can also involve commands and other program calls to determine whether this is an automated resource. EZLECAUT is currently being used as a generic routine to check the RECOVERY entry in the control file. This program is called by EZLEFAIL and EZLERECV. Its call can be skipped by defining SKIP=C on the call to EZLEFAIL/EZLERECV.

Call CHKAUTO as a command because the return code is checked. A return code of zero (0) means automation is in effect. A return code of 1 means that automation is not in effect. If this call is made as a function, the receiving alphanumeric data back from the function is treated as a return code of zero (0).

CHKHIGH='*program_call***'**
This program is called by EZLEFAIL to check that the higher node for the resource is in a state for which recovery on the resource can occur. The higher node can be in terms of hierarchy, connectivity, network management, or priority. For example, if a Line to a PU is inactive, it is impossible to activate the PU because the physical connection is not present; therefore, the call to CHKHIGH should return a 1 (do not continue processing). This is an example of a connectivity higher node.

CHKTHR='*program_call***'**
This program is called by EZLEFAIL to determine whether threshold has been exceeded. The recommended action for this program is to check the control file THRESHOLDS setting for the resource and analyze the status file error log to determine whether threshold setting has been exceeded. This call in EZLEFAIL can be skipped by coding SKIP=(T) on the EZLEFAIL invocation.

Set return codes to:

- RC=0 No threshold has been exceeded.
- RC=1 Infrequent threshold has been exceeded.
- RC=2 Frequent threshold has been exceeded.
- RC=3 Critical threshold has been exceeded.

CRITACT='*prog/func_call***'**
This program is called when a critical threshold (RC=3 from the CHKTHR command call) has been exceeded in EZLEFAIL. Its purpose is to take action when a critical threshold is exceeded. If processing in the program should not continue, a nonzero return code should be returned. If data is returned from a function call, the return code is treated as if it were zero(0), action that should occur when a critical threshold has been exceeded. In the SA option, a critical threshold exception for a PU causes the PU to be deactivated.

ENABLE=Y|N
The enable flag indicates whether an installed function should be enabled. The flag is checked in EZLEFAIL and EZLERECV. Those programs exit if the ENABLE parameter is set to no (ENABLE=N) for the option. This flag is not valid at the EZLRT table level.

FREQACT='*prog/func_call***'**
This program is called when a frequent threshold (RC=3 from the CHKTHR command call) has been exceeded in EZLEFAIL. Its purpose is to take action when a frequent threshold is exceeded. If processing in the program should not continue, a nonzero return code is returned. If data is returned from a function call, the return code is treated as if it were zero (0). Issue actions that should occur when a frequent threshold has been exceeded

HELPDESK='*program_call***'**
The presence of this definition adds the option into the AON help desk menu panel (EZLK1000). If the option is selected, this program is called to provide a help desk problem determination function for the operator.

IDENTIFY='*prog/func_call***'**
This program is called at the beginning of EZLEFAIL and EZLERECV to determine which option a resource belongs to and what its resource type is. The only parameter that the IDENTIFY program should require is the resource name. The IDENTIFY program should be able to determine whether the resource belongs to this option (where the IDENTIFY program is coded) and what the resource type is. If the resource type is to be returned, the IDENTIFY program should be a function call returning RESTYPE=*restype*. The return code is assumed to be zero and processing continues. If the return code is not zero, the resource is not managed by this option, and the calling program must try another option or discontinue processing.

INFRACT='*prog/func_call***'**
This program is called when an infrequent threshold (RC=3 from the CHKTHR command call) has been exceeded in EZLEFAIL. Its purpose is to take action when an infrequent threshold has been exceeded. If processing in the program should not continue, a nonzero return code should be returned. If data is returned from a function call, then the return code is treated as if it were zero (0). Issue the action that should occur when an infrequent threshold has been exceeded from this program.

MAINPANELPOS=*selection_number_on_AON_panel*
This literal is used to format the main operator interface panel. This literal specifies where, in the list of installed options, this selection is displayed. This keyword is used by the 3270 operator interface only and is only valid in the EZLOPT table.

MESSAGING='*prog/func_call***'**
This program is called when operator messaging, logging, and DDF updates are done. It is called from EZLEASLN. You can set special variables for messaging, resource types can be initialized, special processing for updating a particular option, suboption, or resource type can be done.

MSGCLASS=(*msgclass_number,...***)**
MSGCLASS is a 2-digit number used to assign AON notifications to notification operators (as assigned on the NTFYOPS control file entry). Notification operators use this *msgclass_number* in their CLASS list (on the NTFYOPS control file entry) to receive the message. A message accumulates message classes from the EZLRT MSGCLASS= table entry, EZLOPT MSGCLASS entry for the suboption and option, and the call to search *ppp*MT*xx* (*xx* is the first two digits of the message number

and *ppp* is the message prefix, *pppxxns*). If an entry in this DSIPARM member has this message ID starting in column one, the MSGCLASS defined for it is added to the MSGCLASS list.

OCMDCMD=*program_name*
Use this command call to issue the 3270 operator interface for an option or suboption. This keyword is used by the 3270 operator interface only and is only valid in the EZLOPT table.

OCMDDESC='*literal_for_panel_id***'**
This literal is displayed on the main panel of the AON operator interface menu (EZLR0000) to describe the installed options and suboptions. This keyword is used by the 3270 operator interface only and is only valid in the EZLOPT table.

OPERLIST=*(operglob1 operglob2 operglob3 ... operglobn)*
Use OPERLIST when allocating work to automation operators to enable multithreading of the automation work load. If the automation operator is not active when a command is routed to an automation operator, it is routed to the next automation operator in the list. If a command is routed to *operglob2*, it is shipped to the operator ID stored the common global variable, *operglob2*. Operator IDs are defined in the AUTOOPS entries in the control file. Refer to the *IBM Tivoli NetView for z/OS Administration Reference* for more information. If operator2 (from *oprglob2*) is inactive, the command is routed to *operglob3*. The routine continues until an active automation operator is found to issue the command or *operglobn* is reached.

OPTION=*immediate_superoption_owning_the_suboption_or_resource_type*
This literal should reflect the immediate owner of this option or resource type. For a suboption, it reflects the option with which it is shipped (as specified in its EZLOPT definition). For a resource type, the literal reflects the option or suboption that is responsible for managing the resource type that is specified in its EZLOPT definition.

For example, the SNA option ships with the following table definitions for its options and suboptions:

```
EZLOPT AON,ENABLE=Y,...
EZLOPT SNA,OPTION=AON,ENABLE=Y,...
       ...
EZLOPT SA,OPTION=SNA,ENABLE=Y,...
EZLRT NCP,OPTION=SA,...
EZLRT PU,OPTION=SA,...
       ...
EZLOPT APPN,OPTION=SNA,ENABLE=Y,...
EZLRT CP,OPTION=APPN,...
       ...
EZLOPT SNBU,OPTION=SNA,ENABLE=Y,...
EZLRT MODEM,OPTION=SNBU,...
       ...
```

The AON option does not have an OPTION parameter because it is the highest level in the EZLOPT table for this grouping.

This keyword is required on every entry except the highest option level.

RECOVMON='*program_call***'**
This program is called by EZLEFAIL as the last action before notifying operations of the failure. RECOVMON date and time entries are given

in GMTDATE and GMTTIME parameters. This command call can be skipped by coding SKIP=(R) on the EZLEFAIL call. Recommended actions for this program are:

1. Check the automation flag to ensure automation has not been turned off for this resource since the last execution of this program.
2. Check the status of the resource to ensure it is still not in an acceptable status (it might have recovered since the last execution of this program).
3. Take action to return the resource to an acceptable status.
4. Post an availability message to the logs.
5. If recovery was not successful, notify operators that the resource is still inactive. If recovery was successful, write a message to the log saying that recovery was successful.
6. Reschedule this program to run on a user-defined interval, typically, the control file MONIT intervals, although some options might choose to use a constant interval. Customers can define the interval without modifying the program.

This should be a command call because the return string and return codes are not checked. It is an asynchronous monitoring process.

REPORTER=*variable_name*
REPORTER is a variable that completes the Reported By field used by AON and some AON function messages. The default variable used is DOMAINID. AON/TCP uses SP.

RESINFO='*function_call***'**
The program returns all information required by the calling program about a resource. The only parameters required should be the resource name and perhaps the resource type (if known). A function call passes back data. The return string should be in the *"varname=varvalue..."* format. The calling program assigns the variables when processing the return string.

RESLIST='*program_call***'**
The operator interface calls this program to create a select list of resources of a particular type or for an option (depending on where in the tables it is coded). This keyword is used by the 3270 operator interface only and is only valid in the EZLOPT table.

STSCMD=*program_name*
This is the name of the command processor used by an option to update the AON VSAM status file.

STSPIPE=*program_name*
This is the name of the command processor used by an option to update the AON VSAM status file (PIPE version).

SUMCMD=*program_name*
This is the program name called by the operator interface to create a resource information summary panel for a resource type or option. This keyword is used by the 3270 operator interface only and is only valid in the EZLOPT table.

tblkey_value
The value on the TBLKEY= keyword specifies optional processing values used by the EZLEFAIL or EZLERECV routine. If you do not specify the TBLKEY parameter for the EZLEFAIL or EZLERECV

routine, no optional processing or notification occurs. The values on the TBLKEY parameter specify keywords found in the option definition tables. In the option definition table, the keywords define the actual processing values used for optional processing. AON saves the TBLKEY values in the *outmsgid* and *spec_function* variables. Message EZL509I is the default *outmsgid* for EZLEFAIL. EZL504I is the default *outmsgid* for EZLERECV. The value of TBLKEY is in the following format:

```
tblkey_value=(outmsgid,spec_function_call)
```

For example, the EZLEFAIL routine can be called with:

```
EZLEFAIL OPTION=SA MSGPRMS=(OPID) TBLKEY=IST105I
         RESNAME=resname
```

The EZLEFAIL routine obtains the values specified on the IST105I keyword in the option definition table, for example:

```
IST105I=(EZL531,FKVEAIDA(resname restype))
```

In the previous example, the EZLEFAIL routine issues the EZL531I message and runs FKVEAIDA as a function sending the current value of *resname* (resource name) and *restype* (resource type) for optional processing. An optional processing program would perform any automation or processing unique to the resource or failure. No optional processing is done and no message is issued if SKIP=(0) is specified on the EZLEFAIL or EZLERECV call.

The EZLEFAIL routine issues message EZL509I or EZL510I to all logs and to DDF. The EZLERECV routine issues EZL504I to all logs and to DDF. Operators do not receive this message. This message is not issued if SKIP=(A) is specified on the EZLEFAIL or EZLERECV call.

Usage

Sequence numbers in option definition tables can cause unpredictable results.

Appendix A. Implementing X.25 Monitoring Support

AON/SNA X.25 enhances problem determination for packet networks connected to your SNA network. AON/SNA X.25 provides support for the X.25 interface between data terminal equipment and packet-switching networks.

AON/SNA X.25 provides an exit to trap hardware alerts from X.25 resources and translate them into meaningful alerts. These alerts give the operator a clear interpretation of the error, including the meaning of the error bytes, and more specific suggested action. The AON/SNA Help Desk provides NPSI diagnostic and cause code translation. AON/SNA X.25 monitors LUDRPOOLs in NCPs for threshold availability. Users can view a full-screen display of AON/SNA X.25 virtual circuits being monitored by AON/SNA X.25. Thresholding can be done in the number of sessions on a switched virtual circuit (SVC). Threshold exceptions and status changes are reflected in DDF and the NetView log.

AON/SNA X.25 also inserts a message in the NetView log. This message correlates the INOP message generated by VTAM and the corresponding NPSI alert. Additionally, the operator can display the available number of LU control blocks. An alert is sent to the hardware monitor each time an incorrect XID problem is encountered.

Users can monitor switched connections through full-screen panels. Each connection or disconnection, related to a monitored line, updates the panel. Switched group lines are defined in the control file.

Understanding the NPSI Hardware Monitor Enhancement

This section describes the FKVXITAN exit routine and the BNJ146 message automation.

Using the FKVXITAN Exit Routine

The FKVXITAN user exit plays a role in the generic alerts generation from NPSI alerts. This user exit traps alerts from NPSI and translates the diagnostic, clear, and cause codes. The AON/SNA X.25 code then issues a GENALERT with the translated information so that operators can more easily understand X.25 NPSI alerts in the NetView hardware monitor.

Understanding the CNM Interface

All unsolicited communication network management (CNM) messages are sent by VTAM to NetView as part of the specialized DELIVER RU (X'810812') through the CNM interface. This includes the alerts coming from X.25 NPSI. The DSICRTR NetView subtask is the CNM Router task which gets those unsolicited CNM messages and later dispatches them to other tasks (for example, the hardware monitor).

Understanding the XITCI Exit Routine for the DSICRTR DST

The XITCI exit routine for the DSICRTR DST receives control for each incoming unsolicited CNM message. The user exit routine must be defined in the DSICRTTD initialization member for the DSICRTR task.

Understanding the FKVXITAN User Exit

A XITCI user exit routine is coded for the DSICRTR subtask, FKVXITAN. The FKVXITAN exit is used for each unsolicited CNM message, including the RECFMS type 00 (alerts) coming from X.25 NCP Packet Switching Interface (NPSI).

Understanding FKVXITAN Logic

The following list explains the flow of the FKVXITAN exit:

1. The DELIVER RU is parsed to recognize the embedded RU and the block ID (identifying the originating product). If it is not a RECFMS coming from NPSI, no processing occurs and the exit returns control to normal NetView processing.
2. If it is an alert record, the rest of the input is parsed and the following fields are extracted:
   - alert type
   - major code
   - minor code
   - action code
   - text (when present),
   - three qualifiers
   - resource hierarchy

   Format conversions take place so you can display these fields in a message.
3. The BNJ146I message is created with exactly the same format as the standard NetView BNJ146I message for RECFMS except that the token 2 and 3 (date and time) are not inserted.
4. The message is sent to the X.25 network management task for further automation.
5. The RECFMS that triggered the FKVXITAN user exit is suppressed by setting the return code to 4. The alert RECFMS coming from NPSI disappears and does not go to the hardware monitor.

Understanding BNJ146 Message Automation

Figure 208 shows a sample entry that automates message BNJ146.

```
IF  MSGID = 'BNJ146I'
  &  TOKEN(2) = 'R'
  &  TEXT =. 'BKID=FEF'.
  &  TEXT =.'TYPE='BKID=FEF'.'ACT='ACT'QUAL='
        QUAL'TEXT='VCN  'HIER='HIER
         'DOMID='.
THEN EXEC (CMD('FKVEOG01 T' TYPE ACT 'Q('QUAL')Q' 'T('VCN')T'
HIER) ROUTE(ONE *)) DISPLAY(N) NETLOG(Y) SYSLOG(N);
*
IF   MSGID = 'BNJ146I'
  &  TOKEN(2) = 'R'
  &   TEXT =. 'BKID=FEF'.
  &   TEXT =.'TYPE='TYPE'BKID=FEF'.'ACT='ACT'QUAL='
         QUAL   'HIER='HIER
          'DOMID='.
THEN EXEC (CMD('FKVEOG01 Q ' TYPE ACT 'Q('QUAL')Q' HIER)
ROUTE(ONE *) DISPLAY(N) NETLOG(Y) SYSLOG(N);
```

Figure 208. Automation Member Entries for BNJ146I

The first entry corresponds to alerts sent by NPSI V2/V3 and the second entry to alerts sent by NPSI V1. The parameters from the BNJ146I message that are needed by the program are extracted from the message and passed as variables to the program.

Understanding Code Point Tables

The following code points are part of these tables:

- BNJ92UTB alert description code points
- BNJ93UTB probable cause code points
- BNJ94UTB user cause code points
- BNJ95UTB install cause code points
- BNJ96UTB failure cause code points
- BNJ81UTB possible action code points

NPSI sends basic alerts (RECFMS type 00). Only a few codes are supplied by IBM to cover the range of possible AON/SNA X.25 problems. This package provides user code points to complement the code supplied by IBM. The code point range reserved for the user is between X'E000' and X'EFFF'. The range of code points used in this package is from X'EE00' to X'EEFF'. Thus, AON/SNA provides more details and more advice on the possible causes and solutions for an alert.

Describing the Correlation between INOP Messages and NPSI Alerts

When alerts are sent against the virtual circuit line resources, the station (PU) is not owned at the time the alert is sent. This makes utilizing the NPSI alerts difficult.

This difficulty affects the outgoing call refused alerts (either refused by NPSI or cleared by the AON/SNA X.25 PSDN or the DTE). AON/SNA X.25 NPSI sends on the SSCP–PU (the NCP PU) session, first an INOP type 1 on the address of the station, then a RECFMS on the address of the VC line. As a result, on the host side, a message is received:

```
IST259I INOP RECEIVED FOR nodename CODE = 01
```

The *nodename* is the name of the switched PU that attempted to call out. This message identifies neither the path nor the link on which the call out failed. An NPSI alert gives the hierarchy down to the virtual circuit and indicates why the outgoing failure occurred, but it does not give the name of the switched PU that attempted to call out and is affected by the failure.

For installations that frequently make outgoing calls on AON/SNA X.25 switched virtual circuits (SVCs), trying to correlate INOP messages and corresponding NPSI alerts is a challenge. AON/SNA X.25 responds to this need, but because of the asynchronous nature of this process, the tool cannot be considered as absolutely reliable.

Message IST259I is automated in the automation table and puts the switched PU name into a task global variable. A queue of 10 such global variables (X25PU0 to X25PU9) is necessary because several IST259I messages can arrive before the corresponding BNJ146I messages arrive and AON/SNA X.25 can pick up the PU names. This occurs when several PATHS statements are active for a switched PU, leading to successive outgoing call failures. If you need to store more than 10 PU names in global variables, you can easily modify the FKVEOI00 and FKVEOG02 routines. Replace the number 10 with the new value. One statement is in FKVEOI00 and two are statements in FKVEOG02.

A sample message automation member statement follows:

```
IF MSGID = 'IST259I' & TEXT =. 'FOR X'.
 & TEXT =. 'FOR' PUN 'CODE = 01'
THEN EXEC (CMD('FKVEOI00 ' PUN) ROUTE(ONE *))
 NETLOG(Y) SYSLOG(N) DISPLAY(Y);
```

AON/SNA X.25 generates the generic alerts from the NPSI alerts on virtual circuits. It retrieves the oldest switched PU name in the queue, if one is present. It inserts the PU name at the end of the hierarchy, behind the line name if no PU name is currently in the hierarchy.

AON/SNA X.25 records the time together with the PU name in a queue. When a PU name has been in the queue for more than three minutes, AON/SNA assumes the correspondence between the INOP messages and the alerts has been lost. It then cleans up the whole queue.

A message is written to the NetView log that shows the diagnostic code, the cause code, and all the hierarchies for the problem.

Figure 209 shows an example of the message written to the NetView log.

```
NCCF        N E T V I E W  L O G     CNM01        02/06/07 14:05:44

C CNM01    CLEARCAUSE BYTE = 05, DIAG BYTE = 00 RECEIVED FOR
    FOLLOWING RESOURCE HIER=RADNCPE,NPSI,MCH01,MCH,000001,VCN,
       XL01002,V.C.,X.25PUT,RDTE
```

Figure 209. NetView Log

Monitoring Switched Virtual Circuit (SVC) Resource Utilization

An AON/SNA X.25 subscription supplies, with one physical link, a number of virtual circuits, both *private virtual circuits* (PVCs) and *switched virtual circuits* (SVCs). These switched virtual circuits (SVCs) are often used for frequent and short duration connections. The number of switched virtual circuits (SVCs) in use increase and decrease with starting and ending calls from programs.

The primary purpose of this monitoring facility is to provide one screen that displays the number of switched virtual circuit (SVC) lines as available or busy. The system automatically updates this information, but the operator manually refreshes the screen to receive the current information.

Other features of this facility include the ability to:

- Apply threshold values for the number of free switched virtual circuits (SVCs) to highlight switched virtual circuit (SVC) shortages
- Add, change, or delete a temporary link definition
- Define individual timers for critical links to refresh status information on a fixed interval
- Link to DDF to enable DDF monitoring of link availability and threshold status

Understanding the X25INIT Command

To start the switched virtual circuit (SVC) monitoring facility, initialize the environment by running the X25INIT command. Call this command from the configuration file at AON startup. The X25INIT command performs the following:

- reads the X25MONIT control file entries in the configuration file
- checks these entries for validity
- sets up timers for links that you request
- obtains status information for the links

If X25INIT detects errors while validating the parameters for a link, AON/SNA issues a message and bypasses that link.

Switched virtual circuit (SVC) monitoring only works with the naming conventions given by NPSI for the group name and the VC line name. The NPSI naming convention follows:

*p***L***xxxlcn*
The name of the VC line.

*p***25S***xxxy*
The name of the switched virtual circuit group name.

where:

p Is the prefix coded in the X25BUILD macro.

xxx Is the address specified in the AddRESS operand of the X25MCH macro.

lcn Is the logical channel number.

y Is the group sequence on the physical link.

Understanding the LUDRPOOL Command

The LUDRPOOL routine is based on the NCP control blocks structure and works with different versions of NCP. The supported versions are NCP V4R2 through V7.

If you specify a time interval, AON/SNA X.25 issues a NetView EVERY command to run the LUDRPOOL check at regular intervals. It sets a threshold as a global variable so that an alert is sent when the pool of available LUs falls under the threshold.

Monitoring LUDRPOOL Utilization

One of the critical resources in switched SNA is the pool of LU control blocks created within the NCP to be used dynamically for dynamic reconfiguration and switched data links.

The pool of LU blocks is defined by the NCP LUDRPOOL macro:

```
DRPOOLPU PUDRPOOL NUMBER=0

DRPOOLLU LUDRPOOL NUMTYP1=10,    RESERVE 10  LUS ON PU.T1 PUS
                  NUMTYP2=90,    RESERVE 90  LUS ON PU.T2 PUS
                  NUMILU=20      RESERVE 20  LUS FOR IND.LU
```

The PUDRPOOL statement is necessary to use the LUDRPOOL utilization counters.

AON/SNA X.25 is more generally used for switched virtual circuits (SVCs). LUDRPOOL is one of the resources that major AON/SNA X.25 NPSI users want to monitor, especially if they have hundreds or thousands of available switched virtual circuits (SVCs), controlled by one NPSI.

PU Type 2 represents the vast majority of devices. In the previous example, the pool of LUs for switched PU 2 (operand NUMTYP2) is a common installation. PU Type 1 is relevant for NPSI (non-SNA connections), but there is always one simulated LU per virtual channel.

Understanding Security Alerts for an Incorrect XID

A frequent cause of failure in switched SNA connections occurs in the XID exchange, when the SNA ID (IDBLK + IDNUM) sent by the device attempting a switched connection is not recognized by the host.

VTAM compares the station ID it receives in the XID with the values coded for the IDBLK and IDNUM parameters of the PU statements in the switched major nodes.

When VTAM does not find a match, the call is refused and a message issued:

```
IST690I CONNECTION REQUEST DENIED - INVALID STATION ID = aaaaxxxyyyyy
```

The message might be an indication of:

- A security violation. Somebody might have tried to break into your network.
- An operations error. A switched major node might not have been activated.
- A system programming error. The good values of IDBLK-IDNUM might not have been specified in a switched major node.

All of these events are likely to happen regularly with AON/SNA X.25 NPSI switched virtual circuits (SVCs), in particular when the number of connections is high.

A specific NPSI difficulty with IDBLK-IDNUM is encountered for non-SNA AON/SNA X.25 connections (PCNE, PAD, GATE, DATE). In this case, the IDBLK and IDNUM do not come from the remote DTE but are generated by NPSI, according to the virtual circuit on which the call is received and according to the order of the virtual circuit definitions in the NCP generation.

Implementing an Alert through GENALERT

In the following example, the IST690I message is automated in the automation table and causes an alert through GENALERT. The security type is (SCUR).

```
IF MSGID = 'IST690I' & TEXT = .'=' STATID
THEN EXEC (CMD('FKVEOSEC ' STATID) ROUTE(ONE *)) DISPLAY(N)
 NETLOG(Y) SYSLOG(N);
```

Appendix B. Using the Browse Facility

AON uses the NetView browse facility, which enables certain commands and functions that you can use to browse log files. When you display any of the AON logs, AON enables certain commands and function keys to help you to browse the logs more efficiently.

In addition to the function keys used throughout NetView and described in "Function Keys (F Keys)" on page 8, the browse facility provides the following additional function keys to help you browse log files:

F4 Top
Moves to the top of the information being browsed.

F5 Bottom
Moves to the bottom of the information being browsed.

Appendix C. AON Command Synonyms

The following tables show how to use fastpaths to reach each AON panel.

Table 15. Fastpath Commands Reference Table

Command	FastPath	Panel
AON	AON	AON: Operator Commands Main Menu panel
AONINFO	AON 0	AON tutorial panel
	AON 1	AON: Base Functions panel
	AON 1.0	AON Base Functions tutorial panel
AONHD	AON 1.1	AON: Help Desk panel
AUTOVIEW	AON 1.2	AON: AutoView panel
DDF	AON 1.3	Data Center Networks panel
	AON 1.4	AON: Automation Settings panel
SETAUTO	AON 1.4.1	Recovery Settings panel
DISAUTO	AON 1.4.1	Recovery Settings panel
DELAUTO	AON 1.4.1	Recovery Settings panel
SETNTFY	AON 1.4.2	Notification Operators panel
DELNTFY	AON 1.4.2	Notification Operators panel
SETTHRES	AON 1.4.3	Thresholds panel
DELTHRES	AON 1.4.3	Thresholds panel
SETMONIT	AON 1.4.4	Monitor Intervals panel
DELMONIT	AON 1.4.4	Monitor Intervals panel
ACTMON	AON 1.4.5	Active Monitor Settings panel
	AON 1.5	AON: Cross Domain Functions panel
CDLOG	AON 1.5.1	AON: Cross Domain Logon panel
AONGW	AON 1.5.2	AON: Cross Domain Gateway Display panel
AONTAF	AON 1.5.3	AON: Terminal Access Facility Menu panel
TIMER	AON 1.6	AON: Timer Management panel
AONMAINT	AON 1.7	AON: Task and Log Maintenance panel
DSPCFG	AON 1.7.1	AON: Configuration Data Display panel
DSPSTS	AON 1.7.2	Display Status Data panel
	AON 1.7.3	NetView log panel
NLOG	AON 1.7.4	Automation log panel
DBMAINT	AON 1.7.5	AON: Database Maintenance panel
STARTEZL	AON 1.7.6	AON: Start Automation Components panel
STOPEZL	AON 1.7.6	AON: Start Automation Components panel
AONTASK	AON 1.7.7	AON: Task/Operator Display panel
	AON 1.8	AON: Support Functions panel
AONTRACE	AON 1.8.1	AON: Set Trace panel
AONINIT	AON 1.8.2	AON: Reinitialize Automation panel

Table 15. Fastpath Commands Reference Table (continued)

Command	FastPath	Panel
AONENABL	AON 1.8.3	AON: Enable/Disable Automation panel
CGED	AON 1.8.4	AON: Common Global Editor panel
	AON 1.8.5	AON: Automation Table panel
LOADTBL	AON 1.8.6	AON: Loader Tables panel
ILOG	AON 1.9	Inform Log Utility panel
MARK		DDF mark
UNMARK		DDF unmark
DM		Clear held message
AONAIP		Set or reset the AIP operator status
AONSNA	AON 2	SNA Automation: Menu panel
	AON 2.0	Tutorial
SNAHD	AON 2.1	SNA Help Desk panel
SNAMAP	AON 2.2	SNAMAP panel
VTAMOPT	AON 2.3	VTAM Options Management panel
NETSTAT	AON 2.4	NetStat panel
VTAMCMD	AON 2.5	VTAM Commands panel
APPN	AON 2.6	APPN Commands Menu panel
	AON 2.6.0	APPN Tutorial panel
	AON 2.6.1	APPN Issue Checkpoint Commands panel
	AON 2.6.2	APPN Display Control Points panel
	AON 2.6.3	APPN Display Directory panel
	AON 2.6.4	APPN Display Transmission Group Profiles panel
SNBU	AON 2.7	Switched Network Backup Menu panel
	AON 2.7.0	SNBU Tutorial
LISTSNBU	AON 2.7.1	Display SNBU Resource List panel
DISSNBU	AON 2.7.2	Display Information on SNBU Resources panel
SETSNBU	AON 2.7.3	Control SNBU Resources panel
DISPOOL	AON 2.7.4	Display Modem Pools panel
SETPOOL	AON 2.7.5	Add or Delete Modem Pool Resources panel
CHGSNBU	AON 2.7.6	Control SNBU Connections Manually panel
CHGSPEED	AON 2.7.7	Change Modem Speed Manually panel
QRYSNBU	AON 2.7.8	Display SNBU Status panel
X25	AON 2.8	X.25 Menu panel
	AON 2.8.0	X.25 Tutorial
X25MONIT	AON 2.8.1	X.25 SVC Monitoring panel
LUDRPOOL	AON 2.8.2	X.25 LUDR Pool Management panel
DSPSNBU		Displays SNBU Status Data from status file
SNAVIEW		Displays the AutoView resources for AON/SNA
X25INIT		Initializes X.25
AONTCP	AON 3	TCP/IP Automation: Commands Menu panel

Table 15. Fastpath Commands Reference Table (continued)

Command	FastPath	Panel
	AON 3.1	TCP/IP Automation: Ping a Service Point panel
NV6KPING	AON 3.1.1	TCP/IP Automation: Ping a resource through an AIX service point
NV6KCMD	AON 3.1.2	TCP/IP Automation: Issue an AIX command to a service point
NV6KRPNG	AON 3.1.3	TCP/IP Automation: Issue a remote ping between 2 AIX nodes
NV6KPERF	AON 3.1.4	TCP/IP Automation: Performance Thresholds panel
NV6KLIST	AON 3.1.5	TCP/IP Automation: Display the TCP/IP Critical Resource List panel
	AON 3.2	TCP/IP Automation: Issue Command to Service Point panel
MVSPING	AON 3.2.1	TCP/IP Automation: Ping a resource through TCP/IP for MVS
IPSTAT	AON 3.2.2	TCP/IP Automation: Manager Telnet and FTP sessions through TCP/IP for MVS
NVSNMP	AON 3.2.5	TCP/IP Automation: Display the SNMP Menu
	AON 3.2.6	TCP/IP Automation: Server Management
IPMAN	AON 3.2.7	TCP/IP Automation: IP Resource Management
TCPLIST	AON 3.2.7	TCP/IP Automation: IP Resource Management
NV6KVIEW		TCP/IP Automation: AutoView panel

Appendix D. Customizing the SNMP Group Definition File (FKXSNMP)

Note: This function no longer requires AON. The information about this function is also included in *IBM Tivoli NetView for z/OS IP Management*.

Use the following rules for creating new entries in the SNMP group definition (FKXSNMP) file:

- The Group name must be from 1 to 15 characters and must start in column 1.
- The Group name can not be duplicated.
- There must be at least 1 space between the Group Name, the GROUP, the Group type, and the base MIB for Table type Groups.
- There can be up to 3 lines of abstract definition for a Group. The abstract lines can be up to 72 positions and must start with a question mark (?) in column 1.
- The Abstract lines for a Group must follow the GROUP statement for the group.
- Valid Group types are:
  - LIST
  - LIST+
  - TABLE
  - WALK

A **LIST** group type must include the EXACT MIB variable names to be collected.

A **LIST+** group works almost the same as a LIST type Group, but enables the definition of variable data.

The LIST+ group enables you to specify a variable field to be appended to the list of MIB objects in the group. This enables a single group definition to be used for a variety of MIB object groups. For example, a group can contain objects that relate to a specific interface number. If you use traditional LIST type groups, you need multiple groups, one to define each interface. A LIST+ group can be defined to ask prompt for an interface number, when selected, enabling only one group definition to be needed. LIST+ adds keywords that are used to set up the variable data. All of these keywords must start in column 1.

PANELINPUT
Defines this as a LIST+ group

PANELCONST
A user-customizable field that is displayed in the input panel and must be delineated with double quotation marks (″)

PANELVAR
An input field where the data is collected from the screen, for example:

PANELCONST ″PLEASE ENTER AN INTERFACE NUMBER: ″PANELVAR ″__″

Displays as:

PLEASE ENTER AN INTERFACE NUMBER:

__

VAR keywords in LIST and LIST+ groups indicate the starting of varbind lists. This helps in parsing in UNIX. VAR must start in column 1.

A **TABLE** group type must have a base variable to start the search. This is the index variable for the table. A Table group type does not need to have variables listed. The table is Walked and all variables in the table are collected. MIB variables listed in this group are for documentation only.

A **WALK** group type must be a well known group name (defined in an existing RFC). A walk command is issued against the name. MIB variables listed in this group are for documentation only. Walk groups, as defined in some RFCs, may be much larger than the 15-character limit. To work with this limit, the Full Name for the Walk Group may be entered on the Group line after the WALK type (for example: groupname GROUP WALK veryLongGroupName).

Comments must have an asterisk (*) in column 1.

Appendix E. VTAM Messages

This chapter explains the purpose of the VTAM messages that AON/SNA uses, shows the operator response, and any special processing.

General Resource VTAM Messages

IST093I *resource_name* **ACTIVE**

IST1132I *resource_name* **IS ACTIVE, TYPE=***resource_type*

Problem determination: Indicates when a resource becomes active. AON/SNA posts the resource as available.

Operator response: EZL504I : *resource_type resource_name* IS AVAILABLE

EZL517I : *resource_type resource_name* HAS BECOME ACTIVE FROM INTERVENTION BY OPERATOR *operator_id*

Explanation: If the operator that recovered the resource is an AON/SNA automation operator, suppress the EZL517I operator notification because the IST093I was issued as a result of automation activity.

Clear the threshold settings from the status file in preparation for the next failure.

If recovery is in effect, the status of the resource is not CONCT, and the resource type is a PU, LINE, or LINKSTA, check to see if this is part of a two-line TG with lines of unequal speeds and switch traffic flow to the faster (primary) line and relegate the slower line to a back up function in case the faster line fails. This is defined by the TGSWITCH control file definitions.

IST105I *resource_name* **NODE NOW INACTIVE**

IST1133I *resource_name* **IS NOW INACTIVE, TYPE=***resource_type*

Problem determination: If VTAM issues IST105I as a result of an operator (OST) command, AON/SNA posts status and stops automated recovery. This enables the operator to work with a resource without AON intervention. The operator is now responsible for recovery of the resource. If VTAM issues the message as unsolicited, AON/SNA initiates standard EZLEFAIL recovery.

Operator response: EZL505I : RECOVERY TERMINATED FOR *resource_type resource_name* DUE TO ACTION BY OPERATOR *operator_id*

EZL509I : *resource_type resource_ name* IS UNAVAILABLE

EZL531I : *resource_type resource_ name* IS INACTIVE DUE TO OPERATOR *operator_id* INTERVENTION

Explanation: If an AON/SNA automation operator issues the INACT command, ignore the message because it is part of a recovery attempt.

If an operator issues the INACT command, stop recovery and issue the EZL531I.

If a timer already exists for recovery monitoring, purge the timer and start recovery monitoring again.

If the automation status is INRCVY REMIND or REACTV, issue the EZL505I message to all operators.

IST129I **UNRECOVERABLE OR FORCED ERROR ON NODE** *resource_name* **- VARY INACT SCHED**

IST1135I **FORCED VARY INACT SCHEDULED FOR** *resource_name*

IST1136I **VARY INACT** *resource_name* **SCHEDULED - UNRECOVERABLE ERROR**

Problem determination: Detects if resource is in a state that AON/SNA cannot recover it from. Stop automation and notify operators that intervention might be required.

Operator response: FKV526I : *resource_type resource_ name* IS IN AN INVALID STATE: CURRENT STATUS IS *resource_status*

Explanation: Thresholding, availability, messaging, and recovery are not performed by the EZLEFAIL program.

Stops recovery attempts and messaging if the resource is in an unrecoverable state: not ACT* CON* INA* or IIN*.

IST383I **DEACTIVATION OF ID =** *resource_name* **FAILED - REQUEST:** *rcmd* **SENSE :** *rsense***.**

IST1268I *resource_name* **DEACTIVATION** *rcmd* **FAILED :** *rsense*

Problem determination: Detects failed resource deactivations. AON/SNA initiates recovery for the resource with the EZLEFAIL program.

Operator response: EZL509I : *resource_type resource_name* IS UNAVAILABLE

FKV527I : DEACTIVATION OF *resource_name* CANNOT BE COMPLETED BECAUSE *resource_name* HAS FAILED WITH SENSE: *rsense*

Explanation: None

IST608I **VARY ACT FOR ID =** *minor_resource_name* **FAILED-HIGHER NODE :** *resource_name*

IST1274I **VARY ACT** *minor_resource_name* **FAILED =** *resource_name* **NOT ACTIVE**

Problem determination: Detect when AON/SNA cannot recover a resource because its higher node is not active. AON initiates recovery for the higher node and the lower node with the EZLEFAIL program.

Operator response: FKV529I : ACTIVATION OF *minor_resource_name* FAILED DUE TO INACTIVE HIGHER NODE - *resource_name*. ACTIVATION OF *resource_name* IS ATTEMPTED

EZL509I : *resource_type resource_name* IS UNAVAILABLE

Explanation: Thresholding is not performed for the resource.

IST619I **ID=***resource_name* **FAILED- RECOVERY IN PROGRESS**

IST1416I **ID=***resource_name* **FAILED- RECOVERY IN PROGRESS**

Problem determination: Detects a resource failure that VTAM is attempting to recover. AON/SNA enables VTAM MONIT interval to recover the resource. If VTAM is unsuccessful, AON/SNA initiates recovery.

Operator response: EZL509I : *resource_type resource_name* IS UNAVAILABLE

Explanation: Thresholding and recovery is performed after the MONIT interval delay.

IST621I **RECOVERY SUCCESSFUL FOR NETWORK NODE** *resource_name*

Problem determination: Detects successful VTAM recovery of a resource. Posts active resource status and discontinues AON/SNA recovery efforts.

Operator response: EZL504I : *resource_type resource_name* IS AVAILABLE

Explanation: Clear the status file THRSHLD setting if it is CRIT.

If RECOVERY flags are on for the resource (call EZLECAUT), the resource status is not CON* or REC*, and the resource type is a PU, LINE, or LINKSTA, check to see if the resource is one of a two line TG with lines of unequal speeds. Manage the line so that the faster line (the primary line) is carrying all the traffic and relegate the slower line to a back up function in case the faster line fails. This is defined by the control file TGSWITCH definitions.

CDRM VTAM Messages

IST727I **COMMUNICATION WITH CDRM** *resource_name* **LOST - REASON=X'cause code'.**

Problem determination: Detects and notifies operators of a CDRM failure. AON/SNA tries to recover CDRM failures with the EZLEFAIL program.

Operator response: FKV520I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO FORCED INACTIVATE OF THE VR (RC = *rc*); AUTOMATIC RECOVERY IN PROGRESS

FKV521I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO VR INOP (RC = *cause_code.*); AUTOMATIC RECOVER IN PROGRESS

FKV522I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO SSCP - FAILURE (RC = *rc*); AUTOMATIC RECOVERY IN PROGRESS

FKV525I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO SESSION OVERRIDE - ACTIVATE ALREADY IN PROGRESS (RC = *cause_code.*)

FKV511I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO SSCP FAILURE - (RC=*rc*); AUTOMATIC RECOVERY IN PROGRESS

FKV517I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO CLEANUP - THE SSCP IS RESETTING (RC = *cause_code*)

FKV519I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO SSCP CONTENTION (RC = *cause_code*)

FKV531I : COMMUNICATION WITH CDRM *resource_name* LOST DUE TO GATEWAY NODE CLEANUP (RC = *cause_code*)

Explanation: EZL504I is not issued for the CDRM by the EZLEFAIL program.

IST742I **ACTIVATION OF CDRM** *resource_name* **FAILED GWN PATH NOT AVAILABLE**

Problem determination: Detects and notifies operators of a CDRM failure. AON/SNA initiates CDRM recovery with the EZLEFAIL program.

Operator response: FKV541I : ACTIVATION FAILED FOR CDRM *resource_name*; GATEWAY PATH NOT AVAILABLE

IST742I **ACTIVATION OF CDRM** *resource_name* **QUEUED GWN PATH NOT AVAILABLE**

Problem determination: Detects and notifies operators of CDRM queuing.

Operator response: FKV541I : ACTIVATION queued FOR CDRM *resource_name*; GATEWAY PATH NOT AVAILABLE

Explanation: Thresholding and recovery not run by the EZLEFAIL program.

Application Messages

IST400I **TERMINATION IN PROGRESS FOR APPLID** *resource_name*

Problem determination: Detects and notifies operators that the application stopped.

Operator response: FKV552I : APPLICATION *resource_name* HAS BEEN TERMINATED BY VTAM

Explanation: Availability messaging thresholding and recovery are not run by the EZLEFAIL program.

IST804I **VTAM CLOSE IN PROGRESS FOR** *applname* **OPENED BY** *jobname*

Problem determination: Detects a VTAM ACB close has started. AON/SNA monitors the process to be sure that the close is successful. IST805I is issued. This prevents ACBs from being in an endless loop.

Operator response: EZL550I : APPLICATION *appl* WAS NOT CLOSED CORRECTLY BY *operator_id*

Explanation: EZLEFAIL processing for availability messages, thresholding, messaging, and recovery is not done.

Check the control file recovery flag for JOBNAME. If recovery is off for it then exit.

Start timers for NOTIFY and CHECK intervals. When running on CHECK intervals (defined in the control file RECOVERY flag for APPLs) then the status of the application is checked but if it is down, operators are not notified. If it is up, recovery processing is done. When running on NOTIFY intervals, operators are notified if the application is still unavailable.

After two minutes, issue the EZL550 message. This is to give VTAM a chance to stop the application correctly before notifying operators. If it stops correctly, IST805I processing purges this timer and the operators are not notified.

IST805I **VTAM CLOSE COMPLETE FOR** *applname*

Problem determination: The VTAM close is complete for the ACB. AON/SNA stops monitoring for successful close.

Explanation: Only optional processing is performed by the EZLEFAIL program. Purge the timer set from IST804I to issue a message to the operator that the application has not stopped normally.

Host VTAM Messages

IST348I **UNABLE TO PROCESS DISCONNECTION FOR PU =** *resource_name* **DUE TO LACK OF STORAGE**

Problem determination: Notify operators of storage shortage problems during disconnection of a PU.

Operator response: EZL509I : *resource_type resource_name* IS UNAVAILABLE

FKV518I : *resource_type resource_name* DISCONNECTION FAILED DUE TO LACK OF STORAGE - STATUS IS resource_status

Explanation: 'D NET,BFRUSE'

Thresholding is not performed by the EZLEFAIL program.

IST561I **STORAGE UNAVAILABLE:** *pool* **BUFFER POOL**

Problem determination: Detects and notifies operators of storage shortage problems.

Operator response: FKV514I : STORAGE UNAVAILABLE FOR *resource_name* BUFFER POOL

Explanation: 'D NET,BFRUSE'

The EZLEFAIL program performs only optional processing and messaging.

IST562I **STORAGE UNAVAILABLE:** *pool* **REACHED**

Problem determination: Detects and notifies operators of storage shortage problems in CSA.

Operator response: FKV515I : STORAGE UNAVAILABLE - *resource_name* HAS BEEN REACHED

Explanation: 'D NET,BFRUSE'

The EZLEFAIL program performs only optional processing and messaging.

IST564I **STORAGE UNAVAILABLE COMMON AREA SUBPOOL** *pool*

Problem determination: Detects and notifies operators of storage shortage problems in CSA.

Operator response: FKV516I : STORAGE UNAVAILABLE FOR SUBPOOL *resource_name*

Explanation: 'D NET,BFRUSE'

The EZLEFAIL program performs only optional processing and messaging.

IST693I UNABLE TO DISCONNECT ID = *resource_name*

Problem determination: Detects disconnection failure. AON/SNA initiates recovery with the EZLEFAIL program.

Operator response: EZL509I : *resource_type* *resource_name* IS UNAVAILABLE

FKV528I : DISCONNECT OF *resource_name* FAILED DUE TO I/O ERROR OR INSUFFICIENT STORAGE

Explanation: 'D NET,BFRUSE'

IST706I **ADJSSCP TABLE FOR** *resource_name* **IGNORED - INSUFFICIENT STORAGE**

Problem determination: Detects and notifies operators of a storage shortage problem.

Operator response: FKV513I : STORAGE UNAVAILABLE FOR ADJSSCP TABLE FOR *resource_name*

Explanation: 'D NET,BFRUSE'

The EZLEFAIL program performs only optional processing and messaging.

NCP VTAM Messages

IST095A *replyid* **OPTION TO DUMP** *resource_name* **AVAILABLE - REPLY 'YES' or 'NO' or 'YES,DUMPSTA=LINKSTANAME'**

Problem determination: Detects NCP option to dump WTOR. AON responds to the WTOR according to the NCPRECOV definitions. EXIT01 is used. A timer is set to ensure that the dump does not take longer than the time specified in the DUMPTIME parameter. The EZLEFAIL program is not used.

Operator response: EZL509I : *resource_type* *resource_name* IS UNAVAILABLE

FKV538I : REPLY OF *reply* WAS ISSUED BY AUTOMATION FOR *ncpname* FROM *host*: CRITICAL RELOAD REPLY FROM NON-RECOVERY HOST

FKV535I : REPLY OF *reply* WAS ISSUED BY AUTOMATION FOR *ncpname* FROM *host*: NON-CRITICAL RELOAD REPLY FROM NON-RECOVERY HOST

EZL227E : *ident* COULD NOT FIND EXPECTED CONFIGURATION DATA FROM NCPRECOV COMMAND : *errmsg*

IST260I *resource_name* **-** *sscpname* **SESSION LOST SA** *saname* **CODE** *code***.**

Explanation: The EZLEFAIL program is called. Notifies operators of a host to NCP session loss.

Operator response: FKV524I : SESSION LOST BETWEEN *resource_name* AND *sscp_name* IN SA *sa*

FKV539I : SESSION LOST BETWEEN *resource_name* AND reply IN SA *sa* DUE TO A FORCED DEACTIVATION OF THE SSCP-PU SESSION

FKV543I : SESSION LOST BETWEEN *resource_name* AND *resource_name*2 DUE TO DEACTIVATION OF THE VIRTUAL ROUTE

FKV545I : SESSION LOST BETWEEN *resource_name* AND *resource_name*2 IN SA *sa* DUE TO AN SSCP FAILURE

Explanation: The EZLEFAIL program only runs messaging.

IST270I **LOAD OF** *resource_name* **COMPLETE-LOAD MODULE** *mod_name*

Problem determination: Finishes NCP recovery by indicating that the load of the NCP is complete. AON/SNA issues EXIT04. The timer for LOADTIME is purged because the load of the NCP is now complete. The EZLEFAIL program is not used.

Operator response: FKV544I : RELOAD WAS SUCCESSFUL FOR *resource_name* AND IS AVAILABLE

IST272A *replyid* **NO INITIAL TEST FOR** *resource_name* **REPLY 'U' TO BYPASS - OR CANCEL**

Problem determination: Responds to the bypass initial load WTOR for the NCP. Replies U. AON/SNA uses the EZLEFAIL program to run.

Operator response: EZL509I : *resource_type resource_name* IS UNAVAILABLE

FKV530I : BYPASS THE INITIAL TEST ROUTINE FOR *resource_name* - REPLY "U" TO BYPASS WAS ISSUED

FKV551I : REPLY FOR BYPASS INITIAL TEST FOR NCP *resource_name* NOT ISSUED; AUTOMATION FOR *resource_name* IS OFF: REPLY 'U' TO BYPASS OR CANCEL FOR REPLY ID reply

Explanation: AON/SNA runs only special processing in the EZLEFAIL program to respond to the outstanding reply.

IST278A *replyid* **'INVALID' REPLY FOR 'ID ='** *resource_name* **LOAD - ENTER 'U' - OR CANCEL**

Problem determination: Responds to a bad reply to IST272A. Replies U.

Operator response: EZL509I : *resource_type resource_name* IS UNAVAILABLE

FKV530I : BYPASS THE INITIAL TEST ROUTINE FOR *resource_name* - REPLY "U" TO BYPASS WAS ISSUED

FKV551I : REPLY FOR BYPASS INITIAL TEST FOR NCP *resource_name* NOT ISSUED; AUTOMATION FOR *resource_name* IS OFF: REPLY 'U' TO BYPASS OR CANCEL FOR REPLY ID *reply*

Explanation: AON/SNA runs only special processing in the EZLEFAIL program to respond to the outstanding reply.

IST284A *replyid* **OPTION TO RELOAD** *resource_name* **AVAILABLE - REPLY 'YES' OR 'NO' OR 'YES,LOADSTA=LINKSTANAME'**

Problem determination: Responds to the option to reload NCP WTOR according to the NCPRECOV definitions. AON/SNA uses EXIT03 and sets a timer to ensure that the time taken to reload the NCP does not exceed LOADTIME. The EZLEFAIL program is not used.

Operator response: FZL227E : *ident* COULD NOT FIND EXPECTED CONFIGURATION DATA FROM NCPRECOV COMMAND : *errmsg*

FKV551I : REPLY FOR BYPASS INITIAL TEST FOR NCP *resource_name* NOT ISSUED; AUTOMATION IS OFF: REPLY 'U' TO BYPASS OR CANCEL FOR REPLYID *replyid*

FKV537I : REPLY OF reply WAS ISSUED BY AUTOMATION FOR *resource_name* FROM *host*: NON-CRITICAL RELOAD REPLY FROM RECOVERY HOST

FKV538I : REPLY OF reply WAS ISSUED BY AUTOMATION FOR *resource_name* FROM *host*: CRITICAL RELOAD REPLY FROM RECOVERY HOST

IST285I *dumptype* **DUMP OF** *resource_name* **FAILED - PERMANENT**

IST285I *dumptype* **DUMP OF** *resource_name* **FAILED - ddname CANNOT**

IST285I *dumptype* **DUMP OF** *resource_name* **FAILED - UNSUPPORTED**

IST285I *dumptype* **DUMP OF** *resource_name* **FAILED - COMPLETE**

Problem determination: AON/SNA checks the progress of the NCP dump. EXIT02 is run if the dump is complete. If the dump failed, notify the operators that the dump of the NCP cannot complete. AON/SNA purges the timer set for DUMPTIME. The EZLEFAIL program is not called when the dump is COMPLETE. The other three variations of IST285I calls IST285I.

Operator response: EZL504I *resource_type resource_name* IS AVAILABLE

FKV550I DUMP OF NCP *resource_name* FAILED - PERMANENT IO ERROR ON NCP OR DUMP DATASET

FKV554I DUMP OF NCP *resource_name* FAILED - DUMP DATASET ddname CANNOT BE OPENED

FKV559I DUMP OF NCP *resource_name* FAILED - DUMP DATASET ON AN UNSUPPORTED DEVICE TYPE

FKV558I DUMP of *resource_name* COMPLETE

Explanation: Thresholding and recovery are not run in the EZLEFAIL program.

IST361A *replyid resource_name* **FOUND LOADED WITH** *loadmod* **REPLY 'YES' TO RELOAD OR 'NO' TO CANCEL ACTIVATION**

Problem determination: Notify operators when the NCP load module does not match the currently loaded module. AON/SNA replies NO if the NCP is to be automatically recovered.

Operator response: EZL509I *resource_type resource_name* IS UNAVAILABLE

FKV510I LOAD OF NCP *resource_name* STOPPED BECAUSE LOAD MODULE DOES NOT MATCH NEW NCP; AUTOMATION IS OFF, REPLY 'NO' TO CANCEL OR 'YES' TO RELOAD FOR REPLYID *replyid*

FKV512I : LOAD OF NCP *resource_name* CANCELLED - LOAD MODULE DOES NOT MATCH NEW NCP

Explanation: The EZLEFAIL program runs the only optional processing.

IST380I **ERROR FOR ID =** *resource_name* **FAILED - REQUEST :** *rcmd***SENSE :** *rsense*

IST1139I *rcmd* **FOR** *resource_name* **FAILED - SENSE:** *rsense*

Problem determination: If *rcmd* is REQDUMP, AON/SNA purges the dump time timer. If *rcmd* is REQLOAD, AON/SNA purges the load time timer. Notification operators are notified that the LOAD/DUMP has failed. The EZLEFAIL program is not used.

Operator response: FKV501I DUMP OF NCP FAILED - *action reason*

FKV502I LOAD OF NCP FAILED - *action reason*

Explanation: None.

IST464I **LINK STATION** *resource_name1* **has CONTACTED** *resource_name2* **SA** *subarea*

Problem determination: Detects a link station connection to the NCP from AON/SNA. AON/SNA posts link station and NCP as available if the NCP is an automated NCP with a NCPRECOV statement. DUMP and LOAD timers are purged. The EZLEFAIL program is not used.

Operator response: EZL504I *resource_type resource_name* IS AVAILABLE

FKV548I *resource_name* HAS CONTACTED *resource_type resource_name* - *resource_name* IS AVAILABLE

IST530I *ru* **PENDING FROM** *resource* **TO** *resource* **FOR** *resource_name*

IST1278I *ru* **PENDING FROM** *netid* **to** *netid* **FOR** *resource_name*

Problem determination: Detects an NCP unavailability from a channel attached non-recovery host. If the NCP status indicates that it is being recovered by another host, AON/SNA enacts/acts the NCP to recover connection to this host. Otherwise, the operator AON/SNA notifies the operator, who manually recovers the NCP. The EZLEFAIL program is not used.

Operator response: EZL504I : *resource_type resource_name* IS AVAILABLE

FKV542I : NCP *ncpname* REQUIRES A MANUAL ACTIVATION

IST881I **UNABLE TO CONTACT LINK STATION** *resource_name*

IST881I **LOST CONTACT TO LINK STATION** *resource_name*

Problem determination: The NCP name is retrieved from the NCPRECOV control file entry link station *resource_name*.

This message detects and reminds operators that the link station is not in contact with the NCP. Stops DUMP/LOAD completion monitoring. The EZLEFAIL program is not used.

Operator response: EZL509I *restype resource_name* is UNAVAILABLE - *ncp_name* MAY NOT BE AVAILABLE

EZL555I : LINK STATION *linksta* HAS LOST CONTACT WITH NCP *ncp_name*

Explanation: None.

IST897I **NONDISRUPTIVE LOAD OF** *resource_name* **WITH** *module_name* **STARTED**

Problem determination: Detects that the load of an NCP has started. The EZLEFAIL program is not used.

Operator response: FKV556I LOAD OF *ncpname* BY OPERATOR *operator_id* STARTED

IST961I **NONDISRUPTIVE LOAD OF** *ncpname* **WITH** *module_name* **FAILED**

IST523I **REASON =** *reason_text*

Problem determination: Detects when the load of an NCP failed. The EZLEFAIL program is called from another program which parses and passes the second IST523I message of the MLWTO.

Operator response: FKV560I LOAD OF *ncp_resource_name* FAILED - RECEIVE *.reason_text*

Explanation: Thresholding and recovery are not run by the EZLEFAIL program.

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