zEnterprise System

Support Element Operations Guide Version 2.11.1

SC28-6906-01

zEnterprise System

Support Element Operations Guide Version 2.11.1

SC28-6906-01

Note:
Before using this information and the product it supports, read the information in "Safety" on page xi, Appendix C, "Notices," on page 243, and IBM Systems Environmental Notices and User Guide, Z125–5823.

| This edition, SC28-6906-01, applies to the IBM Support Element Console Application, Version 2.11.1. This edition
| replaces SC28-6906-00.

There might be a newer version of this document in a **PDF** file available on **Resource Link**. Go to http://www.ibm.com/servers/resourcelink and click **Library** on the navigation bar. A newer version is indicated by a lowercase, alphabetic letter following the form number suffix (for example: 00a, 00b, 01a, 01b).

Contents

Figures

Tables

Safety

Safety notices

Safety notices may be printed throughout this guide. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

World trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the safety information in your national language with references to the US English source. Before using a US English publication to install, operate, or service this IBM® product, you must first become familiar with the related safety information in the booklet. You should also refer to the booklet any time you do not clearly understand any safety information in the US English publications.

Laser safety information

All System z® models can use I/O cards such as PCI adapters, ESCON®, FICON®, Open Systems Adapter (OSA), InterSystem Coupling-3 (ISC-3), or other I/O features which are fiber optic based and utilize lasers or LEDs.

Laser compliance

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION: Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION:This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

About this publication

This operations guide is for anyone who is responsible for monitoring and operating the IBM zEnterprise™ System.

This operations guide provides information and instructions for users who use a support element while logged on in the following default user IDs and roles:

Access Administrator - ACSADMIN
Advanced Operator - ADVANCED
Operator - OPERATOR
Service Representative - SERVICE
System Programmer - SYSPROG

Notes:

- There are representations of the Hardware Management Console and Support Element windows displayed throughout this manual. They may or may not represent the exact windows that are displayed for your user ID or version.
- Many of the same tasks and controls that are available in the user modes listed above are available also in the service representative user mode. This operations guide does not provide information or instructions for using tasks and controls available exclusively in the service representative user mode. Service representatives should refer instead to the service documentation provided with the system.

Support element users should be familiar with using:

- CD-ROM
- Communication devices
- Direct access storage devices (DASD)
- DVD-RAM
- Graphical user interfaces
- Printers
- USB flash memory drive (formerly referred to as the memory key)
- Workstations

Note: If you are using a USB flash memory drive, plug it into the console and then wait for the console to beep three times. This indicates that the device is ready and can be accessed. If it does not beep three times, unplug the device and try again.

For information and instructions for operating devices other than the support element, refer to the documentation provided with the devices.

How to use view guide

If you are accessing the support element console remotely through the hardware management console using single object operations, this guide is available in portable document format (PDF) to view or print as an online document or by accessing **Resource Link**® (http://www.ibm.com/servers/resourcelink).

When the PDF version of the guide opens, a list of bookmarks displays on the left-hand side. These bookmarks display the highest level topics in the order that they appear as chapters in the book. If any of these topics have lower level topics, a **+** is displayed to the left of the higher level topic. To expand the topic, click once on the **+** and the next level will be displayed.

If you are accessing the support element console locally, this guide is available in HTML format to view as an online document from the support element console.

When the HTML version of the guide opens, you can scroll forward past the title page where the table of contents appears. You can click on any of the titles to view the information you are interested in. Use the **Forward** and **Back** buttons, located at the top of your window, to move around the document. Click **Close** when you are done viewing the document.

To view this guide in its online form using the tree style user interface, see "Welcome" on page 11. If you are using the classic style interface, see "Books" on page 64.

What's new in version 2.11.1

This guide reflects the licensed internal code for Support Element Console Application, Version 2.11.1. You can tell if your Support Element console has this version installed by looking at the title bar on the Support Element Console Workplace window or by pointing your mouse over **SE Version** in the top of the work pane window when using the tree style user interface.

There may be other changes to the licensed internal code that are not described in this guide. For additional information, refer to the PDF files available on Resource Link at http://www.ibm.com/servers/resourcelink or the other documents shipped with your processor.

This section summarizes the new and changed features for Version 2.11.1.

- New **Power Cycle zBX Hardware** task for zBX BladeCenter switches. See"Power Cycle zBX Hardware" on page 107 for more information.
- The **Manage zBX Blade Internal Code** task was renamed to **Manage zBX Internal Code** to include zBX BladeCenter switches. See "Manage zBX Internal Code" on page 140.
- The Disruptive Task Confirmation includes an option where the user ID might be required to provide text input on the window before allowing a disruption of a task. The **User Profiles** task includes an option to enable required text input for disruptive actions.
- Support was added to allow a secure FTP connection for data transfer on the Hardware Management Console and Support Element. The task changes include:
  - New **Manage SSH Keys** task where you can import public keys associated with a host address. See "Manage SSH keys" on page 182 for more information.
  - Updated Audit and Log Management operation for the **Customize Scheduled Operations** task added the **Offload using secure file transfer** option where you enable offloading of the audit data to a secure FTP connection.
- A new task, **View PMV Records**, was added to obtain Problem Management Viewable (PMV) records issued to the IBM Service Support System. See "View PMV Records" on page 111 for more information.
- The **InfiniBand Multiport Status and Control** task was renamed to **Redundant I/O (RIO) Interconnect Status and Control** to include both channel types of InfiniBand® and PCIe channel types. See "Redundant I/O (RIO) Interconnect Status and Control" on page 105 for more information.

Accessibility

This publication is in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties using this PDF file you can request a web-based format of this publication. Go to Resource Link at http://www.ibm.com/servers/resourcelink and click **Feedback** from the navigation bar on the left. In the **Comments** input area, state your request, the publication title and number, choose **General comment** as the category and click **Submit**. You can also send an email to reslink@us.ibm.com providing the same information.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. Send your comments by using Resource Link at http://www.ibm.com/servers/resourcelink. Click **Feedback** on the navigation bar on the left. You can also send an email to reslink@us.ibm.com. Be sure to include the name of the book, the form number of the book, the version of the book, if applicable, and the specific location of the text you are commenting on (for example, a page number, table number, or a heading).

Chapter 1. Introduction

A *support element* is a dedicated workstation used for monitoring and operating a system. It is attached to the central processor complex (CPC) of a system. If you have experience using other systems, you may have used a processor console, support processor, or a similarly named workstation to monitor and operate them.

The IBM zEnterprise System is an *integrated support element*, that is, the support element is located inside the same frame that the central processor complex (CPC) is located. An alternate support element is also provided to give you the option to switch from your primary support element to your alternate support element if hardware problems occur. For more information on the alternate support element, see "Alternate Support Element" on page 134.

The zEnterprise System operates only in logically partitioned mode.

A *Hardware Management Console* is required for monitoring and operating systems with integrated support elements.

The Support Element Console Application

The Support Element Console Application version 2.11.0 is a licensed application that provides the tasks you will use to monitor and operate your system. The application is shipped with each Support Element.

The version number of the Support Element Console Application is displayed in the title bar of the Support Element Logon window and also the Support Element Workplace window.

The Support Element Console Application starts automatically whenever the Support Element is turned on or rebooted. Starting the application begins the process of initializing it. A window displays the IBM Logo and copyright information. When the process completes, the logon window is displayed.

The Welcome window includes links for logging on to the Support Element console and to the online help. It also includes status indicators and message icons. The status indicator reflects the current overall status of the CPC and images. The message indicators alert you to any hardware or operating system messages. If any of these icons do not display a green check mark, you are alerted that a message was logged that may require your attention. See Figure 1 on page 2 for an example of the Welcome window.

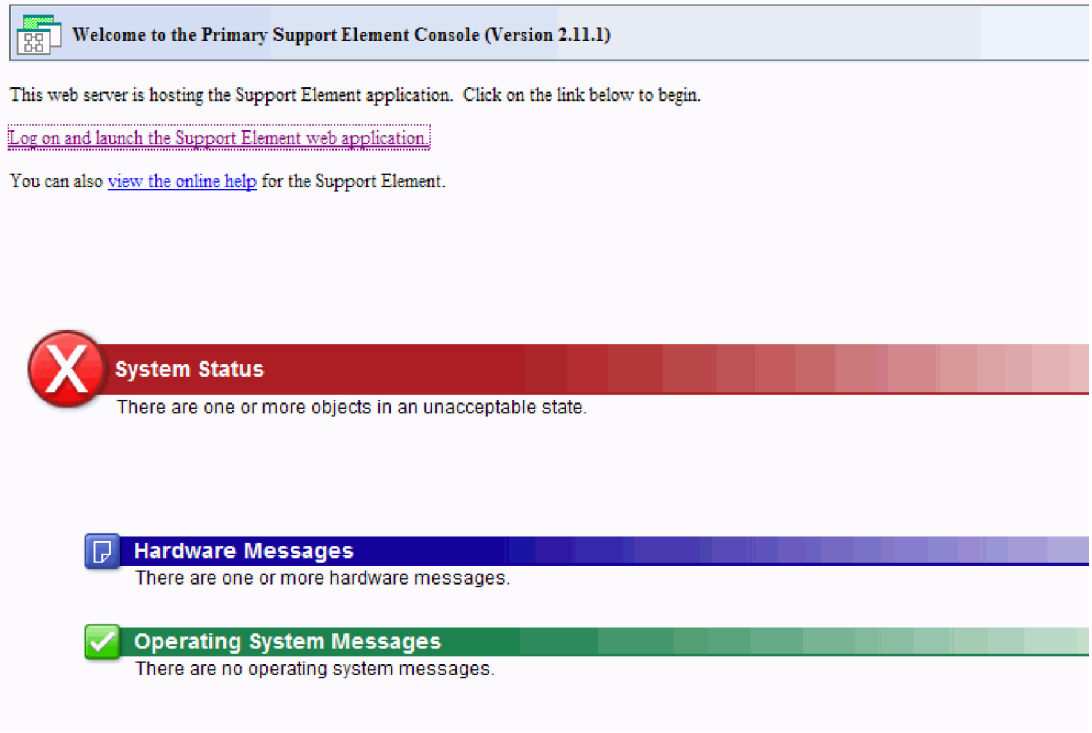


Figure 1. Support Element console welcome window

To log on to the Support Element console, click **Log on and launch the Support Element web application** from the Welcome window. The Logon window is displayed

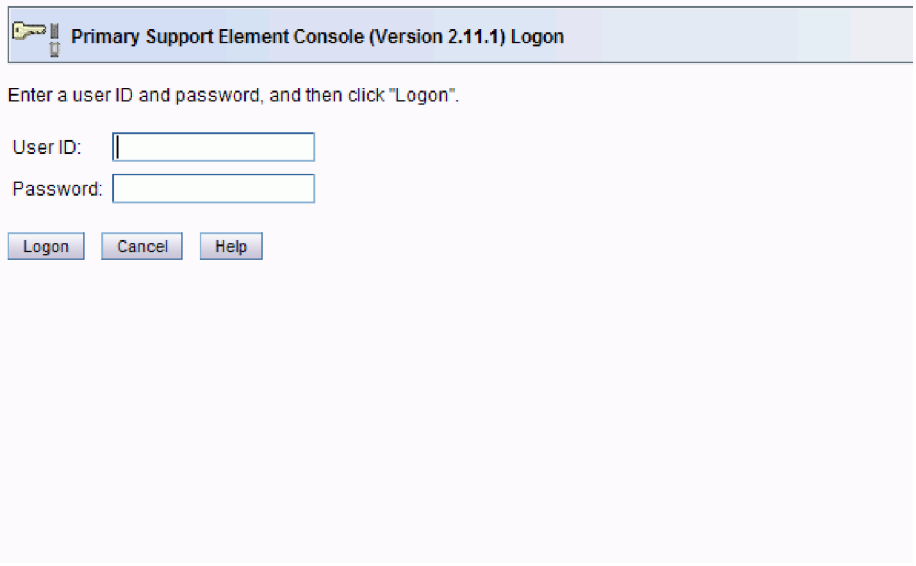


Figure 2. Support Element console logon window

Default user IDs and passwords are established as part of a base Support Element Console. The Access Administrator should assign new user IDs and passwords for each user and remove default user IDs as soon as the support element console is installed by using the **User Profiles** task. The following default user roles, user IDs, and passwords are:

```
Access Administrator            ACSADMIN          PASSWORD
```

Advanced Operator	ADVANCED	PASSWORD
Operator	OPERATOR	PASSWORD
Service Representative	SERVICE	SERVMODE
System Programmer	SYSPROG	PASSWORD

Note: The Support Element workplace is distinguished from the Hardware Management Console workplace most notably by the title of its window and the background pattern of the System zEnterprise.

The Support Element workplace is the window from where you start tasks for monitoring and operating the CPC. Your *user role* determines which tasks and controls you can use on the Support Element workplace. Not all tasks are available for each user role. Refer to the description of the specific task you want to access to see what user role(s) it is available in. Letter case (uppercase, lowercase, mixed) is not significant for the default user IDs or passwords.

If at any time you do not know what user ID is currently logged on to the Support Element console, click on the user ID located on the task bar in the tree style user interface, or open the **Users and Tasks** task in the classic style user interface.

Establishing a Support Element console session from a Hardware Management Console

A Hardware Management Console must be used for monitoring and operating systems with integrated Support Elements.

Ordinarily, you should use the Hardware Management Console to monitor status and perform tasks for the systems defined to it. Only the Hardware Management Console can be used for monitoring and operating multiple systems; using it is more efficient than using each system's Support Element console individually.

Using a system's Support Element console is necessary only for getting information or using tasks that are *not* available from the Hardware Management Console. If using a system's Support Element console is necessary, use the Hardware Management Console's Single Object Operations task to establish a session with the Support Element console. Upon establishing a Support Element session, you can refer to this manual for information and instructions for using the Support Element to monitor and operate the system it is attached to.

The Single Object Operations Task Confirmation window displays. Follow the instructions on the Confirmation window to complete this task.

Logging off the Support Element Console

Once you have completed using the Support Element, you may end the current user session and either log off or disconnect from the console using the **Logoff or Disconnect** task.

Disconnecting preserves your session and allows your tasks to continue running without user accessing to the console. Disconnect sessions exist while the Support Element console application is running. If the Support Element console is restarted or the console is shut down, all session information is lost.

If you disconnect, you can reconnect at a later time. When you login again, a Choose a Disconnected Session window is displayed. You can select the disconnected session to continue working or you can begin a new session. (The number of windows displayed depends on the state of the session when it was disconnected. One of the windows is the main user interface; additional windows are for each task that was running when the session was disconnected.)

Logging off of the Support Element console terminates all running Support Element application tasks and ends the session. The log off operation should only be used when you no longer need access to the Support Element console. Logging off of the console doe not affect the status of the CPC or images.

The Support Element workplace window closes and the Hardware Management Console workplace window is displayed.

To log off the Support Element console:

1. Open the **Logoff or Disconnect** task. The Choose to Logoff or Disconnect window is displayed.
2. Select **Log off**.
3. Click **OK** to end your session on the Support Element console.

To disconnect from the Support Element console:

1. Open the **Logoff or Disconnect** task. The Choose to Logoff or Disconnect window is displayed.
2. Select **Disconnect**.
3. Click **OK** to disconnect from your session on the Support Element console with the intent of returning at a later time.

User Interface (UI) styles for the Support Element console

The Support Element console allows you to choose the interface style in which you prefer to work with:

- Tree style user interface (default)
- Classic type user interface (older interface with object-oriented design).

Tree style user interface

The Support Element console **tree style user interface** is the default for Operator, Advanced Operator, Access Administrator, and System Programmer user roles, but not for the Service Representative user role. The tree style navigation provides hierarchical views of system resources and tasks using drill-down and launch-in-context techniques to enable direct access to hardware resources and task management capabilities. It also utilizes common terminology where possible.

See Chapter 2, "Using the tree style user interface," on page 9 if you want to use the tree style user interface for the Support Element console.

Classic style user interface

The Support Element console **classic style user interface** (classic interface) is the original user interface. The Service Representative user role uses this interface as its default interface. It has an object-oriented design. Through this design, you can directly manipulate the objects (such as CPC or images) that are defined to the Support Element console, and be aware of changes to hardware status as they are detected.

You can work with the objects on the workplace using the mouse to select them. There are several techniques for manipulating objects and tasks. One way to do this is to left-click an object to select it and double-click the task. An alternate method is known as the *drag and drop technique*, which involves using the mouse to pick up one or more objects, dragging them to a task, and then dropping them. These techniques are examples of what is known as *direct manipulation*.

See Chapter 3, "Using the classic style user interface," on page 37 if you want to use the classic style user interface for the Support Element console.

Enabling users to change interface style

If the **UI Style** tab is not displayed when you open the User Settings task, then you are not allowed to change the interface style on the Support Element console. Your access administrator has the ability to enable users to change interface styles and to change the default interface style of the Support Element console by performing the following steps:

1. Log on the Support Element console using the ACSADMIN default user ID or a user ID that has the predefined Access Administrator roles.
2. Open the **Console Default User Settings** task.
   - Using the tree interface: Open the **Console Default User Settings** task from the **SE Management** or **Task Index** work panes.
   - Using the classic interface: Open **Console Actions** under **Views**, then open **Console Default User Settings** task.
3. The Console Default User Settings window is displayed
4. Click the **UI Style** tab.
   - To enable users to change the user interface style, select **Allow user to change the UI style**, then click **Apply**.
   - To control the default user interface style for the Support Element console, select **Tree Style** or **Classic Style**, then click **Apply**
5. Click **OK** when you have finished.

Changing interface style

If the Support Element console is configured to enable you to change the user interface style, you can change interface styles by using the User Settings task.

To change from the tree style interface back to the classic interface, perform the following steps:

1. Open User Settings (from the **SE Management** or **Task Index** work panes or click on the user ID from the task bar). The User Settings window is displayed.
2. Click the **UI Style** tab. The User Style Information window is displayed.
3. Select **Classic Style**, then click **Apply**.

   The interface style changes to classic.

To change from the classic interface back to the tree interface, perform the following steps:

1. Open User Settings (under Console Actions in the classic interface). The User Settings window is displayed.
2. Click the **UI Style** tab. The User Style Information window is displayed.
3. Select **Tree Style**, then click **Apply**.
4. Click **OK**.

Context sensitive help

Context sensitive help allows you to view abbreviated help information for input areas or selectable fields that appear on the task window. To enable this function:

1. Click on the blue **i** that appears in the upper right corner of the task window. (see Figure 3 on page 6) Every time a new task window opens you need to click the blue **i** to enable context sensitive help.

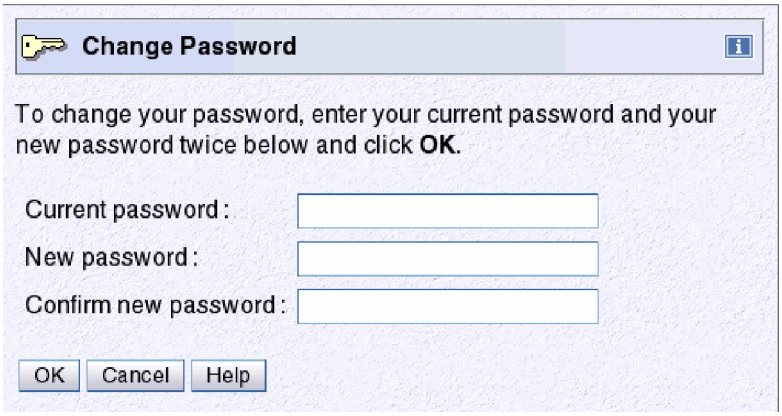


Figure 3. Context sensitive help not enabled

2. Once context sensitive help is enabled, the blue **i** in the upper right corner of the task window changes to an orange **?**. As you place your cursor over the input areas or selectable fields, the abbreviated help text appears in a small box within the task window (see Figure 4). Using the Tab key also allows you to view the help for each field. As you tab to each field, context sensitive help is displayed.

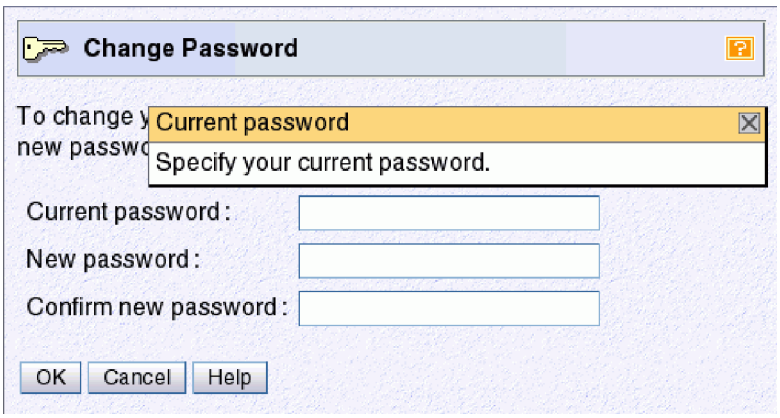


Figure 4. Context sensitive help enabled

Notes:

- You have the capability to move the help box if it hides some of the information on the task window. As you move your cursor into the help box area the cursor will change from an arrow to a yellow cross arrow. Holding the left mouse button down within the box allows you to drag the box to a more convenient area in the task window.
- You can close the help box by clicking on the X in the upper right corner. This will not disable the context sensitive help for the task window, it just removes the help box for the item you were getting help on.
- Scroll bars can be used on the bottom and side of the task window for expanding the task window and allowing more area to view the help box.
- You can continue to perform task options while the context sensitive help is enabled.

When you are ready to disable context sensitive help for the task window, click on the **?**.

Disruptive tasks

Some of the Support Element tasks are considered *disruptive*. Performing a disruptive task on the CPC or image may disrupt its operation. Figure 5 displays an example of the additional Support Element window that is displayed for most of the disruptive tasks.

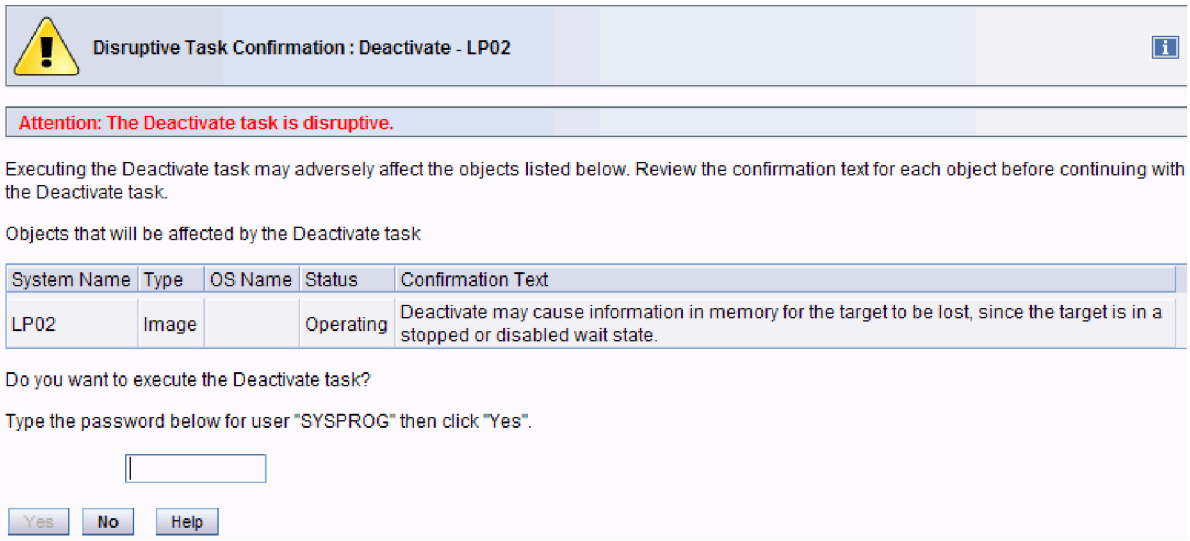


Figure 5. Disruptive task confirmation window

Depending on your user ID, you might not be able to perform the task on the selected object unless you provide required confirmation text or a required password. You can use the online Help if you need additional information for this task confirmation window.

Note: For tasks that are performed by using the **Single Object Operation** task, the password that is used for the **Disruptive Task Confirmation** window depends on if the user ID that was used to log into the Hardware Management Console is also defined on the Support Element when the **Single Object Operation** task is used. If the user ID also exists on the Support Element, then the password needs to match the one for the user on the Support Element. If the user ID does not exist on the Support Element, then the password needs to match the one for the user ID on the Hardware Management Console.

You may want to lock an object to prevent accidently performing a disruptive task on it and then unlock the object only when you want to perform a disruptive task on it.

Note: The **Lockout disruptive task** setting only affects operations from the Support Element workplace that you are currently working at and its Web browser. It does not affect any operations at the Support Element or operations initiated from another Support Element.

For more information on locking an object see “Object locking for disruptive tasks” on page 35 when using the tree interface or see “Object locking for disruptive tasks” on page 41 when using the classic interface.

USB flash memory drive

The Support Element console Version 2.11.0 introduces a new removable writeable media as an alternative to the Support Element console DVD-RAM. The tasks that require access to a DVD-RAM now have the ability to access a USB flash memory drive. There can be more than one USB flash memory drive inserted into the console.

Note: If you are running a task that accesses a USB flash memory drive, you must be aware that there could be more than one USB flash memory drive in the console. Make sure you are accessing the correct USB flash memory drive for your task.

Some of the tasks that require media allow you to choose the type of media depending on the system you are using. You can choose the type of media you want to send the data to from the Select Media Device window, as shown in Figure 6.

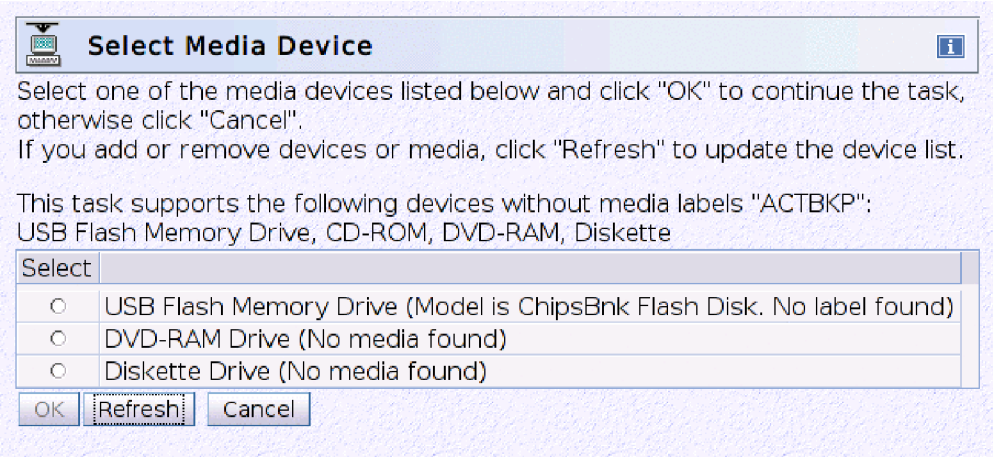


Figure 6. Select media device window

The Support Element console Version 2.10.0 and later is no longer provided with a diskette drive. The available media is DVD-RAM, CD-ROM, and USB flash memory drive (formerly referred to as the memory key).

Note:

- If you are using a USB flash memory drive, plug it into the console. If it is properly inserted, the console beeps three times and a message is displayed indicating the drive was successfully added. The device is ready and can be accessed. Otherwise, the console will not beep three times and a message may display indicating the drive was not added and that you should remove the device and try again.
- Tested virtual file allocation table (VFAT) USB flash memory drives include IBM 128MB, Lenovo 512MB and 1GB, and IBM packaged SMART™ drives.

Chapter 2. Using the tree style user interface

This chapter explains how to use the tree style user interface to perform tasks on the Support Element console or on the system resources. The tree style user interface is comprised of several major components as shown in the figure:

- Banner
- Task bar
- Navigation pane
- Work pane
- Status bar.

The *banner*, across the top of the workplace window, identifies the product and logo. Use the **User Settings** task to turn the banner on or off.

The *task bar*, located below the banner, displays the name of any tasks that are running, the user ID you are logged in as, online help information, and a link to logoff or disconnect from the console.

The *navigation pane*, in the left portion of the window, contains the primary navigation links for managing your system resources and the Support Element console. The items are referred to as nodes. Displayed above the navigation pane is the navigation toolbar.

The *work pane*, in the right portion of the window, displays information based on the current selection from the navigation pane or status bar. For example, when **Welcome** is selected in the navigation pane, the Welcome window content is displayed in the work pane, as shown in the figure.

The *status bar*, in the bottom left portion of the window, provides visual indicators of current overall system status. It also contains a status overview icon which may be selected to display more detailed information in the work pane.

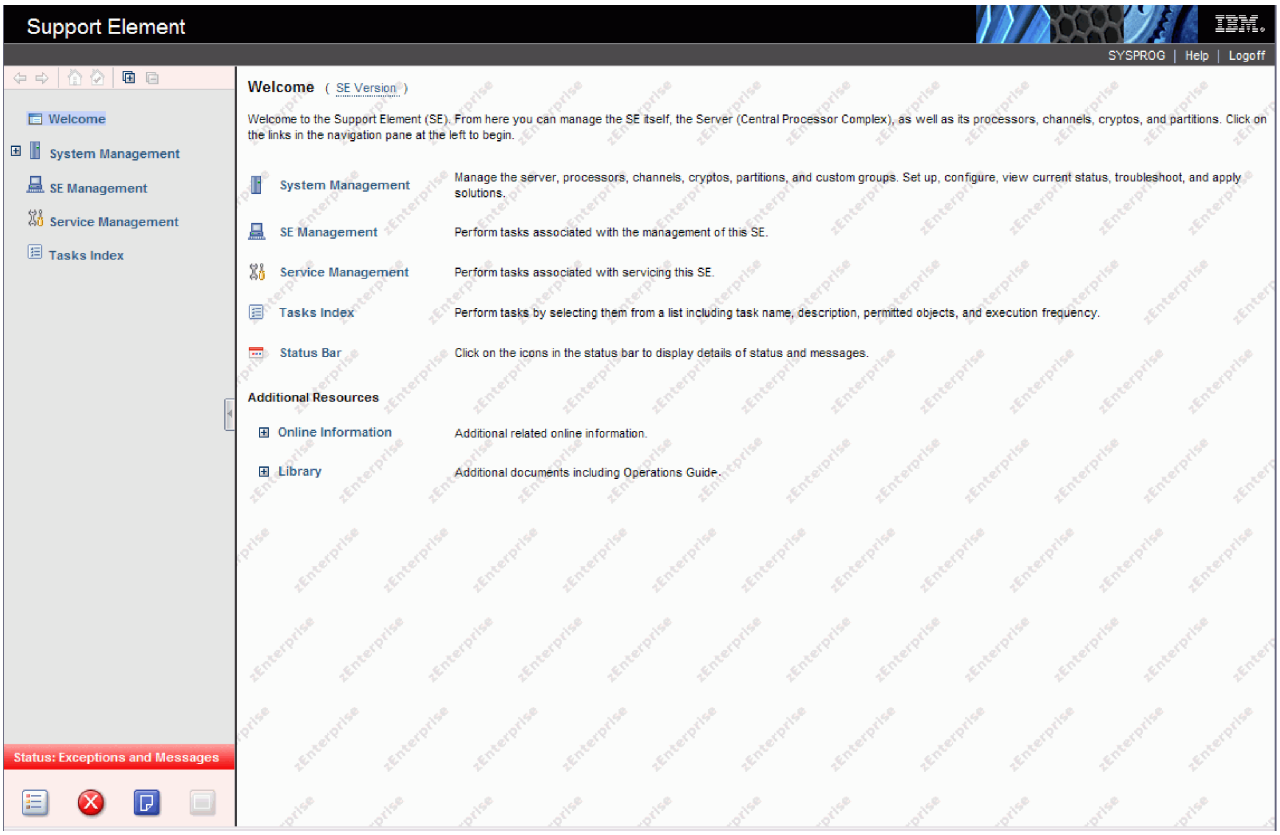


Figure 7. Tree style user interface Support Element console workplace window

You can resize the panes of the Support Element console workplace by moving the mouse pointer over the border that separates the navigation pane from the work pane until the mouse pointer changes to a double-pointed arrow. When the pointer changes shape, press and hold the left mouse button while dragging the mouse pointer to the left or right. Release the button and your navigation pane or work pane is now larger or smaller in size. You can also do this within the Systems Management work pane border that separates the resources table from the tasks pad.

Task bar

The task bar, located below the banner, acts as a navigation bar displaying tasks that have been opened and have not yet been closed. The task bar may be used as a navigation aid or as an 'active task switcher' to move between these tasks. The task switcher does not pause or resume existing tasks. Clicking on a task in the task bar brings that task's window forward and gives it focus. The right end of the task bar also contains the following information as shown in Figure 8.

- **user ID** that you are logged in as. By clicking the user ID you open the **User Settings** task.
- **Help** initially displays information on how to use the tree style user interface on the Support Element console. It also provides information on all the Support Element console tasks.
- **Logoff** opens the **Logoff or Disconnect** task.

Figure 8. Task bar

Navigation pane

The navigation pane, as shown in Figure 7 on page 10, contains the primary navigation links for managing your system resources and the Support Element console. These include:
- Welcome
- System Management
- SE Management
- Service Management
- Tasks Index

It also includes the following navigation methods you can use when working in the tree style workplace:
- Navigation toolbar
- Navigation pane collapse and expand controls

Navigation toolbar

The navigation toolbar, located above the navigation pane, consists of:
- Forward and backward buttons that allow you to move forward and backward in the selection history for the work pane.
- Home page and set home page buttons that allow you to return to the home page during your session and establish a home page to return to every time you log on to the Support Element console.
- Expand and collapse buttons that allow you to expand and collapse all of the nodes of the navigation pane.

You can point your mouse over the icon buttons to get a description of the function.

Navigation pane collapse and expand controls

The navigation pane collapse and expand controls are located on the border between the navigation pane and the work pane. You can click on these controls to collapse or expand the navigation pane allowing you more work area in the work pane, if required. Hovering over these controls indicates whether you are hiding or displaying the navigation pane. You can see an example of these controls in Figure 9 on page 13.

Welcome

Welcome work pane displays navigation information, the Support Element console version information, and other helpful documentation (see Figure 7 on page 10).

To see the level of the Support Element console you are currently working with and other pertinent information, point your mouse over **SE Version** found at the top of the work pane.

The **Additional Resources** include:
- **Online Information** provides a listing of the following online resources. Click on each item to access them.

  Note: This information is available only when you are accessing the Support Element console remotely.
  - **Resource Link** - a web-based solutions site for more information on planning, installing, and maintaining System z servers and software.

  - **Tutorials** - for additional information on using the Support Element console tree style user interface and tasks.
  - **APIs** - for access to the System z Application Programming Interface publications:
    - ***Application Programming Interfaces*** - provides information for developing system management applications that will provide integrated hardware and software system management solutions using the application programming interfaces.
- **Library** - lists the following online publications provided with the Support Element console application. Click on each publication to access them.

  Note: If you are accessing the Support Element console remotely, PDF versions of the documents are available. If you are accessing the Support Element console locally, HTML versions of the documents are available.
  - ***Support Element Operations Guide*** - provides information about the Support Element Console Application and about using the Support Element workplace to monitor and operate your system. It is the book you are currently using.

To open an online book, locate the book you want to open and click on the book title. The book remains open until you close it. When you have finished viewing the book, close it by clicking the **X** in the upper right corner of the book window.

System Management

System Management is used to manager and view system resources. Selecting the expand icon from the navigation pane displays a tree view of system resources that can include:

Resources may include:
- System
- Processors
- Channels
- Cryptos
- Partitions
- Partition resources
- zBX Blades
- zBX BladeCenters
- Virtual Servers
- Custom groups.

When you select **System Management** from the navigation pane, the following resource tabs are displayed in the work pane
- System
- Topology

Groups and objects

Use the navigation pane to locate objects. Objects are divided into groups of objects of the same type. To locate a particular object, you must locate and open the group that contains it. Opening a group displays its objects in the work pane.

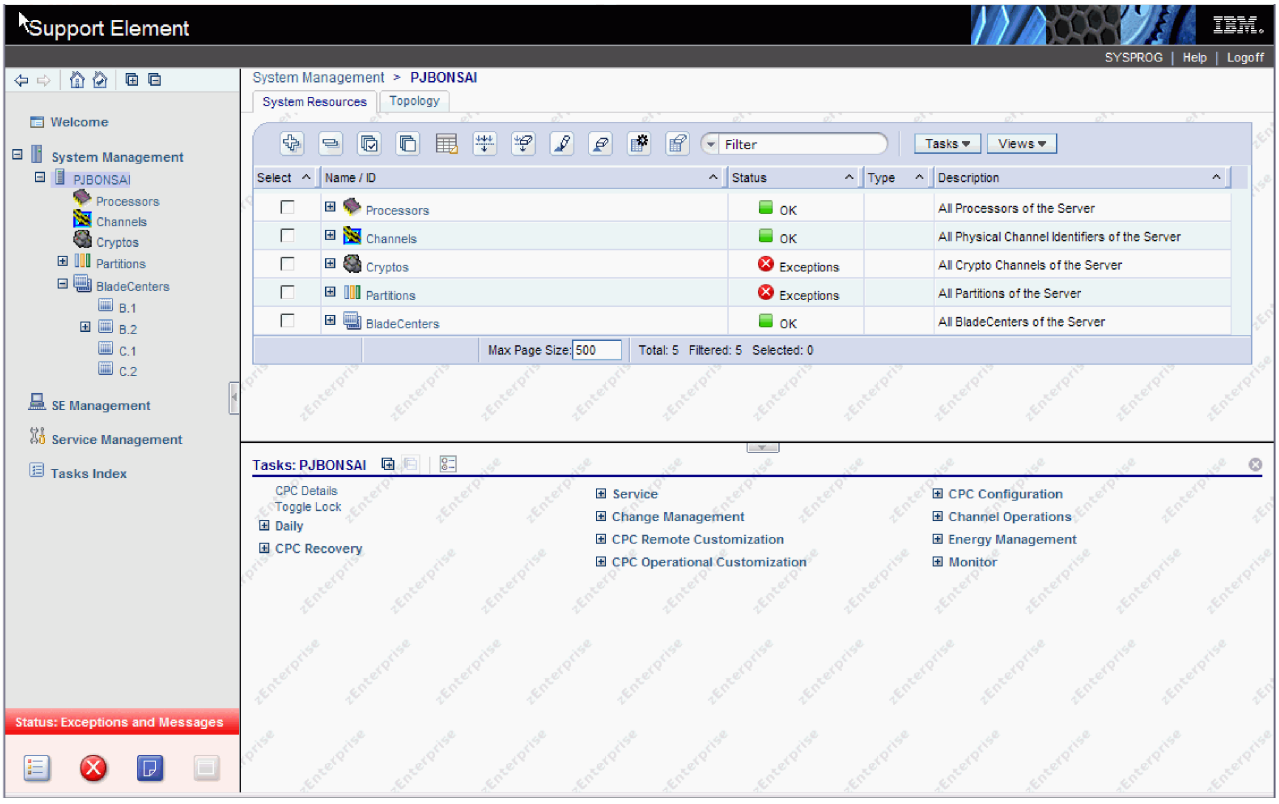


Figure 9. Systems Management object window

System: The **System** node represents all the resources that are managed by this Support Element console.

Note: The term system may also be referred as a CPC or server through out this publication.

When you select the system from the navigation pane, a listing of individually defined objects is displayed under the **System** node in the navigation pane and resource tabs are displayed above the work pane table, as shown in Figure 9.

To work with the system:

- Select **System Management** in the navigation pane
- Click in the **Select** column next to the system name in the work pane table.

Processors: On the Support Element, both physical and logical processors are referred to as processors (CPs).

To locate processors:

1. In the navigation pane, expand **System Management**.
2. From the System Management node, expand the **System** node.
3. Select the **Processors** node.

A listing of processors is displayed in the work pane table under the **Processors** tab. The default table identifies the ID, status, and state of each processors. See Figure 9.

Channels: The node that represents the system contains objects that represent all channels in the input/output (I/O) configuration. To locate channels:

1. In the navigation pane, expand **System Management**.
2. From the System Management node, expand the **System** node.

3. Select the **Channels** node.

A listing of channels is displayed in the work pane table under the **Channels** tab. The default table identifies the physical channel identifier (PCHID), CSS.CHPID, status, state, cage-slot-jack address, and hardware type. Virtual channels will only be displayed after the system is activated. See Figure 9 on page 13

Cryptos: The node that represents the system contains objects that represent all installed cryptos.

To locate cryptos:
1. In the navigation pane, expand **System Management**.
2. From the System Management node, expand the **System** node.
3. Select the **Cryptos** node.

A listing of cryptos is displayed in the work pane table under the **Cryptos** tab. The default table identifies the physical channel identifier (PCHID), crypto ID, status, state, cage-slot-jack address, and crypto type. See Figure 9 on page 13.

Logical partitions: When the system is activated, the **Partitions** node contains objects that represent the logical partitions. Logical partitions are referred to also as images. An image is a set of system resources capable of running a control program or operating system.

To locate partitions:
1. In the navigation pane, expand **System Management**.
2. From the System Management node, expand the **System** node.
3. Select the **Partitions** node.

A listing of logical partitions is displayed in the work pane table under the **Partitions** tab. The default table identifies the logical partition name, status, image mode, sysplex name, operating system name, activation profile, and last used profile. See Figure 9 on page 13.

Partition resources: When the system is activated, the **Partitions** node contains objects that represent the logical partitions. Logical partitions are referred to also as images.

To locate partition resources:
1. In the navigation pane, expand **System Management**.
2. From the System Management node, expand the **System** node.
3. Select the **Partitions** node.
4. Select a partition you want to work with. The partition's defined resources display in the navigation pane below the selected partition and in the work pane table under the **Partitions** tab.

The work pane table identifies the resources defined in the partition. The resources can include CHPIDs, processors (CPs), and cryptos. See Figure 9 on page 13.

zBX BladeCenters: The node that represents the system (CPC) contains objects that represent all installed zBX BladeCenters. The **BladeCenters** node contains objects that represent the defined zBX BladeCenters.

To locate zBX BladeCenters:
1. In the navigation pane, expand **System Management**.
2. From the **System Management** node, expand the **System** node.
3. Select the **BladeCenters** node.

A listing of zBX BladeCenters is displayed in the work pane table under the **BladeCenters** tab. The table identifies the zBX BladeCenter® name, status, and description.

zBX Blades: The node that represents the system (CPC) contains objects that represent all installed and entitled zBX Blades. The **BladeCenters** node contains objects that represent the defined zBX Blades. The tasks pad displays the appropriate tasks that can be performed on a selected zBX Blade.

To locate zBX Blades:
1. In the navigation pane, expand **System Management**.
2. From the System Management node, expand the **System** node.
3. Select the **BladeCenters** node.
4. Select a **zBX BladeCenter**.

A listing of zBX Blades is displayed in the work pane table under the **Blades** tab. The default table identifies the ID, status, type, machine type/model, power usage, and location.

Virtual Servers: The node that represents the system (CPC) contains objects that represent all installed Virtual Servers. The **BladeCenters** node contains objects that represent the defined Virtual Servers.

To locate Virtual Servers:
1. In the navigation pane, expand **System Management**.
2. From the **System Management** node, expand the **System** node.
3. Expand the **BladeCenters** node.
4. Select a **zBX BladeCenter**. A listing of zBX Blades is displayed in table format in the work pane.
5. In the work pane table, expand a **zBX Blade**.

A listing of virtual servers is displayed in the work pane table under the **Virtual Servers** tab. The table identifies the virtual servers name, status, and description.

Custom groups: The **Custom Groups** node provides a mechanism for you to group system resources together in a single view. In addition, groups may be nested to create custom "topologies" of system resources.

You perform tasks on objects in a group by selecting the group in the navigation pane and clicking on the check boxes in the **Select** column of the table. To perform tasks on all of those objects, click **Select All** from the table toolbar.

For group status information, status is displayed in the **Status** column in the work pane table. Status icons are displayed appropriately. If a group has both Hardware Messages and Operating System Messages, a message overlay icon is displayed indicating that both messages exist.

User-defined groups: There may be one or more user-defined groups already defined on your support element console. You can use the **Grouping** task under the Daily category from the tasks pad to create your own group that you want to work with. This task allows you to create new groups and manage existing ones.

To create a group you can:
1. Select one or more objects that you want to include in the group.
2. Open the **Grouping** task from the **Daily** tasks pad.
   The Manage Groups window is displayed.
3. Select **Create a new group** from the Manage Group window.
4. Specify a group name and description.
5. Click **OK** to complete.
6. The new user-defined group is displayed in the navigation pane under the **Custom Groups** node.

You can also create a group by using the pattern match method:

1. Without selecting an object you can open the **Grouping** task from the Custom Groups, System Management tasks pad, or Tasks Index.
2. From the **Create Pattern Match Group** window:
   - Select one or mode group types that you want to create.
   - Specify a group name, description, and the pattern used to determine if an object should be part of the group.
   - Click **OK** to complete.
3. The new user-defined group is displayed in the navigation pane under the **Custom Groups** node.

Note: Patterns specified in the **Managed Resource Pattern** input field are regular expressions. For example, if you specified **abc.***, all the resources that begin with **abc** will be included in that group.

Use the online help for more information on grouping.

Opening task for the System

After you have selected the system or the system object to work with, you are ready to perform tasks on them. The following task categories (groups) are applicable to the system displayed in the tasks pad. Task categories (groups) represent categories of tasks and not tasks themselves. The available task group depends on the object selected from the navigation pane (System, Processors, Channels, Cryptos, Partitions). The following is the task groups that may be available for the system.

- Daily
- CPC Recovery
- Service
- Change Management
- CPC Remote Customization
- CPC Operational Customization
- CPC Configuration
- CHPID Operations
- Channel Operations
- Crypto Service Operations.
- Energy Management
- Monitor

You can select a task from these task groups in a variety of ways.

- Use the tasks pad below the systems work pane (see "Tasks pad")
- Click the context menu icon that appears next to the server name (see "Context menus" on page 18)
- Click the **Tasks** menu from the work pane table toolbar (see "Tasks menu" on page 31).
- Right-click in the cell containing the name of the object to display the context menu.

Note: If a particular task cannot be performed on an object, the task is not displayed.

Tasks pad

The tasks pad is displayed below the work pane table after you have selected the managed objects to work with.

Figure 10 on page 17 shows an example of tasks in the tasks pad that are available for the selected managed objects and applicable for the current user.

By default, the task pad is displayed. You can choose to hide the tasks pad by using the **User Settings** task.

To change the display of the tasks pad setting you can go to the **User Settings** task by selecting:

- **Task Index** or **SE Management** on the navigation pane, then open the **User Settings** task, or
- The user ID from the task bar to access the **User Settings** task to change the setting, or

- The **Close Tasks Pad** icon from the right side of the tasks pad title bar.

Note: To reset a closed tasks pad you must use the **User Settings** task.

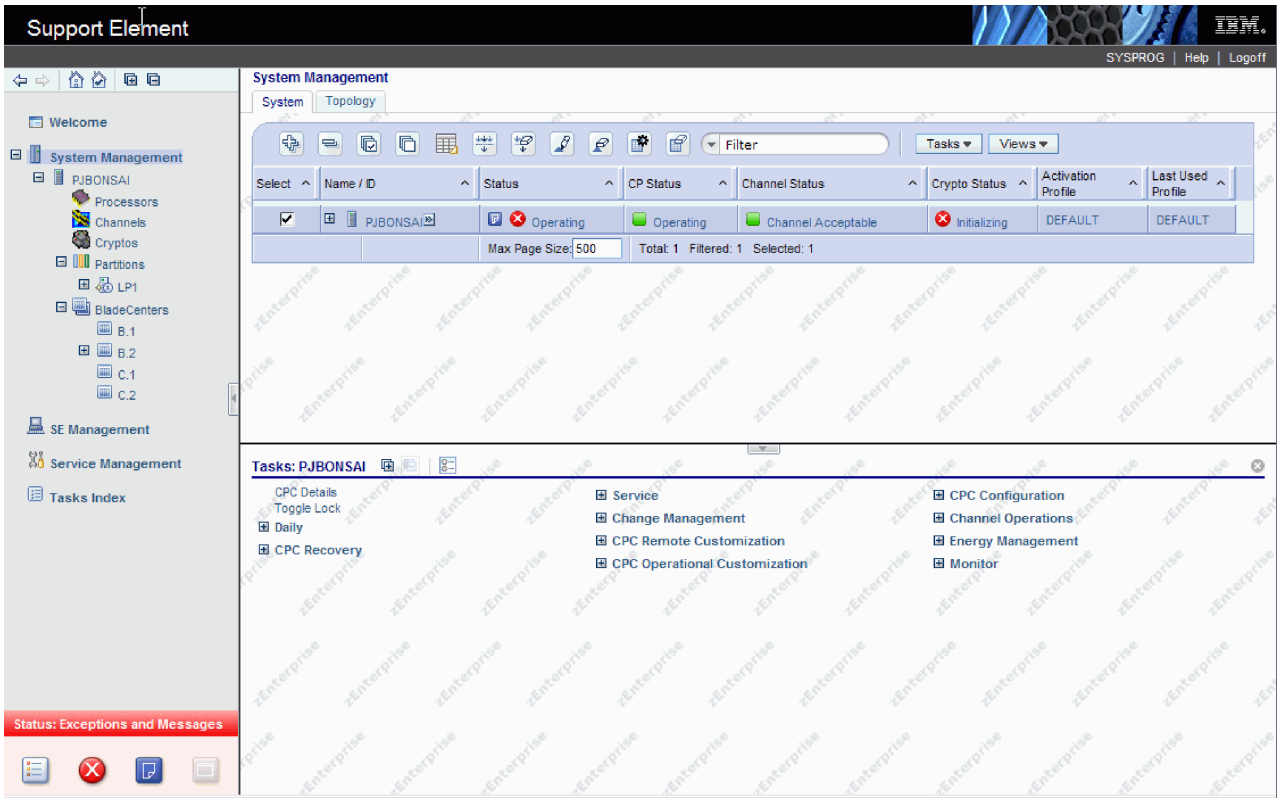


Figure 10. Tasks pad

Additional characteristics of using the tasks pad include:

- Resize the tasks pad by moving the mouse pointer over the border that separates the work pane table from the tasks pad.
- Use the collapse and expand controls icon that is provided on the border between the tasks pad and the work pane. You can click on these controls to collapse or expand the tasks pad allowing you more work area in the work pane, if required. Hovering over these controls indicates whether you will be hiding or displaying the tasks pad.
- Expand or collapse all the task groups in the tasks pad by selecting the **Expand All** icon or the **Collapse All** icon from the tasks pad title bar.
- Organize the tasks pad display by using the **Settings** icon from the tasks pad title bar. This option allows you to arrange the displayed tasks in a viewing format you prefer and in addition:
  - **Number of task columns** - Using the up and down arrows, select the number of columns you want displayed for the list of tasks.
  - **Expand task groups by default** - The task groups are expanded to display applicable tasks.
  - **Sort tasks alphabetically** - The tasks from all the task groups are sorted alphabetically.
  - **Position tasks pad vertically** - The tasks pad is rendered to the right of the work pane's table frame (see Figure 11 on page 18 for an example).

    Note: When the tasks pad displays vertically the column count is not available.

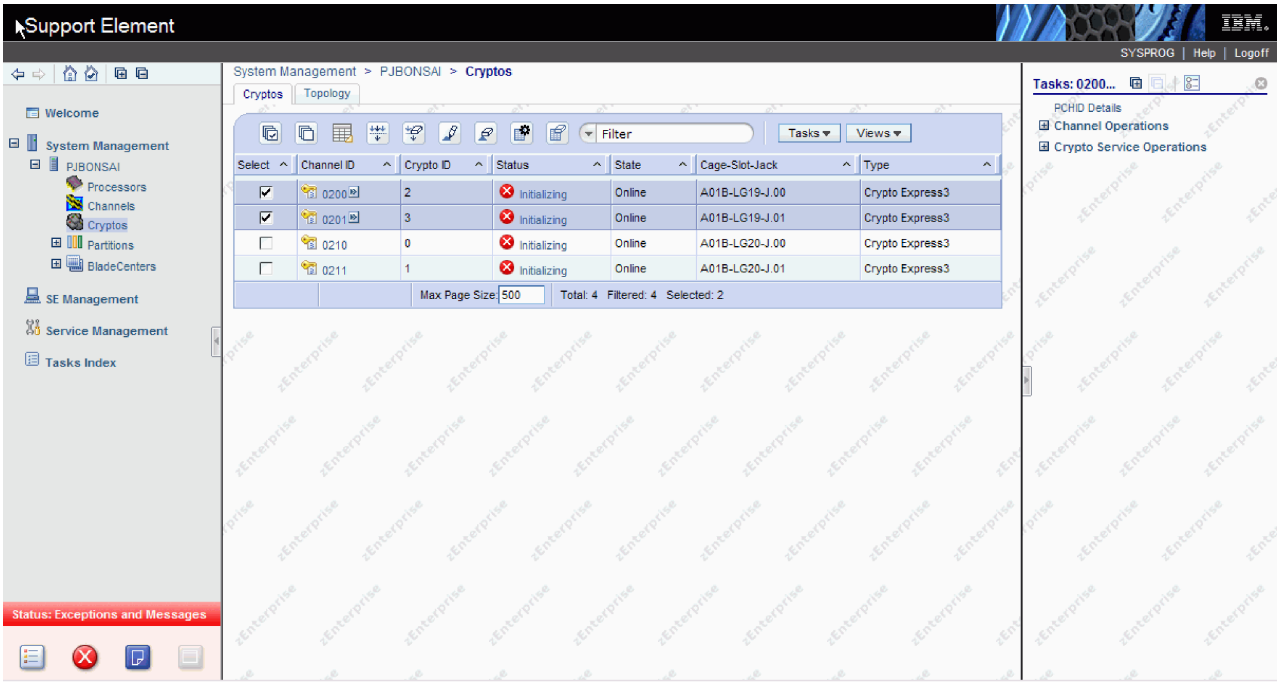


Figure 11. Vertical tasks pad

Figure 11 displays the objects you selected from either the navigation pane tree or the work pane table view. Multiple objects are selected in the work pane table, therefore, the intersection of the selected objects' tasks are displayed.

If there are no objects selected in the work pane table, tasks are displayed in the tasks pad for the object selected in the navigation pane. Additionally, the tasks that display in the tasks pad are those available to the user currently logged in.

An example of using the tasks pad method:

- Select the system in the work pane table (click in the **Select** column).
- Select a task group from the tasks pad (click in the expand button or click the group name).

  Note: After you have expanded the task groups those groups remain open so that you can repeatedly open other tasks without having to reopen the task groups.
- From the task group, select the task that you want to perform.
- The initial task window is displayed.

Context menus

The context menu is a pop-up menu that lists the task groups associated with the selected object or objects. Context menus are only available for table selections. For example:

- Select the object or objects you want to work with in the **Select** column of the system work pane table. The context menu button (double right arrows) is displayed next to the object name you have selected.
- Click the button and the task groups menu is displayed for that particular object, as shown in Figure 12 on page 19.
- You can also right click within the table cell of the object name to display the context menu.
- Select a task to open for the object. If more than one object is selected, the tasks that are displayed in the context menu apply to all selections.

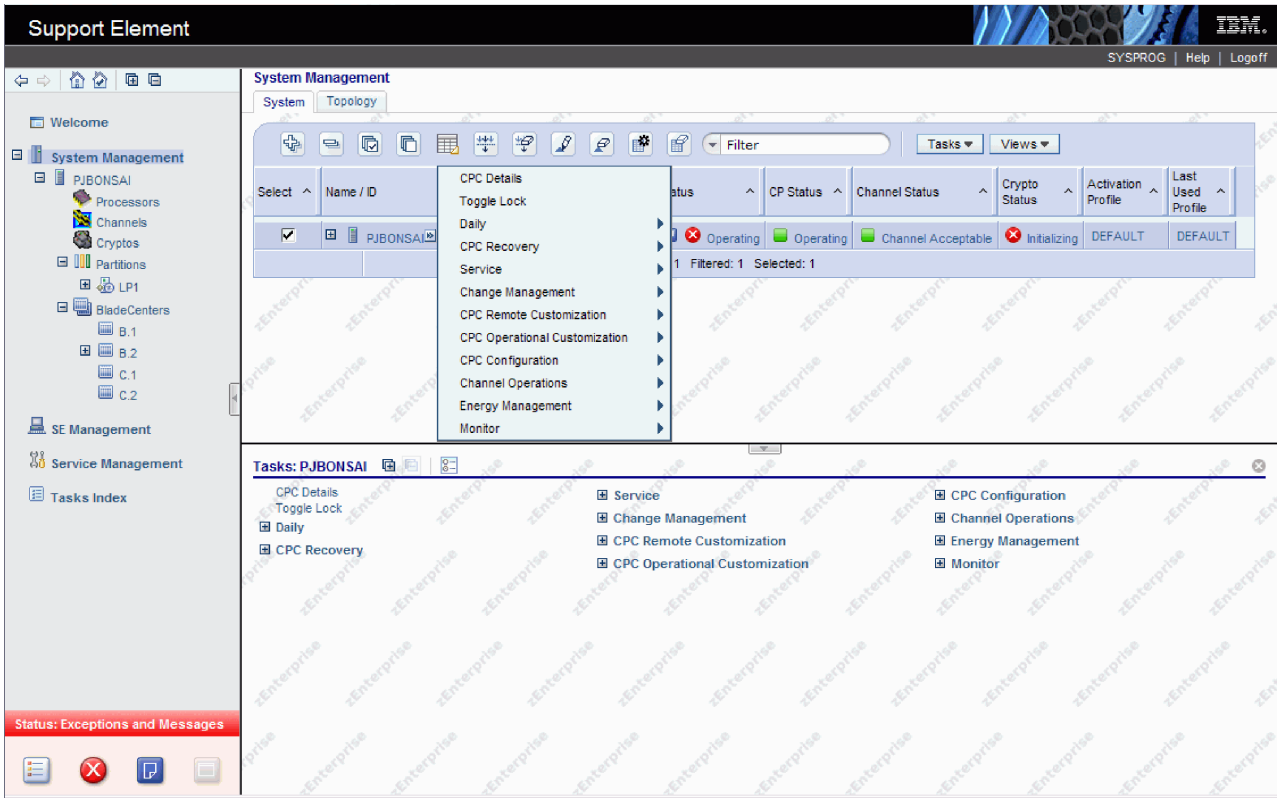


Figure 12. Context menu

Task menu

The **Tasks** menu is displayed on the work pane table toolbar, as shown in the following figure. The tasks menu is only available for table selections. For example, in the **Select** column of the system work pane table, select the object you want to work with. Click **Tasks** for the list of the applicable task groups for the selected objects in the table. Select a task group, then select a task to open for the object. If more than one object is selected, the tasks that are displayed in the tasks menu apply to all selections.

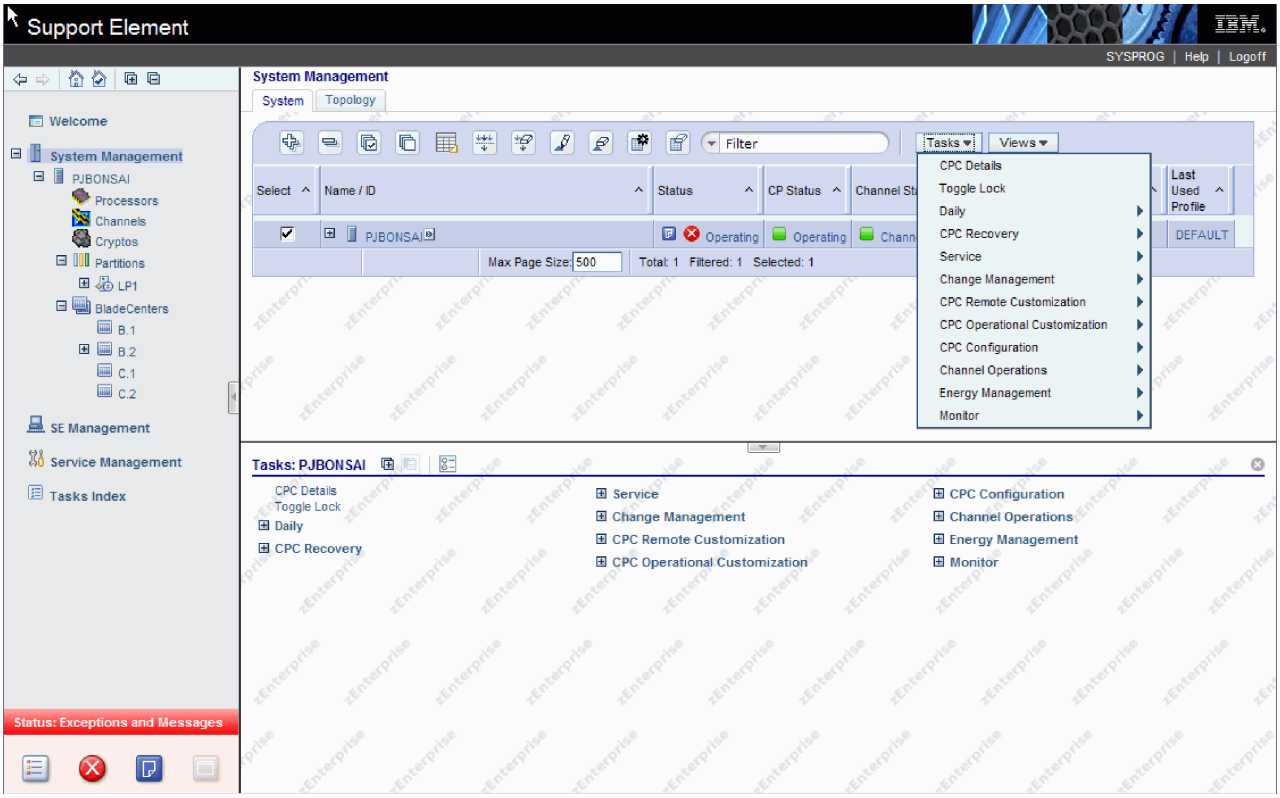


Figure 13. Drop-down menu

Status

The **Status** column of the system work pane table displays the current status of the object. If you select the status text, the help information for that status is displayed. Status icons can also be displayed in the status column next to the status text. Depending on the icon that is displayed, you can get the Hardware Messages task window or the Operating Systems Messages task window. You can see a sample of the status icons in the **Status** column in Figure 13.

Displaying an object's details

All object details can be displayed by using one of the following methods:

- Click on the object name from the work pane table.
- Select the object name from the work pane table then:
  - Click object's **Details** from the tasks pad, or
  - Click the arrow icon next to the object name, then click the objects's **Details** from the context menu, or
  - Right-click in the object name table cell, then click the object's **Details** from the context menu.

In all cases, the object's **Details** window is displayed. See Figure 14 on page 21 for an example of a CPC Details window.

Note: If displaying zBX Blade details for a selected IBM WebSphere® DataPower® Integration Appliance XI50 for zEnterprise (DataPower XI50z) blade, the **Virtual Network Interfaces** tab displays. You can view the details of an existing interface.

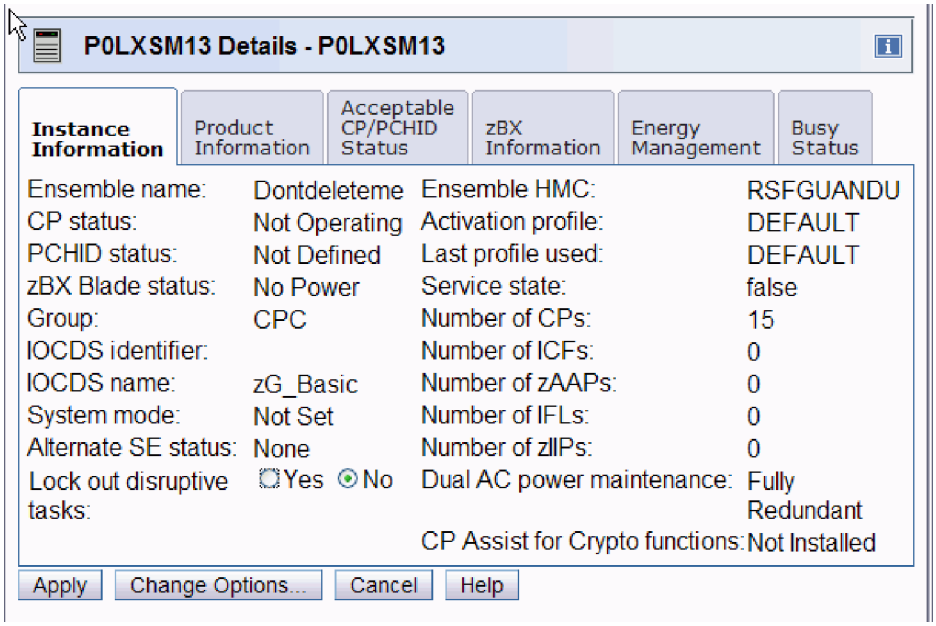


Figure 14. CPC details window

Note: The zBX Information tab is only available when the zBX feature is available for the specified server.

While you are in the object's Details window, you can also lock out disruptive tasks, as described in "Object locking for disruptive tasks" on page 41, or by clicking on **Toggle Lock** in the tasks pad or from the context menu.

When selecting details for channels or cryptos, the **Advanced Facilities...** and **Channel Problem Determination...** buttons display to provide a link to the **Advanced Facilities** and **Channel Problem Determination** tasks for additional information on the selected channel or crypto.

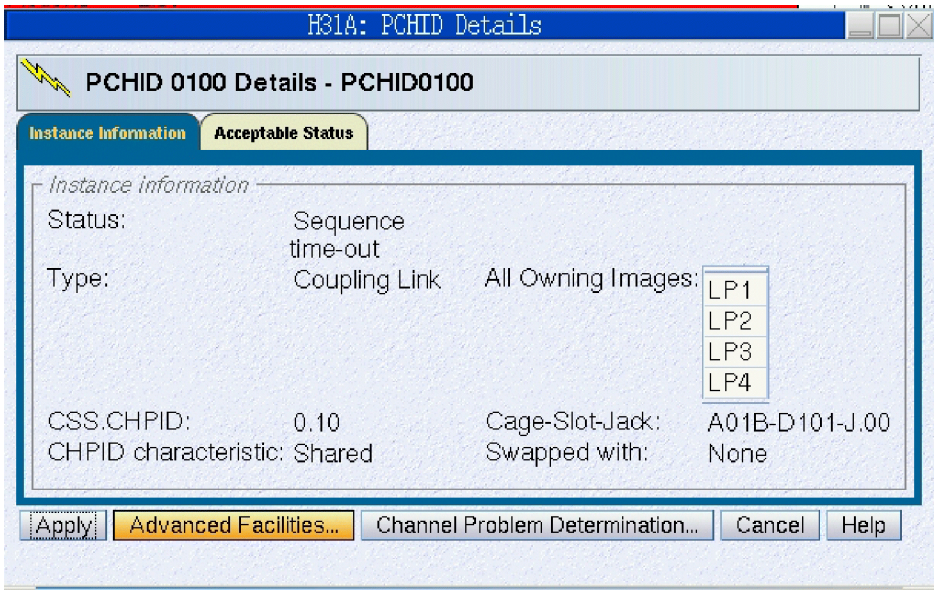


Figure 15. Channels details window

When selecting details for CHPIDs, the **Channel Problem Determination** button displays to provide a link to the **Channel Problem Determination** task for additional information on the selected CHPID.

The object's work pane table includes additional information about the objects. You can use the **Views** menu to customize the information that is displayed in the work pane table (see "Views menu" on page 31 for more information).

SE Management

SE Management allows you to perform tasks associated with the management of this console. When you select **SE Management** from the navigation pane the work pane contains a view of the Support Element console tasks and their descriptions. These tasks are used for setting up the Support Element console, maintaining its internal code, and securing the Support Element console. Most likely, you will not use these actions on a regular basis.

To see what level of the Support Element console you are currently working with, point your mouse over **SE Version** found at the top of the work pane.

To display the tasks in the work pane:
1. Select the **SE Management** node in the navigation pane.
2. By default, a categorized listing of the tasks is displayed. The tasks are arranged in groups which include:
   - Security
   - Configuration.
3. From the work pane, click on the task you want to perform.

If you want an alphabetical listing of the tasks, go to the **View** drop-down menu in the upper right corner of the work pane, and click **Alphabetical**. Click **Categorized** to go back to the task groups.

In addition, for each of the **Alphabetical** and **Categorized** views you can also choose:
- **Detail** displays the tasks in the original tree style user interface style with a small task icon followed by the task name and description in two columns.
- **Icon** displays large task icons above the task name, similar to the classic style user interface task display.
- **Tile** displays tasks using large icons followed by task names and descriptions to help you find tasks by icon while still providing task descriptions.

See Figure 16 on page 23 for an example of an alphabetical sort of the SE management tasks using the icon style.

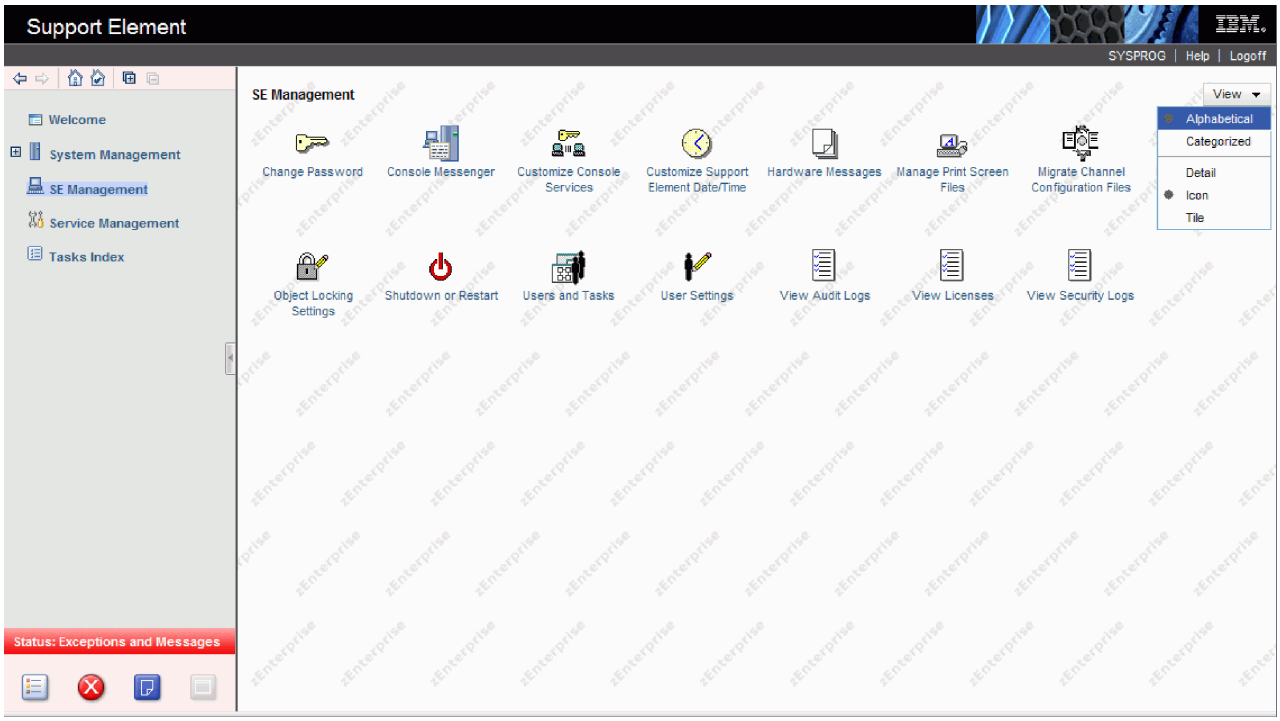


Figure 16. Tasks using an alphabetical sort with icon style

Service Management

Service Management allows you to perform tasks associated with servicing this console. When you select **Service Management** from the navigation pane the work pane contains a view of the service management tasks and their descriptions. These tasks are used to service the Support Element console and maintain its internal code.

To see what level of the Support Element console you are currently working with, point your mouse over **SE Version** found at the top of the work pane.

To display the tasks in the work pane:

1. Select the **Service Management** node in the navigation pane.
2. By default, a categorized listing of the tasks is displayed. The tasks are arranged in groups which include:
   - Console Logs
3. From the work pane, click on the task you want to perform.

If you want an alphabetical listing of the tasks, go to the **View** drop-down menu in the upper right corner of the work pane, and click **Alphabetical**. Click **Categorized** to go back to the task groups.

In addition, for each of the **Alphabetical** and **Categorized** views you can also choose:

- **Detail** displays the tasks in the original tree style user interface style with a small task icon followed by the task name and description in two columns.

- **Icon** displays large task icons above the task name, similar to the classic style user interface task display.
- **Tile** displays tasks using large icons next to each task's name and description to help you find tasks by icon while still providing task descriptions.

See the following figure for an example of a categorized view of the service management tasks using the tile style.

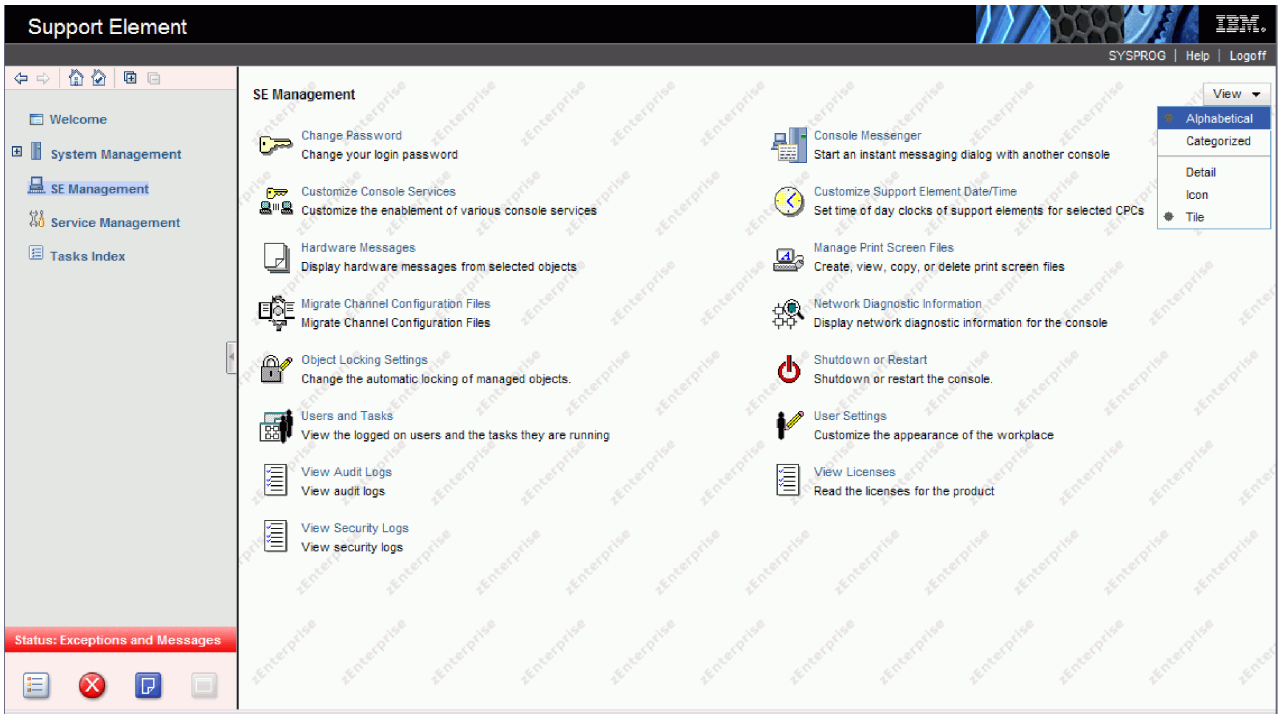


Figure 17. Tasks using a categorized sort with tile style

Tasks Index

Tasks Index allows you to select and perform a task them from the list. When you select **Tasks Index** from the navigation pane the work pane contains an alphabetical listing of the tasks available for the user ID you are logged in as. You can open these tasks by clicking on the task name from the table. The table includes the following information:

Name Names the task. The icon associated with the task can be hidden by disabling the work pane icons from the **User Settings** task.

Permitted Objects

Lists the category of objects that the task may be targeted to run against. The **SE Management** and **Service Management** tasks require no targets, therefore permitted objects are not specified.

You can filter on this column to display only the tasks permitted by particular objects. For example, if you want to display only the tasks that are acceptable on a partition, you can do the following:

1. Select the **Show Filter Row** icon. The filter row is displayed.
2. Click **Filter** that is located under **Permitted Objects**. The **Item** drop-down is displayed.

3. Click the drop-down arrow and select **Partitions**. Click **OK** to continue. A list of all tasks that apply to partitions is displayed.

Count Displays the number of times the task was opened by the current user.

Description
Describes the task.

Notes:

- If a task (for example, Activate) is applicable to one or more targeted objects, a secondary window is displayed for target selection.
- The **SE Management** and **Service Management** tasks are opened without prompting for targets.
- Each time you open a task, the count increments by one. The values in the **Count** column can be reset back to zero by clicking **Tasks** from the work pane table toolbar, then selecting **Reset Task Launch Count**).
- You can use the work pane table toolbar icons for selecting, filtering, sorting, and arranging the information in the table. See "Work pane table toolbar" on page 29 for more detailed information about using the icons and the quick filter function.

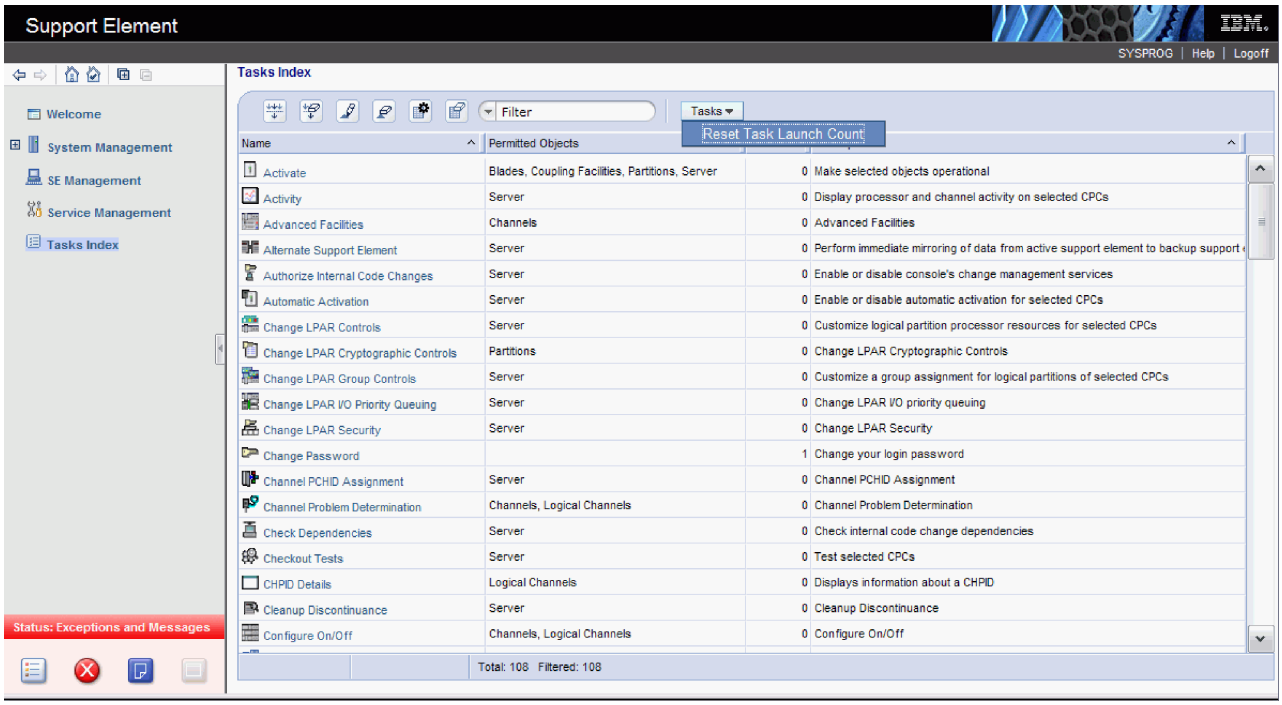


Figure 18. Tasks index

Work pane

The work pane displays information based on the current selection from the navigation pane, resource tabs, or status bar. The work pane described in this section discusses the functions of a **System Management** work pane.

Selecting an object from the navigation pane displays a resources (configurable) table in the work pane as shown in Figure 19 on page 26. This figure identifies some of the areas of the configurable table.

Note: You can click on the name of an object in the work pane table to display the **Details** window.

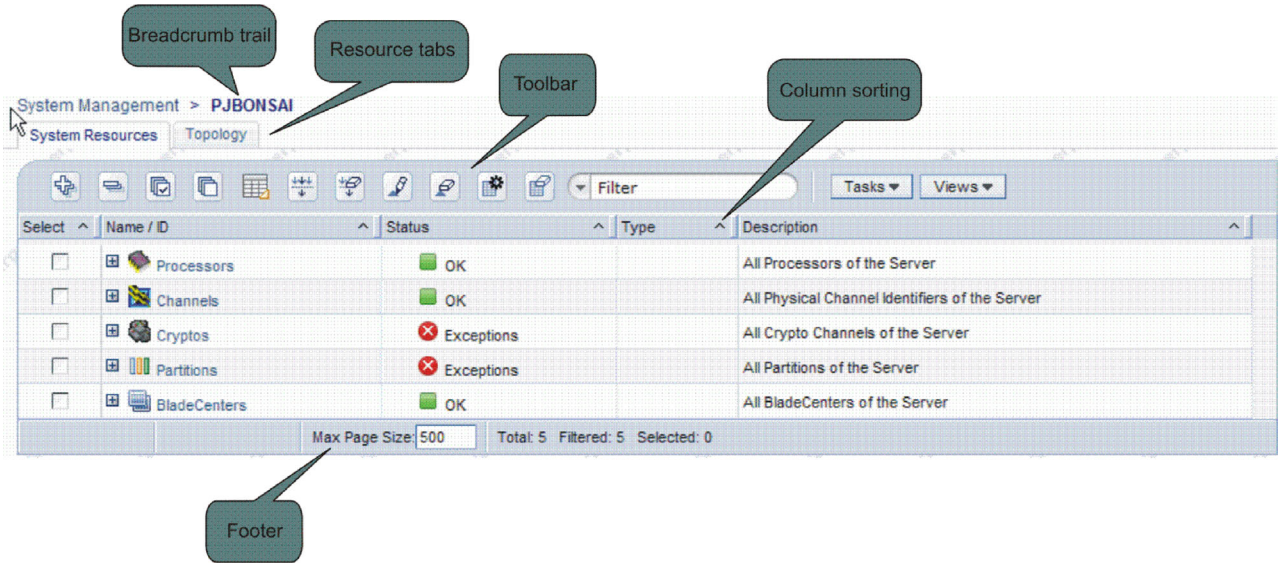


Figure 19. Work pane table features

Work pane table

The information that is displayed in the work pane table allows you to view an object and its children in the same table, including its hierarchical relationships. Initially, all the objects of the navigation pane display a default predefined table view. These tables provide sorting, filtering, and column configuration of the data and allow for customization of which managed objects are displayed in which order. See "Work pane table toolbar" on page 29 for customization of the managed objects.

If an object in the **Name** column contains additional objects, an icon to expand (**+**) or collapse (**-**) the item is located before the object name. This allows you to view all the additional objects within the object. You can continue to perform tasks on the expanded objects. As you place the cursor over the icon, help information is displayed. This information describes the function of the icon. If you have been sorting or filtering in the work pane table, the help information indicates that you are unable to expand the object.

The columns that are displayed by the standard table views are the columns common to the selected object and its children. For example, if you select a system from the navigation pane the columns common for the processors, channels, cryptos, and partitions default views are displayed.

You can customize these tables using the **Manage Views** option from the **Views** menu, see "Creating a custom work pane table view" on page 27.

For an example of the work pane table, see Figure 20 on page 27.

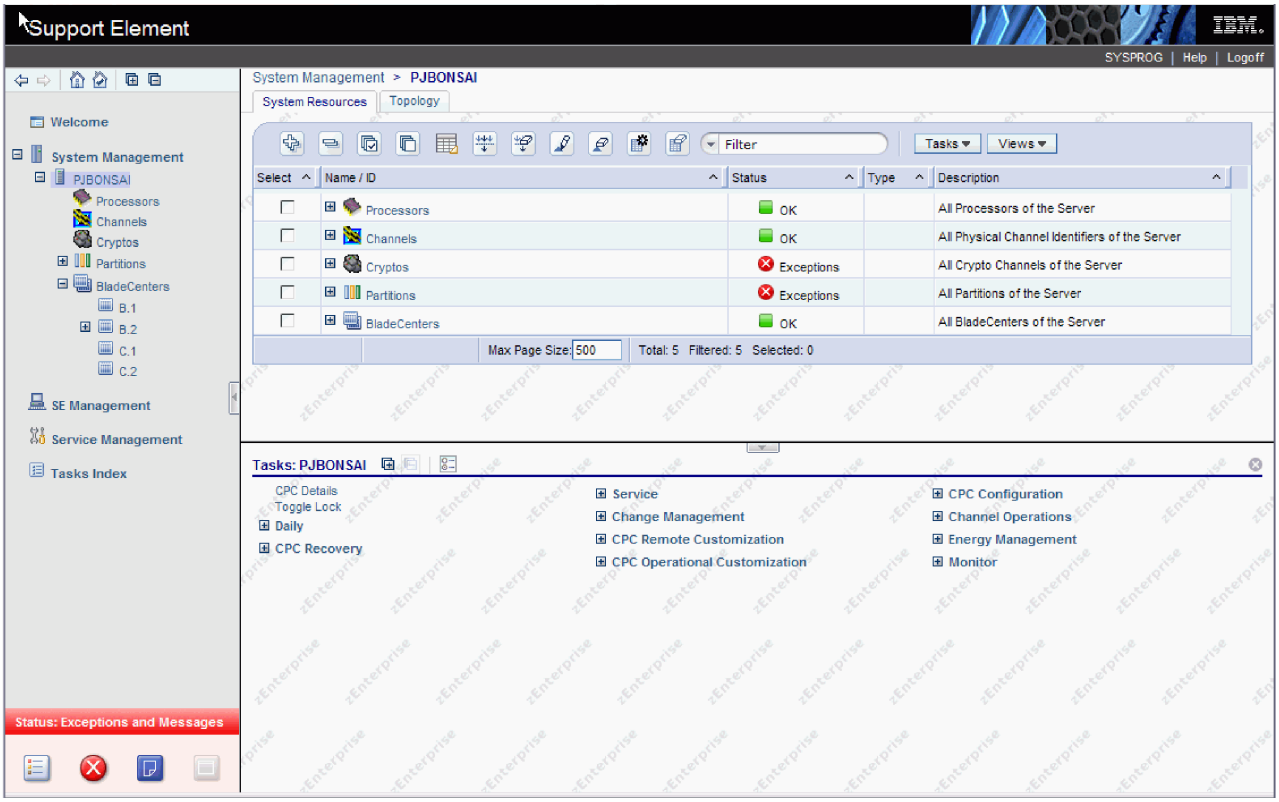


Figure 20. Systems management work pane table

You can also reorder the columns of the work pane table by using the drag and drop method:

1. Place the cursor on the heading of the column you want to move. You will see the cursor change to a cross hair indicating it can be moved.

   Note: The **Select** and **Name** columns are the only columns that cannot be moved.
2. Hold down the left mouse button and drag the column to the desired placement in the table. You cannot drag a column past the **Name** column.
3. The column settings are saved for you. If you want to go back to the original column settings, click the **Reset Column Order, Visibility, and Widths** icon.

Creating a custom work pane table view

The columns that are available when you create customized views are an aggregate of its default table columns and the default table columns of all children. You can create your own user defined column sets by selecting the **Manage Views** option from the **Views** menu.

Note: The settings that you define within the tree style user interface are saved when you log off the Support Element.

If you are creating a new table view for the first time, perform the following steps:

1. Select the **Manage Views** option from the toolbar's **Views** menu.
2. Click **New** from the **Manage Views Dialog** that is located above the resources table.
3. You can specify a unique name for your custom view in the **View Name**: input field (see Figure 21 on page 28).
4. Select the items from the **Configure columns:** list you want included in your view. Use the arrows to manage the order of the columns. Note that **Name** cannot be moved or hidden in the column configuration.

5. Click **OK** when you have completed the customization of your view. The new table view that you created is displayed when you select the **Views** menu.

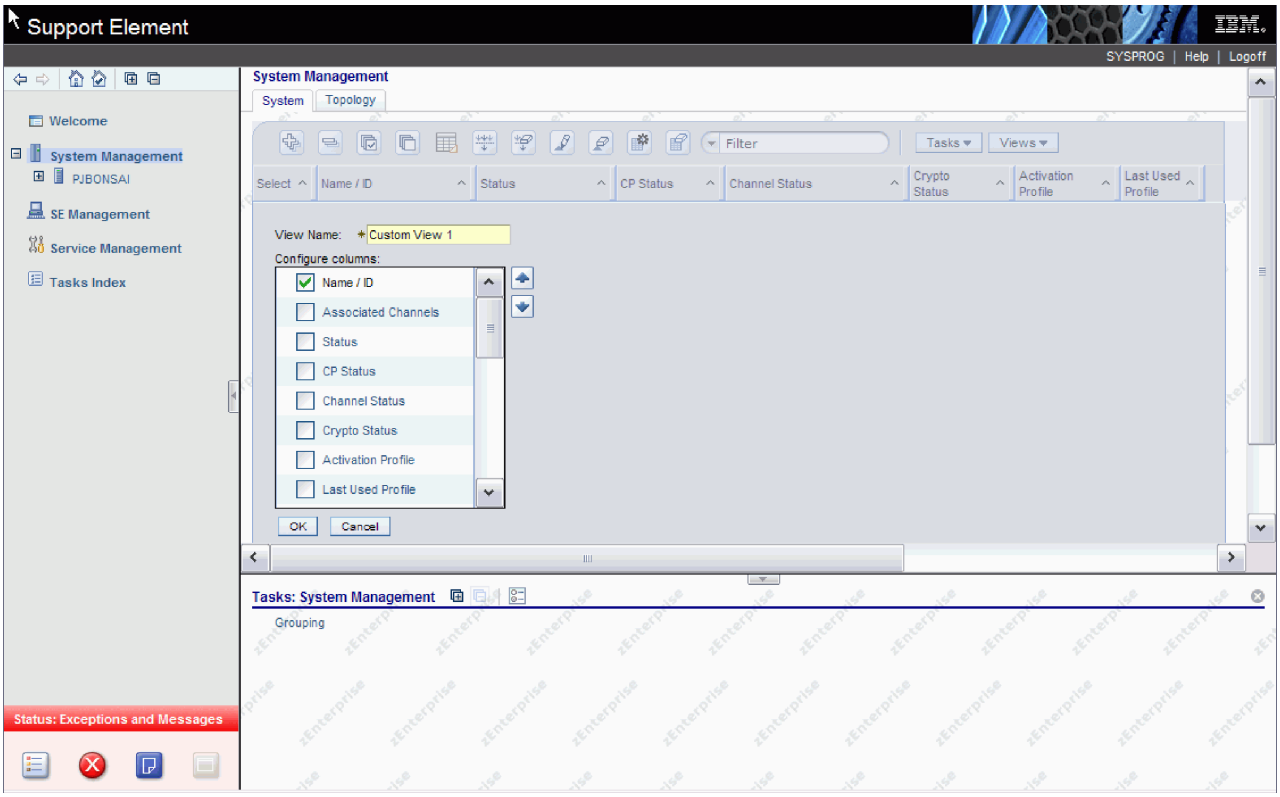


Figure 21. Custom table view

Renaming a custom work pane table view

To rename a work pane table view, perform the following steps:

1. Select the **Manage Views** option from the toolbar's **Views** menu.
2. Select the custom table view name that you want to rename from the **Custom Table Views** list.
3. Click **Rename** in the **Manage Views Dialog**.
4. Specify a unique name for the selected custom table view name.
5. Click **OK** to save your new custom table view name.
6. The new name is displayed in the **View** menu.

Deleting a custom work pane table view

To delete a work pane table view, perform the following steps:

1. Select the **Manage Views** option from the toolbar's **Views** menu.
2. Select the custom table view name that you want to delete from the **Custom Table Views** list.
3. Click **Delete** in the **Manage Views Dialog**.
4. If a confirmation panel is displayed, click **OK** to confirm the deletion.
5. The selected name is not displayed in the **Views** menu.

Changing a custom work pane table view

The columns that are available when you create customized views are an aggregate of its default table columns and the default table columns of all children. To load the selected custom view and configure the columns in the table view, perform the following steps:

1. Select the **Manage Views** option from the toolbar's **Views** menu.
2. Select the custom table view name that you want to configure from the **Custom Table Views** list.
3. Click **Configure** in the **Manage Views Dialog**.
4. Change column selections and column order.

5. Click **OK** to save your changes.
6. The table is displayed as specified by your selections.

Work pane title and breadcrumb trail

The work pane title is displayed directly above the work pane table resource tabs. It identifies the System Management group. Once you begin drilling down to more specific objects from the navigation pane, a breadcrumb trail is displayed on the work pane title line. These breadcrumbs identify the navigation path that led you to the current work pane resources table. You can use the links from the navigation path to go to the previous pages. The resource tabs that are displayed in the work pane depends on the resource selected from the navigation pane.

Work pane table footer

The table footer located at the bottom of the work pane table includes information about the number of pages of information included for the displayed table. It also displays additional summary information such as the number of items selected in the work pane table, filtered total, or the row count of the number of rows displayed in the current page. shows an example of this information.

You can change the number of items you want displayed on each page of the table by specifying a number in the **Max Page Size** input field, then press Enter. If more than one page of information is available, a page count is displayed and you have the ability to go to a page directly by specifying a page number in the entry field, then press Enter.

Work pane table toolbar

The toolbar at the top of the System Management work pane table contains icons used to expand, collapse, export, select, filter, sort, and arrange the entries in the resources table. Hovering over the toolbar buttons displays their functions. The toolbar also includes **Tasks** and **Views** menus that can be used with the information displayed in the resources tables.

Expanding and collapsing resources

The **Expand All** icon allows you to list all the resource groups. The **Collapse All** icon allows you to collapse all the resource groups. These icons work on all those objects that have additional objects associated with them in the table.

Note: These icons are disabled if you are sorting, filtering, or quick filtering. In addition, the table hierarchy is removed.

Selecting rows

You can select more than one table row at any given time. Rows can be individually selected or a block of rows can be selected at once by first left-clicking the selection box of the first row in the desired block and then shift-clicking the selection box of the last row in the desired block. Click **Select All** or **Deselect All** to select or deselect all objects in the table. The table summary at the bottom of the table (work pane table footer) includes the total number of items that are selected. To set the object selection use the **User Settings** task.

Export data

The **Export Data** icon allows for table data to be downloaded in a Comma Separated Values (CSV) file. This downloaded CSV file can then be imported into most spreadsheet applications.

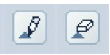
Note: This function is available only when you are accessing the Support Element console remotely.

Filtering

If you click **Show Filter Row**, a row is located under the title row of the table. Click **Filter** under a column heading to limit the entries in a table. You can filter tables to show only those entries most important to you. You can toggle the filtered view on and off by selecting the check box next to the desired filter in the filter row. Click **Clear all Filters** to return to the complete listing. The table summary includes the total number of items that pass the filter criteria and the total number of items.

Note: When you are filtering within the work pane table the objects cannot be expanded.

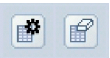
Sorting



Edit Sort and **Clear All Sorts** perform multicolumn sorts of objects in the table in ascending or descending order. Click **Edit Sort** to define sorts for columns in a table. Alternatively, you can be perform single column sorting by selecting the ^ in the column header to change from ascending to descending order. Click **Clear All Sorts** to return to the default ordering.

Note: When you are sorting within the work pane table the objects cannot be expanded.

Column configuration



Use the column configuration buttons to manage the columns displayed in the System Management tree view. Click **Configure Columns** to arrange the columns in the table in the order you want or to hide columns from view. All available columns are listed in the Columns list by their column names. You select the columns you want displayed or hidden by selecting or clearing the box next to the column names. Manipulate the column order by selecting a column name in the list box and clicking the arrow buttons to the right of the list to change the order of the selected columns. When you have completed the configuration of the columns, click **OK**. The columns are displayed in the table as you specified. If you want to go back to the original layout of the table, click **Reset Column Order, Visibility, and Widths** on the table toolbar. Select one or more of the properties to reset to their original layout, and click **OK**.

Quick filter

Use the quick filter function to enter a filter string in the Filter input field, and then press **Enter** to apply the filter. By default, all the columns are filtered, showing only rows containing a cell whose value includes the filter text. Clicking the arrow displays a menu that restricts the columns to which the filter is applied.

Note: When you are sorting or filtering within the work pane table the objects cannot be expanded.

Tasks menu

The **Tasks** menu is displayed on the work pane table toolbar and is only available for table selections when working with managed objects and custom groups. See “Task menu” on page 19 for more information.

Views menu

The **Views** menu is displayed on the work pane table toolbar when working with managed objects and custom groups. This menu allows you to display different sets of attributes (columns) in the table. Figure 22 shows an example of the **Views** options when you are working with the system.

For information on defining your own table view, see “Creating a custom work pane table view” on page 27.

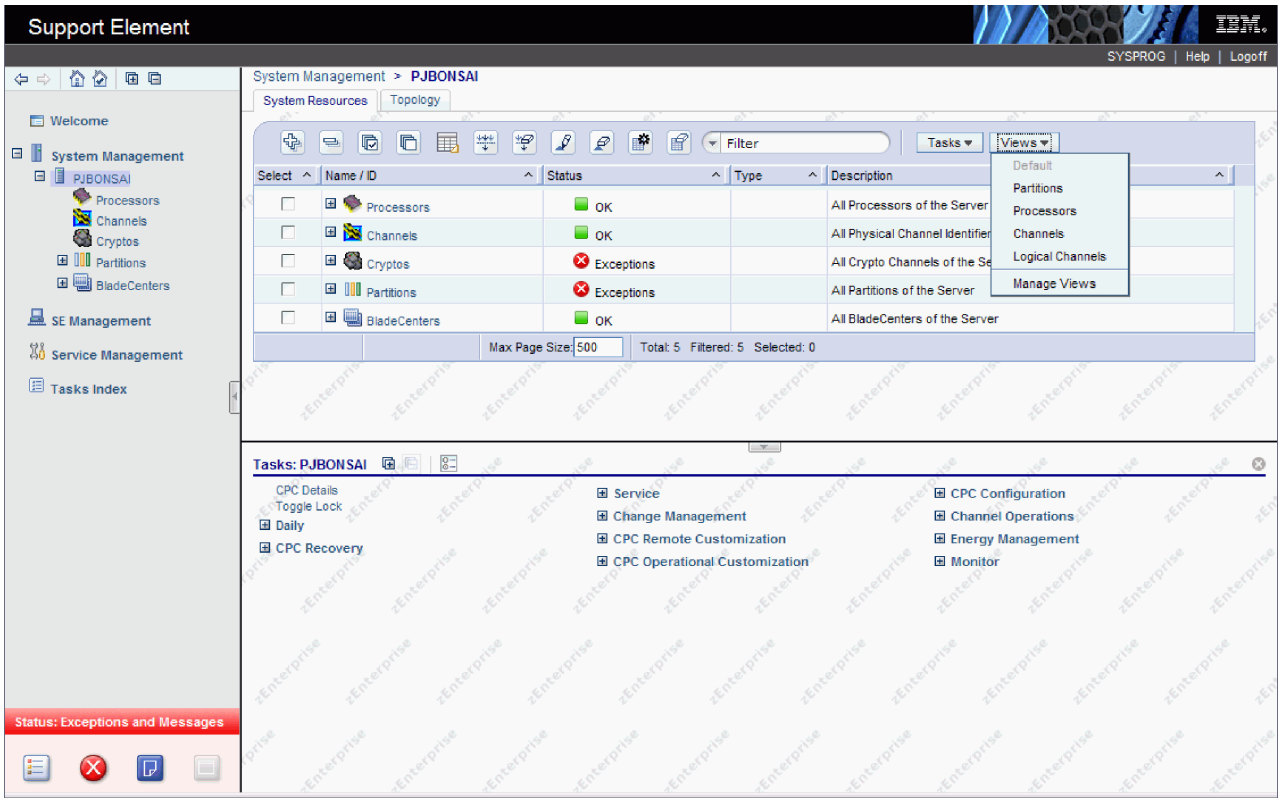


Figure 22. The system views menu

Topology

The information that is displayed from the **Topology** tab is a graphical relationship-based view of the objects. It is composed of the Toolbar, Framed image, and Support areas, some of which are identified in Figure 23 on page 32.

Note: When an object's status changes or new objects have been added or removed, the image is updated and the new content automatically fits in the current work pane area.

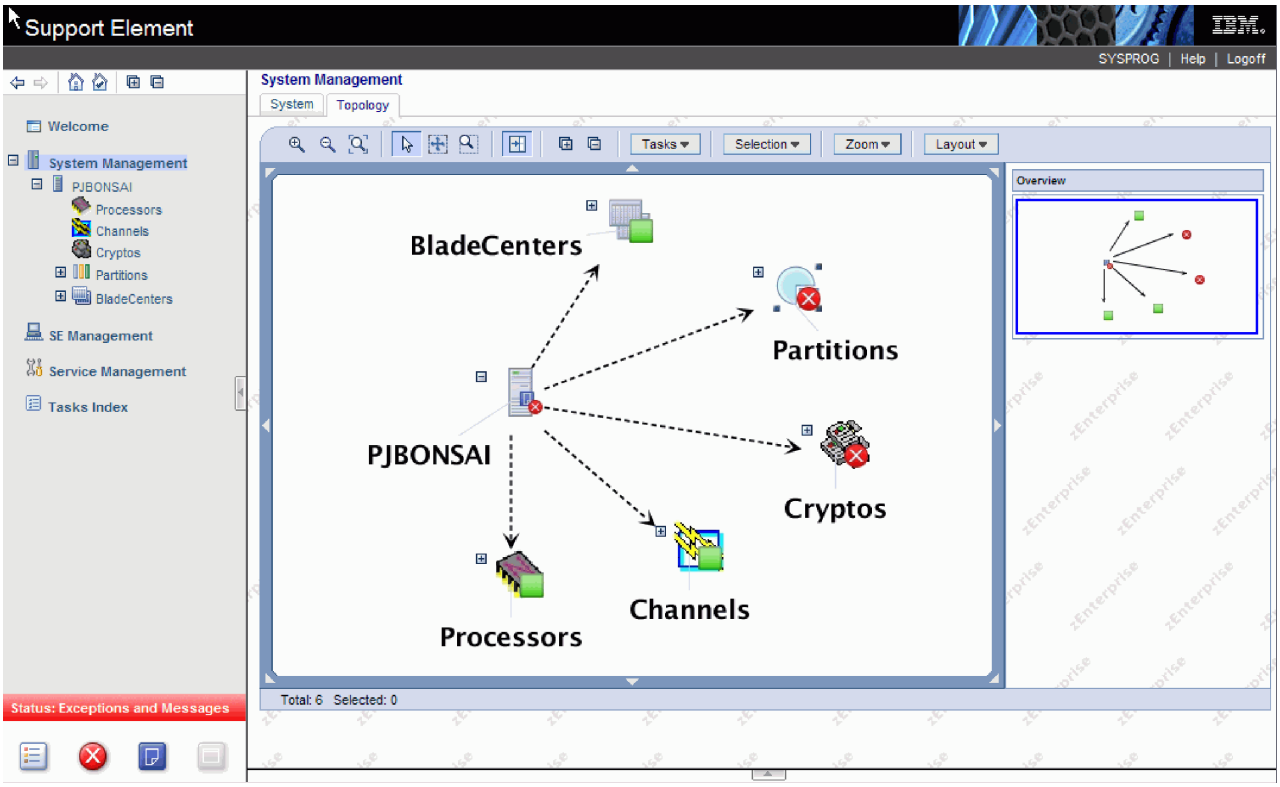


Figure 23. Topology view features

Toolbar

This area of the topology work pane consists of several icons and drop-down menus for controlling the appearance and actions of the topology view. You can mouse over the toolbar icons for short descriptions of the respective actions.

The toolbar icons are divided into the following groups:

- Content zoom and fit control - used for enlarging and shrinking the images and automatically fitting the image content within the work pane area:
  - **Zoom In**
  - **Zoom Out**
  - **Fit Contents to Viewport**
- Mouse modes - controls the function of the mouse.
  - **Select Mouse Mode** (default) - clicking on an object causes its selection to be toggled.
    - When a node is selected, the tasks context menu icon is displayed and the tasks in the **Tasks** menu are also updated.
    - When multiple selection is enabled, press (Ctrl +) left mouse button to select multiple nodes. Left clicking in a blank area of the work pane area deselects all selected nodes.
  - **Pan Mouse Mode** - scroll the objects in the frame up, down, left, or right using direct manipulation. After you release the mouse button, the mouse mode is automatically changed back to the selection mode.
  - **Zoom Mouse Mode** - creates a viewport to zoom into. The mouse is used to select a rectangular area (a blue box is displayed to indicate the area) as part of the image frame to zoom into. The objects in the area are enlarged. After you release the mouse button, the mouse mode is automatically changed back to the selection mode.

- Toggle Support Area Visibility icon - toggles the visibility of the support area, which displays the image Overview (see Figure 23 on page 32).
- Expand All / Collapse All icons - expand (display) or collapse (hide) the children of all objects.

The drop-down menus include:

- **Tasks** - when one or more objects are selected the tasks available for the objects are displayed. These same tasks are displayed in the context menu and tasks pad.
- **Selection** - allows you to select all the objects, deselect all the objects, or invert selection.
- **Zoom** - allows you to change the content size:
  Fit Content
  Automatically fits the objects in the framed image area.
  50% Size of each object is displayed as half its actual size.
  100% Size of each object is displayed as the actual size.
  200% Size of each object is displayed as twice the actual size.
- **Layout** - allows you to select the preferred object layout:
  Rerun Current
  Redraws the image using the current layout.
  Tree Displays objects in a hierarchical tree format.
  Hierarchical
  Arranges the nodes so that the majority of links are short and flow uniformly in the same direction.
  Circular
  Objects are automatically grouped into either a ring or star topology.
  Uniform length
  Searches for a configuration of the graph where the length of the links are the same.
  Grid Objects are placed into a grid.

Framed image

This area displays graphical representations of managed objects. Each object is represented with a graphic which displays the object's name, its status, its tasks (in a context menu), and an expand/collapse button if it has children. Note some of the following characteristics as you work in the framed image:

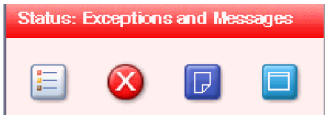
- If an object is selected, the label uses black font color and blue background color, the background of the object icon also turns blue.
- The status icon overlay is a combination of the system status icon, hardware messages icon, and the operating system messages icon.
- If an object is locked, the lock icon is displayed.
- If an object is busy, the busy icon is displayed.
- Click on a frame segment to redraw the image that has been panned in the associated direction.
- Click the right mouse button in an empty area of the images frame to display a context menu with the following additional options (similar to the Toolbar functions):
  - **Collapse All**
  - **Expand All**
  - **Selection**
  - **Zoom**
  - **Layout**
  - **Center here** - centers you on the current mouse position.
  - **Move here** - moves the selected object into the current mouse position (this option displays only when exactly one object is selected).
- Click the right mouse button or click the double arrow icon on a selected object to display a context menu with the following additional options:
  - **Zoom To** - zooms into the object in the center of the viewer display area.
  - **Center here** - centers you on this object.
  - **Expand** - expands the object by displaying any children if an object is collapsed.

– **Collapse** - collapses the object by hiding its children if an object is expanded.

Support

This optional area (click **Toggle Support Area Visibility** icon on the toolbar) is used to display a high level view of the topology of the entire system configuration with only the status of managed resources represented. Moving the rectangle changes what is displayed in greater detail in the image viewer area.

Status bar



The status bar, in the bottom left pane, provides an "at a glance" view of overall system status, including managed system resources and the Support Element console. A status-sensitive title, background color, and icons are part of the status bar. The Status Overview icon is always available in the status bar. Indicators (icons) are displayed in the work pane table next to a managed object when it is in an Exception State or when it receives a Hardware or Operating System Message.

Click any of the individual icons in the status bar to view a listing of resources. For example, select the Exceptions icon to view all resources with an exception state. The results are displayed in a table in the work pane.

Exceptions

If any managed object is in unacceptable state, the **Exceptions** indicator (icon) is displayed on the status bar. When you select the **Exceptions** indicator (icon) it displays a table in the work pane of only the objects in an unacceptable state.

Hardware Messages

If a managed object receives a hardware message, the Hardware Message indicator (icon) displays on the status bar. When you select the **Hardware Messages** icon it displays a table in the work pane of only the objects with hardware messages. The table that displays includes the object name, status, and description. To view the hardware message for a particular object you can click on the **Hardware Message** icon in the **Status** column or you can select the object by clicking in the **Select** column next to the object name(s), click **Daily** in the tasks pad, and click **Hardware Messages**. The Hardware Messages window opens. Now you can work with your messages.

Operating System Messages

If a managed object receives an operating system message, the **Operating System Message** indicator (icon) displays on the status bar. When you select the **Operating System Messages** indicator (icon) it displays only objects with unviewed operating system messages requiring attention. The table that is displayed includes the object name, status, and description. To view the operating system messages for a

particular object you can click on the **Operating System Messages** icon in the **Status** column or you can select the object by clicking in the **Select** column next to the object name(s), click **Daily** in the tasks pad, and click **Operating System Messages**. The Operating System Messages window opens. Now you can work with your messages.

Status overview

When you select the ***Status Overview*** icon it displays a more detailed view of overall status in the work pane, as shown in Figure 24. It summarizes the total number of exceptions, hardware messages, and operating system messages by objects. Then you can select a link from the work pane to display all objects with the particular state in the work pane.

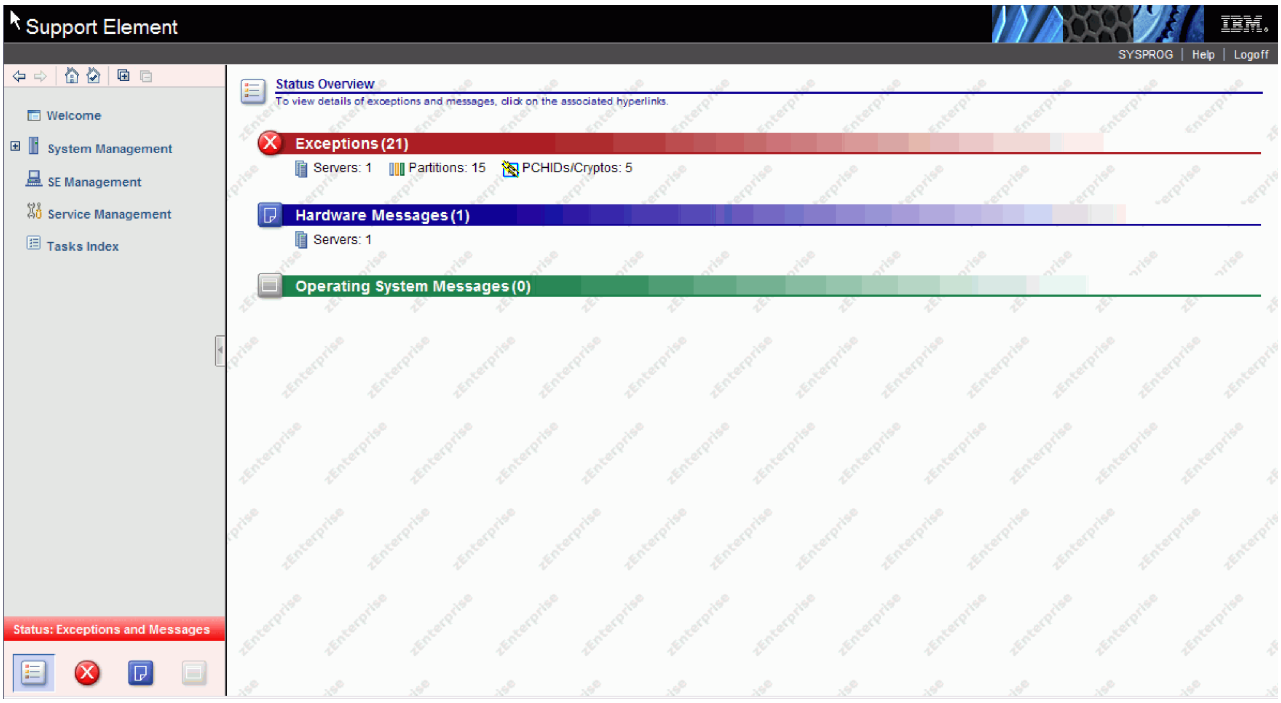


Figure 24. Status overview

Object locking for disruptive tasks

You can tell when a system or system image is locked because a small lock is displayed next to the system name in the work pane table. In the topology view the icon is shown as an overlay of the object icon.

The setting of the system or system object's toggle lock determines whether you can perform a disruptive task on the system or system objects. You can lock an individual object or automatically lock all objects.

To individually lock (or unlock) the system or system objects:
1. Select the system from the table that you want to lock (or unlock).

2. Click **CPC Details** from the tasks pad. The CPC Details window is displayed.
3. You can select **Yes** or **No** for **Lock out disruptive tasks**.
4. Click **Apply** to make the change.

There is also an automatic way to lock the system and system objects at one time. Unlike the previous ways for locking an object, using this method can cause the object to be relocked automatically if it was unlocked to perform a task on it. To use this method, you must have a user ID with the predefined user roles of an *Advanced Operator*, *System Programmer*, *Access Administrator*, or *Service Representative* for the Support Element console.

1. Open the **Object Locking Settings** task from the **SE Management** work pane. The Locking window opens.
2. Select **Automatically lock all managed objects** or **Relock after a task has been run** or both.

Chapter 3. Using the classic style user interface

This chapter explains how to use the classic style user interface for performing tasks on the Support Element console or on a CPC.

Support Element Workplace

The *Support Element Workplace* is the window where you start tasks for monitoring and operating your system.

The workplace presents tasks and their targets graphically, as *icons*. Using the workplace to get information and start tasks is often a matter of monitoring and manipulating icons, rather than, for example, typing commands or using menus.

Icons that represent the functions, facilities, and controls you use to monitor and operate the system and console are referred to as *tasks*. A single icon that represents a set of one or more related tasks is referred to as a *task list*.

Icons that represent the physical and logical elements of the system, which are often the targets of tasks, are referred to as *objects*. The console's objects include:

- Central processor complex (CPC)
- Physical channels (PCHIDs)
- Central processors (CPs)
  - This includes: General processors, Internal Coupling Facility (ICF), Integrated Facility for Linux (IFL), zSeries Application Assist Processors (zAAPs), and IBM System z Integrated Information Processors (zIIPs).
- Logical channels (CHPIDs)
- images (An *Image* is a set of CPC resources capable of running a control program or operating system. One or more images is created during a power-on reset of a CPC. Each logical partition is an image.)
- zBX BladeCenters
- zBX Blades
- Virtual Servers.

A single icon that represents a set of one or more objects of the same type is referred to as a *group*.

The classic style user interface support element console workplace is divided into three *areas* to organize its icons. The three areas are:

Views Located along the top left side of the workplace, this area contains icons that represent different collections or views of the objects that make up your system. The background color of this area also gives an indication of the status of the system, as described in "Monitoring system status" on page 42.

Work area
Located below the Views area, this area contains icons in the current view. Depending on the view, the work area contains either groups, objects, tasks in progress, task lists, tasks for monitoring and operating the console, or online books.

Tasks area
Located along the right side of the workplace, this area displays the current task list that contain tasks for monitoring and operating the system.

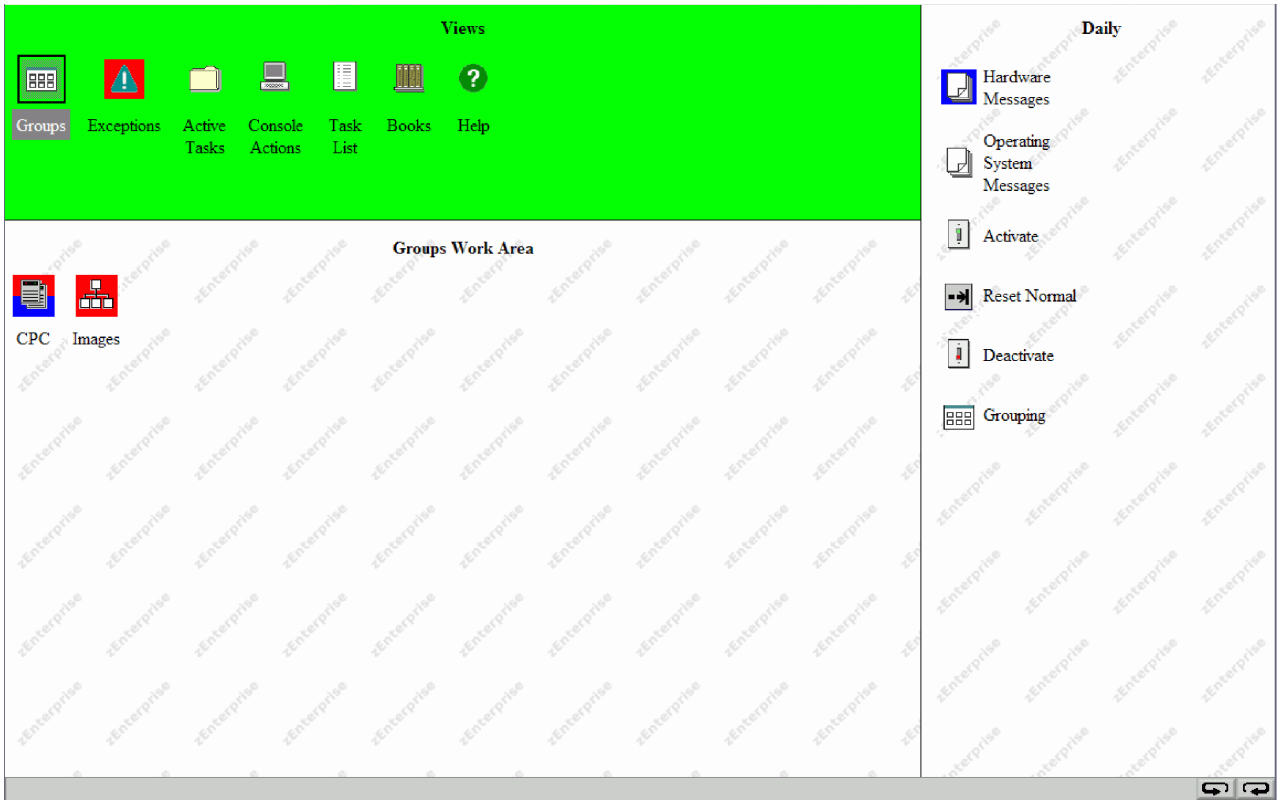


Figure 25. Classic interface workplace window

Selecting objects

Selecting objects prepares them for further action. Selecting a Views icon allows you to display the view by pressing **Enter**. The default setting for selecting objects displayed in the *Work* area is **Single object selection**. However, to select more than one object at a time, allowing you to perform tasks on them as a dynamic group, you can do the following:

1. Open **Console Actions** from the **Views** area.
2. Open **User Settings** from the **Console Actions Work Area**. The User Settings window is displayed.
3. Select the **Controls** tab on the User Settings window.
4. Deselect **Single object selection** by clicking on the check mark to remove it, click **Apply**, then click **OK** when you are finished with the task.

In the *Work* area, if the selection of multiple objects is allowed, you can use one of the following methods for selecting multiple objects:

- Click on each object to be selected.
- Select or deselect all objects in a view.

To select all objects:

1. Display the objects you want to select. For example, click **Channels** so those objects are displayed in the *Work* area.
2. Right-click on a spot on the **Channels Work Area** without an icon. This displays the menu for the *Work* area (see Figure 26 on page 39).
3. Click **Select all**. This selects all the objects in the *Work* area.

To deselect all objects, if all objects are selected:

1. Right-click on a spot on the **Channels Work Area** without an icon. This displays the menu for the *Work* area (see Figure 26).
2. Click Deselect all. This deselects all the objects in the Work area.

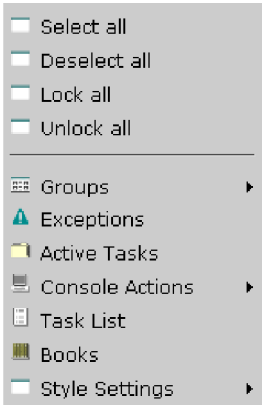


Figure 26. Work area menu

Clicking individual objects that are already selected deselects the objects.

Note: There are times when you want to work with a single object and want to ensure that additional objects are not accidentally selected. Use the **User Settings** task to verify the **Single object selection** option is selected (a check mark displays).

Opening an object

Opening an object in the Work area displays a further level of detail about the object. There are several ways to open an object. One way is to double-click it.

Double-clicking any one of the **Groups** icons in the Groups view displays icons for the objects (for example, images) that make up that group.

Another way to display the icons that make up the group is to right-click the object and, on the menu that appears, click **Open**.

Displaying object details

After you open the object, you can display detailed information about the object by double-clicking it. Then a window opens that displays the object's current status information and other object details.

An alternate way to display this information is to right-click the object's icon and then click the object's **Details**. Right-clicking on an object displays its pop-up menu. Selecting the object's **Details** on this menu displays the details about the object. Figure 27 on page 40 shows an example of a CPC Details window.

Note: If displaying zBX Blade details for a selected IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise (DataPower XI50z) blade, the **Virtual Network Interfaces** tab displays. You can view the details of an existing interface.

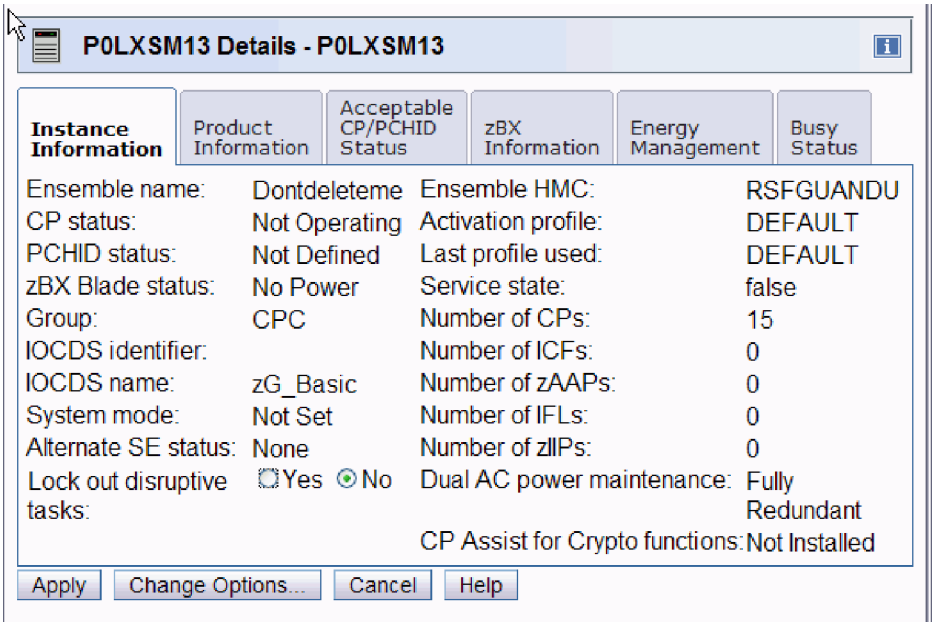


Figure 27. CPC details window

Note: The zBX Information tab is only available when the zBX feature is available for the specified server.

While you are in the object's Details window, you can also lock out disruptive tasks, as described in "Object locking for disruptive tasks" on page 41.

When selecting Details for CHPIDS, the **Channel Problem Determination** button displays to provide a link to the **Channel Problem Determination** task for additional information on the selected CHPID.

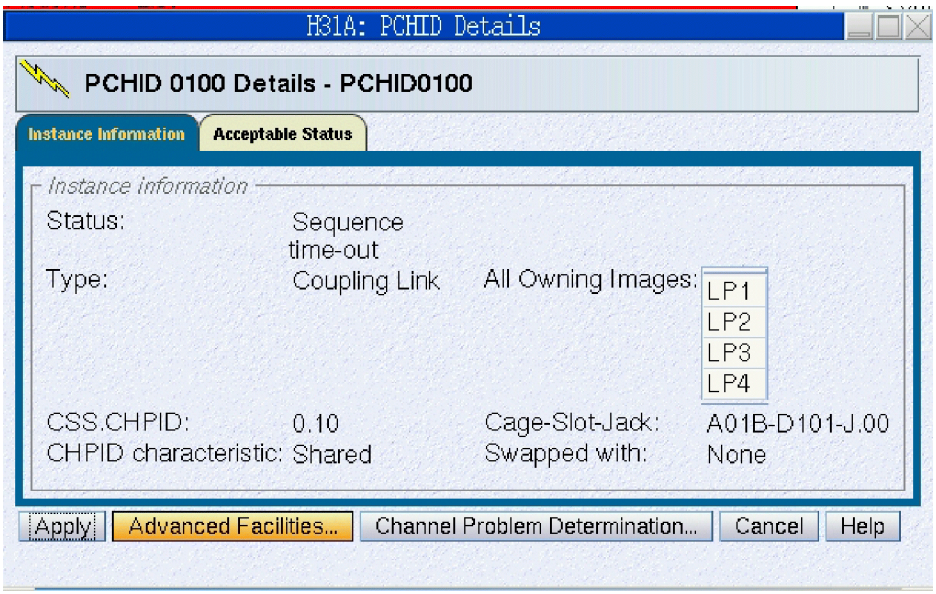


Figure 28. Channel details window

When selecting **Details** for channels or cryptos, the **Advanced Facilities...** and **Channel Problem Determination...** buttons display to provide a link to the **Advanced Facilities** and **Channel Problem Determination** tasks for additional information on the selected channel or crypto.

Starting a task on an object

After locating a task, and locating and selecting its targets, you can start the task on the targets. There are several ways to start tasks. You can use whatever way is easiest for you or most appropriate for the task.

To start a task on a single target:

1. Locate the task.
2. Locate the target object or group.
3. Start the task on the target by any of the following:
   - Dragging and dropping the task on the target.
   - Dragging and dropping the target on the task.
   - Selecting the target and double-clicking on the task.
   - Selecting the target, selecting the task, and clicking **Enter**.
   - Right-clicking on the object to get a task menu.

To start a task on multiple targets:

1. Locate the task.
2. Locate and select the target objects or groups.
3. Start the task on the targets by any of the following:
   - Dragging and dropping the task on any one of the selected targets.
   - Dragging and dropping any one of the selected targets on the task.
   - Double-clicking on the task.
   - Selecting the task, and clicking **Enter**.
   - Right-clicking on any selected object and getting a task menu.

Object locking for disruptive tasks

Some of the Support Element Console tasks are considered *disruptive*. Performing a disruptive task on a CPC or image may disrupt its operation. For example, activating a CPC and loading an image are disruptive tasks. You may want to lock an object to prevent accidentally performing disruptive tasks on it and then unlock the object only when you want to perform a disruptive task on it.

Depending on whether the **Lockout disruptive task** setting is set to **Yes** or **No** determines if you can perform a disruptive task on a CPC or CPC object. You can either lock an individual object or a group of objects at one time.

Note: The **Lockout disruptive task** only affects operations from the Support Element Console workplace you are currently working at. It does not affect most operations from the Support Element (for example, scheduled operations and CPC operations management commands, etc.), and operations initiated from other sources (for example, from Hardware Management Consoles).

To individually lock the CPC or CPC object:

1. Locate the object you want to lock in the Work Area.
2. Right-click on the object's icon.
3. Click **CPC Details** from the menu.
   The CPC Details window opens.
4. Set Lockout disruptive tasks to **Yes** or **No**.
5. Click **Apply** to lock the object.

If you want to lock the CPC or images at one time, there is an automatic way to lock all them displayed on the workplace at one time. If using this method, you will cause an object to be relocked automatically if it was unlocked to perform a task on it.

1. Locate the objects you want to lock in the Work Area.
2. Open **Console Actions** from Views.

   This displays the console actions in the Console Actions Work Area.
3. Open the **Support Element Settings** task from the Console Actions Work Area.

   This displays the Support Element Settings Work Area.
4. Open the **Object Locking Settings** task from the Support Element Settings Work Area.
5. Select **Automatically lock all managed objects** or **Relock after a task has been run** or both. All objects currently in the work area are now locked.

When the object(s) are locked, a small lock in the lower left hand corner of the icon indicates that the disruptive tasks are locked for that object. If you attempt to perform a disruptive task on a locked object, a window is displayed indicating the object is locked.

If you want to unlock an object or a group of objects, you still need to follow the previously described unlocking procedure.

Monitoring system status

The Support element console continuously monitors the status of its objects and compares them to the object's acceptable status settings.

Note: The following description of the use of color is based on a set of default colors that are set up for you initially. You may override the defaults and associate different colors, or use gray patterns instead of color, by using the **User Settings** task. (For more information, refer to "User Settings" on page 189.)

Acceptable status

Good or acceptable status for the CPC and images in the processor cluster is indicated by a green background in the *Views* area of the Support Element console workplace window, and by the absence of a red background around the Exceptions icon. Status changes from acceptable to unacceptable, referred to as *Exceptions*, are indicated on the Support element console workplace window by a color change from green to red. By default, green indicates good, or acceptable status. Red indicates an exception, or that an object has an unacceptable status.

To set the acceptable status for a CPC or image, double click on the CPC or image icon to display the Details window. From the **Acceptable Status** tab you can select the acceptable status settings. The default acceptable status value is *Operating*.

Messages that may require operator attention are indicated by the blue flashing Hardware Messages icon or by the cyan flashing Operating System Messages icon in the *Tasks* area. In addition, to indicate which objects have hardware or operating system messages that require operator attention, the CPC or image icon's background color and its group icon background color will also be blue or cyan.

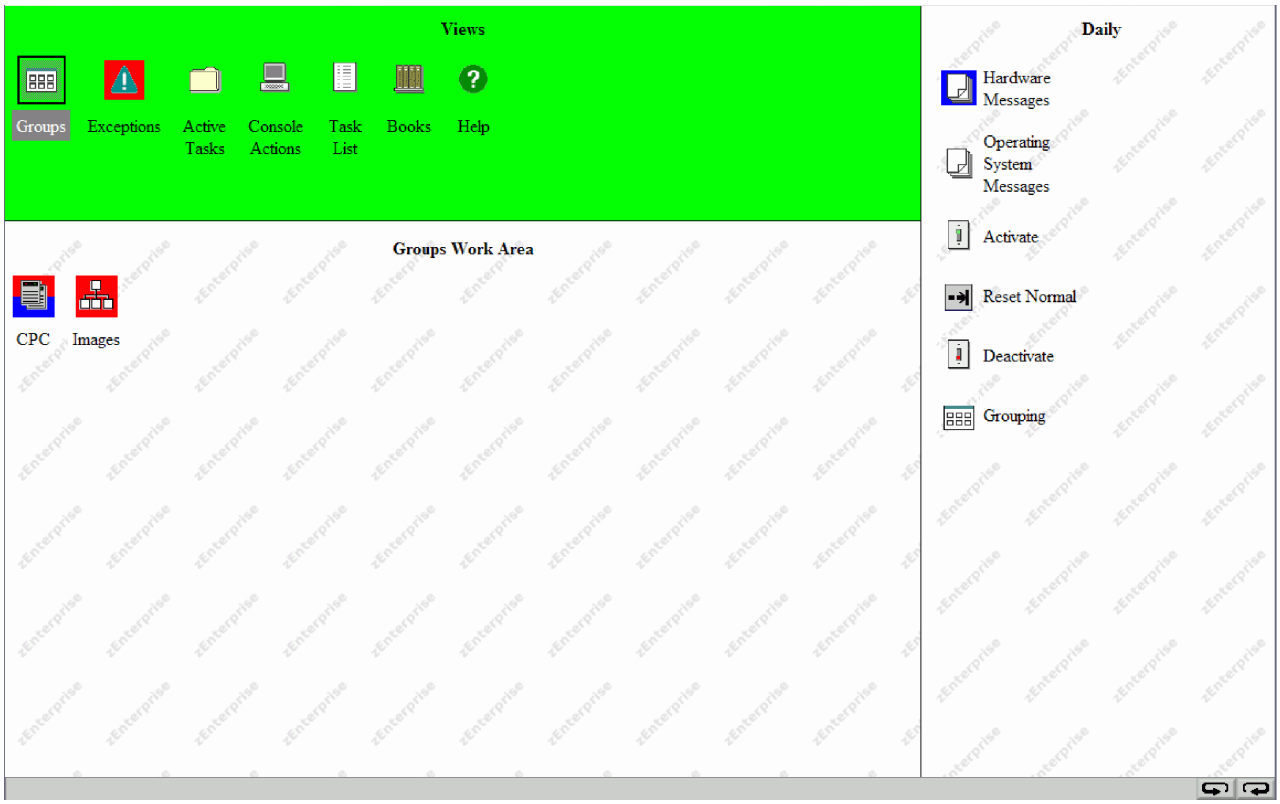


Figure 29. Acceptable status

Unacceptable status

The default acceptable status value is *Operating*. Initially, all other status values are considered unacceptable, unless you select them on the Details window by double-clicking on a CPC or image icon. If an object's status changes to any of the unacceptable values, it is treated as an *Exception* situation. An exception situation is visually indicated by a change of the entire *Views* area background color from green to red as shown in Figure 30 on page 44. A background color is also displayed for the CPC or images that have an unacceptable status, and for any of the groups that contain the CPC or images. The background color depends on what you have selected on the Details window.

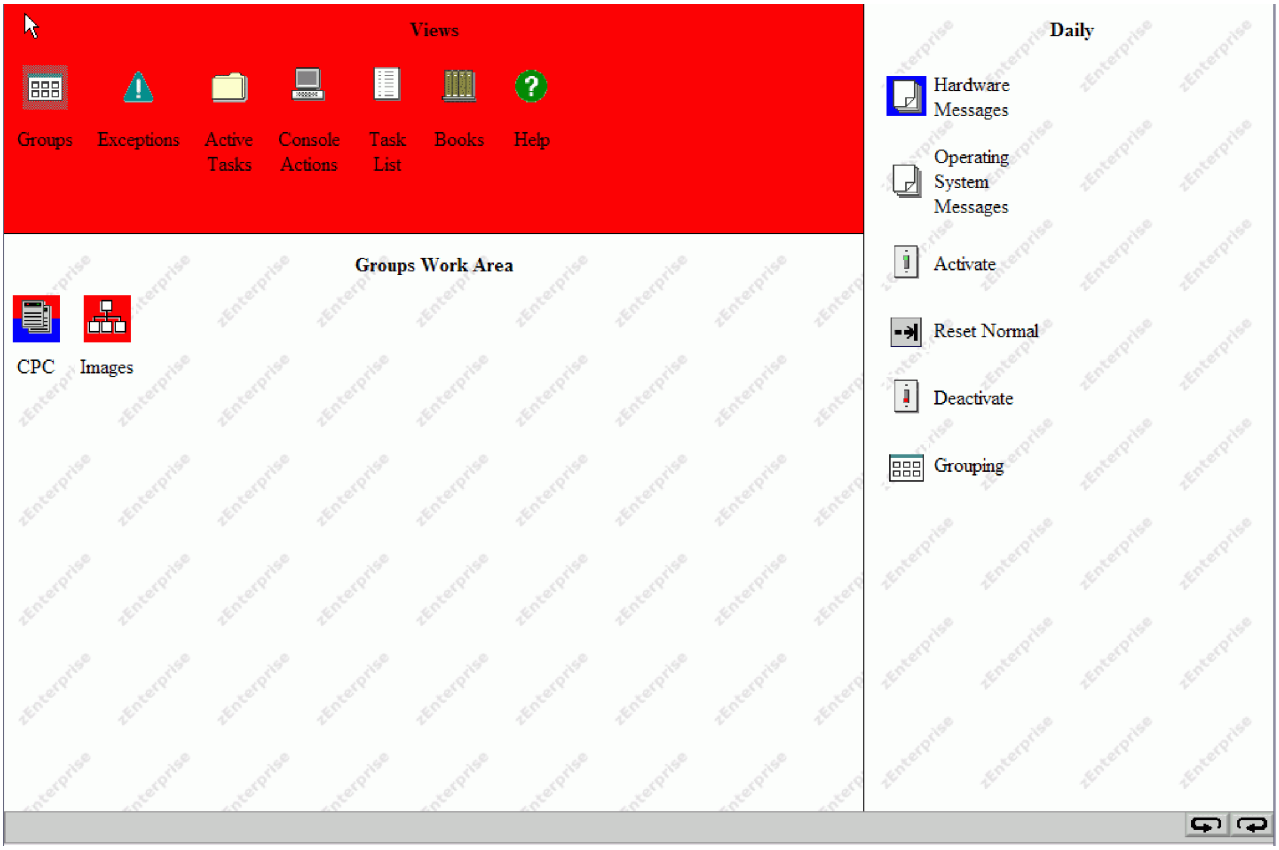


Figure 30. Unacceptable status

If an exception situation exists, you can open the **Exceptions** group from the *Views* area to see a subset of only the CPC or images involved in an exception condition. After you display the Exceptions view, the background of the entire *Views* area changes back to green, and a red background only remains around the Exception icon, the object icon, and the group icon with the unacceptable status. This will allow any additional exception situations to be recognized by a color change of the *Views* area. An exception state will remain until the CPC or image returns to a status that you have indicated as acceptable.

Views and the work area

Views of your system's objects are represented in the **Views** area (in the upper left portion of the window). Each view provides a different way of looking at information related to your system. After you open the Views objects, they are displayed in the **Groups Work Area** (in the lower left portion of the window) and their contents are available for further action.

The following are represented in the **Views** area:
- Groups
- Exceptions
- Active tasks
- Console actions
- Task list
- Books
- Help

The **Groups Work Area** displays the objects of you system based on the View that you select. Objects must be displayed in the **Groups Work Area** before you can perform tasks on them.

You can display a particular View by using any of the following methods:

- Double-clicking on the icon on the **Views** area that you want
- Selecting the icon in the **Views** area by clicking on it, then pressing **Enter**.

You can also display two of the choices by opening the menu.

The menu is a shortcut for navigating the workplace. To open the menu, click the right mouse button once on any empty area in the **Groups Work Area**. This displays a menu listing. An arrow to the right of a menu choice indicates additional choices are available on a *cascaded menu*. A cascaded menu provides additional menu choices and may include additional cascaded menus. Each cascaded menu provides a more direct shortcut for locating and opening icons in a particular view.

Getting detailed system status

Use Views and the work area to get detailed system status by checking the individual status of the following objects that represent physical or logical elements of the system:

- Central processor complex (CPC)
- Central processors
- Channels
- CHPIDs
- Images

Like the background color of the Views area, the background color of an object's icon indicates whether its status is acceptable (as defined by the user) or unacceptable. The background color of an object's icon indicates the object's status in one of two ways:

No color
: This indicates the object's status is acceptable. An *acceptable* status is any object status that is normal, is as expected, or does not require your immediate attention or intervention. That is, an object with an acceptable status is OK as is.

Color
: This indicates the object's status is unacceptable. The specific color indicates the object's specific, unacceptable status. An *unacceptable* status is any object status that is not normal, is not as expected, or requires your immediate attention when it occurs. That is, an object with an unacceptable status is not OK, and may require your intervention to make it OK again.

Therefore, checking whether the individual status of an object is acceptable or unacceptable requires locating a group that contains the object, then checking the background color of the object's icon.

Groups

The Groups view is displayed initially when you log on to the support element console and is the view that you will use most often to run and monitor your system. Groups are comprised of logical collections of objects. They provide a quick and easy means for performing tasks against the same set of objects more than once without having to select each object every time the task is run. In addition, status is reported on a group basis, allowing you to monitor your system in a way that you prefer. Use Views and the work area to locate objects. To locate a particular object, you must locate and open the group that contains it. Opening a group displays its objects in the work area.

To open a group:

1. Open **Groups** from Views.
2. Locate the group that contains the type of objects you want to locate in the Groups Work Area.
3. Double-click on the group to open it.

The CPC

One of console's default groups, the **CPC** group, contains the object that represents the central processor complex (CPC). The object that represents the CPC contains objects that represent its physical processors. On the Support Element workplace, physical processors are referred to as central processors (CPs).

To locate the CPC:

1. Open **Groups** from Views.
2. Locate the group labeled **CPC** in the Groups Work Area.
3. Double-click on the **CPC** group to open it.

To locate physical processors:

1. Open **Groups** from Views.
2. Locate the group labeled **CPC** in the Groups Work Area.
3. Right click on the CPC to open its pop-up menu.
4. Select the **CPs** menu choice.

   This displays the objects that represent the CPs in the work area.

Logical partitions

When the central processor complex (CPC) is activated, one of console's default groups, the **Images** group, contains objects that represent the logical partitions. Logical partitions are referred to also as images. An *Image* is a set of CPC resources capable of running a control program or operating system. Each object that represents an image contains objects that represent logical processors. On the Support Element, logical processors are referred to central processors (CPs).

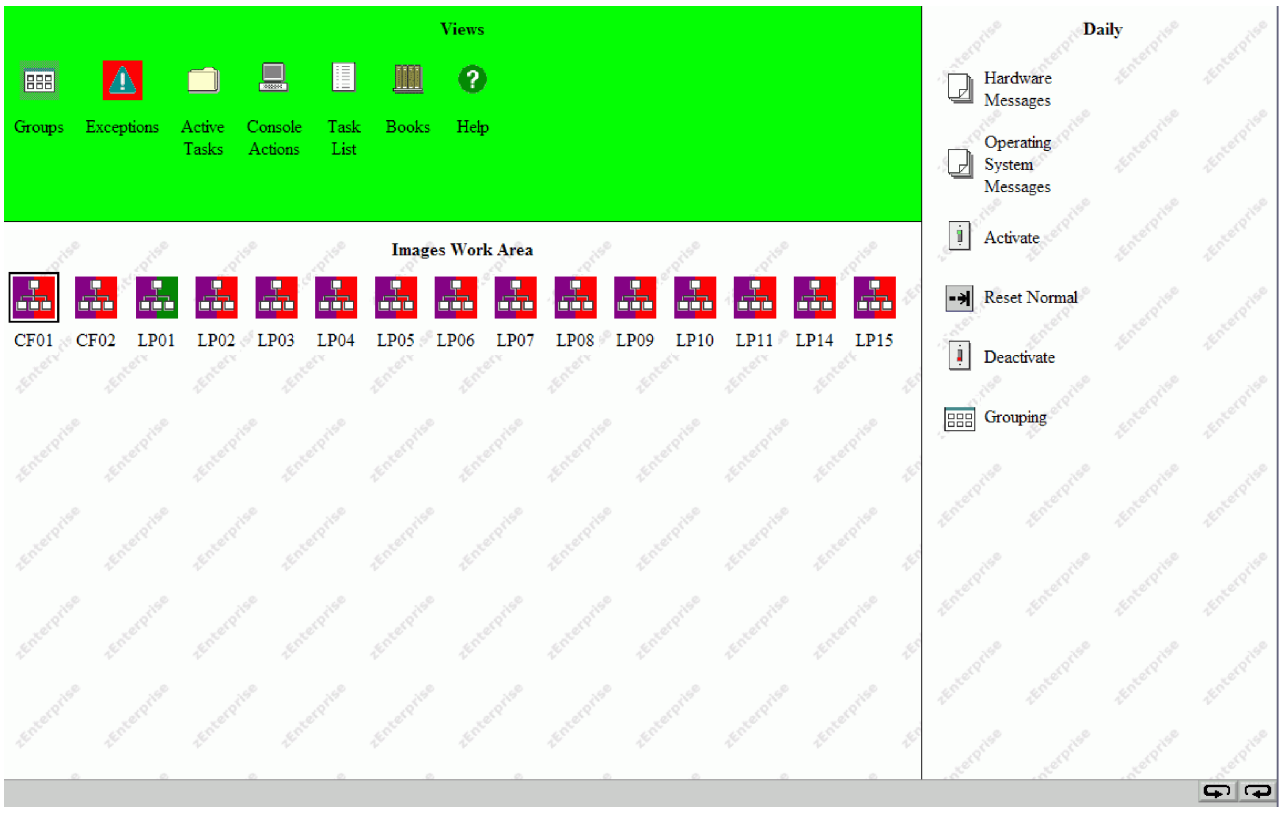


Figure 31. Logical partitions

To locate logical partitions:

1. Open **Groups** from Views
2. Locate the group labeled **Images** in the Groups Work Area.
3. Double-click on the **Images** group to open it.
   This displays the objects that represent logical partitions in the Images Work Area.

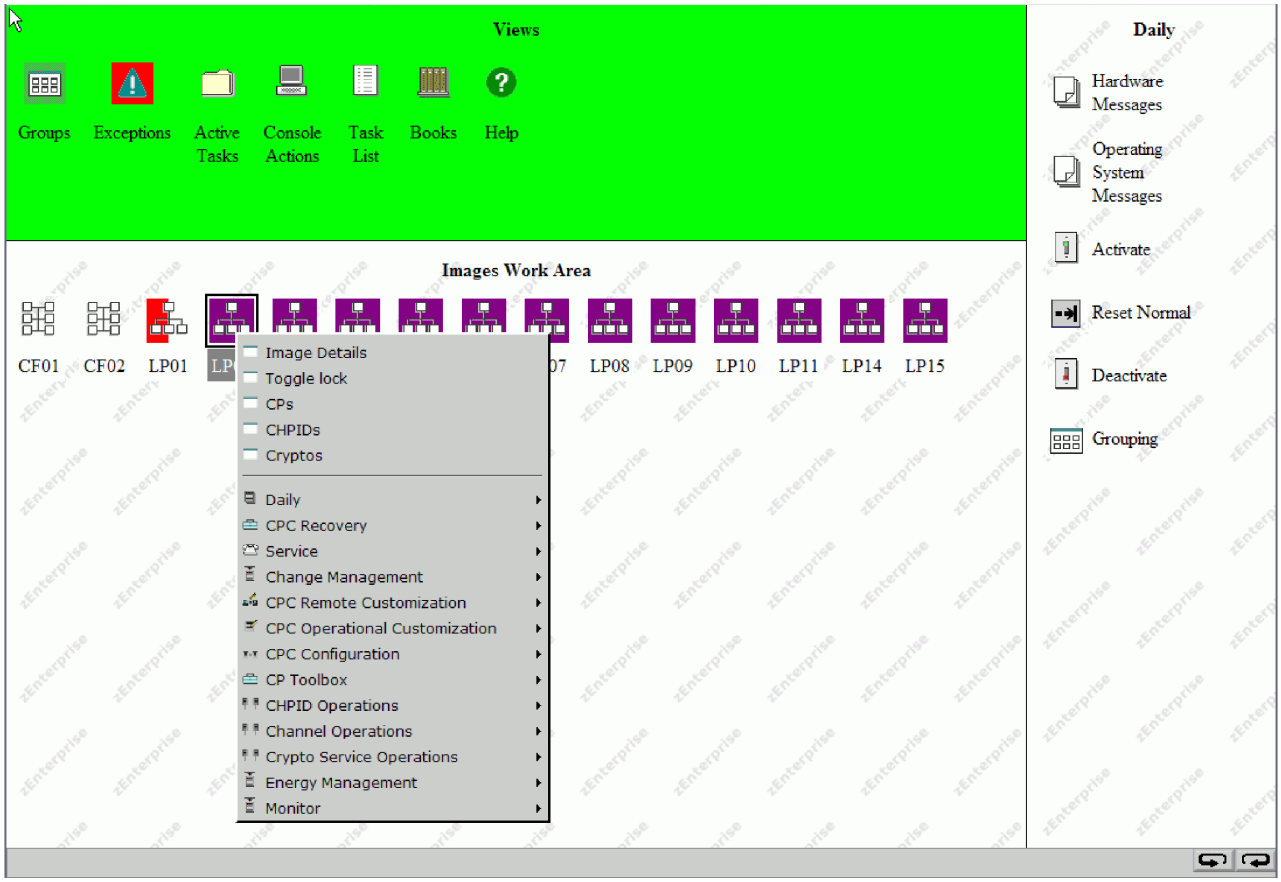


Figure 32. Logical processors

To locate logical processors:

1. Open the Images Work Area.
   For instructions, see "Logical partitions" on page 46.
2. In the Images Work Area, locate the image that represents the logical partition to which the logical processors are assigned.
3. Right click on the image to open its pop-up menu.
4. Select the **CPs** menu choice.
   This displays the objects that represent the image's logical processors in the work area.

Channels

The object that represents the central processor complex (CPC) contains objects that represent all channels in the input/output (I/O) configuration.

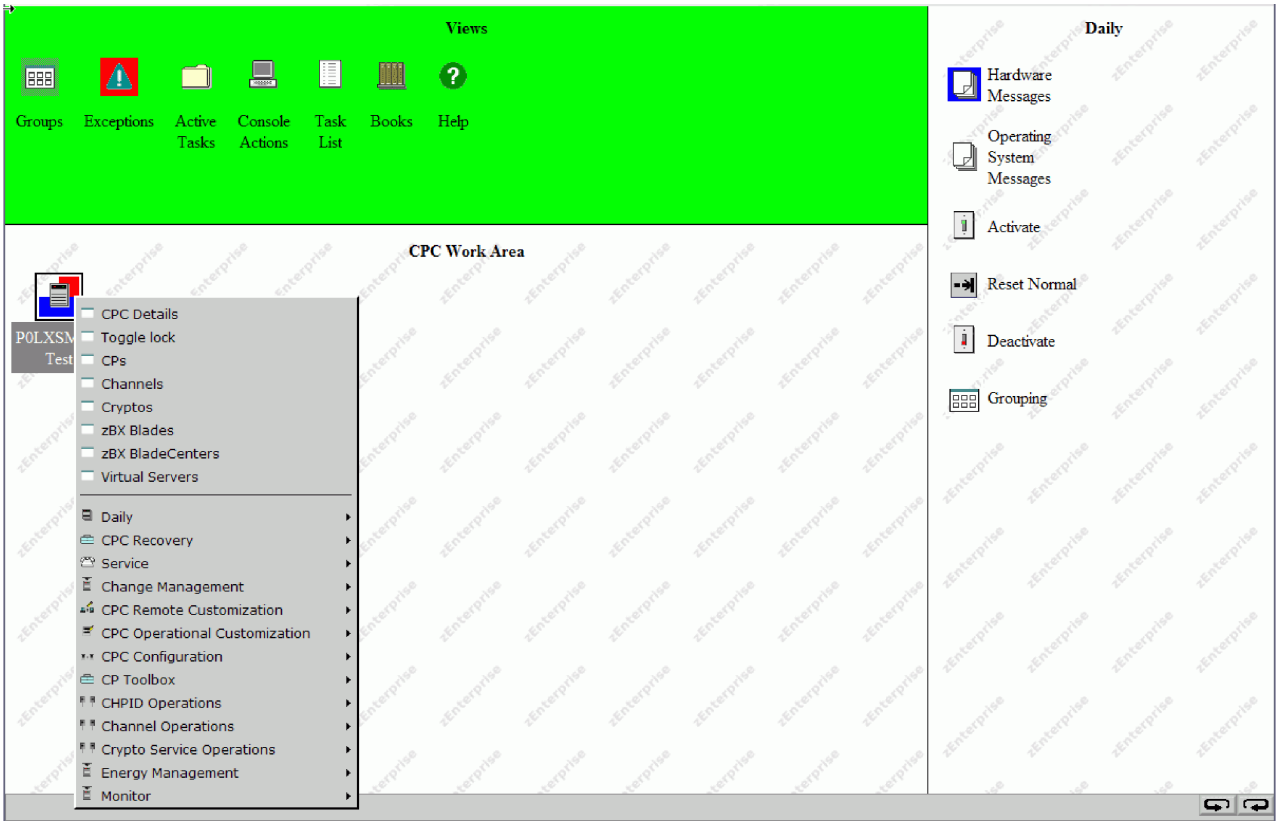


Figure 33. Cannels

To locate all channels in the CPC's I/O configuration:

1. Open the CPC Work Area.

   For instructions, see "The CPC" on page 46.
2. In the CPC Work Area, locate the CPC.
3. Right click on the CPC to open its pop-up menu.
4. Select the **Channels** menu choice.

   This displays the objects that represent the channels in the work area. Each channel is labeled with its physical channel identifier (PCHID).

Channel paths

The object that represents the logical partitions or images contains objects that represent all channel paths defined in its input/output (I/O) configuration.

To locate channel paths assigned to a specific logical partition:

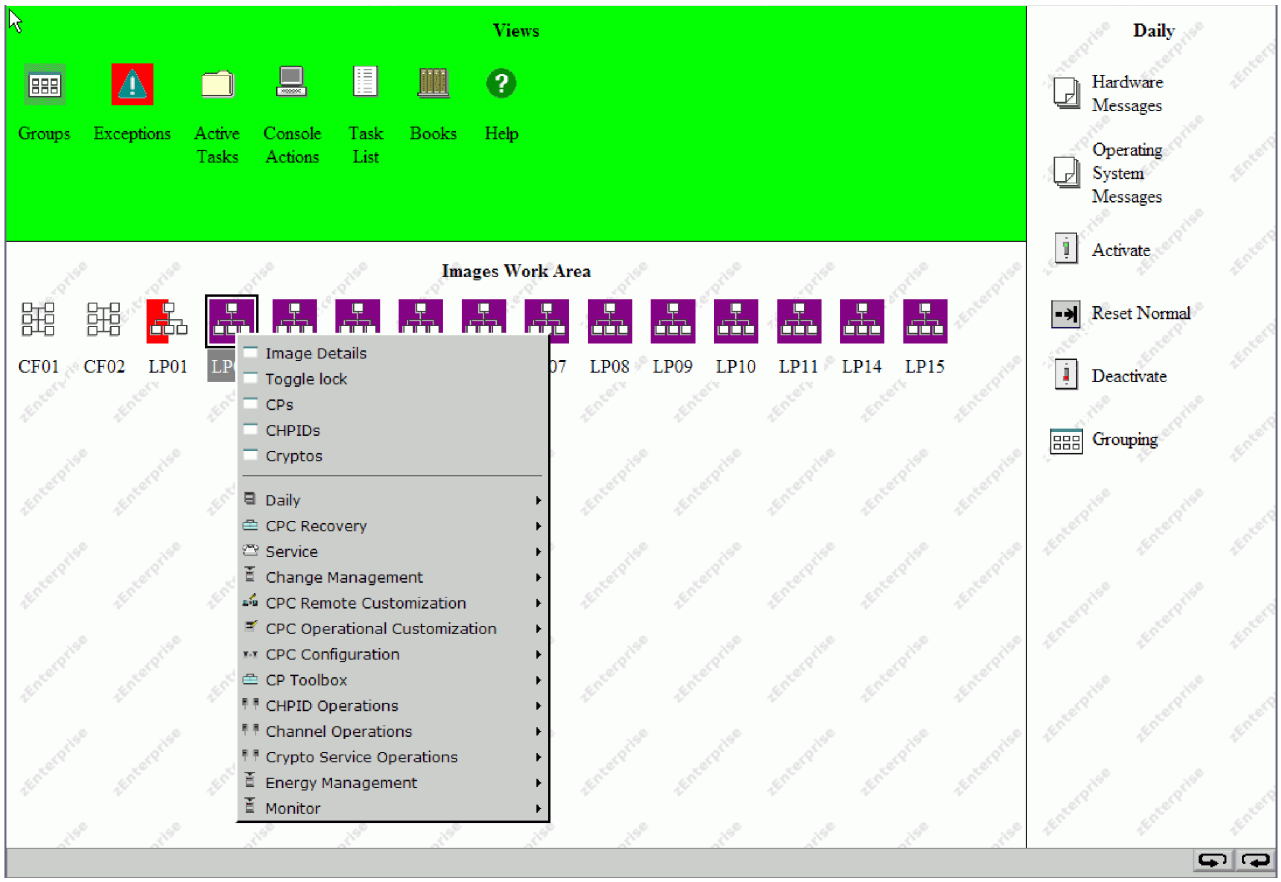


Figure 34. Channel paths

1. Open the Images Work Area.

   For instructions, see "Logical partitions" on page 46.
2. In the Images Work Area, locate the image that represents the logical partition to which the channel paths are assigned.
3. Right click on the image to open its pop-up menu.
4. Select the **CHPIDs** menu choice.

   This displays only the objects that represent the image's channel paths in the work area. Each channel path is labeled with its channel path identifier. A single-digit number that identifies the channel subsystem followed by a two-digit number that identifies the channel path associated with that channel subsystem. (CSS.CHPID).

Cryptos

The object that represents the central processor complex (CPC) contains objects that represent all installed cryptos.

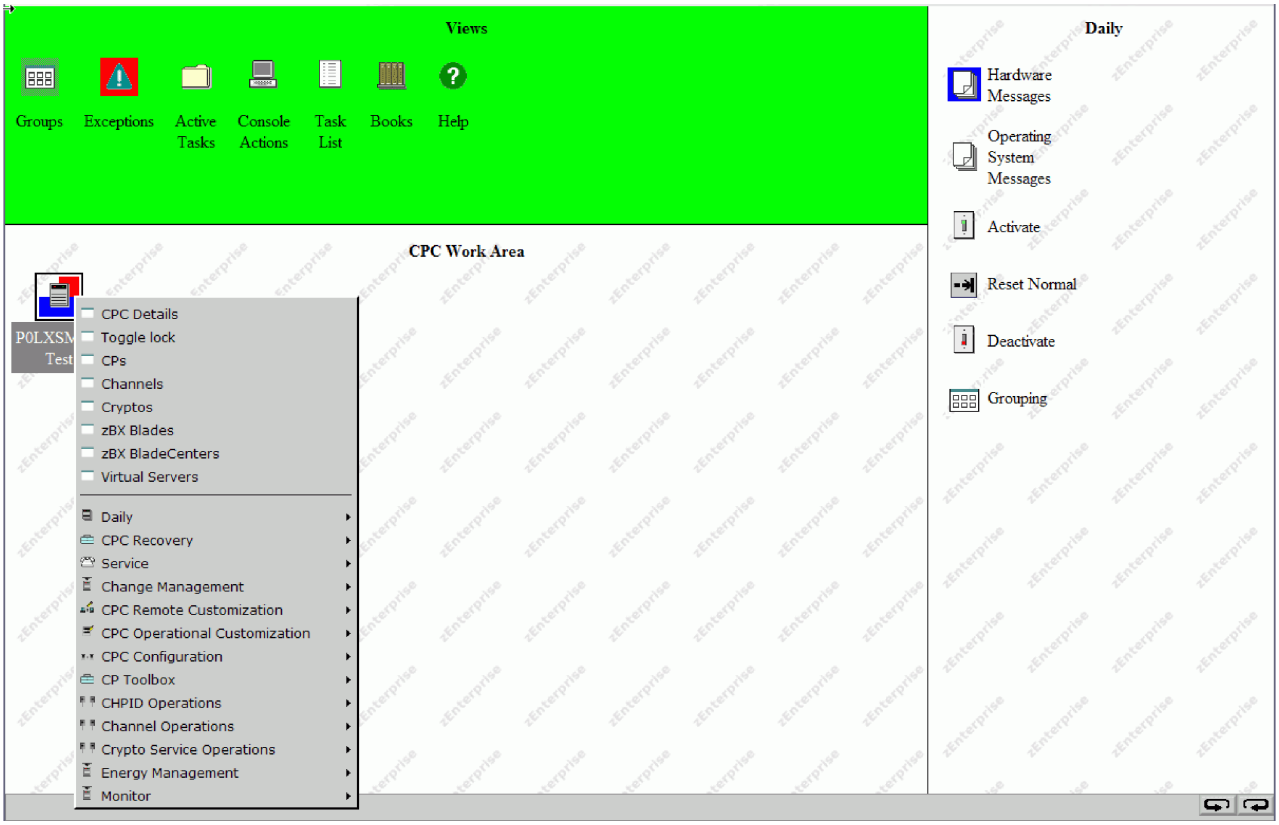


Figure 35. Cryptos

To locate all cryptos in the CPC's I/O configuration:

1. Open the CPC Work Area.

   For instructions, see "The CPC" on page 46.
2. In the CPC Work Area, locate the CPC.
3. Right click on the CPC to open its pop-up menu.
4. Select the **Cryptos** menu choice.

   This displays the objects that represent the cryptos in the work area. Each channel is labeled with its physical channel identifier (PCHID).

zBX BladeCenters

The node that represents the system (CPC) contains objects that represent all installed zBX BladeCenters.

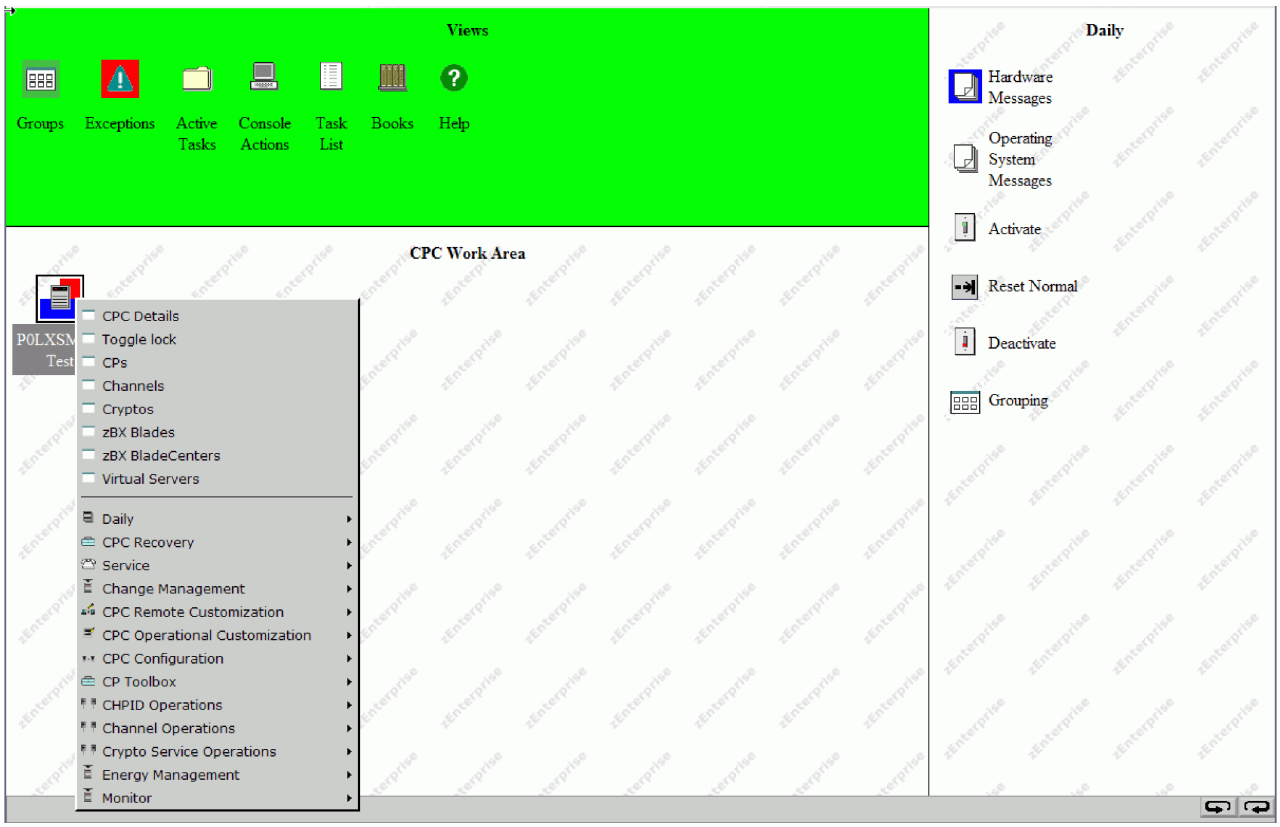


Figure 36. zBx BladeCenters

To locate all zBX BladeCenters:

1. Open the CPC Work Area.

   For instructions, see "The CPC" on page 46.
2. In the CPC Work Area, locate the CPC.
3. Right click on the CPC to open its pop-up menu.
4. Select the **zBX BladeCenters** menu choice.

   This displays the objects that represent the zBX BladeCenters in the work area. Each zBX BladeCenter is labeled with an identifier.

zBX Blades

The object that represents the central processor complex (CPC) contains objects that represent all installed and entitled zBX Blades.

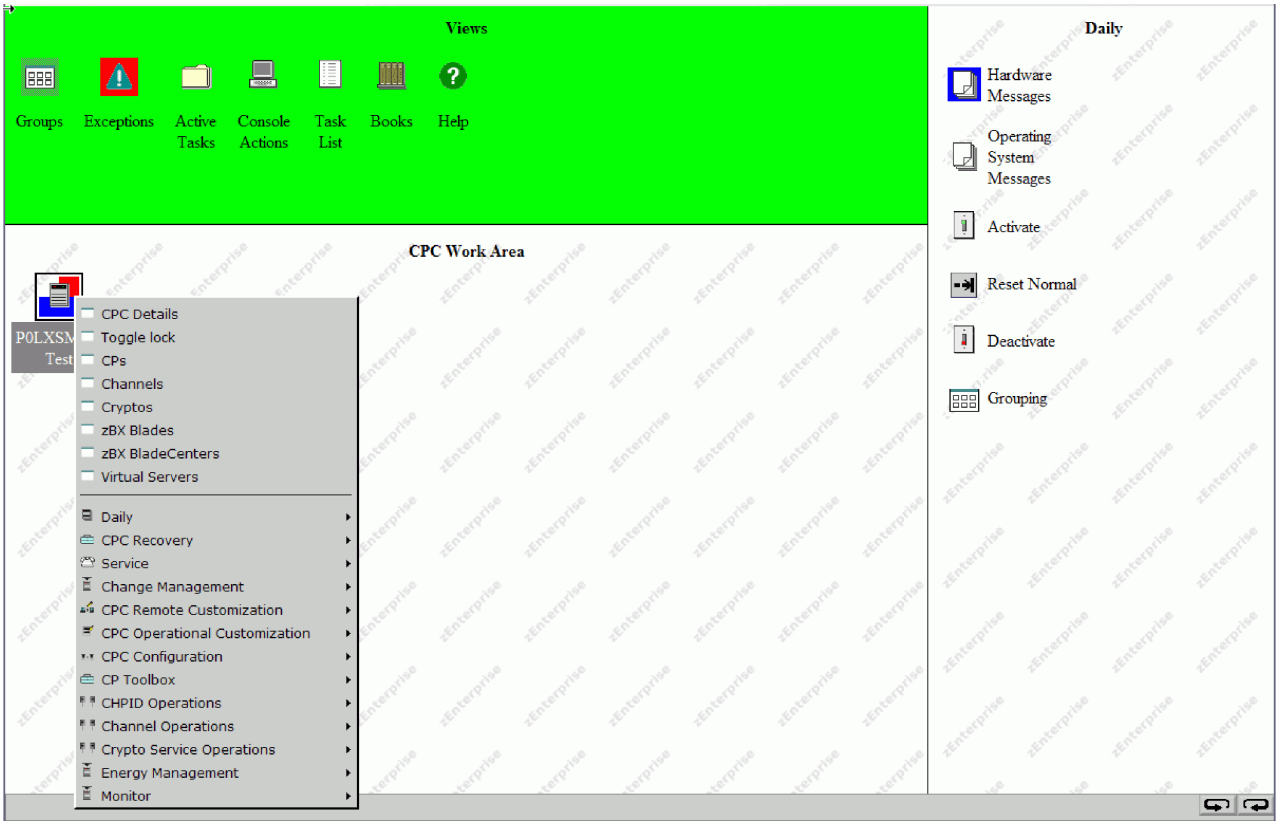


Figure 37. zBX Blades

To locate all zBX Blades:

1. Open the CPC Work Area.

   For instructions, see "The CPC" on page 46.
2. In the CPC Work Area, locate the CPC.
3. Right click on the CPC to open its pop-up menu.
4. Select the **zBX Blades** menu choice.

   This displays the objects that represent the zBX Blades in the work area. Each zBX Blade is labeled with its identifier.

Virtual Servers

The object that represents the system (CPC) contains objects that represent all installed Virtual Servers.

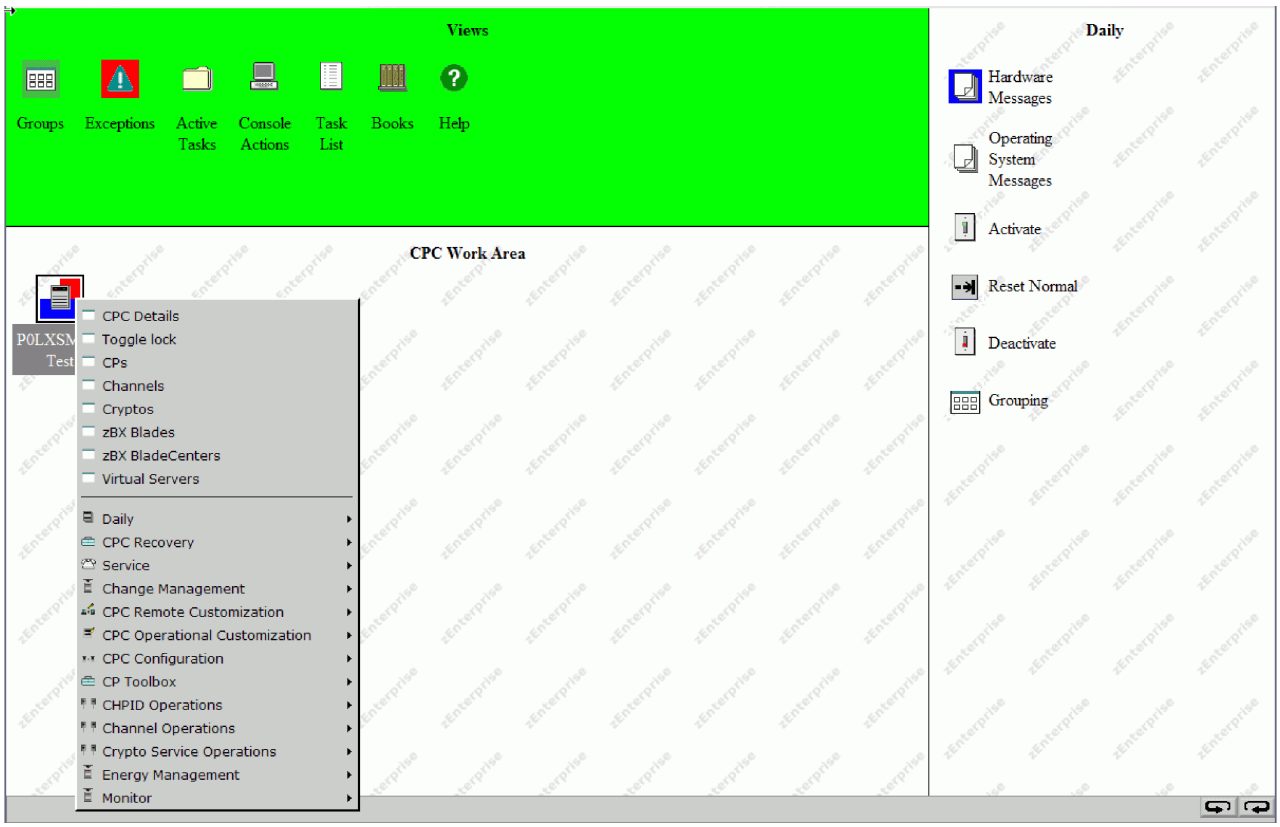


Figure 38. Virtual servers

To locate all Virtual Servers:

1. Open the CPC Work Area.

   For instructions, see "The CPC" on page 46.
2. In the CPC Work Area, locate the CPC.
3. Right click on the CPC to open its pop-up menu.
4. Select the **Virtual Servers** menu choice.

   This displays the objects that represent the Virtual Servers in the work area. Each Virtual Server is labeled with an identifier.

Determining the exact status of an object

After locating an object, check the background color of its icon to determine whether its status is acceptable or unacceptable:

- The icon's background has no color when the object's status is acceptable.
- When the object's status is unacceptable, the icon's background displays the color that identifies the unacceptable status.

Note: If you are not certain which unacceptable status is indicated by the background color of the CPC's icon, double-click on it to open the CPC's **Details** window.

Background color of the CPC

The background color of the icon of the central processor complex (CPC) indicates whether the statuses of the CPC, its central processors (CPs), and its channel paths are acceptable or unacceptable. While the statuses are acceptable, the background of the CPC icon has no color. Otherwise, the background color of the CPC indicates unacceptable statuses as follows:

- Until CPC power is turned on and a power-on reset is performed, the background color of the CPC indicates an unacceptable CPC status.
- After CPC power is turned on and a power-on reset is performed:
  - The background color of the left side of the CPC indicates an unacceptable CP status.
  - The background color of the right side of the CPC indicates an unacceptable channel path status.

The background color of the CPC's icon also indicates whether its support element received hardware messages from the CPC. When the support element receives a hardware message, the background color of the CPC changes to the color set for indicating a hardware message was received. The default color is blue.

Note: If the status of the CPC, its CPs, or its channel paths is unacceptable, *and* the CPC's support element received hardware messages, then:

- The color of the top half of the CPC's icon indicates the unacceptable status.
- The color of the bottom half of the CPC's icon indicates the support element received hardware messages.

Background color of images

The background color of an image's icon indicates whether the statuses of the image, its central processors (CPs), and its channel paths are acceptable or unacceptable. While the statuses are acceptable, the background of the image icon has no color. Otherwise, the background color of the image indicates unacceptable statuses as follows:

- While the image is not activated, the background color of the image indicates an unacceptable image status.
- After the image is activated:
  - The background color of the left side of the image indicates an unacceptable CP status.
  - The background color of the right side of the image indicates an unacceptable channel path status.

The background color of the image's icon also indicates whether its support element received operating system messages from the image. When the support element receives an operating system message, the background color of the image changes to the color set for indicating an operating system message was received. The default color is cyan.

Note: If the status of the image, its CPs, or its channel paths is unacceptable, *and* the image's support element received operating system messages, then:

- The color of the top half of the image's icon indicates the unacceptable status.
- The color of the bottom half of the image's icon indicates the support element received operating system messages.

Background color of CPs

The background color of the icon of a channel path indicates whether the status of the channel path is acceptable or unacceptable. While the status is acceptable, the background of a channel path's icon has no color. Otherwise, the background color of the channel path is the color that indicates its specific unacceptable status.

Background color of channel paths

The background color of the icon of a channel path indicates whether the status of the channel path is acceptable or unacceptable. While the status is acceptable, the background of a channel path's icon has no color. Otherwise, the background color of the channel path is the color that indicates its specific unacceptable status.

Status messages

There are three types of status messages that can cause the CPC to display status that may require attention:

Test This indicates a conditions exists, such as PSW even compare or Address compare are enabled. To determined the exact conditions test status select the **Test Mode** tab on the Details window.

Degraded

This status message displays under the CPC icon in the Groups Work Area. This indicates that, although the CPC is still operating, some hardware is not working.

Some of the conditions that cause this message to be displayed are:

- Loss of channels due to CPC hardware failure
- Loss of memory
- One or more books are no longer functioning
- The ring connecting the books is open
- Capacity Backup resources have expired
- Processor frequency reduced due to temperature problem
- CPC was IMLed during temperature problem.

To view what conditions caused this message to display on a CPC:

1. Double-click on the object in the object's work area. The Details window displays for the selected object.
2. **Click Degrade reasons...** The Degraded Details window displays the current list of reasons why the CPC is degraded.

Service Required

This status displays in the **Acceptable CP/PCHID Status** tab on the Details window of the CPC. This indicates that the spare hardware shipped with the CPC has been depleted. When a part fails causing the use of the last redundant parts of that type, you now have just the required number of parts to keep the CPC running. This message is a reminder to you and the service representative that repairs should be made at the earliest possible time before addition. Some of the conditions that cause this message to be displayed are:

- Loss of one bulk power assembly (BPA)
- Loss of communications to the alternate support element
- No more spare processing units (PUs)
- Not enough spare PUs to support either Capacity Backup or Disaster Recovery Assurance (if either feature is installed)
- Memory sparing threshold reached
- An Oscillator/ECF card is defective
- The alternate support element is fenced
- A multiple chip module (MCM) is defective.

Exceptions

You can use **Views** and the work area to immediately locate all current exceptions. Objects that are in an exceptions state, due to an unacceptable status condition, will be displayed in the Exceptions Work Area.

1. Open **Exceptions** from Views.

   This displays all objects with unacceptable statuses in the Exceptions Work Area. (Not all logical objects are displayed. For example, Image CPs.)
2. In the Exceptions Work Area, the background color of each object's icon indicates its current status. If you are not certain which status is indicated by the background color of an object's icon, double-click on the object to open its Details window.

This window includes detailed information about the object, including a list of the colors used to indicate its statuses.

See "Monitoring system status" on page 42 for more information about Exceptions.

Recognizing exceptions

After the background color of the Views area returns to green, indicating there are no new exceptions, you can still recognize *current* exceptions by the background colors of the **Exceptions** icon and of each group that contains an exception:

- Upon opening the **Exceptions** view, the background color of the Views area returns to green, but the **Exceptions** icon remains red, the color set for indicating there are exceptions.

  The **Exceptions** icon remains red until the last of *all* current exceptions is returned to an acceptable status.
- When an exception occurs, the background color of each group that contains the exception changes to red, the color set for indicating there are exceptions.

  A group that contains exceptions remains red until *all* of its exceptions are returned to an acceptable status.

  Note: Within a group, the background color of each object that is an exception is the color set to indicate its specific unacceptable status, as described previously in the topics that follow "Determining the exact status of an object" on page 53. An exception remains the color of its unacceptable status until it is returned to an acceptable status.

Returning an exception to an acceptable status

After you locate an exception and check its unacceptable status, you can use any appropriate task to return the exception to an acceptable status. The target object of the task can be either:

- The exception from the Exceptions Work Area.
- The same exception from any group that contains it.

Locating the exception in the Exceptions Work Area is the quickest way to locate a target for the task.

Note: When activation is the task you intend to use to return an exception to an acceptable status, you should consider the activation profile assigned to the target object. Whenever an object is activated, it is activated according to the information in its assigned activation profile.

The exception in the Exceptions Work Area is automatically assigned the activation profile used in the most recent attempt to activate the object. To activate the exception with a different activation profile, you can either:

- Assign the exception in the Exceptions Work Area the activation profile you want to use.
- Locate an instance of the same exception, in any group that contains it, that is already assigned the activation profile you want to use.

For more information about activation and assigning activation profiles, see "Activate the CPC" on page 69 and "Checking a logical partition's assigned activation profile" on page 226.

Active tasks

A task is considered to be in progress, and is referred to as *active*, until it is completed *and* its completion is acknowledged. Display the Active Tasks view by double clicking with the left mouse button on the Active Tasks icon in the **Views** are. This view is useful when you have minimized the Progress windows

for one or more tasks that are in progress simultaneously. Object icons representing all the tasks that are currently in progress, or those tasks that have completed but whose ending status has not been reviewed, will be displayed in the *Active Tasks Work Area*.

If there are active icons in the Active Tasks Work Area, you can double-click on them to redisplay the Progress window for that task. When a task completes, the Progress window for that particular task will be automatically redisplayed, allowing you to respond to the final status.

Minimizing and restoring a task in progress

Completing a task typically requires using one or more windows and messages to provide information for performing the task or to acknowledge information about its intermediate and final outcomes. A window or message that requires you to provide or acknowledge information remains open until you do so. Ordinarily, the window or message also remains displayed. Some tasks provided for monitoring and operating the system allow you to temporarily set the task aside, while it is still active, by minimizing its open window or message. This is referred to as *minimizing an active task*.

Consider minimizing an active task whenever either:

- The console is busy processing the task and does not require your interaction or attention for several minutes.
- Or you want an unobstructed view of the workplace.

  For example, you may want to monitor its objects or areas for status changes.
- Or you want to use the workplace to do something else, but do not want to complete or cancel the task first.

  For example, you may want to use the console's 3270 emulator, check or change the console's settings, or open one of the console's online books.

To minimize an active task:

1. Click on the minimize icon of the active task's open window or message.

   Note: The minimize icon is located in the upper right corner of the window or message.

   This minimizes the window or message, which minimizes the active task. The task is still active, and its current window or message remains open, but it is temporarily not displayed.

After you minimize an active task, it will remain minimized until either:

- The console restores the task automatically when it completes processing the task and displays a window or message with information about the task's final outcome.

  Close the window or message to acknowledge receiving the information and to end the completed task.
- Or you restore the task, at any time, to either complete it, cancel it, or check its progress.

  Use Views and the work area to restore a minimized active task.

To restore a minimized active task:

1. Open **Active Tasks** from the **Views** area.

   Note: An empty **Active Tasks Work Area** indicates there are no minimized active tasks.
2. In the **Active Tasks Work Area**, locate the minimized active task you want to restore.
3. Double-click on the task to restore it.

   Restoring the task again displays its open window or message. Follow the instructions on the window for completing, cancelling, or continuing the task.

Restoring a minimized open window

The windows and messages displayed during active tasks remain open until you provide or acknowledge information as required to complete the tasks. Not all open windows indicate an active task.

For example, open windows that provide options for starting tasks, changing settings, or viewing information, are *not* considered active tasks. While you can minimize an open window the same way you minimize an active task, minimized open windows will not be included in the **Active Tasks** view.

To restore a minimized open window:

1. Click on the maximize icon located in the upper right corner of the workplace.

   Restoring the open window again displays it. Follow the instructions on the window for using it or use its controls to close it.

Completing active tasks and closing open windows before logging off

You cannot log off the console while tasks are active or windows are open. The console will notify you if there are active tasks or open windows when you attempt to log off. You must complete or cancel each active task and close each open window before the console will allow you to log off:

- If an active task is minimized, restore it, then follow the instructions on an active task's open window or message to complete or cancel the task.

  Completing an active task may often be only a matter of acknowledging the completion of the task.
- If an open window is minimized, restore it, then use its controls to close it.

Console actions

Display the Console Actions view by double-clicking with the left mouse button on the Console Actions icon in the *Views* area. Object icons representing all the actions that can be performed on the Hardware Management Console and its internal code are displayed in the *Console Actions Work Area* as shown in Figure 39 on page 59. These actions are used for setting up the Support Element, maintaining its internal code, and servicing the Support Element console. Most likely, you will not use these actions on a regular basis.

Note: The layout of the console actions in the work area uses the default sort order for the classic style user interface. You can change the layout from the **User Settings** task on the **Classic Style** tab or select **Style Settings** from the pop-up menu in the work area. Figure 39 on page 59 displays the console actions sort order by ascending name.

To begin any console action task while using the classic style user interface:

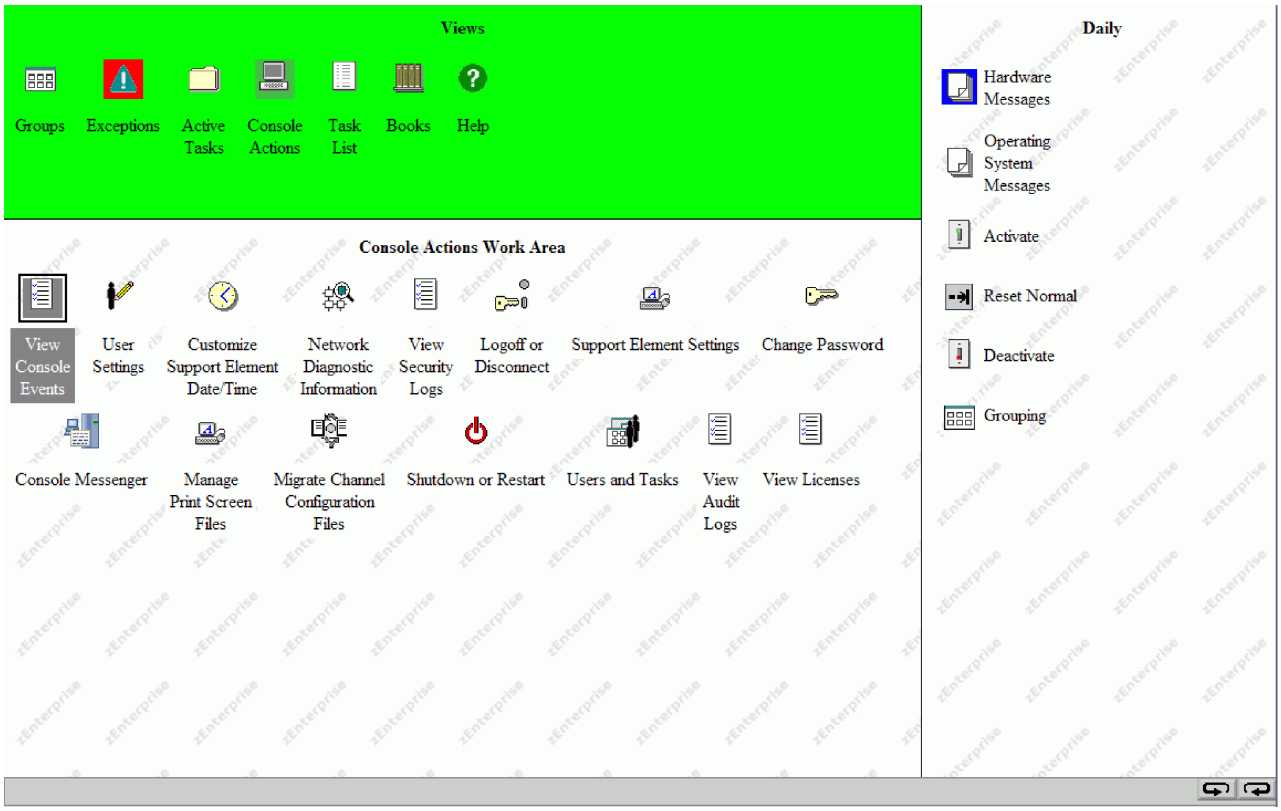


Figure 39. Console actions work area

To start a console action:

1. Open **Console Actions** from the **Views** area.
2. Open the task that you want to perform from the **Console Actions Work Area**.
3. The window for that task opens and you can proceed with the functions that need to be performed for that task.

See Chapter 15, “Console Actions,” on page 171 for specific descriptions of all console actions.

Task lists

Display the Task list view by double-clicking with the left mouse button on the Task List icon in the **Views** area.

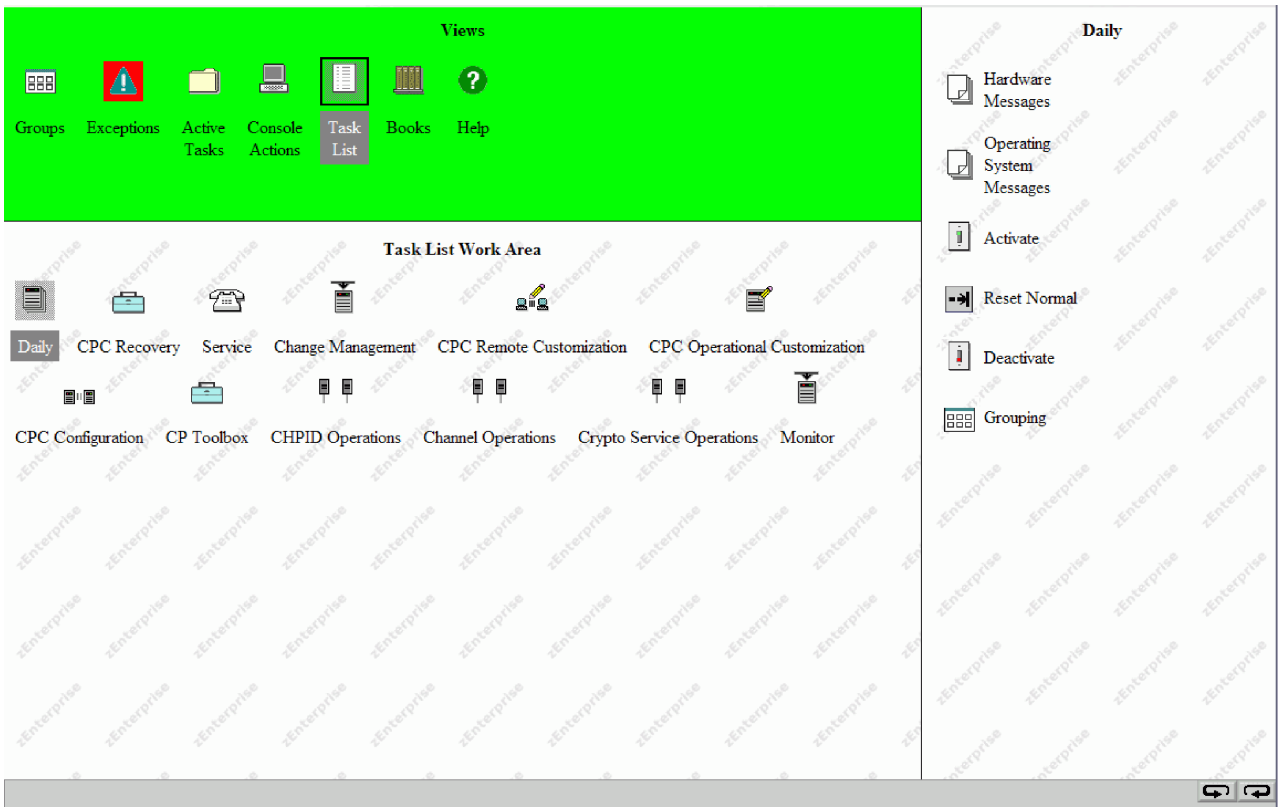


Figure 40. Task list work area

Use views, the work area, and the tasks area to locate system tasks. System tasks are divided into lists of related tasks. To locate a particular system task, you must locate and open the task list that contains it. Opening a task list displays its tasks in the tasks area along the right side of the workplace.

To open a task list:

1. Open **Task List** from Views.
2. In the **Task List Work Area**, locate the list that contains the type of system task you want to start.
3. Double-click on the task list to open it.
4. Locate the task list on the right side of the Support Element Workplace.

Begin with the task in the upper left corner of the area, and move left to right through each row of task lists. Consider this order a *ring*. To complete the ring, the last task list in the last row is followed by the first task list in the first row. After you become familiar with this order, you may prefer to open a task list by using the controls, referred to as *ring buttons*, located in the lower right corner of the tasks area.

To use ring buttons to open a task list:

- Click on the left ring to open the next task list in the ring.
- Click on the right ring to open the previous task list in the ring.

Note: To view the rings on the support element console, click the maximize icon in the upper right hand corner of the support element workplace.

Until you become familiar with the tasks contained in each task list, use the index of this operations guide to locate instructions for starting the task you want to perform. The instructions will identify the name of the task and the name of the task list that contains it.

Hardware messages

The central processor complex (CPC) and Support Element Console Application send messages to the support element console to notify you of significant events that involve or affect the use of CPC hardware and licensed internal code. The messages are referred to as *hardware messages*.

Hardware messages may be sent to the support element console at any time. The support element console receives the messages automatically, stores them in a message log, and turns on several console indicators to help you recognize that hardware messages were received.

The support element console can store a maximum of five hundred messages in its hardware message log. If the message log becomes full, the support element console continues to receive and store new messages, but deletes the log's oldest message for each new message that is received. Promptly view, act on, and delete hardware messages to avoid filling the message log and losing messages.

Recognizing when hardware messages were received

While the Support Element Console Application is running, it changes the background color of one or more icons to indicate the support element console received a hardware message from the central processor complex (CPC).

The type and number of icons changed upon receiving a hardware message depends on whether anyone is logged on the console at the time:

- While logged on, the background color of the following icons changes when the support element console receives a hardware message:
  - The background color of the CPC changes to blue, the color set for indicating a hardware message was received.
  - The background color of each group that contains the CPC changes to blue.
  - The background color of the **Hardware Messages** task flashes blue. That is, its background color alternates between blue and the color of the tasks area. This is the task you will use to view the hardware messages.
- While logged off, the background color of the **Hardware Messages** icon on the logon window flashes blue when the support element console receives a hardware message. That is, its background color alternates between blue and the color of the logon window.

  Note: The logon window is titled Support Element Logon. The **Hardware Messages** icon is located in the Message indicators area of the window.

In addition to changing the background colors of icons, the support element console beeps once when it receives a hardware message, regardless of whether anyone is logged on or logged off the console at the time.

The **Hardware Messages** icon continues to flash blue until you acknowledge receiving the new hardware messages by taking action on any one of them. The background color of the CPC and the groups that contain it remains blue until you take action on each new hardware message. Taking action on hardware messages begins with viewing them.

Viewing hardware messages

View hardware messages to remain informed of events that involve or affect the use of the central processor complex (CPC). Upon viewing hardware messages, you can also:

- Get more details for messages to determine what actions to take in response.
- Delete messages you no longer need.
- After you open the hardware messages notebook, use the online Help for more information on using it to view and delete hardware messages.

To get more details for messages:

1. Locate the **CPC** to work with.
2. Locate and open the **Hardware Messages** task.
3. Select each message for which you want more details, then click **Details**.

   This opens a Details window, one at a time, for each selected message for which details are available.
4. Read the information and follow the directions on each details window to determine what action to take in response to a message. In many cases, you can use a details window itself to start the action.

Operating System Messages

An image is a set of central processor complex (CPC) resources capable of running a control program or operating system. An operating system running in an image sends messages to operating system consoles to notify you of significant events that involve or affect the use of the operating system. The messages are referred to as *operating system messages*.

If an operating system running in an image supports console integration and is customized to allow using the support element console as an operating system console, then the support element console can also receive operating system messages.

An operating system may issue any number of messages at any time. The support element receives the messages automatically and stores them in a message log. The support element also turns on several console indicators to help you recognize that priority or held operating system messages were received. A *priority* or held operating system message either requires a response from the console operator or notifies the console operator of a critical condition that requires immediate attention.

The support element can store an average of approximately 200 (depending on the length of each message) messages in its operating system message log per image. If the message log becomes full, the support element continues to receive and store new messages, but deletes one or more of the log's oldest non-held, non-priority messages to make room for each new message. If there are not any non-held, non-priority messages, the oldest non-held priority, held, or priority message will be deleted.

Recognizing when priority or held operating system messages were received

While the Support Element Console Application is running, it changes the background color of one or more icons to indicate the support element received a priority or held operating system message from an image supported by the central processor complex (CPC).

The type and number of icons changed upon receiving a priority or held operating system message depends on whether anyone is logged on the console at the time:

- While logged on, the background colors of the following icons change when the support element receives a priority operating system message:
  - The background color of the image that supports the operating system changes to cyan, the color set for indicating that a priority or held operating system message was received.
  - The background color of each group that contains the image changes to cyan.

  - The background color of the **Operating System Messages** task flashes cyan. That is, its background color alternates between cyan and the color of the tasks area. This is the task you will use to view the operating system messages.
- While logged off, the background color of the **Operating System Messages** icon flashes cyan when the support element receives a priority or held operating system message. That is, its background color alternates between cyan and the color of the logon window.

  Note: The logon window is titled Support Element Logon. The **Operating System Messages** icon is located in the Message indicators area of the window.

The **Operating System Messages** icon continues to flash cyan until you acknowledge receiving the new priority or held operating system messages by viewing them. Likewise, the background colors of the image and the groups that contain it remain cyan until you acknowledge receiving the new priority or held operating system messages by viewing them. While viewing operating system messages, you have the option of responding to them.

Viewing operating system messages

View operating system messages to remain informed of events that involve or affect the use of images supported by the central processor complex (CPC). Upon viewing operating system messages, you can also:

- Send responses to messages.
- Delete messages you no longer need.
- Use the online Help for more information to view, respond to, or delete operating system messages.

To view operating system messages:

Black Indicates an informational message that normally does not require a response from the console operator.

Blue Indicates a held message that requires a response from the console operator.

Red Indicates a priority message about a critical condition that requires immediate attention.

Responding to an operating system message requires receiving an operating system message first. You can use **Operating System Messages** also to send commands to an operating system, regardless of whether you've received messages from it.

Sending commands to operating systems

You can use a support element console to send commands, at any time, to operating systems running in images supported by the central processor complex (CPC). operating system commands, about

To send commands to an operating system:

1. Locate a target: either a group of images or individual images. Using a group of images will allow sending commands to each operating system running on images in the group, while using individual images will allow sending commands to their operating systems only.
2. Locate and open the **Operating System Messages** task.

   This opens the Operating System Messages notebook. Each page lists the operating system messages, if any, from each image in the target group or among the selected images. The window provides a **Send** command for sending commands to the operating systems running on the images.

   Use the online Help for more information to send commands to an operating system.

   Note: The **Send** command is not available if the operating system running on an image does not support receiving commands from the support element console.

Books

Use Views and the work area to open online books provided with the Support Element Console Application. The books provide information about using the application and Support Element workplace. The books include:

Support Element Operations Guide
This online book is the publication you are currently using. It provides information about the Support Element Console Application and about using the Support Element workplace to monitor and operate your system.

To open an online book:

1. Open **Books** from **Views** area.
2. In the **Books Work Area**, locate the book you want to open and double-click on the book icon. The book remains open until you close it.

Help

Provides both general and specific information. Any icon can be dragged and dropped on the Help icon for information, or the Help icon can be dragged and dropped on any of the icons in the Views, Tasks, or Work areas of the Support Element Console window.

Help will display the section of this online document that describes the object that the help icon was dropped on. Once that information is displayed, you may go to any other part of the document for other information.

To display Help for an object or Support Element Console area:

1. Drag and drop the Help icon on the object or the area of the Support Element Console that you want help information for.

The Help window displays help information for the object or area of the Support Element Console where you dropped the help icon.

Displaying hover help for workplace objects

Online help provides extensive, comprehensive information for the areas and objects on the support element workplace. As you become more familiar with workplace objects, and if you have less frequent need for the amount and depth of information provided by online help, consider using hover help instead. Hover help is a brief description of an object's, contents, usage, or purpose. The help is displayed in a compact window that hovers above the object. You can set hover help either *on* or *off*, depending on what you want. Initially, hover help is set off.

To set *hover help* on for your workplace:

- Open **Console Actions** from Views.
  This displays the console actions in the Console Actions Work Area.
- Open the **User Settings** task from the Console Actions Work Area.
  This **User Settings** window is displayed.
- Select the **Controls** tab on the **User Settings** window.

- Select **Show hover help** from the menu choice. This places a check next to it and sets hover help on. If you want to set hover help off, uncheck the choice by selecting it from the menu.
- Click **Apply**, then click **OK** to enable hover help.

Note: Hover help is not displayed immediately. The cursor must remain placed on a workplace object for several seconds to display the help.

You can work with the objects on the workplace using the mouse to select them. This is known as the *drag and drop technique*. This involves using the mouse to pick up one or more objects, dragging them to a task, and then dropping them. These techniques are examples of what is known as *direct manipulation.*

Chapter 4. Daily

This section describes the tasks from the **Daily** task list used most often on a daily basis for monitoring and operating the system.

To launch the tasks from the **Daily** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Note: The **Activity** task is now accessed from the **Monitors Dashboard** task by selecting **Open Activity** from the menu bar.

Activation

Activation is a process that makes an object operational, where the *object* can be a central processor complex (CPC) or an image, and *operational* means either:

- The object is ready to have a control program or operating system loaded.
- The object has loaded and is running a control program or operating system.

Activation makes an object operational by:

- Using predefined information, referred to as an *activation profile*, to set the operational capabilities and characteristics of the object.
- Checking the current status of the object, and then performing only the operations necessary to make it operational.

So using activation is not limited to starting the system. Using activation is recommended *whenever you want to make the CPC or its images operational*.

A *complete activation* activates the CPC and its images completely and in a single step. The result of a complete activation is an operational CPC with images loaded and running operating systems. The current status of the CPC and its images determines which operations are performed during activation to make them operational. Activation may include:

1. Turning CPC power on.
2. Performing a power-on reset, which includes allocating system resources to the CPC.
3. Then activating logical partitions to support multiple images.

   Activating each logical partition includes:

   a. Initializing it.
   b. Allocating system resources to it.
   c. Loading it with a control program or operating system.

Since the status of the CPC and its images determines which operations must be performed during activation to make them operational, one or more operations listed above may *not* be performed during activation. For example:

- Activating the CPC does not perform a power-on reset if the CPC has already been power-on reset and the applicable settings in its assigned activation profile, such as the operating mode and active input/output configuration data set (IOCDS), are already in effect.
- Activating the CPC does not perform any operations if the CPC is already operational and all settings in its assigned activation profile are already in effect.

Activation profiles

The predefined information used to activate an object is referred to as an *activation profile*. There are four types of activation profiles:

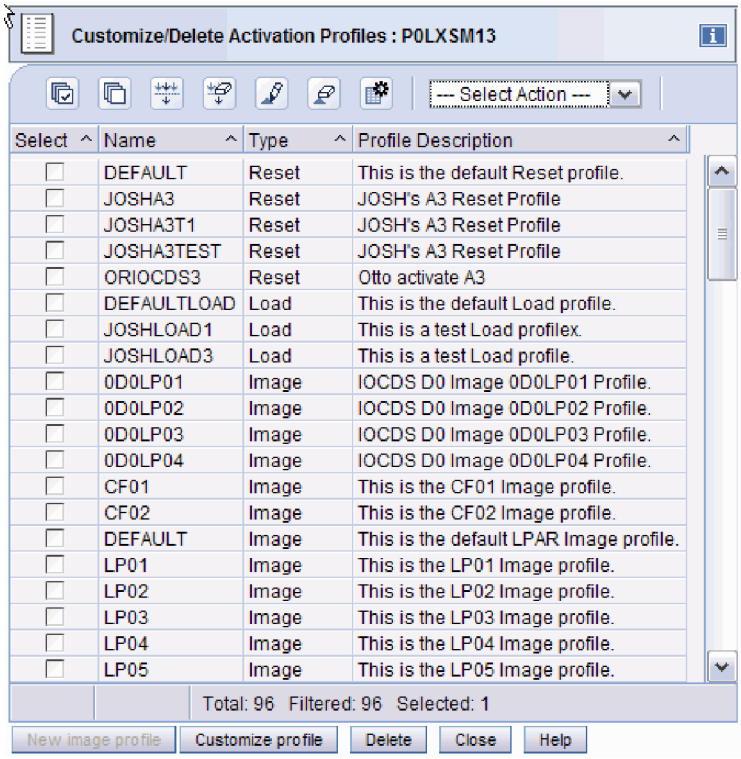


Figure 41. Activation profiles

- A *reset profile* is used to activate a central processor complex (CPC) and its images.
- An *image profile* is used to activate an image of a CPC previously activated.
- A *load profile* is used to load a previously activated image with a control program or operating system.
- A *group profile* is used to define the group capacity value that can be customized in determining the allocation and management of processor resources assigned to the logical partition group.

To support your normal, day-to-day system operations, you will activate a central processor complex (CPC) with a reset profile. Activating a CPC with a properly customized reset profile includes initializing its images, if necessary, and can include loading the images. That is, a properly customized reset profile *includes* the image profiles necessary to perform a complete activation of a CPC and its images.

After activating a central processor complex (CPC) with a reset profile, you can use the other types of activation profiles to establish a different or alternate operational capabilities and characteristics for the images, but without performing a complete activation of the CPC again. You can:

- Activate an image with a load profile to load a different control program or operating system.
- On a CPC, activate an image with its image profile to activate it individually rather than by activating the CPC.

Preparing for an activation

To successfully activate a central processor complex (CPC), you'll need:

- A properly customized reset profile assigned to the CPC and customized to meet your unique needs for operating the CPC.

- Access to resources referred to in the reset profile:
  - An input/output configuration data set (IOCDS) for defining the CPC's input/output (I/O) configuration.
  - Operating systems for loading images.

Preparing an IOCDS

You must build an IOCDS and it must be stored on a CPC's support element before you can activate the CPC.

An IOCDS is used during a power-on reset to define your I/O configuration to the channel subsystem of the CPC. The I/O configuration is the set of all I/O devices, control units, and channel paths available to the CPC.

You can build an IOCDS by using an input/output configuration program (IOCP):

- An IOCP may be available as a batch program with your operating system.
  For information about using the IOCP, see: *Input/Output Configuration Program User's Guide*,, SB10-7037.
- A stand-alone IOCP also is available with the support element.
  For information about using the stand-alone IOCP, see: *Stand-Alone IOCP User's Guide*, SB10-7040.

Preparing to load images

To load an image during the activation of the CPC or logical partition that supports it, you must make an operating system or control program available for loading the image.

An operating system or control program is available for loading an image if it can be loaded by using I/O devices defined in the IOCDS used to activate the CPC. For example, with a properly defined I/O configuration, the operating system or control program could be:

- Read from a DASD.
- Read from a tape device to a DASD, then read from the DASD.
- Read from a tape device directly.

Note: Activating a coupling facility, which loads an image with coupling facility control code (CFCC), does not require using devices in the CPC's I/O configuration. The CFCC is loaded from the CPC's support element.

Activate the CPC

Use the Support Element workplace to start the task for activating the central processor complex (CPC).

Note: Activating a CPC can be considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.

To activate the CPC:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. The CPC must have access to the input/output configuration data set (IOCDS) and operating systems referred to in the reset profile. See "Preparing an IOCDS."

3. Locate the **CPC** to work with.
4. Locate and open the **Activate** task.
5. Review the information on the **Activate Task Confirmation** window to verify the object you will activate is the CPC, and the activation profile it will use is the one you want.
6. If the information is correct, click **Yes** to perform the activation.

   The Activate Progress window indicates the progress of the activation, and the outcome.
7. Click **OK** to close the window when the activation completes successfully.

   Otherwise, if the activation does not complete successfully, follow the directions on the window to determine the problem and how to correct it.

After the CPC is activated, you can use the **Activate** task again, if necessary, to selectively activate its images.

Activate an object

Use the Support Element workplace to start the task for activating an object and if they support activation profiles, the activation profiles to be used for each object of the central processor complex (CPC).

An *image* is a set of CPC resources capable of running a control program or operating system. One or more images is created during a power-on reset of a CPC. Each logical partition is an image.

To activate an object:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. You must activate the CPC, and the activation must complete with at least a successful power-on reset of the CPC.
3. If you are activating an image, you must customize an activation profile and assign it to the image. See "Activation profiles" on page 195.
4. The system must have access to the operating system referred to in the activation profile. See "Preparing to load images" on page 69.
5. Locate the object. If the object is an image, locate the image to which you assigned the activation profile.

   Note: Activating an object can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
6. Locate and open the **Activate** task.
7. Review the information on the Activate Task Confirmation window to verify the object or image you will activate is the image, and the activation profile it will use is the one you want.
8. If the information is correct, Click **Yes** to perform the activation.

   This displays the Activate Progress window. The window indicates the progress of the activation, and the outcome.
9. Click **OK** to close the window when the activation completes successfully.

   Otherwise, if the activation does not complete successfully, follow the directions on the window to determine the problem and how to correct it.

Deactivate the CPC

Deactivation is an orderly process for shutting down and turning off the system.

Shutting down and turning off the system, referred to also as *deactivating* the system, includes:

- Ending hardware and software activity.
- Clearing, releasing, and deallocating hardware resources.
- Turning off power.

You can use the Support Element workplace to start the task for deactivating the central processor complex (CPC). The target, or *object*, of a deactivation can be a CPC or an image. For more information about deactivating individual logical partitions, see "Deactivate an object."

Note: Although you can use the power switch on the CPC itself to turn it off, you should turn off CPC power by deactivating it instead. Unlike using the CPC's power switch, deactivating the CPC includes clearing, releasing, and deallocating its hardware resources before turning off its power.

To deactivate the CPC:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. End all operating systems supported by the images.

   Important: If you do not end all operating systems before deactivating the CPC, operating system activity will be abruptly ended during deactivation, resulting in a possible loss of data.
3. Locate the **CPC** to work with.

   Note: Deactivating a CPC can be considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
4. Locate and open the **Deactivate** task.
5. Review the information on the Deactivate Task Confirmation window to verify the object you will deactivate is the CPC.
6. If the information is correct, click **Yes** to perform the deactivation.

   The Deactivate Progress window indicates the progress of the deactivation, and the outcome.
7. Click **OK** to close the window when the deactivation completes successfully.

   Otherwise, if the deactivation does not complete successfully, follow the directions on the window to determine the problem and how to correct it.

After the CPC is deactivated, the CPC and the images are no longer operational.

Deactivate an object

You can use the Support Element workplace to start the task for deactivating an object of the central processor complex (CPC).

An *Image* is a set of CPC resources capable of running a control program or operating system. One or more images is created during a power-on reset of a CPC. Each logical partition is an image. You can use one or more images as deactivation targets to deactivate individual logical partitions.

To deactivate an object:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the object you want to deactivate.

   Note: Deactivating an object can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Deactivate** task.
4. Review the information on the Deactivate Task Confirmation window to verify the object you will deactivate.
5. If the information is correct, click **Yes** to perform the deactivation.

   The Deactivate Progress window indicates the progress of the deactivation, and the outcome.
6. Click **OK** to close the window when the deactivation completes successfully.

   Otherwise, if the deactivation does not complete successfully, follow the directions on the window to determine the problem and how to correct it.

After the image is deactivated, the logical partition it supported is no longer operational. The CPC and images previously activated to support other logical partitions remain operational. Logoff the Support Element of each system that is to be powered off. See "Logoff or Disconnect" on page 180.

After logging off the integrated Support Element, shutdown the Hardware Management Console, see the *Hardware Management Console Operations Guide*.

Grouping

Managing groups enables you to create, delete, add to, and delete from user-defined groups of objects. You may want to create a group when you want to perform the same task on several images simultaneously instead of repeating the task on each individual image. This task also allows you to group one or more user-defined groups into other groups.

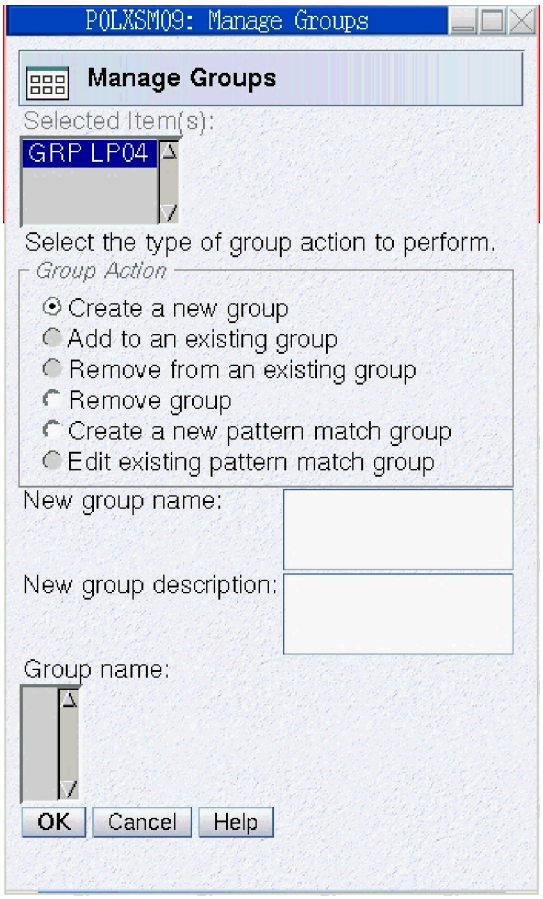


Figure 42. Creating a group

To group images:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Images** that you want to work with.
3. Select one or more objects.
4. Locate and open the **Grouping** task. The Manage Groups window displays to allow you to add the selected object(s) to an existing group, delete the selected object(s) from a group, create a new group, create a pattern match group, or delete the group.

You may want to group one or more user-defined groups into other groups if you have many groups in your Groups Work Area and need additional work area space. However, if you group user-defined groups into other groups, you cannot perform any task other than **Grouping** on these groups.

To group groups of user-defined images:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **images** that you want to group.
3. Select one or more objects.
4. Locate and open the **Grouping** task.

   The Manage Groups window displays.

5. Select **Create a new group** in the **Group Action** box.
6. Enter a *group name* in the **New group name** box.
7. Click **OK**. A **Create a New Group** window displays stating you successfully created a new group.
8. Click **OK**. The new group is now displayed in the Group Work Area.
9. Select another group that you want to add to the group you just created above.
10. Locate and start the **Grouping** task.

    The Grouping window displays.
11. Click *Add to an existing group* in the **Group Action** box.
12. Select the *group name* you created in **step 9** above from the **Group Name** box.
13. Click **OK**. The Add to an Existing Group window displays telling you successfully added a group to another group.
14. Click **OK**. The group is no longer displayed in the Group Work Area because it is now part of the group you created in **step 9**.
15. Repeat **steps 11** through **14** for as many groups that you want to add to the new group.

Reset normal

A *reset normal* initializes a system or logical partition by:

- Clearing its pending interruptions.
- Resetting its channel subsystem.
- Resetting its processors.

If you have experience using other systems, a reset normal may have been referred to as a *system-reset-normal*.

A reset normal prepares a system or logical partition for loading it with an operating system. On the Support Element workplace, *images* support operating systems, images are your targets for resets. An image represents a logical partition, while the CPC is activated.

A reset normal is one of several recovery tasks that you can use to attempt to recover from hardware or software errors. A reset normal is often effective but less disruptive than other tasks, which typically makes it the first task attempted to recover from errors when they occur. Follow your local error recovery procedures for determining when to perform a reset normal.

To perform a reset normal:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.

   Note: Performing a reset normal on an image can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Reset Normal** task.
4. Review the information on the confirmation window to verify the image you will reset.
5. If the information is correct, Click **Perform reset** to perform the reset normal.
6. Click **OK** to close the progress window when the reset completes successfully.

Otherwise, if the reset does not complete successfully, follow the directions on the window, or on any messages that may display, to determine the problem and how to correct it.

Note: For more information about all recovery tasks, including reset normal, seeChapter 5, “CPC Recovery,” on page 77.

Chapter 5. CPC Recovery

This section describes the tasks from the **CPC Recovery** task list typically needed to attempt to recover from hardware or software errors. The recovery tasks, from least to most disruptive, are:

- Processor operations: stop all and start all
- Resets: normal and clear
- Load
- Power-on reset

If you have experience using other systems, you may find that some recovery tasks are the same as or similar to tasks you have used not only for error recovery on similar systems, but also for starting the system under normal circumstances. But using the Support Element workplace, you should *activate* the system instead of using recovery tasks for starting the system under normal circumstances. Activating the system, referred to also as *system activation*, automatically determines its status and then performs all of the tasks necessary to make it operational. For more information about activation, see "Activation" on page 67.

Use recovery tasks only while following your local procedures for error recovery.

To launch the tasks from the **CPC Recovery** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Load

A load resets a system or logical partition, to prepare it for loading an operating system, and then loads the operating system. If you have experience using other systems, a load may have been referred to as an *initial program load* or *IPL*. You can have up to four Load types: Normal, Clear, SCSI, and SCSI dump.

For daily or routine loading of images, it is recommended that you customize activation profiles to specify how you want to load images, and then use a profile with the **Activate** task to perform all the operations necessary to make an image operational, including loading it with a control program.

Load (except for a coupling facility image) causes a program to be read from a designated device and initiates the execution of that program. On the Support Element workplace, **images** support operating systems, so images are your targets for loads. An image represents a logical partition, while the CPC is activated.

Follow your local error recovery procedures for determining when to perform a load.

To perform a load:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.

Note: Loading an image is considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.

3. Locate and open the **Load** task.
4. On the Load window:
   a. Use the controls to identify the operating system you want to load, and to indicate how you want to perform the load.
   b. Click **OK** to perform the load using the information you provided.

      The Load Task Confirmation window is displayed.
5. Review the information on the confirmation window to verify the image you will load and the information you provided for performing the load. If the information is correct, click **Yes** to perform the load.

   The progress window indicates the progress of the load, and the outcome.
6. Click **OK** to close the window when the load completes successfully.

   If the load does not complete successfully, follow the directions on the window, or on any messages that may display, to determine the problem and how to correct it.

Load from Removable Media or Server

This task loads system software or utility programs from a CD-ROM or DVD in the local removable media device, or from an FTP server.

Note: The installation of some software, such as certain levels of z/VM®, requires you to not remove the media from the Hardware Management Console's drive until directed. Refer to the installation instructions that come with your software for more information.

To load the software:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).

   Note: Load from Removable Media or Server is considered a disruptive task. If the object is locked, you must unlock it before continuing. For more information about disruptive tasks, see "Disruptive tasks" on page 7.
2. Locate the **Image** to work with.
3. Locate and open the **Load from Removable Media or Server** task.

   The Load from Removable Media or Server window displays.
4. Select one of the software options:
   - Hardware Management Console CD-ROM/DVD
   - FTP Source (If you choose this option specify the FTP host computer, user ID, password, and account.)
5. Click **OK** to close the window when the task completes successfully.

Power-on reset

A power-on reset initializes a system by:

- Initializing all processors.
- Initializing the channel subsystem.
- Allocating storage.
- Loading the hardware system area (HSA) with licensed internal code.
- Establishing logically partitioned (LPAR) mode.
- Defining the input/output (I/O) configuration to the channel subsystem.

If you have experience using other systems, a power-on reset may have been referred to as an *initial microcode load* or *IML*.

On the Support Element workplace, the central processor complex (CPC) is the system, so the CPC is your target for a power-on reset.

Follow your local error recovery procedures for determining when to perform a power-on reset.

To perform a power-on reset:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. You must have an input/output configuration data set (IOCDS) available on your Support Element which defines the I/O configuration for the CPC.
3. Locate the **CPC** to work with.

   Note: Performing a power-on reset to a CPC is considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
4. Locate and open the **Power-on reset** task.

   The Power-On reset notebook pages provide controls for customizing the information used to perform a power-on reset of the CPC.
5. Use the controls on each page to customize the power-on reset information as needed:
   a. Use the General page to select an operating mode and IOCDS for the CPC.
   b. Use the Dynamic page to establish the hardware support required to use dynamic input/output (I/O) configuration.
   c. Use the Options page to enable or disable the global input/output (I/O) priority queuing for the CPC and set the automatic input/output (I/O) interface reset.
   d. Use the CP/SAP page to select a CP/SAP configuration to optimize the performance of the CPC.
6. Select **Perform power-on reset** to perform the power-on reset using the information you provided in the window.
7. Click **Power-on reset** to perform the power-on reset.

   The progress window indicates the progress of the power-on reset, and the outcome.
8. Click **OK** to close the window when the power-on reset completes successfully.

   If the power-on reset does not complete successfully, follow the directions on the window, or on any messages that may display, to determine the problem and how to correct it.

Use the online Help for more information on performing a power-on reset.

Resets: normal and clear

A reset initializes a system or logical partition by:

- Clearing its pending interruptions.
- Resetting its channel subsystem.
- Resetting its processors.

Such a reset is referred to as a *reset normal*; if you have experience using other systems, a reset normal may have been referred to as a *system-reset-normal*. Like a reset normal, a *reset clear* clears interruptions, resets channels, and resets processors for a system or logical partition, but a reset clear also clears main storage for the system or logical partition. If you have experience using other systems, a reset clear may have been referred to as a *system-reset-clear*.

A reset prepares a system or logical partition for loading it with an operating system. On the Support Element workplace, *images* support operating systems, so images are your targets for resets. An image represents either:

- A central processor complex (CPC)
- A logical partition (LPAR).

Follow your local error recovery procedures for determining when to perform a reset normal or reset clear.

Reset clear

To perform a reset clear:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.

   Note: Performing a reset clear on an image can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Reset Clear** task.
4. Review the information on the confirmation window to verify the image you will reset.
5. If the information is correct, Click **Yes** to perform the reset clear.

   The progress window indicates the progress of the reset, and the outcome.
6. Click **OK** to close the window when the reset completes successfully.

   If the reset does not complete successfully, follow the directions on the window, or on any messages that may display, to determine the problem and how to correct it.

Reset normal

To perform a reset normal:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.

   Note: Performing a reset normal on an image can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Reset Normal** task.
4. Review the information on the confirmation window to verify the image you will reset.
5. If the information is correct, Click **Yes** to perform the reset normal.

   The progress window indicates the progress of the reset, and the outcome.
6. Click **OK** to close the window when the reset completes successfully.

   If the reset does not complete successfully, follow the directions on the window, or on any messages that may display, to determine the problem and how to correct it.

Processor operations: start all and stop all

Start all and *stop all* are processor operations you can use, together, to control whether processors can process instructions. If you have experience using other systems, you may have used START and STOP commands or **Start** and **Stop** keys to start and stop processors

On the support element workplace, *images* are supported by physical processors or logical processors. An image represents a logical partition, while the CPC is activated.

By using start and stop on *all* processors that support an image, you can control the processing activity of the image, and thereby control the activity of the software running on the image:

- Stop all processors for an image to suspend its processing activity. This effectively suspends the activity of the software running on the image.
- Start all previously stopped processors for an image to resume its processing activity. The activity of the software running on the image also is resumed.

Follow your local error recovery procedures for determining when to stop all processors, what to do afterwards, and when to start all processors again.

Note: If your local error recovery procedures direct you to work with individual processors, use tasks in the CP Toolbox task list. See Chapter 11, "CP Toolbox," on page 145, for more information about tasks for working with individual processors:

- Processor operations: stop and start
- Changing a processor's operation rate
- Using display/alter
- Performing a PSW restart
- Setting conditions for stopping a processor
- Tracing processor activity
- Interrupting processor activity
- Using store status.

Start all

Follow your local error recovery procedures for determining when to start all processors. Generally, starting all processors for an image is most effective after you have used the **Stop All** task to stop all processors for the image.

To start all processors for an image:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.

   Note: Stopping an image can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Start All** task to start all processors for the image.

   This immediately performs the operation; all processors for the image are started and resume operating.

Stop all

Follow your local error recovery procedures for determining when to stop all processors. Generally, stopping all processors for an image is effective only when the image and its processors are operating.

To stop all processors for an image:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.

   Note: Stopping an image can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Stop All** task to stop all processors for the image.

   This immediately performs the operation; all processors for the image are stopped.

Chapter 6. CPC Operational Customization

This section describes the tasks from the **CPC Operational Customization** task list for operating logical partitions.

To launch the tasks from the **CPC Operational Customization** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Automatic activation

Follow your local procedures for recovering from a power outage that is the result of a utility power failure. You may be able to speed recovery from such power outages by *enabling automatic activation* for the central processor complex (CPC). *Automatic activation* is a CPC setting that controls whether the CPC is activated automatically when power is restored following a utility power failure:

- When automatic activation is *enabled*, and a utility power failure occurs, the CPC is activated automatically when utility power is restored. The CPC is activated using the same reset profile used most recently to activate the CPC before the power outage.
- When automatic activation is *disabled*, and a utility power failure occurs, the CPC power remains off when utility power is restored. You can activate the CPC at any time, but manually, after utility power is restored.

To enable or disable automatic activation:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the CPC to work with.
3. Locate and open the Automatic Activation task to start it.
4. Use the Customize Automatic Activation window's controls to enable or disable automatic activation:
   a. Select the CPC name from the list.
   b. Select **Options** from the menu bar.
   c. While automatic activation is disabled, select **Enable automatic activation** from the menu to change the CPC's setting to enabled.
   d. While automatic activation is enabled, select **Disable automatic activation** from the menu to change the CPC's setting to disabled.
   e. Click **Save** to save the setting and close the window.

Use the online Help for more information on using the window to enable or disable automatic activation.

Change LPAR Controls

The settings that determine how processor resources are assigned to, used by, and managed for logical partitions that can be activated on the central processor complex (CPC) are referred to here as *control settings*. More specifically, control settings determine:

- Whether logical partitions are assigned dedicated or shared processor resources.
- How each logical partition activated with shared processor resources shares them with other logical partitions activated with shared processor resources.
- How the CPC manages logical partitions' use of shared processor resources.

Both the CPC and its logical partitions have control settings. A logical partition's control settings apply to it only. The CPC's control settings apply to all of its logical partitions. The control settings are:

Logical processor assignment
: These logical partition settings control how many logical processors are assigned to the logical partition, how they are assigned as either dedicated or shared processor resources, and the processing weights of logical partitions. The settings control how a partition is workload managed and whether software pricing is to change based on the number of defined capacity.

Processor running time
: These CPC settings control how its logical partitions' processor running time is determined. The processor running time, referred to also as a timeslice, is the amount of continuous time allowed for each logical partition's logical processors to perform jobs on shared central processors.

The initial control settings of the CPC and each logical partition are established by the activation profiles used to activate them. See the following topics for more information about customizing activation profiles for establishing initial control settings:

- "Activation profiles" on page 195
- "Assigning initial logical or reserved processors" on page 213
- "Setting processor running time" on page 207
- "Setting defined capacity" on page 220
- "Setting Workload Manager (WLM) controls" on page 213

To review or change control settings:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.

   Note: Changing logical partition control settings on a CPC can be considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Change LPAR Controls** task.

   The Change Logical Partition Controls window displays.
4. Depending on the physical processors installed in your system (CPs, ICFs, IFLs, IFAs, and zIIPs), select the processor assignment tab to display the processor assignment window. Each processor assignment window lists the logical partitions that can be activated on the CPC and displays check boxes, entry fields, and other controls that indicate their current control settings:
   - Each logical partition's settings for logical processor assignments, including the number of logical processors assigned to each logical partition, and how they are assigned as either dedicated or shared processor resources. The defined capacity weights and current weight. Workload manager (WLM) the current, minimum, and maximum processing weight.
5. Select the Processor Running Time tab.
6. Use the controls to change the control settings of the logical partitions or the CPC, then proceed to indicate what you want to do with the new settings.
7. Use the controls to change:

- One or more logical partition's settings for how logical processors are assigned as either dedicated or shared processor resources.
- The processing weights of logical partitions that share central processors (and whether they are capped).
- A logical partition to be workload managed with minimum and maximum weight values to set.
- Defined capacity values for software pricing.
- The CPC's settings for processor running time.

Change LPAR Cryptographic Controls

The settings that determine how the activated logical partition uses the Crypto Express2 and Crypto Express3 assigned to are referred here as cryptographic controls. The logical partition's cryptographic controls are:

Control domain index numbers
This number identifies the cryptographic domains the logical partition uses for remote secure administration functions.

Usage domain index numbers
This number identifies the usage domains the logical partition uses for cryptographic functions. The usage domains cannot be removed if they are online.

Cryptographic Candidate List
These numbers identify which cryptos will be assigned to the logical partition. Cryptos cannot be removed if they are online.

Cryptographic Online List
These numbers identify which cryptos will be brought online at the next logical partition activation. Changes to the online list do not affect the running system.

Logical partition's initial cryptographic controls are established by the activation profile used to activate the logical partition. See “Activation profiles” on page 195 for more information about customizing activation profiles for establishing a logical partition's initial cryptographic controls:

You can use the Support Element workplace to start the task to select cryptographic control settings to be changed dynamically on the system, in the image profile, or both.

To dynamically change logical partition cryptographic controls:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3).
2. The Crypto Express2 or Crypto Express3 feature must be installed.
3. Locate the **image** to work with.
4. Locate and open the **Change LPAR Cryptographic Controls** task.
5. Use the Change LPAR Cryptographic Controls window to change the crypto configuration for a logical partition then proceed to indicate what you want to do with the new settings.
6. Use the cryptographic controls to dynamically:
   - Add crypto(s) and usage domain index(es) to a logical partition for the first time.
   - Add crypto(s), crypto(s) and usage domain index(es), or a usage domain index(es) to a logical partition that is already using crypto.

- Remove crypto(s), crypto(s) and usage domain index(es), or usage domain index(es) from a logical partition.
- Add and remove crypto(s), crypto(s) and usage domain index(es), or usage domain index(es) from a logical partition.

Use the online Help for more information on changing logical partition cryptographic controls.

Change LPAR Group Controls

The group assignment for logical partitions determines how allocation and management of processor resources assigned to the logical partitions in a group can be activated on the central processor complex (CPC).

You can use the Support Element workplace to start the task for reviewing or changing the group assignment for logical partitions. The group name, member partitions, and group capacity value display. A logical partition can become a member of a group which allows determining the allocation and management of processor resources assigned to logical partitions in a group. You can change a group assignment dynamically for the active logical partitions.

To review or change logical partition group controls for the selected CPC:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.

   Note: Changing logical partition group controls can be considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Change LPAR Group Controls** task.

   The Change Logical Partition Group Controls window displays.
4. Use the controls to change the group capacity or logical partition group members.

Change LPAR I/O Priority Queuing

This task allows you to review or change the minimum or maximum input/output (I/O) priority queuing value assignments of logical partitions. These values are passed on to the I/O subsystem for use when queuing decisions with multiple requests. You can dynamically (new settings take effect without customizing profiles or activating objects) change the minimum and maximum input/output (I/O) priority queuing values. See "Setting I/O priority queuing values" on page 220 to customize the activation profile for each logical partition.

To change LPAR I/O priority queuing:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Change LPAR I/O Priority Queuing** task.

The Change Logical Partition Input/Output (I/O) Priority Queuing window displays. The window lists the I/O priority queuing values for logical partitions defined by this IOCDS.

4. Use the window to dynamically change the minimum and maximum I/O priority queuing values.

   Note: If global input/output I/O priority queuing is **Enabled**, changes made for the minimum or maximum values will take effect immediately. If the global value is **Disabled**, changes will be saved by the system, but will not take effect until the global value is changed to **Enabled**.

5. Make a selection to indicate what you want to do with the new setting.

Use online Help to guide you through completion of this task.

Change LPAR Security

The settings that determine the extent of interaction between logical partitions that can be activated on the central processor complex (CPC) are referred to here as *security settings*.

A logical partition's security settings are:

Performance data control
This setting controls whether a logical partition has global access to performance data.

Input/output configuration control
This setting controls whether a logical partition can change the input/output (I/O) configuration of the CPC on which it is activated.

Cross partition authority
This setting controls whether a logical partition can issue a subset of control program instructions to other logical partitions activated on the same CPC

Logical partition isolation
This setting controls whether a logical partition has exclusive use of its reconfigurable channel paths.

Basic counter set authorization control
The basic set authorization control can be used in analysis of cache performance, cycle counts, and instruction counts while the logical CPU is running.

Problem state counter set authorization control
The problem state set authorization control can be used in analysis of cache performance, cycle counts, and instruction counts while the logical CPU is in problem state.

Crypto activity counter set authorization control
The crypto activity counter set authorization control can be used to identify the crypto activities contributed by the logical CPU and the blocking effects on the logical CPU.

Extended counter set authorization control
The counters of the extended counter set authorization control are model dependent.

Coprocessor group counter set authorization control
The coprocessor group counter set authorization can be used to count the crypto activities of a coprocessor.

Basic sampling authorization control
The basic sampling authorization control allows tooling programs to map instruction addresses into modules or tasks, and facilitates determination of hot spots.

Permit AES key import functions
The permit Advanced Encryption Standard (AES) key import functions allow you to enable the new Perform Cryptographic Key Management Operation functions of the CP Assist for Cryptographic Functions (CPACF) feature.

Permit DEA key import functions
The permit Data Encryption Algorithm (DEA) key import functions allow you to enable the new Perform Cryptographic Key Management Operation functions of the CP Assist for Cryptographic Functions (CPACF) feature.

A logical partition's initial security settings are established by the activation profile used to activate the logical partition. See "Activation profiles" on page 195 for more information about customizing activation profiles for establishing a logical partition's initial security settings:

To review or change logical partition security settings:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.

   Note: Changing logical partition security settings on a CPC can be considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Change LPAR Security** task.

   The Change Logical Partition Security window displays. The window lists the logical partitions that can be activated on the CPC and displays check boxes that indicate their current security settings:
   - Performance data control
   - Input/output configuration control
   - Cross partition security
   - Logical partition isolation
   - Basic counter set authorization control
   - Problem state counter set authorization control
   - Crypto activity counter set authorization control
   - Extended counter set authorization control
   - Coprocessor group counter sets authorization control
   - Basic sampling authorization control
   - Permit AES key import functions
   - Permit DEA key import functions.

   Use the online Help for more information about changing logical partition security.
4. Use the check boxes to change the logical partitions' security settings, then use the controls to indicate what you want to do with the new settings.

   Use the online Help for more information about changing logical partition security.

   Notes®:
   - *Dynamic I/O configuration*: Although more than one logical partition can run an application that supports dynamic I/O configuration, you should allow using only one logical partition to dynamically change the I/O configuration. The I/O configuration control setting of the logical partition you choose must display a check mark. The I/O configuration control setting of all other logical partitions should be blank.
   - *Automatic reconfiguration facility (ARF)*: To use a logical partition for running an application that supports the ARF, its cross partition authority setting must display a check mark.

Customize/Delete activation profiles

This task enables you to create new activation profiles, customize existing profiles, or delete unwanted profiles that are stored in the CPC. An activation profile is required for the CPC or image activation and defines the IOCDS, storage sizes, and other parameters that will be available when the object is activated.

The *DEFAULT RESET*, *DEFAULT IMAGE*, and *DEFAULT GROUP* profiles are the only profiles that can use the same name. For more information on activation profiles, see Appendix A, "Customizing activation profiles," on page 195.

To create new, customize existing, or delete activation profiles:

1. Select one or more objects.
2. Open the **Customize/Delete Activation Profiles** task. The Customize/Delete Activation Profiles List window is displayed.
3. If you selected more than one object for this task, then tabs on the right side of the window allow you to work with the objects you selected.
4. Select a profile from the list, then click an action you want to perform, such as **Customize profile**. The Customize Activation Profiles window is displayed. This window uses a tree view to present the activation profile information.

   The tree view located on the left side of the window includes the CPC that you want to work with and its images, if applicable. You can expand on each of these items by clicking on the square and you can then click on each name for more details or to make appropriate changes to the profile.

You can also use the **New image profile** to guide you through the process of creating a new image profile. From the Customize/Delete Activation Profiles List window:

1. Select the profile name that requires an image profile to be created, then click **New image profile**. The New Image Profile Wizard displays to guide you through the process of creating a new image profile.
2. Proceed through the wizard windows propagating the desired information.
3. Click **Finish** when you have completed the task and are ready to save the changes.

You can also use the **Customize profile** to modify parameters of two or more image profiles. From the Customize/Delete Activation Profiles List window:

1. Select two or more image profile names that require modification, then click **Customize profile**. The Select one or more images window is displayed.
2. Click **OK**. The Image Wizard window is displayed.
3. Proceed through the wizard windows propagating the desired information.
4. Click **Finish** when you have completed the task and are ready to save the changes.

Use the online Help to get additional information for working with profiles.

Customize Scheduled Operations

Use the Support Element to customize scheduled operations for automatically performing the following operations in the recommended process for managing internal code changes.

- Accept *previous* internal code changes, if any, that were retrieved, installed, and activated.
- Retrieve the new internal code changes from the IBM Service Support System to the Support Element.
- Install and activate concurrent internal code changes to make them operational.

Activate the CPC
Makes the installed code changes operational in place of their corresponding licensed internal code. Activating the changes does not permanently modify the internal code and they may be removed until the time that they are accepted. Activating internal code changes that are not concurrent may cause the Support Element(s) to reload its licensed internal code without warning. If no licensed internal code changes are installed, the CPC will be activated with the current licensed internal code.

Deactivate (Power-off) selected CPC
Stops the operating system, deallocates resources, clears associated hardware and powers off the CPC.

Accept internal code changes
Schedules an operation to make activated internal code changes a permanent working part of the licensed internal code of the selected CPC.

Install and activate concurrent code changes
Schedules an operation for installing and activating internal code changes retrieved for the selected CPCs

Remove and activate concurrent code changes
Schedules an operation for removing and activating internal code changed installed for the selected CPCs.

Retrieve internal code changes
Schedules an operation to copy internal code changes from a remote service support system to the Support Element hard disk.

Transmit system availability data
Sends service data generated by the selected object to IBM. This data is used to ensure a high level of availability.

Activate or deactivate processed resources in an OOCoD record
Sends an operation to activate or deactivate a processed OOCoD record.

Change LPAR weights
Schedules an operation to change the processing weights for processor types assigned to one or more active logical partitions and allows the partition capping value to be specified. Specify only the weights for active partitions that you want to change or that you want to be active. If a partition specified does not exist or is not active at the time the operation runs, then the entire scheduled operation is ignored.

Audit and log management
Schedules an operation to perform an audit report on selected types of audit data. This audit data report can be viewed and offloaded to a selected media or location.

Set Power Saving
Schedules and operation to reduce the average energy consumption of a target CPC, BladeCenter, or Blade.

To schedule operations for managing internal code changes:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).

2. Locate the **CPC** you want to work with.
3. Locate and open the **Customize Scheduled Operations** task.

   The Customize Scheduled Operations window displays.
4. Click **Options** from the menu bar to display the following menu options:
   - To add a scheduled operation, click **New...**
   - To delete a scheduled operation, select the operation you want to delete, then click **Delete**.
   - To return to the Support Element console workplace, click **Exit**.
5. Click **View** from the menu bar to display the following menu options:
   - To view a scheduled operation, select the operation you want to view, point to **View** and then click **Scheduled Details...**
   - To change the time of a scheduled operation, select the operation you want to view, point to **View** and then click **New Time Range...**
6. Click **Sort** from the menu bar to sort the scheduled operations and select a sort category that you prefer.
7. Use the online Help to get additional information for scheduling an operation.

Enable I/O Priority Queuing

This task allows you to enable or disable I/O priority queuing for the system. Enabling the I/O priority queuing allows the system to specify a priority to be associated with an I/O request at start subchannel time. See"Enabling or disabling the global input/output I/O) priority queuing" on page 206 to customize the reset profile for the CPC.

To enable or disable the I/O priority queuing:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Enable I/O Priority Queuing** task.

   The Enable Input/Output (I/O) Priority Queuing window displays.
4. Click the menu under **Settings** to make your selection:

   Enabled
   Activates I/O priority queuing for the CPC.

   Disabled
   Deactivates I/O priority queuing for the CPC.
5. Click **Save** to save the setting.

Use online Help to guide you through completion of this task.

Export/Import Profile Data

This task allows you to export or import activation profiles or system activity profiles for the CPC to the hard drive or removable media. Exporting and importing profiles is necessary only when you intend to have your current system and Support Element replaced with a new system and Support Element. When a Capacity Backup Upgrade (CBU) is activated, more processors (CPs, SAPs, ICFs) are activated in the system. In most cases, this requires you to change your activation profiles to include these new processors in the next activation. Otherwise, the CP/SAP split in the reset profile and the number of dedicated CPs/ICFs and other processor options in the Image profile won't specify the correct options.

To export/import profile data:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Export/Import Profile Data** task to start it.

   The Export/Import Profiles window displays.
4. Select the option you want to export or import profiles:
   - Export/import profiles to/from hard drive
   - Export/import profiles to/from removable media.

   Note: If you are using a USB flash memory drive, plug it into the console and then wait for the console to beep three times. This indicates that the device is ready and can be accessed. If it does not beep three times, unplug the device and try again. See "USB flash memory drive" on page 7 for more information.
5. Click **OK**.

   Use the online Help for more information about exporting/importing profile data.

Logical Processor Add

You can use the Support Element workplace to start the task that allows you to select logical processor definitions to be changed dynamically on the system, in the image profile, or both. Dynamic changes will take effect without performing a reactivation of the logical partition.

The initial control settings of each logical partition are established by the activation profiles used to activate them. See the following topics for more information about customizing activation profiles for establishing initial control settings:

- "Assigning initial logical or reserved processors" on page 213
- "Setting Workload Manager (WLM) controls" on page 213.

To dynamically add one or more logical processors to a logical processor:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **image** to work with.
3. Locate and open the **Logical Processor Add** task.

   The Logical Processor Add window displays.
4. Based on the current logical partition configuration, change the logical processor definitions for the partition:
   - Increase the initial values, reserved values, or both for installed logical processor types.

- Add a reserved value and set weight capping indicators for logical processor types that have not yet been installed and have no reserved CPs defined.
- Increase the reserved value for logical processor types that have not been installed and already have reserved CPs defined.

5. To have the new changes take effect immediately, click **Change Running System**.
6. To have the new changes take effect when the logical partition is activated with the modified profile, click **Save to Profiles**.
7. To have the new changes take effect immediately and also when the logical partition is activated with the modified profile, click **Save and Change**.

Use the online Help for more information on adding a logical processor.

Manage zBX LEDs

Use this task for problem determination in locating a selected zBX Blade target:

- zBX Blade and BladeCenter
- BladeCenter only.

Then perform an action to turn on, blink or reset the zBX LED.

To manage zBX LEDs:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select a zBX blade.
3. Locate and open the **Manage zBX LEDs** task. The Manage zBX LEDs window is displayed.
4. Select the target and action to perform.
5. Click **Apply** to perform the operation.
6. Click **Cancel** to turn off all zBX LEDs and close the window.

Use the online Help if you need additional information about managing zBX LEDs.

Storage information

The model of your system determines the minimum, standard, and maximum storage capacity of the central processor complex (CPC).

Installed storage is part of the CPC's hardware configuration; it is provided by one or more storage cards physically installed in the CPC. *Allocated storage* is installed storage that is in use for a specific purpose:

- The *hardware system area (HSA)* is storage only the CPC can use. It stores the CPC's licensed internal code and input/output (I/O) definition while the CPC is activated.
- *Central storage* includes main storage and internal disk subsystem cache. Operating systems and applications can use main storage; only the CPC can use the cache.
- *Expanded storage* is a buffer some operating systems can use for high-speed paging to and from main storage.

Storage is allocated to a CPC when it is activated.

When the CPC is activated, much of the storage allocated to the CPC can be allocated to the logical partitions activated on it:

- The central storage allocated to the CPC is the central storage initially available to logical partitions.
- The expanded storage allocated to the CPC is the expanded storage initially available to logical partitions.

Like the CPC, storage is allocated to a logical partition when it is activated. So to allocate storage to the CPC or a logical partition, you must customize the activation profile you use to activate it.

To review the current storage allocations:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Storage Information** task to start it.
   - Page tabs along the top of the window identify its pages. Select a page tab to display that page.
   - The first page of the window displays information about storage installed and allocated for the CPC. Its page tab is labeled: Base system storage allocation.
   - If the CPC is activated, the window includes a second tab that displays information about storage allocated for logical partitions currently activated on the CPC. Its page tab is labeled: Logical partition storage allocation.

   Use the online Help for more information about using the window to review the current storage allocations.

Degraded storage mode

Degraded storage mode is the result of a hardware failure that prevents the central processor complex (CPC) from using all of its installed storage. Activating the CPC fails if a hardware failure that affects its storage occurs. Like all hardware failures, the CPC automatically analyzes it, then reports it by issuing a hardware message.

The details of the hardware message will instruct you to customize the CPC's activation profiles to attempt activating the CPC and its images with *half* the amount of its installed storage. Activate the CPC with the newly customized activation profiles. If the activation succeeds, the CPC resumes operating, but with a reduced amount of installed storage. This condition, referred to as *degraded storage mode*, allows the CPC to continue operating until the hardware failure is corrected by you or your service provider.

If the CPC is operating in degraded storage mode, the term **Degraded** is displayed below the CPC name. Open the CPC details window to view the Degraded Reasons.

In degraded storage mode, the amount of installed storage available for allocating central and expanded storage is temporarily reduced. The reduced amount of available storage is referred to here as the *degraded mode storage amount*.

Upon activating a central processor complex (CPC) in degraded storage mode, central storage, and expanded storage are allocated from the degraded mode storage amount.

View LPAR cryptographic controls

You can use the Support Element workplace to start the task to review information about the active logical partitions that use the CEX3A, or CEX3C assigned to them. You can review:

- A summary tab page of information on all active logical partitions.
- Individual tab pages for each logical partition's cryptographic controls.

To review the logical partition's cryptographic controls:

1. The Crypto Express3 feature must be installed.
2. At least one activated logical partition must have at least one CEX3A, or CEX3C assigned to it.
3. Log onto the support element on the hardware management console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
4. Locate the **CPC** to work with.
5. Locate and open the **View LPAR Cryptographic Controls** task.

   The View LPAR Cryptographic Controls window displays. The window includes a summarized view tab for cryptos on all partitions and individual tabs for each logical partition's cryptographic controls.
6. Click **OK** when you have finished.

Use the online Help for more information about viewing the cryptographic controls.

Chapter 7. CPC Remote Customization

This section describes the tasks from the **CPC Remote Customization** task list you can use to customize settings that control whether, how, and for what purposes connections are established and communications are conducted between remote systems and the Support Element of the central processor complex (CPC).

To launch the tasks from the **CPC Remote Customization** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see "Object locking for disruptive tasks" on page 41.

Customer Information

Typically, if the service support system cannot determine the cause of the problem, it forwards the problem report and service request to a support center for further analysis by service personnel. The analysis may require a service representative to contact your company, preferably the person responsible for the CPC at the site where the CPC is located. So problem reports and service requests transmitted from the CPC's Support Element to the service support system also include such information.

You can use the Support Element workplace to customize information, referred to here as *account information*, that the CPC's service providers can use to contact your company and the person responsible for the CPC.

To customize account information:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Customer Information** task. The Customer Information window is displayed.
4. Select one of the following tabs from the Customer Information window:
   - Administrator
   - System
   - Account.
5. Enter the information in the fields provided.

   If the selected objects do not all have the same customer information, the information displayed on the Customer Information window will be information that applies to the first selected object. The information for the other objects will be displayed by tabs on the right.
6. Click **OK** to save the information and close the notebook.

Use the online Help for more information about using the page to customize the information.

Connecting and communicating with a remote service support system

Remote service is two-way communication between the Support Element of a central processor complex (CPC) and a remote, automated *service support system* provided and maintained by the CPC's service provider. For example, when IBM is the CPC's service provider, IBM provides and maintains the remote, automated IBM Service Support System.

Note: If you are familiar with IBM service, you may have heard the IBM Service Support System referred to as RETAIN®.

The CPC's *remote service settings* control whether and how its Support Element uses remote service. When the CPC's remote service settings are customized for using remote service, the CPC's Support Element uses a feature called the *remote support facility (RSF)* to establish a remote connection through its *phone server* to your service provider's service support system. Whenever a connection is established during a Support Element operation, it can send information to the service support system or receive information from it.

Using remote service is optional, but has the following benefits:

- You can let the Support Element automatically report problems and get service through the service support system.
- You can use the service support system as a source for retrieving internal code changes.
- You can use the service support system as a destination for transmitting service data.

The remaining topics in this section describe these benefits in more detail and provide instructions for getting them by customizing the CPC's remote service settings.

Getting ready to report problems and get service

The Support Element automatically and continuously monitors itself and the central processor complex (CPC) for problems. If the Support Element detects a problem, it uses a knowledge-based expert system called *Problem Analysis* to automatically:

- Analyze the problem, attempt to determine its cause, and determine whether service is required to correct the problem.
- Issue a hardware message to notify you of the problem. Information provided with the message includes a detailed description of the problem and instructions for correcting it or calling for service.
- Send problem information for optical errors to a designated console, if available, for additional analysis.

If service is required to correct the problem, it is your responsibility to contact your service provider, report the problem, and request service to correct it. You can do this manually by calling your service provider on the telephone and using the information provided with the hardware message to describe the problem.

If your service provider has an automated service support system for receiving and processing problem reports and service requests, you can report problems and request service automatically by customizing the Support Element's remote service settings as follows:

- *Enable* remote service to allow the Support Element to establish remote connections through its *phone server* to your service provider's service support system.
- *Enable* automatic service calling to allow the Support Element to automatically report problems and get service through the remote connection to the service support system.

If the Support Element detects a problem while remote service and automatic service calling are enabled, the Support Element uses its phone server to transmit the problem report and service request to the service support system, which receives and processes them according to the service policies of your

service provider. For example, when your service provider is IBM, the IBM Service Support System analyzes your problem report, then forwards it accordingly:

- When the cause of the problem is known, the IBM Service Support System forwards the problem report to a service representative, who is then sent to your location with the instructions, parts list, and other information necessary to correct the problem.
- When the cause of the problem is not yet known, the IBM Service Support System forwards the problem report to an IBM Support Center for further analysis.

To customize the Support Element for automatically reporting problems and getting service, see "Remote service" on page 100 for instructions for enabling remote service *and* automatic service calling.

Getting ready to retrieve internal code changes

Licensed internal code, referred to also as *internal code*, controls many of the operations available on a central processor complex (CPC) and its Support Element. IBM provides *internal code changes* to change the internal code of a CPC or its Support Element. Changing the internal code may be necessary to add new functions, improve existing functions, or correct problems.

IBM provides internal code changes by delivering them on a USB flash drive and by making them available on the IBM Service Support System. Although the same internal code changes are available from each source, the most direct source is the IBM Service Support System. But you can use the IBM Service Support System as a source only by customizing, in advance, the CPC's remote service settings to *enable* remote service.

While remote service is enabled, the IBM Service Support System is *another* source for manually retrieving internal code changes. If you intend to *schedule an operation* for retrieving internal code changes regularly and automatically, the IBM Service Support System is the only eligible source. You must enable remote service before scheduling an operation for retrieving internal code changes.

To use the IBM Service Support System as a source for retrieving internal code changes, either manually or during a scheduled operation, see "Remote service" on page 100for instructions for enabling remote service.

Getting ready to transmit service data

Service data is a set of system information, such as program and event traces and storage dumps, collected by the Support Element of the central processor complex (CPC). When IBM is the service provider for your system, service data assists IBM in servicing it.

You can send service data to IBM either by copying it to a DVD-RAM or USB flash media for delivery to IBM, or by transmitting it to IBM through a remote connection to the IBM Service Support System. Although the same service data is sent to IBM through each destination, the most direct destination is the IBM Service Support System. You can use the IBM Service Support System as a destination only by customizing, in advance, the CPC's remote service settings to *enable* remote service.

While remote service is enabled, the IBM Service Support System is *another* destination for manually transmitting service data. If you intend to *schedule an operation* for transmitting service data regularly and automatically, the IBM Service Support System is the only eligible destination. You must enable remote service before scheduling an operation for transmitting service data.

To use the IBM Service Support System as a destination for transmitting service data, either manually or during a scheduled operation, see "Remote service" on page 100 for instructions for enabling remote service.

Remote service

Remote service is a two-way communication between the console and the IBM Service Support System (commonly known as RETAIN) for conducting automated service operations.

You can use the Support Element workplace to customize the remote service settings of the central processor complex (CPC). The settings control whether and how the CPC's Support Element uses the remote support facility (RSF) to establish a remote connection through its phone server to your service provider's service support system. Whenever a connection is established during a Support Element operation, it can send information to the service support system or receive information from it.

To customize remote service settings:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Remote Service** task.
4. Use the Customize Remote Service window to set the CPC's remote service settings.
5. Select **Enable remote service request**. This option allows the Support Element to establish remote connections to the IBM Service Support System.
6. To allow the Support Element to automatically report problems and get service through its remote connection to the IBM Service Support System:
   - Check **System z** to enable service for System z related problems
   - Check **zBX** to enable service for zBX related problems.

   Note: Note: This option is only available when the IBM zEnterprise BladeCenter Extension (zBX) feature is installed.
7. After you enable remote service, you must customize the telephone number for calling the IBM Service Support System.
8. Click **OK** to save the settings and close the window.

Use the online Help for more information about using the window to customize the settings.

Chapter 8. Service

This section describes the tasks from the **Service** task list you can use to test, report problems, and get service for the central processor complex (CPC).

To launch the tasks from the **Service** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Checkout tests

Checkout tests are test programs typically run by service representatives to test the central processor complex (CPC) hardware and determine whether it is operating correctly.

Running checkout tests will require all CPC resources. That is, you will not be able to run other control programs or operating systems of the CPC while checkout tests are running.

Checkout tests are fully automated. Once you start them, they require no input or interaction until they are completed. Checkout tests begin with a power-on reset of the CPC and with the diagnostic (D0) input/output configuration data set (IOCDS), followed by loading and running the test programs.

Note: The power-on reset cancels all operations in progress on the CPC, and loading the checkout tests replaces the CPC's current control program or operating system. When the checkout tests are completed, activate the CPC to perform a power-on reset and load the previous control program or operating system.

Checkout tests include testing the CPC's processors and storage, and running internal wrap tests on its channels.

Note: Other hardware in the CPC's input/output (I/O) configuration, such as drivers, receivers, interface cables, control units, and I/O devices, are not tested.

To start checkout tests:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.

   Note: Starting checkout tests on a CPC can be considered disruptive. If the CPC is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **Checkout Tests** task.
4. Click **Run test** from the **Checkout Tests** window to start the checkout tests.

   When checkout tests are completed, the results are displayed. The results provide information about errors that were detected or problems that occurred, if any, during testing.

Delete LPAR dump data

Dump data remains stored on the support element until it is either:

- Replaced by new dump data during an automatic dump.
- Deleted manually.

Ordinarily, you will not need to delete dump data manually. Deleting dump data is necessary only if the dump data prevents you from manually dumping new data:

- If a logical partition data dump is already stored on the support element, you must delete it before you can manually dump new logical partition data.
- If two coupling facility logical partition data dumps are already stored on the Support Element, you must delete at least one of them before you can manually dump new coupling facility logical partition data.

Note: Starting the task for manually deleting dump data is useful also to check the types of dump data, if any, already stored on the support element, and to check the time and date the data was dumped. After you've checked the type, time, and date of previously dumped data, cancel the task to end it *without* deleting the previously dumped data.

To manually delete dump data:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Delete LPAR Dump Data** task.
4. Use the window's controls to select the types of dump data you want to delete, then click **Delete** to delete them.

   Otherwise, if you only wanted to check the type, time, and date of previously dumped data, click **Cancel** to end the task *without* deleting the previously dumped data.

Dump LPAR data

Most service data is collected and stored automatically by the Support Element of the central processor complex (CPC). This includes logical partition dump data and coupling facility logical partition dump data.

Logical partition dump data is control area information that is automatically collected and stored if logical partition errors are detected. Collecting and storing information is often referred to as *dumping data*.

Coupling facility logical partition dump data is control area information that is automatically collected and stored if coupling facility logical partition errors are detected while a logical partition is operating in coupling facility mode.

Like other types of service data, logical partition dump data and coupling facility logical partition dump data assist IBM in servicing the CPC. Like other types of service data, sending dump data to IBM is necessary only when dump data is requested by IBM.

If the dump data requested by IBM is not available, or if it is available but was not dumped recently, you can manually dump the data first, then send it and any other requested service data to IBM.

Note: If you are not certain whether dump data is already stored on the Support Element, or whether it was dumped recently, you can use the **Delete LPAR Dump Data** task to check. Starting the task displays a window that lists the types of dump data, if any, already stored on the Support Element, and displays the time and date the data was dumped. See "Delete LPAR dump data" on page 102 for instructions for starting the task. After you've checked the type, time, and date of previously dumped data, you will be able to cancel the task *without* deleting the previously dumped data.

To manually dump data in LPAR or coupling facility mode:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. To dump logical partition data, the CPC must be power-on reset.
3. To dump coupling facility logical partition dump data, the CPC must be power-on reset, and a logical partition must be activated in coupling facility mode.
4. To dump logical partition dump data, locate the CPC:
   a. Locate the **CPC** to work with.
5. To dump coupling facility logical partition dump data, locate the coupling facility logical partition.
   a. Locate the **Image** you want to work with.
6. Locate and start the **Dump LPAR Data** task.

   This opens the dump window for the target object.

   Note: If a message notifies you that dump data is already stored on the Support Element, you must delete it before you can manually perform another dump. For more information and instructions, see "Delete LPAR dump data" on page 102.
7. Use the window's controls to select the type of dump you want to perform, then click **OK** to start the dump.

Dump machine loader data

Most service data is collected and stored automatically by the support element of the central processor complex (CPC). This includes logical partition dump data and coupling facility logical partition dump data.

Logical partition dump data is control area information that is automatically collected and stored if logical partition errors are detected. Collecting and storing information is often referred to as *dumping data*.

Coupling facility logical partition dump data is control area information that is automatically collected and stored if coupling facility logical partition errors are detected while a logical partition is operating in coupling facility mode.

Like other types of service data, logical partition dump data and coupling facility logical partition dump assist IBM in servicing the CPC. Like other types of service data, sending dump data to IBM is necessary only when dump data is requested by IBM.

If the dump data requested by IBM is not available, or if it is available but was not dumped recently, you can manually dump the data first, then send it and any other requested service data to IBM.

Note: If you are not certain whether dump data is already stored on the Support Element, or whether it was dumped recently, you can use the **Delete LPAR Dump Data** task to check. Starting the task displays a window that lists the types of dump data, if any, already stored on the Support Element, and displays the time and date the data was dumped. See "Delete LPAR dump data" on page 102 for instructions for starting the task. After you've checked the type, time, and date of previously dumped data, you will be able to cancel the task *without* deleting the previously dumped data.

To manually dump data in LPAR or coupling facility mode:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. To dump logical partition data, the CPC must be power-on reset.
3. To dump coupling facility logical partition dump data, the CPC must be power-on reset, and a logical partition must be activated in coupling facility mode.
4. Log onto the support element on the hardware management console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
5. To dump logical partition dump data, locate the CPC.
6. To dump coupling facility logical partition dump data, locate the coupling facility logical partition.
7. Locate and start the **Dump LPAR Data** task.
   This opens the dump window for the target object.

   Note: If a message notifies you that dump data is already stored on the Support Element, you must delete it before you can manually perform another dump. For more information and instructions, see "Delete LPAR dump data" on page 102.
8. Use the window's controls to select the type of dump you want to perform, then click **OK** to start the dump.

Global OSA status

This task allows you to display the global OSA status for all networking OSA channels on the CPC. The window displays the PCHID, status, CHPID, and other information associated with each listed channel and an option to display more detailed information.

Note: This information should be used only under the guidance of IBM product engineering.

To display the global OSA status:

1. Locate the **CPC** you want to work with.
2. Locate and open the **Global OSA Status** task.
   The Global OSA Status window displays.
3. Click **Details** to display additional information on a selected OSA channel.

4. Click **OK** to exit the window.

Use the online Help for more information on global OSA status.

Redundant I/O (RIO) Interconnect Status and Control

This task allows you to check the state and status of the Redundant I/O (RIO) multiport and chain links for the InfiniBand and PCIe channel types. An option is also available to display details and search a specific PCHID/CSS.CHPID controlled by the selected channel.

To check RIO multiport status:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Redundant I/O Interconnect Status and Control** task.

   The Redundant I/O Interconnect Status and Control window displays.
4. Click **Display PCHID/CSS.CHPID** to display details for both sides of the RIO multiport.
5. Click **Search PCHID/CSS.CHPID** to search for a specific PCHID/CSS.CHPID.
6. Click **Cancel** to close the window.

   Use the online Help for more information on checking RIO multiport status.

Offload virtual RETAIN data to HMC Removable Media

This task allows you to copy problem data onto a hardware management console removable media when there is no external connections for your Hardware Management Console to send problem data.

To offload Virtual RETAIN® data to the HMC Removable Media:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and start the **Offload Virtual RETAIN Data to HMC Removable Media** task.

   The Virtual Retain Data Offload window displays.
4. Select the *problem number* of the subdirectory you want to offload from the list
5. Insert the removable media in the Hardware Management Console that is formatted with a volume label of: VIRTRET.
6. Click **OK** to initiate the offload.

   This offload process takes several minutes, depending on the size and quantity of the files to be transferred to removable media.

Use the online Help for more information on offloading RETAIN data.

Reporting problems and getting service

The Support Element automatically and continuously monitors itself and the central processor complex (CPC) for problems. If the Support Element detects a problem, it uses a knowledge-based expert system called *Problem Analysis* to automatically:

- Analyze the problem, attempt to determine its cause, and determine whether service is required to correct the problem.
- Issue a hardware message to notify you of the problem. Information provided with the message includes a detailed description of the problem and instructions for correcting it or calling for service.

If service is required to correct the problem, it is your responsibility to contact your service provider, report the problem, and request service to correct it. You can do this manually by calling your service provider on the telephone and using the information provided with the hardware message to describe the problem.

But if your service provider has an automated service support system for receiving and processing problem reports and service requests, you can report problems and request service automatically by customizing the Support Element's remote service settings.

Settings for reporting problems and getting service automatically

If your service provider has an automated service support system for receiving and processing problem reports and service requests, you can report problems and request service automatically by customizing the Support Element's remote service settings as follows:

- *Enable* remote service to allow the Support Element to establish remote connections to your service provider's service support system.
- *Enable* automatic service calling to allow the Support Element to automatically report problems and get service through its remote connection to the service support system.

To customize the Support Element for automatically reporting problems and getting service, see“Remote service” on page 100 for instructions for enabling remote service *and* automatic service calling.

Using hardware messages to report problems and get service

The central processor complex (CPC) and Support Element Console Application send messages to the support element to notify you of significant events that involve or affect the use of CPC hardware and licensed internal code. The messages are referred to as hardware messages. Promptly view hardware messages as the Support Element receives them to determine their source and subject. See Chapter 2, “Using the tree style user interface,” on page 9 if you are using the tree style user interface, or if you are using the classic style user interface, see “Hardware messages” on page 61 for more information about the Support Element's hardware message indicators..

Problem Analysis issues hardware messages to notify you of problems detected by the Support Element. A hardware message issued by Problem Analysis typically is a brief, general description of a problem with hardware or licensed internal code. Information provided with the message includes a detailed description of the problem and instructions for either correcting the problem or reporting the problem and getting service.

Problem Analysis issues the hardware messages regardless of whether the Support Element's remote service settings are customized for automatically reporting problems and getting service. The remote service settings determine only how problem reports and service requests are transmitted:

- If remote service and automatic service calling are enabled, and if Problem Analysis determines service is required to correct a problem, it automatically transmits a problem report and service request to your service provider.

- If remote service or automatic service calling is not enabled, you must use the hardware message issued by Problem Analysis to report the problem and get service.

To use a hardware message to report a problem and get service:

1. Locate the **CPC** to work with.
2. Locate and open the **Hardware Messages** task.

   The Hardware Messages window pages list the CPC's hardware messages and provides controls for working with them.

   Use the online Help for more information to view and delete hardware messages.
3. Select the message that describes the problem for which you want more details, then click **Details**.

   For hardware messages issued by Problem Analysis, this opens a Problem Analysis window that displays the message details.
4. Read the information and follow the directions on the Problem Analysis window to determine what action to take in response to the message.
5. If service is required to correct a problem, click **Request service** to report the problem to your service provider and to request service. The Support Element's remote service settings determine how the service request is made:
   - If remote service is enabled, requesting service transmits a problem report and service request to your service provider's automated service support system.
   - If remote service is not enabled, requesting service displays a window that provides all the information you need to call your service provider on the telephone, describe the problem, and request service.

Perform problem analysis

The Support Element starts Problem Analysis automatically only upon detecting a problem. While the Support Element provides very comprehensive error detection, if it does not detect a problem you suspect is affecting the central processor complex (CPC) or Support Element, you can use the Support Element workplace to start Problem Analysis manually.

To start Problem Analysis manually:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Perform Problem Analysis** task.
4. Use the Perform Problem Analysis window to start Problem Analysis manually.

   Problem Analysis will issue a hardware message to notify you if it identifies a problem.
5. Click **View All Errors...** to view details on all error in the display list.
6. Click **View Selected Errors...** to view details on a selected error in the display list.
7. Click **Cancel**to exit the window.

Power Cycle zBX Hardware

Use this task when you have completed zBX hardware action using the **Perform Problem Analysis** task and have been directed to power on the zBX component that requires a power cycle.

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **zBX BladeCenter**.
3. Locate and open the **Power Cycle zBX Hardware** task.
4. Select the location of the zBX component to power cycle.
5. Click **Power Cycle Component** to recover the zBX component.

Network Traffic Analyzer Authorization

Use this task for the selected OSA-Express or HiperSockets™ channel to customize or check the current authorization to trace network traffic. This task allows you to select:

- Customize network traffic analyzer settings
- Check current network traffic analyzer authorization.

To customize or check the network traffic analyzer settings:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate the OSA-Express or HiperSockets **Channel** you want to work with.
4. Locate and open the **Network Traffic Analyzer Authorization** task.
   - For OSA-Express, the Network Traffic Analyzer Controls window displays.
   - For HiperSockets, the HiperSockets Network Traffic Analyzer Authorization window displays.
5. Depending on the channel type you have selected:
   - For OSA-Express, select the appropriate control task to:
     - *Customize Network Traffic Analyzer Settings...* to set up NTA authorization to allow or disallow the OSA channels from tracing outside of their own partition.
     - *Check current Network Traffic Analyzer authorization...* to allow the Support Element to scan all the OSA channels and report back which OSA channels are authorized for NTA to trace outside its own partition.
   - For HiperSockets, select the network traffic analyzer logical partition and eligible logical partitions that will be authorized to set up, trace, and capture the HiperSockets network traffic.
     - All IQD channels are not authorized to enable HiperSockets NTA
     - This IQD channel is not authorized to enable HiperSockets NTA
     - This IQD channel is authorized to enable, control and capture network traffic from all logical partitions that contain the IQD CHPID that maps to this IQD channel (Caution: This setting will result in tracing all traffic flowing between all the logical partitions using this IQD CHPID. This can result in performance degradation)
     - Customized HiperSockets NTA logical partition authorization list for this IQD channel.
6. Click **OK** to perform the selected operation.

Use the online Help for more information on customizing network traffic authorization settings.

Restore DataPower XI50z

Use this task to restore the DataPower XI50z secure-backup files you saved on the DataPower XI50z WebSphere Appliance interface for the selected DataPower XI50z. You can use the secure-restore task to:

- Assure applicance recovery
- Move the configuration files to a replacement appliance from an end-of-life appliance
- Use the backup from one appliance to configure multiple, similar function, compatible appliances
- Use the backup during the development cycle to move configuration data from a development environment to test, to pre-production, and finally to production.

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select a DataPower XI50z Blade.
3. Locate and open the **Restore DataPower XI50z** task. The Restore DataPower XI50z window is displayed.
4. Enter the backup source location where you saved the DataPower XI50z backup files.
5. Enter the credential identifier that will be used to decrypt the DataPower XI50z backup files.
6. Click **Validate** to verify that the backup files will successfully restore to the DataPower XI50z.
7. Click **Restore** to restore the backup files on the DataPower XI50z.

Use the online Help if you need additional information.

Report a problem

Problem Analysis provides the means for reporting a problem and requesting service only if it identifies the problem and determines service is required to correct the problem. While Problem Analysis provides very comprehensive problem identification and determination, if it does not identify or does not determine service is required for a problem you suspect is affecting the central processor complex (CPC) or Support Element, you can use the Support Element workplace to report the problem and request service anyway, independently of the results of Problem Analysis.

To report a problem and request service independently of Problem Analysis:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Report a Problem** task.
4. Select the type of the problem you have from the list provided and enter a description of the problem in the **Problem Description** box.

   Note: If you are just testing problem reporting, select **Test automatic problem reporting** and enter *This is just a test* in the **Problem Description** box.
5. Click **Request Service**.

To test problem reporting from the Report a Problem window:

1. Select **Test automatic problem reporting** and enter This is just a test in the Problem Description input field.
2. Click **Request Service**. The Report Problem window is displayed.
3. Click **OK** to complete this task.

Use the online Help for more information about using the window to report the problem and request service.

Service status

You can enable this task to allow a service representative to perform service tasks on the CPC or support element. Many of the CPC service tasks require that the CPC is first placed in service status. Repair and verify, for example, cannot be run on a CPC until that CPC is placed in service status.

When in service, the CPC status displayed on its Details window will be **Service** and no other status will be reported by the CPC until service status is disabled. The background of the Support Element workplace also displays **Service** while service status is enabled. During a service action, status changes (for example, no power) that would normally cause an execution due to an unacceptable status will not cause an exception when the status is service.

Service status also prevents messages indicating the loss of communication to the Support Element from displaying while the Support Element is powered off or during licensed internal code load.

To enable or disable service status:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Service Status** task.
4. Select one or more objects using the check boxes.
5. Point to **Options** from the menu bar and then click **Enable service status**, **Disable service status**, or **Display error message** to enable or disable service status or display error messages, respectively
6. Click **Save** to save your changes.
7. Click **Yes** when you are ready to save your changes.

Use the online Help for more information about using the window to set service status.

Transmit service data

Service data is a set of system information, such as program and event traces and storage dumps, collected by the support element of the central processor complex (CPC). When IBM is your service provider for the CPC, service data assists IBM in servicing it.

Sending service data to IBM is necessary only when service data is requested by IBM, usually through either your service representative or IBM Support Center. Typically, IBM will request service data after a problem is reported if analyzing the service data is necessary to determine the cause of the problem.

You can send service data to IBM either by copying it to a media device (DVD-RAM or USB flash memory drive for delivery to IBM, or by transmitting it to IBM through a remote connection to the IBM Service Support System. (See "USB flash memory drive" on page 7 for more information.)

Notes:

- Although the same service data is sent to IBM through each destination, the most direct destination is the IBM Service Support System. You can use the IBM Service Support System as a destination only by customizing, in advance, the CPC's remote service settings to *enable* remote service. See "Remote service" on page 100 for instructions for enabling remote service.
- If you are using a USB flash memory drive, plug it into the console and then wait for the console to beep three times. This indicates that the device is ready and can be accessed. If it does not been three times, unplug the device and try again.

To send service data to IBM:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Transmit Service Data** task.
4. Use the Transmit Service Data window, as directed by your service representative or IBM Support Center, to select the service data requested by IBM.
5. Select the data you want to send and the destination for the data, enter the related problem management number if it is known, and you can select **zBX Resources** to send if the IBM zEnterprise BladeCenter Extension (zBX) feature is installed.
6. Click **Send** to transmit the selected data or **Cancel** to end the task without sending any data..

Use the online Help for more information about using the window to select service data and send it to IBM.

View PMV Records

This task allows you to obtain the Problem Management Viewable (PMV) records issued to the IBM Service Support System for the Support Element console. These problems are typically sent to the IBM Service Support System where errors are not recorded by the console. You are able to view and edit the PMV records on the console and you have the ability for an interactive dialog with an IBM service representative. A PMV record is initially created from the **Report a Problem** task specifying a problem type of **Type V Viewable PMH(PMV)**.

To view a PMV record:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator, system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **View PMV Records** task. The View PMV Records window is displayed.

3. Click **Yes** to retrieve a list of the most recent records, otherwise click **No** to get a list of records without the latest updates. The View PMV Records message window is displayed. It indicates the PMV records that are being retrieved from the IBM Service Support System. This process can take a long time. You can click **Cancel** to stop the process and exit the task at any time.
4. When the records have been retrieved, the View PMV Records window displays a listing of the PMV records and corresponding machine.
5. Select a PMV record to view, click **View PMV**. A message is displayed indicating the retrieval of the PMV record. The View PMV Records window is displayed. From this window the following options are available:
   - To add a comment to the PMV record, click **Add Comment**. The View PMV Records window is displayed with a text input area. Provide a comment in the text input area and click **Add Comment**.
   - To refresh the details of the PMV record, click **Refresh PMV**. The PMV record displays the most current information.
   - To supply a screen capture of the problem in the PMV record, click **Add Attachment**. The View PMV Records window is displayed with the available screen captures you created using the **Manage Print Screen** task. Select one or more files and click **Upload Image**.
   - To view existing screen captures (files) available for download, click **View Available Attachments**. The View PMV window displays a list of attachments that can be downloaded for the PVM record. Select one or more attachments you want to download then click **Download Attachment**.
   - To view attachments on the PVM record, click **View Downloaded Attachments**. The View PMV Records window displays the screen captures you uploaded to the PVM record. To view an image, select one then click **View Image**.
6. To stop processing an action on a PVM record or to exit the task, click **Cancel** at any time.

Use the online Help if you need additional information for viewing PMV records.

View service history

You can use the Support Element workplace to display the service history of the central processor complex (CPC). This task displays a list of current problems for the CPC. The problems may be opened or closed with the most recent entry at the top of the list.

To view the CPC's service history:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **View Service History** task. The Service History window is displayed.
4. From the menu bar you can:
   - Select **View** for the following choices:

     Problem summary
     Displays detailed information about the selected problem including machine type, model, and serial number information.

Problem analysis panels
Redisplays the Problem Analysis (PA) windows that were created when the selected problem was originally reported.

Repair information
Displays repair information for the selected problem.

Exit Ends the task.

- Select **Close** for the following choices:

  Selected problem
  Changes the current status of the selected problem to be closed.

  All problems
  Changes the current status of all open problems to be closed.

- Select **Sort** for the following choices:

  By date
  Lists problems in the order of the dates on which problems occurred, starting with the most recent problem.

  By system name
  Lists problems by the alphabetical order of the names of the objects on which they occurred.

  By status
  Lists all open problems, followed by all closed problems.

- Select **Help** to display additional tasks information.

Use the online Help for more information about the problem and service information on it.

Chapter 9. CPC Configuration

This section describes tasks from the **CPC Configuration** task list and some elements of the physical and logical configuration of the central processor complex (CPC). It also describes tasks you can use to get or change information that describes or defines the CPC configuration.

To launch the tasks from the **CPC Configuration** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Channel to PCHID assignment

This task allows you to display the physical locations of all the installed and configured physical channels and the assigned physical channel identifier (PCHID) mapping. The CSS.CHPID associated with the PCHID and a description of the channel hardware type are displayed. The CSS.CHPID identifies the channel subsystem that the CHPID belongs to. You can view the front and back details of a specific cage. An action to write the view to a USB flash memory drive allows you to print the cage view.

To view the channel to PCHID assignments:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. The central processor complex (CPC) must be power-on reset.
3. Locate the **CPC** to work with.
4. Locate and open the **Channel to PCHID assignment** task.

   Channel to PCHID assignment window displays.
5. Click **View** from the menu bar to display the following menu options:
   - Sort by Channel Location
   - Sort by Cage and PCHID Number
   - Sort by Card Type and PCHID Number
   - Sort by Book and Jack and Fanout
   - Sort by Channel State
   - Sort by PCHID Number
   - Sort by Configured CSS.CHPIDs
   - View Cage Details.
6. Click **Search** from the menu bar to display the following menu options:
   - Search by PCHID
   - Search by Configured CSS.CHPID.
7. Click Exit from the **Options** menu bar to exit this window.

Use the online Help for more information on determining PCHID assignments.

Cryptographic Configuration

The Crypto Express3 features are orderable features.

- The Crypto Express3 features work with the Integrated Cryptographic Service Facility (ICSF) and the IBM Resource Access Control Facility (RACF®) (or equivalent software products) in an z/OS® or OS/390® operating environment to provide data privacy, data integrity, cryptographic key installation and generation, electronic cryptographic key distribution, and personal identification number (PIN) processing. The Crypto Express3 features are used also with the IBM Processor Resource/System Manager (PR/SM™) to establish a logically partitioned (LPAR) environment in which multiple logical partitions can use cryptographic functions.
- The Crypto Express3 features work with the Integrated Cryptographic Service Facility (ICSF) in an z/OS or OS/390 operating environment to provide support for RSA (PK) cryptographic operations. The Crypto Express3 features are used with the IBM Processor Resource/System Manager (PR/SM™) to establish a logically partitioned (LPAR) environment in which multiple logical partitions can use cryptographic functions.

Use the Support Element to monitor the Crypto Express3 (CEX3A) accelerators and coprocessors (CEX3C) by loading their configuration data during CPC activation. Upon completing the configuration and initialization of the Crypto Express3 features, you can monitor and manage it by:

- Checking the status of the CEX3A, and CEX3C.
- Testing the random number (RN) generators of the CEX3C.
- Zeroizing the CEX3C.
- Indicate whether you want TKE commands permitted for the CEX3C.
- Import and activate a UDX for any CEX3C installed in your system.
- Select a crypto configuration type for your system.

To work with the Crypto Express3 features:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3.
2. The Crypto Express3 features must be installed, and the CPC must be powered-on.
3. Locate the **CPC** to work with.
4. Locate and open the **Cryptographic Configuration** task.

The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC and provides controls for working with them.

View cryptographic details

You can use the Support Element workplace to monitor the status of the Crypto Express3.

To view the status of the Crypto Express3 features:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3.
2. Start the **Cryptographic Configuration** task for working with CEX3A and CEX3C. For instructions, see “Cryptographic Configuration”

The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC and provides controls for working with them.

Note: The Crypto Express3 has completed its initialization when the status indicates *Configured*. After initialization is complete, you need to refresh the Cryptographic Configuration window. If initialization is ongoing, you may need to refresh the Cryptographic Configuration window to see the current status until *Configured* is indicated.

3. Select from the list the CEX3A and CEX3C that you want more information for.
4. Click **View Details**.

   The Cryptographic Details window displays information on the selected CEX3A and CEX3C.

Test RN generator

Each CEX3C includes a random number (RN) that may be used as a key for encryption. Testing a RN generator verifies whether the numbers it generates are sufficiently random.

Ordinarily, a RN generator is tested automatically when it is initialized. But you can use the Support Element workplace at any time to manually test a RN generator.

You can select to run a RN generator test on individually selected CEX3C or run a test on all CEX3C.

To test a CEX3C RN generator:

1. A power-on reset of the CPC must be complete.
2. The CEX3C must be online and assigned to a logical partition.
3. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3.
4. Start the **Cryptographic Configuration** task for working with CEX3C. For instructions, see "Cryptographic Configuration" on page 116.

   The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC, and provides push buttons for working with them.

   To manually test a specific CEX3C:

   - Select from the list a configured CEX3C that you want to test.
   - Click **Test RN Generator** to test it.

     A message is displayed to indicate the results of the test.

   To manually run the test on **all** CEX3C:

   - Click **Test RN Generator on All X Coprocessors** to test it.

     A message is displayed to indicate the results of the test.

Zeroize CEX3C manually

Zeroizing a CEX3C clears all configuration data and cryptographic keys by resetting them to binary zeroes.

Attention: Zeroizing one or all CEX3C clears its configuration data and clears all cryptographic keys. Zeroizing all also erases configuration data from the Support Element hard drive (for example, UDX files). CEX3C should be zeroized manually only when absolutely necessary, typically when CEX3C configuration data must be erased completely.

For example:

- You must zeroize CEX3C prior to selling or transferring ownership of the CPC.
- A service representative may zeroize CEX3C prior to upgrading the CPC, if required.

- You may want to zeroize CEX3C if, in an emergency, it is the only way to maintain the security of encrypted data.

To manually zeroize CEX3C:

1. A power-on reset of the CPC must be complete.
2. The CEX3C must be online and assigned to a logical partition.
3. Start the **Cryptographic Configuration** task for working with CEX3C. For instructions, see "Cryptographic Configuration" on page 116

   This displays the Cryptographic Configuration window. The window lists the CEX3A and CEX3C installed on the CPC, and provides controls for working with them.

   To manually zeroize a specific CEX3C:

   - Select from the list the configured CEX3C you want to zeroize.
   - Click **Zeroize** to zeroize the selected CEX3C.

     A Zeroize Warning window is displayed to notify you of the consequences for clearing the configuration data.
   - Click **Zeroize** to confirm your request to zeroize the selected CEX3C.

   To manually run zeroize on all CEX3C:

   - Click **Zeroize All X Coprocessors** to zeroize all the CEX3C and erase configuration data from the Support Element hard drive.

     A Zeroize Warning window is displayed to notify you of the consequences for zeroizing all the CEX3C.
   - Click **Zeroize All** to confirm your request to zeroize them.

   A message is displayed to indicate the results of the function.

Usage domain zeroize

Zeroizing a usage domain clears the cryptographic keys for a selected logical partition by resetting them to binary zeroes.

To zeroize a logical partition usage domain:

1. A power-on reset of the CPC must be complete.
2. The CEX3C must be offline.
3. Start the **Cryptographic Configuration** task for working with CEX3C. For instructions, see "Cryptographic Configuration" on page 116

   This displays the Cryptographic Configuration window. The window lists the CEX3A and CEX3C installed in the CPC, and provides controls for working with them.

   To zeroize a usage domain:

   - Select from the list the configured CEX3C you want to zeroize.
   - Click **Usage Domain Zeroize**.

     A Usage Domain Zeroize window is displayed
   - Select the logical partition and usage domain index(es) to zeroize.
   - Click **Zeroize** to confirm your request to zeroize the selected usage domain indexes.

   A message is displayed to indicate the results of the function.

TKE commands

The TKE workstation can manage secure functions of a specific Crypto Express3 feature only if permission is given. If permission is denied, all requests for information or commands to a specific CEX3C from the TKE workstation will not be allowed. You can use the Support Element to dynamically permit or deny TKE commands to the CEX3C from the TKE workstation.

To permit or deny TKE commands:

1. A power-on reset of the CPC must be complete.
2. The CEX3C must be online and assigned to a logical partition.
3. Start the **Cryptographic Configuration** task for working with CEX3C. For instructions, see "Cryptographic Configuration" on page 116.

   The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC and provides controls for working with them.
4. Select from the list the CEX3C that you want to view or modify TKE command permission.
5. Click **TKE Commands**.

   The TKE Commands Configuration window displays information on the TKE commands for the selected CEX3C.
6. Locate the Permit TKE Commands check box. Then either:
   - Mark the check box to permit TKE commands. The check box displays a check mark when you mark it.
   - Or unmark the check box to deny TKE commands. The check box becomes empty when you unmark it.
   - Click **OK** to change the permission.

   Use the online Help for more information on TKE commands configuration.

Crypto type configuration

The Crypto Express3 features can be configured to run as a CEX3A or CEX3C. The Crypto Express3 must be deconfigured prior to changing the crypto configuration type. If you select **Accelerator**, you can zeroize the selected CEX3C by indicating **Zeroize the Coprocessor** on the Crypto Type Configuration window.

To select a crypto type configuration:

1. A power-on reset of the CPC must be complete.
2. Start the **Cryptographic Configuration** task for working with CEX3A and CEX3C. For instructions, see "Cryptographic Configuration" on page 116.

   The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC and provides controls for working with them.
3. Select from the list the CEX3A and CEX3C that you want to change the crypto type configuration.
4. Click **Crypto Type Configuration**.

   The Crypto Type Configuration window displays information on the selected Crypto Express3.
5. Select a crypto type configuration for the Crypto Express3.
6. Zeroize the CEX3C when selecting an CEX3A crypto type.
7. Click **OK** to change the crypto type configuration.

Use the online Help for more information on crypto type configuration.

UDX configuration

The UDX allows you to add customized operations to the CEX3C installed. The UDX provides the capability to develop your own UDX Segment 3 image file and load your custom Segment 3 image file onto one or more CEX3C. To view the Segment 3 details, click **View Details** on the Cryptographic Configuration window. The Segment 3 image file is built and loaded onto a DVD-RAM using a Windows NT® workstation. For more information on building a UDX Segment 3 image file go to the following website at:

- http://www-03.ibm.com/security/cryptocards/
- Click on Library on the navigation bar.

To configure for User Defined Extension (UDX):

1. Start the **Cryptographic Configuration** task for working with CEX3A and CEX3C. For instructions, see "Cryptographic Configuration" on page 116.

   The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC and provides controls for working with them.
2. The Crypto Express3 feature must be installed, and the CPC must be power-on reset to activate the UDX. Otherwise, to import a UDX file:
3. Locate and open the **Cryptographic Configuration** task.

   The Cryptographic Configuration window lists the CEX3A and CEX3C installed in the CPC and provides controls for working with them.
4. Click **UDX Configuration** to configure the CEX3C for UDX.

   The UDX Configuration window displays detailed information for the CEX3C configured for UDX capability and provides controls for working with them.
5. Insert the UDX DVD-RAM into the hardware management console drive.
6. Click **Import** to import the UDX file from the DVD-RAM to the Support Element hard drive.

   The Import window displays.
7. Click **OK**.
8. Click **Activate** to load the UDX data to the CEX3C.

Use the online Help for more information on UDX configuration.

Cryptographic management

If a Crypto Express3 card is removed from the system, this task allows you to break the association of the cryptographic number and the card serial number. This is necessary because the cryptographic number assigned to that card continues to be associated with the card's serial number, unless the card is released, preventing reuse of the cryptographic number.

This task also allows you to view CEX3A and CEX3C configuration of:

- All installed cards with their CEX3A and CEX3C assignment, crypto number, card location, and PCHID.
- All fenced cards.

To release a cryptographic number from the card serial number:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3.
2. Locate the **CPC** to work with.
3. Locate and open the **Cryptographic Management** task.

   The Cryptographic Management window list the cryptographic number assignments in the current system configuration.
4. Select the cryptographic number to be released from the card serial number list.
5. Click **Release**.

   The Cryptographic Management window confirms the cryptographic number you selected to be released.

6. Click **Confirm**.
   A message is displayed to indicate the release was successful.

Use the online Help for more information on releasing an CEX3A and CEX3C.

Customize Network Settings

Use this task to assign a series of IP addresses to an IBM Smart Analytics Optimizer cluster for the selected zBX Blade.

Note: If a zBX Blade type DPXI50z is selected, the WebSphere DataPower Login window is displayed.

To customize the zBX Blade network settings:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select a zBX Blade.
3. Locate and open the **Customize Network Settings** task. The Customize Settings window for the selected zBX Blade is displayed.
4. Specify the IP addresses for the selected operating zBX Blade.

Use the online Help if you need additional information about customizing zBX network settings.

Display Adapter ID

Use this task to display the adapter ID, location, and fanout type assigned to the InfiniBand channels.

To display the InfiniBand adapter ID:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Display Adapter ID** task.
4. The Display Assigned Adapter ID window lists the InfiniBand cage-card slot, location, fanout type and assigned adapter ID.
5. Click **OK** to exit the window.

Manage DataPower XI50z

Use this task to open the WebSphere DataPower XI50 user interface and manage the selected DPXI50z zBX blade.

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select a DPXI50z zBX blade and then open the **Manage DataPower XI50z** task. The WebSphere DataPower Login window is displayed.
3. Log in using dp-admin (password dp-admin) or a user ID created by dp-admin. The WebSphere DataPower user interface is displayed.

   Note: If this is the initial time you are logging in, you will be prompted to change the password. After changing the password, the WebSphere DataPower Login window will close and you will need to reopen the Manage DataPower XI50z task.
4. Manage the selected DPXI50z zBX blade as a normal DataPower appliance would be managed.

   Notes:
   - For additional information, go to http://www.ibm.com/software/integration/datapower/library/documentation and select XI50 to visit the DataPower XI50 Information Center.
   - If the WebSphere DataPower XI50 user interface window is left idle for the specified idle timeout, the session will expire and you will need to log in again to continue.
5. Click **Logoff** on the top right corner of the WebSphere DataPower user interface when finished.

Manage ISAOPT Cluster Size

Use the Support Element workplace to start the task to define the number of IBM Smart Analytics Optimizer (ISAOPT) Blades that will participate in the IBM Smart Analytics Optimizer cluster. The cluster consist of all the ISAOPT Blades in the attached BladeCenters. The cluster size should not be greater than the number of zBX Blades you are going to entitle. You can define the cluster size after at least one ISAOPT Blade is entitled and in the Operating or Not Operating state. The default is 14.

To manage the ISAOPT cluster size:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select a zBX Blade.
3. From the **Configuration** task group, open the **Manage ISAOPT Cluster Size** task. The Manage ISAOPT Cluster Size window is displayed.
4. Select the new cluster size value from the selection list.
5. Click **Save** to save the new value.

Use the online Help if you need additional information on managing ISAOPT cluster size.

Manage zBX Hardware

Use this task to add or remove a zBX Blade on your system. Use the Support Element workplace to start the task to graphically display the current zBX Blade hardware configuration information for your system.

Perform the following steps to manage the zBX Blade hardware configuration:

1. Select the CPC to work with.
2. Select and open the **Manage zBX Hardware** task. The Manage zBX Hardware Task window is displayed.

3. Click **Tools** from the menu bar to display the following menu options:
   - Add zBX Blade...
   - Remove zBX Blade...
4. Click **Details** from the menu bar to display the following menu option:
   - zBX Blade details...

Use the online Help if you need additional information about managing zBX Blade hardware.

FCP Configuration

The N Port Identifier Virtualization (NPIV) for Fibre Channel Protocol (FCP) channels allows sharing of a single physical FCP channel among operating system images. Use this task to display or alter worldwide port names assigned to FCP channels.

Use this task to:

- Display all N Port Identifier Virtualization (NPIV) port names currently assigned to FCP subchannels...
- Display WWPN for the physical ports of FCP channels...
- Export binary NPIV system Configuration file to the Hardware Management Console USB memory drive...
- Import binary NPIV system Configuration file from the Hardware Management Console USB memory drive...
- Release all port names that had previously been assigned to FCP subchannels that are now locked
- Release a subset of the port names that had previously been assigned to FCP subchannels that are now locked...

To enable the NPIV mode for selected channel paths see "FCP NPIV Mode On/Off" on page 154.

To display or alter worldwide port names assigned to FCP channels:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **FCP Configuration** task.

   The FCP Configuration window displays.
4. Select the operation you want to perform from the FCP Configuration window.
5. Click **OK** after making your selection.

Use the Online Help for more information on releasing a NPIV port name.

Input/output (I/O) configuration

The input/output (I/O) configuration of the central processor complex (CPC) is the set of all I/O devices, control units, and channel paths available to the CPC. During each power-on reset of the CPC, an input/output configuration data set (IOCDS) is used to define the I/O configuration to the channel subsystem.

You must build an IOCDS and store it on the CPC's Support Element before you can use it during power-on reset to define the CPC's I/O configuration. You can build an IOCDS by using an input/output configuration program (IOCP):input/output configuration program

- An IOCP may be available as a batch program with your operating system.

  For information about using the IOCP, see: *Input/Output Configuration Program User's Guide*, SB10-7037.
- A stand-alone IOCP also is available with the Support Element.

  For information about using the stand-alone IOCP, see: *Stand-Alone IOCP User's Guide*, SB10-7040.

You can use the Support Element workplace to start the support processor input/output configuration program (IOCP) available with the Support Element of the central processor complex (CPC).

To start the stand-alone IOCP:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Image** you want to work with.
3. Locate and open the **Input/output (I/O) Configuration** task.

   The Input/Output Configuration window displays.
4. Click **Options** from the menu bar to display the following menu options:
   - Enable Write Protection
   - Disable Write Protection
   - Copy Configuration
   - Export Source File
   - Import Source File
   - Open Source File
   - Delete Source File
   - Print Data Set Report
   - Write Report to Tape
   - Build Data Set
   - Disassemble Data Set.
5. Click **View** from the menu bar to display the following menu options:
   - Channel Path Configuration
   - Partition Images Configured
   - Dynamic Information
   - Configuration Program Level
   - Support I/O Mask.
6. Click **Tools** (Service role only) from the menu bar to display the following menu options:
   - Save Data Files on Hardware Management Console...
   - Save Data Files to USB Flash Memory Drive
   - Restore Data Files from Hardware Management Console...
   - Restore Data Files from the USB Flash Memory Drive...
   - Restore only IOCDS Data Files from USB Flash Memory Drive
   - Restore Only Channel Configuration Files from USB Flash Memory Drive
   - Erase Data Files from Hardware Management Console.
7. Click Exit from the **Options** menu bar to exit the window.

Use the online Help for more information on defining the input/output (I/O) configuration.

Perform model conversion

Some central processor complex (CPC) configuration tasks support performing system upgrades and model conversions. Follow your normal order process for ordering an upgrade or model conversion for your system.

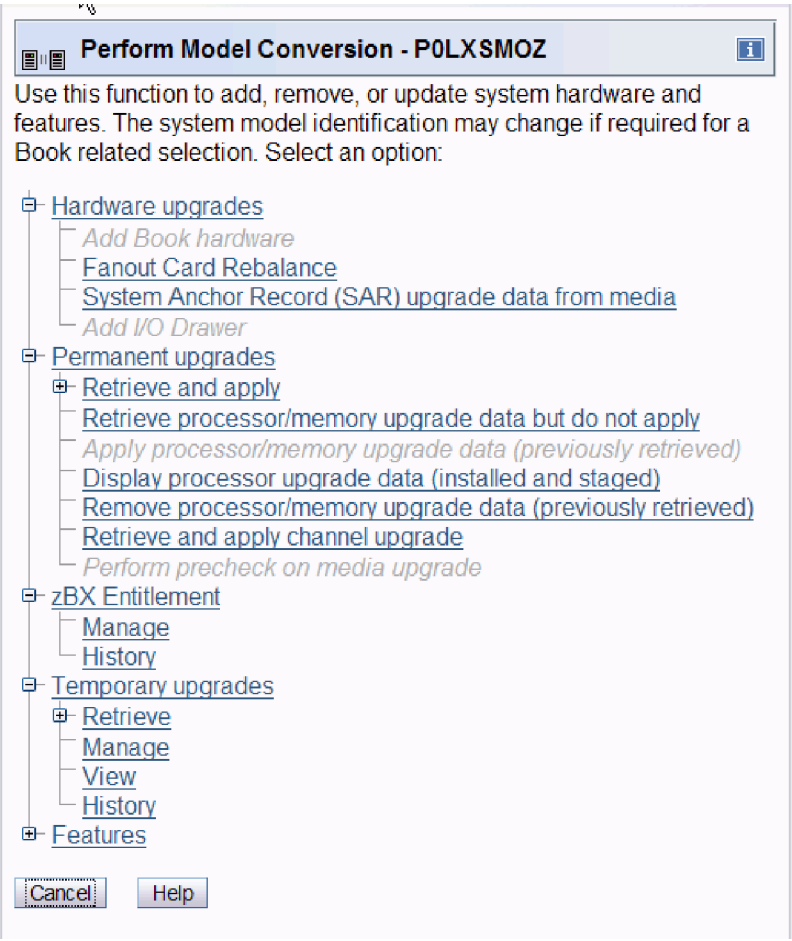


Figure 43. Perform model conversion

Hardware upgrades

This hardware upgrade option is used in adding memory or book upgrades to hardware on the system.

To select an option for hardware upgrades:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Perform Model Conversion** task.

   The Model Conversion window displays.
4. Select **Hardware upgrades**.

5. Select one of the following hardware upgrade choices from the Model Conversion window:
   - Add Book hardware
   - Fanout card Rebalance
   - Prepare for Enhanced Book Availability

     Note: This option is a prerequisite to the Perform Enhanced Book Availability option and will determine the readiness of the system for the targeted book. The configured processors and the in-use memory will be evaluated for the evacuation from the targeted book to the unused resources available on the remaining books within the system configuration.
   - Perform Enhanced Book Availability

     Note: This option allows for the evacuation of system resources from the targeted book, removal of the book, removal of memory hardware, addition of new memory hardware, reinstallation of the targeted book, and finally the restoration of the targeted book into the system configuration.
   - Display Previous Prepare Enhanced Book Availability Results
   - System Anchor Record (SAR) upgrade data from media
   - Add I/O drawer
   - Remove I/O drawer.

Use the online Help for more information on installing hardware upgrades to your system.

zBX Entitlement

The zBX Entitlement option allows you to perform entitlement actions and view information on selected zBX Blades. You can work with the **zBX Entitlements** table by using the table icons or **Select Action** from the table tool bar.

Perform the following steps to work with the zBX Entitlement option:
1. Select the CPC to work with.
2. Locate and open the **Perform Model Conversion** task. The Perform Model Conversion window is displayed.
3. Select one of the following zBX Entitlement options from the Perform Model Conversion window:
   Manage
   To perform entitlement actions on selected zBX Blades.
   History
   To view detailed information on selected zBX Blades.

Use the online help for more information on managing zBX entitlements.

Permanent upgrades

The permanent upgrade option allows you to order permanent capacity upgrades to processors, memory, and the Crypto Assist Feature (CAF) to your system. Retrieve your upgrade data from the IBM Service Support System or from a media source.

To select a permanent upgrade option:
1. Locate the **CPC** to work with.
2. Locate and open the **Perform Model Conversion** task.
   The Model Conversion window displays.
3. Select one of the following permanent upgrade choices from the Model Conversion window:
   - Retrieve and apply

- Retrieve processor/memory upgrade data but do not apply
- Apply processor/memory upgrade data (previously retrieved)
- Display processor upgrade data (installed and staged)
- Remove processor/memory upgrade data (previously retrieved)
- Retrieve and apply channel upgrade.

Use the online Help for more information on installing permanent upgrades to your system.

Temporary upgrades

The temporary upgrade options allows you to temporarily increase, add, or replace processor capacity on your system. Retrieve, install, and activated tasks for temporary records (On/Off CoD, CBU, or Planned Event) are all separate records located on the IBM Service Support System or media device.

- Installed records include information on the current state of all the installed temporary upgrades on your system. You can review the information under **Installed Records.** Optionally, click **Details, Add processors, Remove processors,** or **Delete** to change the temporary installed upgrades on your system.
- Stage records include information on temporary upgrades retrieved from the IBM Service Support System or selected media. The staged records window requires moving temporary upgrades to the installed area when there is availability of less than 4 installed upgrades. You can review the information under **Staged Records.** Optionally, click **Details, Install,** or **Delete** to change the temporary staged upgrades on your system.

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Perform Model Conversion** task.

   The Model Conversion window displays.
4. Select one of the following temporary upgrade choices from the Model Conversion window:

   Retrieve
   To retrieve your upgrade data from the IBM service support system or other media device.

   Manage
   To change the state of the installed and staged temporary upgrade selected records.

   History
   To view the history of actions performed on all temporary upgrade records.

Use the online Help for more information on installing temporary upgrades to your system.

System input/output configuration analyzer

Use this task to view and analyze your current I/O configuration. The data can be viewed in several different arrangements giving emphasis to one item. You may filter the data and it will be applied to all applicable views.

To view and analyze your current I/O configuration:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. The central processor complex (CPC) must be power-on reset.
3. Locate the **CPC** to work with.
4. Locate and open the **System Input/Output Configuration Analyzer** task.

   The System Input/Output Configuration Analyzer window displays.
5. Select a choice from the following menu bar:
   - **File** to save data to a USB flash memory drive, refresh the display window, or exit the current window.
   - **View** to display different views for the current I/O configuration data.
   - **Filter** to filter out or to display specific information for the current I/O configuration.
   - **Sort** to sort the current view using parameters specified.
6. Select **Exit** from the **File** menu bar to exit the task.

Use the online Help for more information on completing this task.

System (Sysplex) Time

Use the System (Sysplex) Time task to view or setup time synchronization for a server (CPC) using the Sysplex Timer® or Server Time Protocol (STP). A *Sysplex Timer* is a device that provides a time source to the time-of-day (TOD) clocks of Central Processor Complexes (CPCs) attached to it and the operating systems or control programs running that server (CPC). *Server Time Protocol* (STP) is a time synchronization architecture designed to provide the capability for multiple servers (CPCs) to maintain time synchronization with each other and to form a Coordinated Timing Network (CTN).

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **System (Sysplex) Time** task.

   The System (Sysplex) Time window displays.

   Note: Depending on the features you have installed and enabled, use the appropriate tabs that appear at the top of the System (Sysplex) Time window.

See Appendix B, "Using the System (Sysplex) Time task," on page 235 for more detailed information and procedures on using this task. You can also use the online Help if you need additional information to complete this task.

View hardware configuration

Hardware configuration information stored on the Support Element of the central processor complex (CPC) is information about the CPC's frame and parts in the frame. Information about the frame includes the machine type, model number, and serial number of the frame's machine, and the CPC's location in the frame. The information for each part in the frame includes its:

- Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
- Location
- Custom card identifier (CCIN)
- Description
- Part number
- Serial number
- Engineering change (EC) number

You can use the Support Element workplace to display the hardware configuration information.

To view the hardware configuration:

1. Locate the **CPC** you want to work with.
2. Locate and open the **View Hardware Configuration** task.

   Information is displayed about the CPC's frame and lists the location, CCIN, and a description of each part in the frame.

   Use the online Help for more information about the display fields and list.
3. To display the part number, serial number, and EC number for a specific part, select the part from the list, then click **Details**.

   This displays the selected part's detailed information on the Part Details window.

Chapter 10. Change Management

This section describes tasks from the **Change Management** task list that you can use to manage internal code changes provided by IBM for changing the licensed internal code of the central processor complex (CPC) and its Support Element. After describing licensed internal code and internal code changes in more detail, this section provides instructions for starting the tasks.

To launch the tasks from the **Change Management** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9, or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Licensed internal code

Licensed internal code, referred to also as *internal code*, controls many of the operations of the hardware with which it is provided. For example, internal code is provided with the central processor complex (CPC) and Support Element of each system, and is often provided with other system components such as channels and optional features.

Activating internal code makes it operational. If you have experience using other systems, you may have performed an *initial microcode load (IML)* to make a system's internal code operational. Though their names are different, the principle and purpose of the processes are the same: to load internal code so the system can use it.

Internal code is stored on system hardware by IBM during manufacturing. After IBM delivers and installs your system, it may be necessary to change its internal code to add new functions, improve existing functions, or correct problems. For those purposes, IBM provides internal code changes.

Internal code changes

IBM provides *internal code changes* to change the internal code provided with system hardware. Changing the internal code may be necessary to add new functions, improve existing functions, or correct problems.

One unit of internal code is called an *engineering change (EC)*. An *internal code change level*, referred to also as a *change level*, is a group of internal code changes provided to change all or part of the internal code in an EC. The internal code changes in a change level may replace one or more single bytes of internal code in an EC, or may entirely replace one or more modules of internal code.

Changing internal code directly affects the internal code already stored on system hardware, which is the internal code that the system uses when the hardware is made operational. So following an orderly process in a timely manner is essential for managing internal code changes correctly.

IBM recommends following the internal code change process below. This is a summary of the process you should follow to correctly manage the internal code changes for a system. Ordinarily, an IBM service representative will provide new internal code changes and manage their initial use. For internal code changes already stored on the Support Element, IBM recommends that you manage these changes only under the supervision of an IBM service representative or with the assistance of the IBM Support Center.

Note to service representatives: Use the system's service guide to follow service procedures for changing internal code.

The internal code change process is a sequence of tasks you perform upon receiving internal code changes from IBM. Changing the internal code may be necessary to add new functions, improve existing functions, or correct problems.

The goal of the internal code change process is to make the system operate with the most current internal code available.

If you have multiple systems, IBM recommends you complete the process to your satisfaction on one system before distributing the changes to the other systems.

The process begins when IBM either delivers new internal code changes to you on a DVD-RAM or makes changes available on the IBM Service Support System. Then you should:

1. Backup critical data of the system's Support Element.
2. Accept *previous* internal code changes, if any, that you retrieved, installed, and activated the last time you used this process.
3. Retrieve *all* new internal code changes from their source to the Support Element.
4. Install and activate *all* new internal code changes to make them operational.
5. Mirror data from the primary Support Element to the alternate Support Element.
6. Operate the system to determine whether it is operating correctly and satisfactorily with the new internal code changes.
7. **If you have multiple systems**: When you are satisfied with the operation of the new internal code changes on one system, distribute the changes to other systems and repeat the internal code change process.

You should use a Hardware Management Console, if available, to follow the recommended internal code change process for changing a system's internal code and distributing its internal code changes to other systems. See “Define clonable internal code levels” on page 139 for more information on distributing internal code levels to multiple systems. If a Hardware Management Console is not available, you can use each system's Support Element console to change its internal code.

Changing internal code and automating the process

If the system's central processor complex (CPC) is connected to and managed by a Hardware Management Console, it is recommended you use the Hardware Management Console, rather than the CPC's Support Element console, to change the system's internal code. Refer to the documentation provided with the Hardware Management Console for more information and instructions.

Otherwise, if you do not have or do not use a Hardware Management Console to manage the CPC, you can use schedule operations on the support element to automate much of the process.

You can use the Support Element of a central processor complex (CPC) to automate much of the process IBM recommends following for managing internal code changes.

You can automate the process by:

- Identifying the task, or *operations*, you want performed automatically.
- Scheduling when you want each operation performed.
- Customizing how often you want the schedule of operations repeated.

IBM recommends using regularly scheduled operations for managing internal code changes. The advantages include:

- Installing and activating changes promptly, which might correct internal code errors before they occur or cause problems on your system.
- Accepting changes regularly, which makes installing and activating subsequent changes possible.
- Performing a potentially disruptive operation, like activating the CPC, when its interruption of system availability has the least impact.

Activating internal code changes for the CPC

Installing or removing internal code for the central processor complex (CPC) can require activating the CPC.

The types of internal code changes that you install or remove determines whether activating the CPC is necessary to activate its internal code. There are two types of internal code changes:

- *Concurrent* changes

  You do not need to activate the CPC to activate internal code that is changed by installing or removing concurrent changes.
- *Disruptive* changes

  The CPC is activated when installing or removing disruptive changes.

Since activating a CPC ends its operating system activity, you might want to consider that consequence when you choose and use workplace tasks to install or remove changes and activate the internal code:

- Schedule an operation to automatically change and activate concurrent internal code changes.

  Note: Installing or removing disruptive changes must be done from the **Change Internal Code** task window on the Hardware Management Console.
- Or use the Hardware Management Console to manually change and activate internal code to control whether the CPC is activated by choosing the type of changes to make.

  Note: The task you use to manually change internal code indicates whether internal code changes include concurrent or disruptive changes. You can choose the type of changes you want installed or removed based on whether it is OK to activate the CPC to activate the changes:
  - If it is OK to activate the CPC, you can install or remove both concurrent and disruptive internal code changes.
  - Otherwise, if it is not OK to activate the CPC, you can either install concurrent changes up to the first disruptive change, or remove concurrent changes down to the first disruptive change.

The online Help for information and instructions for choosing the type of changes you can install or remove.

Activating internal code changes for the Support Element

Activating internal code for the Support Element after installing or removing internal code changes might require reinitializing the Support Element.

Because you do not need to activate the central processor complex (CPC) to activate Support Element internal code that was changed, Support Element internal code changes are considered *concurrent* changes. The CPC and its operating systems continue to operate while the Support Element internal code is activated.

However, Support Element operations are interrupted and its applications are ended when its internal code is activated. You might want to consider those consequences when you choose and use workplace tasks to install or remove changes and activate the internal code:

- Schedule an operation to automatically change and activate internal code for a day and time when the Support Element is not in use.
- Or manually change and activate internal code when the Support Element can be reinitialized without interrupting other operations or ending other applications.

Remote connections to the Support Element from another console are disrupted when the Support Element's internal code is activated.

Activating internal code changes for channels

Activating internal code for channels after installing or removing internal code changes requires reinitializing the channels.

In most cases, channel internal code can be activated concurrently. That is, the central processor complex (CPC) can continue operating while channel internal code is activated.

Channel internal code cannot be activated concurrently for channels that are in continuous use. Channels in continuous use are referred to as *continuous usage channels*.

Activating the channel internal code is held pending for continuous usage channels, rather than interrupting and ending their activity, until either:

- Channel activity stops.
- A power-on reset of the CPC is performed.

Stopping channel activity

The internal code for continuous usage channels is activated when the channels are no longer in use. When changes for continuous usage channels are installed, a hardware message is displayed explaining which types of channels need to be configured off and on again to activate the changes. To stop channel activity, you can either:

- Use an operating system facility to end channel activity.
- Use channel tasks to end channel activity.

  Note: The operating system may not be notified when channel activity ends. For this reason, it is recommended you use an operating system facility rather than the workplace to end channel activity.
- Wait for channel activity to end.

  Note: This action might be impractical. Typically, channels with activation of internal code pending are always in use.

Performing a power-on reset

The internal code for continuous usage channels is activated when a power-on reset of the CPC is performed. To perform a power-on reset, you can either:

- Use the **Activate** task to activate the CPC.
- Use the **Power-on reset** task to perform a power-on reset of the CPC.

Alternate Support Element

Use this task to perform any of the following actions for the selected CPC:

- Mirror data from the primary Support Element to the alternate Support Element
- Switch from the primary Support Element to the alternate Support Element
- Query whether a switch between Support Elements can take place.

One Support Element is used for the primary, the other as the alternate. The primary Support Element is used for all hardware service. The alternate Support Element has a special workplace window with limited tasks available.

Note: The primary support is scheduled for automatic mirroring by default at 10 a.m. with a one-hour window for starting the operation. A record is added to the Support Element's event log to indicate the outcome of the operation.

Switch the primary element and the alternate Support Element

You can use this action to switch to the alternate Support Element when the primary fails. When the manual switchover action is started, the system checks that all internal code levels are the same and that the CPC is activated. If the switch can be made concurrently, the necessary files are passed between the Support Elements, and the new primary Support Element is rebooted. If a disruptive switch is necessary, the CPC will be deactivated before completing the switch.

There are several conditions, when in progress, that will prevent a switchover:

- A mirroring task
- An internal code update
- A hard disk restore
- An engineering change.

The system automatically attempts a switchover for the following conditions:

- Primary Support Element has a serious hardware problem
- Primary Support Element detects a CPC status check
- Alternate Support Element detects a loss of communications to the primary over both the service network and the customer's LAN.

Note: To disable the automatic switchover, See "Customize Console Services" on page 175.

To switch to the alternate Support Element:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Alternate Support Element** task.
   The Alternate Support Element window displays.
4. Select the **Switch the Primary Support Element and the Alternate Support Element** radio button.
5. Click **OK** to perform the action.

Use the online Help for more information on the alternate Support Element actions.

Mirror the primary Support Element data to the alternate Support Element

Notes:

- Mirroring is suppressed if the Support Element has service status enabled.
- Mirroring is suppressed if the alternate Support Element was loaded with a different CD-ROM from the primary Support Element.
- Mirroring is suppressed if the alternate Support Element is fenced because of an automatic switch.
- The primary Support Element is scheduled for automatic mirroring at 10 a.m. each day with a one-hour window for starting the operation. A record is added to the Support Element's event log to indicate the outcome of the operation.

This action mirrors Support Element data for the central processor complex (CPC). Mirroring Support Element data copies it from the CPC's primary Support Element to its alternate Support Element. By regularly mirroring Support Element data, you can help ensure that the alternate Support Element looks and works the same as the primary Support Element in case you need to switch to the alternate Support Element (for example, because of a hardware failure on the primary Support Element).

Ordinarily, Support Element data is mirrored automatically each day or when you install internal code changes through single step internal code changes, but you can use this action to mirror Support Element data immediately, at any time, and for any reason. The following are examples of when you would want to mirror Support Element data instead of waiting for the automatic mirroring default times:

- Licensed internal code changes
- Input/output configuration data set (IOCDS) changes
- Hardware configuration definition (HCD) changes
- Dynamic I/O changes
- Dynamic load address and parameter changes
- LPAR data
- Profile changes
- Lockout disruptive tasks
- Scheduled operations

To mirror the primary Support Element data:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Alternate Support Element** task.

   The Alternate Support Element window displays.
4. Select the **Mirror the Primary Support Element data to the Alternate Support Element** radio button.
5. Click **OK** to perform the action.

Use the online Help for more information on the alternate Support Element actions.

Query switch capabilities

The query switch capability action provides a quick check of the communication path between the Support Elements, the status of the automatic switch action, and their status. You can use this action before attempting a switch to the alternate Support Element or for checking the status of the automatic switch action.

To query switch capabilities:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Alternate Support Element** task.

   The Alternate Support Element window displays.
4. Select the **Query Switch capabilities** radio button.

5. Click **OK** to perform the action.

Use the online Help for more information on the alternate Support Element actions.

Internal code change management

Both the remote service settings and change management settings of a central processor complex (CPC) affect how you can use its Support Element for internal code change management:

- The CPC's *remote service settings* control whether you can use the IBM Service Support System as a source for retrieving internal code changes to the Support Element.
- The CPC's *change management settings* control whether and how you can use retrieved internal code changes to change the internal code of the CPC and its Support Element.

IBM provides internal code changes by delivering them on a DVD-RAM or USB flash memory drive, and by making them available on the IBM Service Support System. Although the same internal code changes are available from each source, the most direct source is the IBM Service Support System. But you can use the IBM Service Support System as a source only by customizing, in advance, the remote service settings of a central processor complex (CPC) to *enable* remote service.

While remote service is enabled, the IBM Service Support System is *another* source for manually retrieving internal code changes; that is, DVD-RAM and FTP remain eligible sources. If you intend to *schedule an operation* for retrieving internal code changes regularly and automatically, the IBM Service Support System is the only eligible source. You must enable remote service before scheduling an operation for retrieving internal code changes.

To use the IBM Service Support System as a source for retrieving internal code changes, either manually or during a scheduled operation, see “Remote service” on page 100 for instructions for enabling remote service.

Authorize internal code changes

If the internal code change authorization setting is enabled, you can use the Support Element console to install and activate internal code changes and to perform subsequent change management operations:

- Accept internal code changes to make them permanent internal code.
- Remove internal code changes to resolve problems.
- Delete internal code changes to attempt error recovery.

Normally, the setting is enabled, which allows changing the internal code of the CPC and its Support Element. You can manually disable the setting if there is any reason you do not want internal code to be changed.

The Support Element console also disables the setting automatically if it detects errors after activating new internal code changes, to prevent accepting the erroneous internal code changes. If this happens, you can manually enable the setting again when you want to install and activate new internal code changes that correct the previously detected error.

To change the setting for internal code change authorization:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3).
2. Locate the **CPC** to work with.

3. Locate and open the **Authorize Internal Code Changes** task.
4. Use the Authorize Internal Code Changes window controls to enable or disable the setting for internal code change authorization:
   a. While the setting is enabled, the **Do not allow installation and activation of internal code changes** check box is empty.

      To disable the setting of the next activation, click once on the check box to mark it.
   b. While the setting is disabled of the next activation, the **Do not allow installation and activation of internal code changes** check box displays a check mark.

      To enable the setting, click once on the check box to unmark it.
   c. Click **Save** to save the setting and close the window.

   Use the online Help for more information to enable or disable the setting for internal code change authorization.

Check dependencies

Internal code is organized into units called *engineering changes (ECs)*, which are referred to also as *streams*.

Internal code changes might provide new internal code, or correct or improve existing internal code, for particular streams. If internal code changes for multiple streams are needed, together, to complete an addition, correction, or improvement of the internal code, then the internal code changes have *dependencies*. For example, if engineering change (EC) E12345, change level 001, must be installed and activated before EC E54321 level 005 can be installed and activated, then EC E54321 level 005 has a dependency on EC E12345 level 001.

The dependencies of internal code changes are designated by IBM when the changes are created. After internal code changes are retrieved to the Support Element of the central processor complex (CPC), their dependencies, if any, are checked automatically whenever you start an operation that will change the system's internal code. Such an operation is attempted only if all dependencies of the internal code changes are met.

You can use the Support Element to also *manually* check the dependencies of internal code changes. Manually checking that dependencies are useful:

- Before you perform an operation for changing the system's internal code.

  By manually checking the dependencies of internal code changes you intend to select while performing the operation, you might get a detailed list of the dependencies that would not be met, but which you must meet before or while actually attempting the operation.

  Note: This is especially important if you intend to use specific internal code changes, rather than all changes, while performing the operation. Using specific changes increases the possibility of *not* specifying one or more dependencies of the specific changes.
- After automatic dependency checking notifies you, upon attempting an operation, that one or more dependencies are not met.

  By manually checking the dependencies of internal code changes you selected while attempting the operation, you get a detailed list of the dependencies that were not met, but which you must meet before or while attempting the operation again.

Ordinarily, only an IBM service representative checks the dependencies of internal code changes, typically while following a service procedure for changing the system's internal code. If you are not following a service procedure, IBM recommends that you check dependencies only with assistance from IBM Product Engineering, provided through your IBM service representative or IBM Support Center.

To manually check dependencies:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. One or more internal code changes must be eligible for being either accepted, installed, or removed.
3. Locate and open the **Check Dependencies** task.
4. Select the radio button that describes the operation and internal code changes for which you want dependencies checked, then click **OK** to begin the dependency checking.
5. Wait until a window indicates the dependency checking is complete. The window also indicates whether all dependencies were met for performing the selected operation:
   - If all dependencies were met, you can return to the service procedure you are following and proceed with its instructions for actually performing the operation.
   - If one or more dependencies were not met, the window lists messages that describe each dependency that was not met, identify the operations you must perform to meet the dependencies, and identify the EC number and change level of each internal code change you can or must use with the operations to meet the dependencies. Upon returning to the service procedure you are following, you can proceed with its instructions and refer to its recovery actions for meeting failed dependencies described by the messages.

   In either case, click **OK** to close the window.

Use the online Help for more information for any radio button and the operation it describes and the dependency checking it performs.

Define clonable internal code levels

The **Define Clonable Internal Code Levels** task allows you to define internal code levels to save and send to RETAIN. The defined clonable internal code levels from a system are saved with an identifying name and password and sent to RETAIN, then later retrieved using the Hardware Management Console to bring another system to the identical internal code level. The Define Clonable Internal Code Levels window displays a list of all clonable internal code levels that have been defined. Click **Details...** to display the engineering change numbers and levels associated with a selected defined clonable internal code level. You can use the **Define Clonable Internal Code Levels** task to:

- Create a new defined clonable internal code level to be saved and sent to RETAIN
- Replace an existing defined clonable internal code level with an updated level and send to RETAIN
- Delete an existing defined clonable internal code level that is no longer needed.

Note: The Define Clonable Internal Code Levels window displays the machine serial number for the Support Element. You need this machine serial number when retrieving the clonable level definition data from the Hardware Management Console.

To define a clonable internal code level:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Define Clonable Internal Code Levels** task.

The Define Clonable Internal Code Levels window includes push buttons to perform tasks when working with defining a clonable internal code level. You can use the window to:

1. Type an identifying alphanumeric name and alphanumeric password of 1 to 8 characters in the **Name** and **Password** entry fields. Then, click **Create** to save a clonable internal code level to send to RETAIN.
2. Select a defined internal code level from the list to be replaced, then click Replace to replace the selected existing defined internal code level with an updated level to send to RETAIN.
3. Select a defined clonable internal code level from the list that is no longer needed, then click **Delete** to delete the existing defined clonable internal code level.

Use the online Help for more information about defining clonable internal code levels.

Force channel internal code changes

Internal code changes are pending for all channel, if any, that were busy during the most recent concurrent internal code change operation, and have remained busy since then.

The internal code change operation might have been either an installation and activation, or a temporary removal and activation of concurrent internal code changes. Rather than interrupting and ending activity on busy channels, their internal code was not updated, and the channel internal code changes were held pending for them.

When internal code changes are pending for one or more channel paths in the input/output (I/O) configuration of the central processor complex (CPC), you can forcibly update their licensed internal code with pending changes using the **Force Channel Internal Code Change** task.

Note: Forcibly updating the licensed internal code of a channel path interrupts and ends channel activity on busy channels that have internal code changes pending and might disrupt the operation of the CPC if it is using the interrupted channels.

To forcibly update licensed internal code with pending changes:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Force Channel Internal Code Change** task.

   The Force Channel Internal Code Change window displays.
4. Select the channels with changes pending that you want to force a licensed internal code update.
5. Click **Force** to forcibly update the licensed internal code of the channels with changes pending.

Use the online Help for more information about forcibly updating internal code changes pending.

Manage zBX Internal Code

Use this task:

- To control when disruptive internal code changes are applied to zBX Blades. The process of updating certain internal code components on zBX Blades is disruptive to zBX Blade operations. When internal code updates for these components are installed and activated on the Support Element, they are placed into a staging area, marked as pending, and a hardware message is generated to notify the system administrator that pending updates for zBX Blades exist. These updates are not automatically applied to any zBX Blade. The **Pending** column indicates the zBX Blades that have pending internal code updates.

| • For IBM Support Services, to recover from cases where internal code cannot be concurrently installed
| on a zBX Blade or on zBX BladeCenter switches when they are installed and activated on the Support
| Element.

Perform the following steps to manage zBX internal code updates:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Manage zBX Internal Code** task. The Manage zBX Internal Code window is displayed.
4. Select one or more zBX Blades as targets to update pending disruptive zBX internal code.
5. Click **Update Blades** to update pending disruptive zBX Blade internal code.
6. Select a single zBX Blade as a target to display current and pending levels for internal code components on a zBX Blade.
7. Click **Details** to display the internal code components for the selected zBX Blade and for each components, its current and pending internal code levels.
8. Select **Enable Internal Code Management** from the **Select Action** list to allow you to enable management of internal code updates by the Support Element for the selected DPXI50z zBX Blades.
9. Select **Disable Internal Code Management** from the **Select Action** list to allow you to disable internal code management for the selected DPXI50z zBX Blades.
10. Click **Update Switches** to update pending internal code for the zBX BladeCenter switches.

    Note: This function is used only by IBM Support Services.

Use the online Help if you need additional information about how to manage zBX internal code.

Query channel/crypto configure off/on pending

Use this task to select a condition to either:

- Query channel/cryptos currently requiring a configure off/on action in order to perform a code load.
- Query channel/cryptos that will require a configure off/on action after the next install and activate of a channel/crypto in order to perform a code load.

To query channel/cryptos that are configure off/on pending:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Query Channel/Crypto Configure Off/On Pending** task.

   The Query Channel/Crypto Configure Off/On Pending window displays.
4. Click **Current conditions** to display a list of channel/cryptos that have configure off/on current conditions pending.
5. Click **Conditions in the next Inst/Act** to display a list of channel/cryptos that have configure off/on conditions pending in the next nondisruptive code load.
6. Click **OK** to return to the previous window.

Use the online Help for more information on reviewing pending channel and/or cryptos to configure Off/On.

Query coupling facility reactivations

This task allows you to query what coupling facility current code level changes need to be deactivated and then reactivated in order to be applied to your CPC.

To query coupling facility reactivation:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Query Coupling Facility Reactivations** task.

   The Query Coupling Facility Reactivations window displays.
4. Review the list of coupling facility code level change to be reactivated.
5. Click **OK** to exit the window.

Use the online Help for more information on query coupling facility reactivations.

Query internal code changes pending power-on reset

Use this task to select a condition to either:

- View internal code changes currently pending a power-on reset.
- View summary of internal code changes pending power-on reset.

To query internal code changes pending power-on reset:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Select the condition you want to view from the window.
4. Click **OK** to view the selected condition.

Use the online Help for more information on querying internal code changes pending power-on reset.

Specify concurrent upgrade sync point

Use this task to restrict specific internal code changes from being installed and activated on the system. The concurrent upgrade of Engineering Changes requires the system to transition from a specific code point to another specific code point. This start point **from** and transition point **to** is called the sync point

level. By setting a sync point level, a higher level of the Engineering Changes data stream that defines the sync points is prevented from being installed and activated.

To specify a sync point level for internal code changes:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Specify Concurrent Upgrade Sync Point** task.

   The Specify Concurrent Upgrade Sync Point window displays.
4. Enter the sync point level that you want the internal code changes restricted to.
5. Click **Reset** to remove the level restriction that was previously set.
6. Click **OK** to exit the window.

Use the online Help for more information on specifying concurrent upgrade sync point.

Selective channel patch control

Use this task to selectively define which OSA Express® channels will have new channel loads applied via a concurrent code update.

To select channel apply updates:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **Selective Channel Patch Control** task.

   The Selective Channel Patch Control window displays.
4. Select the channel type you want to apply updates.

   Note: The selected channel type will require a configure off/on of each channel for the selected channel type.
5. Click **OK** to perform the operation.
6. Click **Cancel** to exit the window without performing the operation.

Use the online Help for more information on defining clonable internal code levels.

System information

The Support Element automatically keeps records of information about the internal code changes stored on it. The record-keeping begins when changes are retrieved from their source to the Support Element.

For each internal code change, the information identifies:

- Its engineering change (EC) number.
- The change level most recently retrieved.

- The highest retrieved internal code change level that can be installed and activated concurrently.
- The change level most recently installed.
- The change level most recently activated.
- The change level most recently accepted.
- The lowest installed change level that can be removed and activated concurrently.
- The lowest change level that can be activated after removing installed change levels.
- Additional details include the most recent date and time each task was performed.

The information may assist you with planning and managing internal code changes. For example, review the information to either:

- Determine whether the central processor complex (CPC) is operating with your latest available levels of internal code changes.
- Determine which tasks you must perform next to make the CPC operate with your latest available levels of internal code changes.

You can use the Support Element of a central processor complex (CPC) to display information about the internal code changes stored on it. It also lists the part number, engineering change (EC) number and state levels of each set of licensed internal code associated with the Support Element.

Licensed internal code controls many of the operations available on the Support Element. Internal code changes may provide new operations, or correct or improve existing operations.

The part number and EC number are assigned to a set of licensed internal code by IBM product engineering. The numbers identify the licensed internal code and its purpose.

If a set of licensed internal code is modified, its EC number is supplemented with a state level. A state level distinguishes between different versions of the same set of licensed internal code.

To view internal code change information:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPC** to work with.
3. Locate and open the **System Information** task.

   The System Information window displays. It displays internal code change information.
4. Select the internal code information you want and then click **EC Details...** to view the additional information about this internal code.
5. Click **Query Additional Actions...** to display information about further actions that may be needed.
6. Click **OK** when you have completed this task.

Use the online Help for more information on the internal code change information.

Chapter 11. CP Toolbox

This section describes tasks from the **CP Toolbox** task list you can use to monitor and control the operation and storage of specific central processors (CPs) in the central processor complex (CPC).

To launch the tasks from the **CP Toolbox** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Display or alter data

A processor stores data in the following storage locations:

- Registers, which are special-purpose storage locations:
  - Program status word (PSW)
  - General purpose registers
  - Control registers
  - Floating point registers
  - Access registers
  - Prefix register
- Main storage locations:
  - Real storage
  - Real storage key
  - Primary virtual storage
  - Secondary virtual storage
  - Absolute storage
  - Home virtual storage
  - Virtual storage identified using access registers

Displaying or altering data in processor storage locations typically is done only by system programmers with experience in interpreting and altering the data. Follow your local procedures for determining when to display or alter data. You can use the Support Element workplace to display or alter the data in storage locations used by any eligible processor. Eligible processors include:

- Logical processors that support the images of logical partitions activated in operating modes other than coupling facility mode.

To display or alter data in processor storage:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3
2. Locate the **CPs** you want to work with.
3. Locate and open the **Display or Alter** task.
4. Use the Display or Alter window controls to display or alter the data in the processor's storage locations.

Use the online Help for the window for more information about using its controls to display or alter the data.

Interrupt

An *interrupt* is a processor operation you can use to present an external interruption to a processor. If you have experience using other systems, you may have used an IRPT command or an Irpt key to interrupt a processor.

Follow your local procedures for determining when to interrupt a processor. You can use the Support Element workplace to interrupt any eligible processor. Eligible processors include:

- Physical processors that support the image of a central processor complex (CPC).
- Logical processors that support the images of logical partitions activated in operating modes other than coupling facility mode.

To interrupt a processor:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPs** you want to work with.
3. Locate and start the **Interrupt** task.

   This immediately performs the operation; an interrupt request is generated for the processor.

PSW restart

A *restart* or *PSW restart* is a processor operation you can use to restart a processor. If you have experience using other systems, you may have used a RESTART command or Restart key to restart a processor.

Restarting a processor typically is done during a software error recovery procedure. Follow your local procedures for determining when to restart a processor. You can use the Support Element workplace to restart any eligible processor. Eligible processors include:

- Physical processors that support the image of a central processor complex (CPC).
- Logical processors that support the images of logical partitions activated in operating modes other than coupling facility mode.

To restart a processor:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPs** you want to work with.

   Note: restarting a processor on an image can be considered disruptive. If the image is locked, unlock it. See "Object locking for disruptive tasks" on page 41.
3. Locate and open the **PSW Restart** task.
4. Select a reason for restarting the processor, then click **OK** to continue.

5. Review the information on the PSW Restart Confirmation window to verify the processor that you will restart is the one you want.
6. If the information is correct, click **OK** to perform the restart.

   This begins the restart; a message displays when it is completed.
7. Click **OK** to close the message when the restart completes successfully.

   Otherwise, if the restart does not complete successfully, follow the directions in the message to determine the problem and how to correct it.

Processor operations: start and stop

Start and *stop* are processor operations you can use, together, to control whether a processor can process instructions. If you have experience using other systems, you may have used START and STOP commands or Start and Stop keys to start and stop a processor.

You can use the Support Element workplace to start and stop any eligible processor. Eligible processors include:

- Logical processors that support logical partitions activated in operating modes other than coupling facility mode.

Start processors

Follow your local procedures for determining when to start processors. But generally, starting processors for an image is most effective after you've used the **Stop** task to stop processors for the image.

To start processors for an image:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPs** you want to start.
3. Locate and start the **Start** task.

   This immediately performs the operation; the processor is started and resumes operating.

Stop processors

Follow your local procedures for determining when to stop processors. Generally, stopping processors for an image is effective only when the image and processors are operating.

To stop processors for an image:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the**CPs** you want to stop.
3. Locate and start the **Stop** task.

   This immediately performs the operation; the processor is stopped.

Stop on CP address match

The processing and input/output (I/O) activity of central processors (CPs) is reflected in how the activity affects the contents of main storage, the status of I/O devices, and the contents of program status word (PSW). That is, CP activity is indicated by the conditions of main storage, I/O devices, and the PSW.

Monitoring these conditions provides another means for monitoring and controlling CP activity. By setting an *address match* or *event* that identifies the specific condition you want to watch for, all CPs are automatically stopped when the actual condition of main storage, I/O devices, or the PSW matches the condition you set. You can set the following condition for stopping CPs:

CP address match
Set for monitoring main storage and stopping all CPs when a CP accesses a specific main storage location while processing non-I/O operations.

Follow your local procedures for determining when to set conditions for stopping CPs. You can use the Support Element workplace to set conditions for stopping CPs.

To set conditions for stopping CPs:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CPs** you want to work with.
3. Locate and open the **Stop on CP Address Match** task.

   The window displays controls for setting the conditions that you want to stop the CP.

   Use the online Help for the window for information about using its controls to set conditions for stopping the CP.

Store status

Store status is a processor operation you can use to store the contents of a processor's registers, excluding the time-of-day (TOD) clock, in assigned storage locations. The contents of the following registers are stored by the store status operation:

- CPU timer
- Clock comparator
- Current® program status word (PSW)
- Access registers 0-15
- Prefix
- Floating point registers 0-6
- General registers 0-15
- Control registers 0-15

If you have experience using other systems, you may have used a store-status key to initiate the store status operation for a processor.

Follow your local procedures for determining when to perform the store status operation. You can use the Support Element workplace to perform the store status operation for any eligible processor. Eligible processors include:

- Physical processors that support the image of a central processor complex (CPC).
- Logical processors that support the images of logical partitions activated in operating modes other than coupling facility mode.

To perform the store status operation:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3
2. Locate the **CPs** you want to work with.
3. Locate and start the **Store Status** task.

   A message displays when it is completed.
4. Click **OK** to close the message when the operation completes successfully.

   Otherwise, if the operation does not complete successfully, follow the directions in the message to determine the problem and how to correct it.

Chapter 12. CHPID/Channel/Crypto operations

This section describes tasks from a **CHPID Operations**, **Channel Operations**, or **Crypto Service Operations** task list you can use to monitor and control the operation of a specific CHPID, channel, or crypto. A channel path (CSS.CHPID) is associated with a physical channel identifier (PCHID).

To launch tasks from a **CHPID Operations**, **Channel Operations**, or **Crypto Service Operations** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9, or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Advanced Facilities

You can use the Support Element workplace to open a facility for monitoring, operating, and customizing a selected channel type. To work with the selected channel type:

1. Log onto the support element on the hardware management console through **Single Object Operations** in system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3). The CPC must be power-on reset.
2. Locate the channel type that you want to work with.
3. Locate and open the **Advanced Facilities** task.
4. The Advanced Facilities window displays a list of actions you can take depending on the channel type selected. The list may include:
   - **View code level**
   - **Card Trace/Log/Dump Facilities**
   - **Card specific advanced facilities**
   - **Reset to defaults...**
5. Select the action that you want to start, then click **OK**.
6. The next window that displays depends on the action selected:
   - For the Advanced Facilities window, select one of the tasks, then click **OK**.
   - For the View Code Level window, view the code level for the card, then click **OK**.
   - For the Card Trace/Log/Dump Facilities window, select one of the tasks, then click **OK**.
   - For the Reset to Default Configuration window, click **Yes** to reset to the default configuration.

Use the online Help to get additional information for working with Advanced Facilities.

Channel problem determination

You can use the support element workplace to determine the state and status of specific channel paths in the input/output (I/O) configuration of the central processor complex (CPC). The label for each channel path's icon includes its physical channel identifier (PCHID), state, and status. When you need more

detailed information on determining problems, you can use the support element workplace to perform channel problem determination. Perform channel problem determination to get the following types of information, referred to as *problem determination information*, for a channel path:

- Analyze channel information...
- Analyze subchannel data...
- Analyze control unit header...
- Analyze paths to a device...
- Analyze device status...
- Analyze serial link status...
- Display message buffer status...
- Fabric login status...
- Analyze link error statistics block...
- Optical Power Measurement.

If you have experience using other systems, you may have performed *input/output (I/O) problem determination* to get similar information for a channel path.

To perform channel problem determination:

1. Log onto the support element on the hardware management console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3). The CPC must be power-on reset and the image must be activated.
2. Locate the **Channels**, **CHPID**, or **Crypto** that you want to perform channel problem determination.
3. Locate and open the **Channel Problem Determination** task.

   The Partition Selection window lists the logical partitions which problem determination can be performed.
4. Select from the list the logical partition that you want to perform problem determination.
5. Click **OK**.

   The Channel Problem Determination window lists the types of problem determination information you can get for the selected channel.

   Note: The channel you selected to start the task is the task's initial input. One or more windows are displayed if additional input is needed to display the type of information you want.
6. Select the radio button beside the type of problem determination information you want, then click **OK**.

   Follow the instructions on each subsequent window, if any, to provide the additional input needed to display the type of information you selected.

   Upon providing the additional input, if any, the channel's problem determination information is displayed.

Analyze channel information

Performing a power-on reset of the central processor complex (CPC) includes defining its input/output (I/O) configuration and allocating its storage. A *channel definition error* occurs when either:

- The definition of a channel defined in the I/O configuration does not match the characteristics of the channel hardware installed in the CPC.
- The channel type of a channel defined in the I/O configuration is incompatible with the CPC's storage allocation.

You can use the support element workplace to locate channels that have definition errors. The icon label for any channel that has a definition error displays **Definition error** for its status. After locating a channel that has a definition error, perform channel problem determination to determine the channel's exact definition error.

To determine a channel's exact definition error:

1. Log onto the support element on the hardware management console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. The CPC must be power-on reset, the image must be activated, and the status displayed for the channel must be **Definition error**.
3. Locate and open the **Channel Problem Determination** task for *one* channel that has a definition error.

   The Channel Problem Determination window lists the types of problem determination information you can get for the selected channel.
4. Select the **Analyze Channel Information** radio button, then click **OK**.

   This displays the Analyze Channel Information window. The window displays channel information for the selected channel path.
5. Click **Error details**.

   This displays a message that describes the selected channel's exact definition error.

   Note: Error details is *not* available if the status displayed for the selected channel is *not* **Definition error**.

Configure On/Off

Configure on and *configure off* are channel path operations you can use to control whether channel paths are online or on standby in the active input/output (I/O) configuration:

- A channel path is *online* while configured on. It is in the active I/O configuration and it can be used.
- A channel path is on *standby* while configured off. It is in the active I/O configuration but it cannot be used until it is configured on.

If you have experience using other systems, you may have used a CHPID command with ON and OFF parameters to configure channel paths on and off.

You can use the Support Element workplace to configure channel paths on or off. However, operating systems will not be notified when you use the workplace to configure channel paths on or off. For example, if you configure off a channel path, the operating system running in any image that owns or shares the channel path is not notified, and the next operation from the operating system to the channel path causes an error. It is recommended you use the operating system facilities rather than the Support Element workplace, whenever possible, to configure channel paths on and off.

Note: When using z/OS operating environment, deactivate the crypto through ICSF before configuring off crypto. To determine when crypto initialization has completed after a configure on or a crypto, see "View cryptographic details" on page 116

To use the workplace to configure a channel path on or off:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **channel path** you want to configure on or off.
3. Locate and open the **Configure On/Off** task.

   The Configure On/Off window displays. The window displays the *current state* and *desired state* of the selected object.
4. Use the window list and actions to *toggle* the desired states of the object you want to configure on or off.
   - If the current state of the object is **Online**, toggle its target state to **Standby** if you want to configure off the object.
   - If the current state of the object is **Standby**, toggle its target state to **Online** if you want to configure on the object.

   Note: If you attempt to change the target state of an object that cannot be configured on or off, a message is displayed in the **Messages** list column to indicate changing the object is not allowed. Double-click on the message for more information about why the object state cannot be changed.
5. When you finish changing the target states of the object you want to configure on or off, click **Apply** to make each object new target state its current state.

FCP NPIV Mode On/Off

Use this task to enable N Port Identifier Virtualization (NPIV) mode for selected channel paths. When NPIV mode is enabled for selected channel paths, the system provides a virtual FCP channel for each S/390® device definition for a FCP channel in the active Input/Output configuration.

Note: The channel paths must be configured offline to enable NPIV mode.

To set the NPIV configuration:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **CHPID** to work with.
3. Locate and open the **FCP NPIV Mode On/Off** task.

   The NPIV Mode On/Off window displays.
4. Click **Select All** to select all the listed channel paths to enable for NPIV mode.
5. Click **Deselect All** to deselect all the listed channel paths that are enabled for NPIV mode.
6. Click **Apply** to make the changes.

Use the online Help for more information on enabling the NPIV mode.

Reassigning channel paths

Reassign is a channel operation you can use to perform at once all the steps necessary to reassign a reconfigurable channel path from its owning logical partition to another logical partition:

1. Configuring off the channel path from its owning logical partition, if necessary.
2. Releasing the channel path, if necessary.
3. Configuring on the channel path to the other logical partition.

Any channel path that is reconfigurable is eligible for being reassigned. The icon label for a reconfigurable channel path displays **Reconfigurable**.

To reassign a channel path:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3
2. The central processor complex (CPC) must be power-on reset.
3. The channel paths must be defined as reconfigurable in the active input/output (I/O) configuration.
4. Locate *one* reconfigurable channel, identified with a physical channel identifier (PCHID), that you want to reassign.
5. Locate and open the **Reassign Channel Path** task.

   The Reassign Channel Path window identifies the logical partition that the selected channel path is currently assigned, and lists the logical partitions to which it can be reassigned.
6. Select from the list the logical partition that you want to reassign the channel path, then click **Reassign**.

   The Select a Partition window displays showing the channel path that is currently assigned, the owning partition, and a list of logical partitions from which you can select to reassign the channel path.
7. Click the logical partition in the Target Partition window list to which you want the channel path reassigned.
8. Click **Reassign**.

   The Confirm the Action window is displayed.
9. Click **Reassign** from the confirmation window to confirm your request to reassign the selected channel path to the target logical partition.

   This reassigns the channel path to the logical partition.

   Note: If the target logical partition is not activated, the channel path is still configured on, but its status does not immediately become **Online**. The status remains **Standby** instead, and becomes **Online** only when the target logical partition is activated.

Use the online Help for more information about using the window to reassign the channel path.

Releasing channel paths

Release is a CHPID operation you can use to free reconfigurable channel paths from their assignment to isolated logical partitions.

The active input/output configuration data set (IOCDS) determines whether channel paths are reconfigurable, and which logical partition each channel path is assigned to. Each logical partition's security settings determine whether it is isolated. A logical partition's initial security settings are set by

the activation profile used to activate it. Afterwards, the **Change LPAR Security** task can be used to change the settings. For more information, see "Change LPAR Security" on page 87.

Reconfigurable channel paths assigned to an isolated logical partition do not become available to other logical partitions when they are configured off. Releasing such channel paths will make them available to other logical partitions.

Channel paths that are both reconfigurable and isolated are eligible for being released. You can use the CHPID's Work Area to locate reconfigurable channel paths assigned to isolated logical partitions. The icon label for any reconfigurable channel path displays **Reconfigurable** and either **Isolated** or **Not isolated** to indicate whether it is assigned to an isolated logical partition.

To release channel paths:

1. The central processor complex (CPC) must be power-on reset.
2. The channel paths must be defined as reconfigurable in the active input/output (I/O) configuration.
3. The channel paths must be assigned to isolated logical partitions.
4. The channel paths must be configured off.
5. Locate the reconfigurable channel paths you want to release.
6. Locate and open the **Release** task.
7. Click **Release** from the confirmation window to confirm your request to release the selected channels. This releases the channel paths.

Note: Upon configuring off and releasing reconfigurable channel paths from isolated logical partitions, you must use operating system facilities to configure them on to other logical partitions.

Service on/off

Service on and *Service off* are channel operations you can use to control whether channels, identified with physical channel identifiers (PCHIDs) are on standby in, or reserved from, the active input/output (I/O) configuration:

- A channel is on *standby* while service is set off. It is in the active I/O configuration but it cannot be used until it is configured on. It will remain in the active I/O configuration until service is set on.
- A channel is *reserved* while service is on. It is not in the active I/O configuration and cannot be used. It will remain out of the active I/O configuration until service is set off.

Setting service on for a channel, which removes it from the active I/O configuration, allows running diagnostic tests on the channel without disturbing other channels being used by the system. Setting service on for a channel can be used also to remove failing channels from the I/O configuration so subsequent power-on resets will not attempt to initialize the failing channels.

If you have experience using other systems, setting service on or off for channels may have been referred to as taking channels in and out of single channel service (SCS), for which you may have used an SCS command with IN and OUT parameters.

To set service on and off for a channel:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3). The CPC must be power-on reset.

2. Locate the **Channel** or **Crypto** identified with a physical channel identifier (PCHID), that you want to set service on or off.
3. Locate and open the **Service On/Off** task.
4. Initially, each channel's current state and target state are the same. Use the Service On/Off window controls to change the target states of the channel that you want to set the service state on or off:
   - If the current state of a channel is **Reserved**, toggle its target state to **Standby** if you want to set service off for the channel.
   - If the current state of a channel is **Standby**, toggle its target state to **Reserved** if you want to set service on for the channel.

   If you attempt to change the target state of a channel that cannot have service set on or off, a message is displayed in the **Messages** list column to indicate changing the channel's state is not allowed. Double-click on the message for more information about why the channel state cannot be changed.
5. When you finish changing the target states of the channels for which you want to set service on or off, click **Apply** to make each channel's new target state its current state.

Show LED

Show LED is a channel operation you can use to find the location of the jack and card slot in a cage. The light emitting diode (LED) is located below each card slot and near each jack in the cages that support attachment hardware. You can use this task for channel problem determination.

To set the show LED on:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate the **Channel** or **Channel path** that you want the LED on for.
3. Locate and open the **Show LED** task.

   The Show LED window displays the PCHID for the LED that is on.
4. Click **OK** to turn the LED off.

Chapter 13. Energy Management

This section describes tasks from the **Energy Management** task list that you can use to monitor, manage, and customize power allocations within the physical limits of your data center. You can use the **Set Power Cap** task to limit peak power consumption and the **Set Power Saving** task to reduce the average energy consumption of your system resources.

To launch the tasks from the **Energy Management** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9, or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Set zBX Power Policy

Use this task to indicate that the zBX Blades are to be powered off the next time the CPC is deactivated. If unchecked, deactivation of the CPC will not interrupt the zBX Blades from running and communicating with other CPCs.

Note: The default setting is not to power off the zBX blades.

Perform the following steps to set the zBX power policy setting:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select a CPC.
3. Locate and open the **Set zBX Power Policy** task. The Set the zBX Power Policy window is displayed.
4. Check the selection to **allow the CPC to power the zBX Blades off**.
5. Click **OK** to perform the operation.
6. Click **Cancel** to exit the window without performing the operation.

Use the online Help if you need additional information about setting the zBX power policy setting.

Set Power Cap

This task allows you to limit the peak power consumption of a system resource or group of resources. You can closely manage power allocations within the physical limits of your data center.

The actions you can perform on the system resources from this task include:

- Selecting the Power Capping setting
- Setting the Cap Value
- Viewing power capping details on default and hidden columns

To set the power cap:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer user role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3).
2. Select a CPC (server), BladeCenter, or individual blade.
3. Open the **Set Power Cap** task. The Set Power Cap window is displayed. The window lists the current power capping settings and power cap values for the CPC.
4. Specify the power capping setting in the **Power Capping Setting** list.
5. Specify the power cap in the **Cap Value** field.
6. Click **OK** to complete the task.

Use the online Help if you need additional information about setting the power cap.

Set Power Saving

This task allows you to reduce the average energy consumption of a system component or group of components. You can closely manage power allocations within the physical limits of your data center.

To set power saving:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer user role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3).
2. Select a CPC (server), BladeCenter, or individual blade.
3. Open the **Set Power Saving** task. The Set Power Saving window is displayed. The window lists the current power saving settings for the CPC.
4. Specify the power saving setting for the CPC resources in the **Power Saving** list
5. Click **OK** to complete the task.

Use the online Help if you need additional information about setting power saving.

Chapter 14. Monitor

This section describes the tasks from the **Monitor** task list you can use to monitor system activity for the central processor complex (CPC).

To launch the tasks from the **Monitor** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Note: The **Activity** task and **System Activity Profiles** task are now accessed from the **Monitors Dashboard** task by selecting **Open Activity** and **Open Activity Profiles** from the menu bar.

Monitors Dashboard

Note: In the zEnterprise™ environment, the term *CPC* consists of a zEnterprise mainframe and any attached IBM zEnterprise BladeCenter Extension (zBX). The term *zCPC* refers to the physical collection of main storage, central processors, timers, and channels within a zEnterprise mainframe.

Use this task to monitor system activity and display activity details on your system for the selected CPCs.

To monitor system activity for your system:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select the CPC to work with.
3. Open the **Monitors Dashboard** task. The **Monitors Dashboard** window is displayed. The overview table includes information on processor and channel usage, power consumption, and ambient air temperature. Expand the Details section to view activity details for the CPCs.
4. To display summaries of processing and channel activity for the selected CPC, expand the Details section for the CPCs you want to monitor. Refer to "System Activity" for more information.
5. To work with system activity profiles, select **Open Activity Profiles** located above the Overview table. The Customize Activity Profiles window for the selected CPC is displayed. Refer to "Customize System Activity" on page 165 for more information.
6. When you have finished viewing this information, click **Close**.

Use the online Help to get additional information about monitoring your system.

System Activity

The operating systems and applications running on the system determine its workload. Over any period of time, and depending on its workload, the system will spend some of the time doing work and the rest of the time waiting to do work. That is, the system will be either busy or idle, respectively. *System activity* is a measurement of how busy the system is over a period of time. Since system activity is likely to vary over consecutive periods of time, you need to see those consecutive variations in activity to get an accurate idea of how busy the system is.

Note: The utilization reported by Activity for most channel types coincides with the utilization reported by Resource Management Facility (RMF™). For Fiber Channels, the **Activity** task considers the channel to

be busy any time an operation is pending, even if the channel is waiting for a device to respond. RMF™ looks at the amount of work done versus the amount of work that could be done by the channel. Therefore, if you have devices that are relatively slow to respond, leaving the channel waiting for a response that would be otherwise idle, Activity shows a utilization that is significantly higher than that reported by RMF.

Your system is the central processor complex (CPC) and the physical and logical resources it uses to do work. The CPC's Support Element provides a function, referred to as *system activity analysis*, for monitoring system activity by monitoring the activity, or *usage*, of a subset of the CPC's physical and logical resources:

- Central processors (CPs)
  - General purpose processors
  - Internal Coupling Facility (ICF) processors
  - Integrated Facility for Linux (IFL) processors
  - zSeries® Application Assist Processors (zAAPs)
  - IBM System z Integrated Information Processors (zIIPs)
- System assist processors (SAPs)
- Channels
- Logical partition(s) and logical processor(s)
- Power consumption usage
- Air input temperature.

Note: Central processors (CPs) include the General purpose processors, Internal Coupling Facility (ICF) processors, Integrated facility for Linux (IFL) processors, zSeries application assist processors (zAAPs), and IBM System z Integrated Information Processors (zIIPs).

Monitoring system activity does not require monitoring the usage of all CPC resources at once. Instead, you can use a *system activity profile* to define the particular resources you want to monitor. For each resource you choose to monitor, you can use the system activity profile to: system activity profile

- Set conditions for which you want the resource's usage reported or ignored.
- Indicate how you want the resource's usage presented.

System activity analysis

System activity analysis is a function of the Support Element Console Application that:

- Monitors and quantifies the activity of a subset of physical and logical resources, or *system resources*, used by the central processor complex (CPC).

  Quantified activity is referred to here as an *activity summary*.
- Uses graphics to present activity summaries of monitored resources.
- Regularly and automatically updates activity summaries with current information.
- Monitors the power consumption and input temperature.

The system resources monitored during system activity analysis, and how their activity summaries are presented, are determined by the information in a system activity profile.

Starting system activity analysis

The **Open Activity** selection from the **Monitors Dashboard** task displays the system activity for the CPC. System activity includes the channel activity and physical processing activity that has been defined in the

system activity profiles that are stored in the selected CPC. For more information about assigning and customizing activity profiles for CPC, see “Customize System Activity” on page 165.

Available screen space and resources provide a practical upper limit on the number of System Activity displays that can be active at one time. Starting the **Activity** task when another instance of the task is already running does not stop the previous task instance.

Note: The utilization reported by the **Activity** task for most channel types will agree with the utilization reported by Resource Measurement Facility™ (RMF). For fiber channels, however, this task considers the channel to be busy any time an operation is pending, even if the channel is waiting for a device to respond. Whereas, RMF looks at the amount of work done versus the amount of work that could be done by the channel. This means that if you have devices that are relatively slow to respond, leaving the channel waiting for a response but otherwise idle, **Activity** will show a utilization that is significantly higher than that reported by RMF.

To display system activity:

1. Select **Open Activity** located above the Overview table.
   - If you select a single object for the task, both the System Activity Summary window is displayed and the System Activity window is displayed.

     The System Activity Summary window displays the system activity for each object on a single line. The activity displayed as a blue bar is the average of all reported physical processor processing activity for the CPC. The activity displayed as a green bar is the average of all reported channel activity for the CPC. One or both types of activities can be displayed for the selected objects. A red bar indicates that activity data is not available for the object. You can choose different variations of the information to be displayed:
     – Both processor and channel activity in graphics (this is the default view)
     – Processor activity only in graphics
     – Both processor and channel activity in text
     – Channel activity only in graphics.

     The System Activity window displays more detailed information about the processing or channel activity as a percentage. It changes as the amount of activity changes. It can also optionally show the power being consumed and the air input temperature for those systems that support it. You can use the **Font Size** arrows to increase or decrease the size font for the information being displayed.
   - If you selected more than one object, the System Activity Summary window is displayed. You can then double-click on a summary bar for that object to display its System Activity details window.
2. When you are done reviewing the system activity details, click the red **X** in the upper right corner of the window to close the task window.

Notes:

- To monitor the true processing activity while using an operating system that uses an active wait state, like some versions of z/VM and VM, start system activity analysis with a system activity profile customized to exclude processing activity during an active wait state. For more information, see “Effect of an active wait state on processing activity” on page 164.
- Although the System Activity window's range for displaying activity graphically is 0% to 100%, the processing activity of logical partitions that share processors may exceed 100%. For more information, see “Processing activity for logical partitions using shared processors” on page 164.
- You can use the System Activity window to view a detailed snapshot of a shared channel's usage by each logical partition that shares it. For more information, see “Channel activity for logical partitions using shared channels” on page 165.

Use the online Help for more information on using the window to monitor system activity.

Effect of an active wait state on processing activity

By using an active wait state, an operating system does not yield idle processing resources to the system. This affects how you should monitor processing activity for such systems.

During system activity analysis of all processing activity, central processors (CPs) in an active wait state are considered busy rather than idle. Since the CPs are either actually busy, or in an active wait state that is considered busy, activity summaries of such CPs always indicate 100% usage.

To monitor the true processing activity, you can customize a system activity profile for monitoring processing activity that excludes a CP's activity while it is in an active wait state. Two of the sample system activity profiles, named VMPROCESSOR and VMPROCLIST, are examples of such profiles. They are customized, as follows, for monitoring processing activity while using a z/VM and VM operating system that uses an active wait state:

- Processing activity includes the individual and average activity of all CPs.
- But excludes CP activity in the supervisor state while the program status word (PSW) key is 3. These conditions are true while a CP is in an active wait state.

Refer to the documentation provided with your operating system to determine whether it uses an active wait state, and if so, to determine also the processor state and PSW key value of a CP while it is in an active wait state.

Processing activity for logical partitions using shared processors

A logical partition is assigned logical processors by the activation profile used to activate it. The activation profile also determines whether the logical processors are supported by dedicated processing resources:

- Logical partitions activated *with* dedicated processing resources have exclusive use of a central processor (CP) for each of its assigned logical processors.
- Logical partitions activated *without* dedicated processing resources share the use of non-dedicated CPs. A logical partition's processing weight and its setting for whether the processing weight is capped, which are both set by the activation profile also, determine the logical partition's share of non-dedicated processing resources.

Note: For instructions for locating this information in an activation profile, see "Assigning initial logical or reserved processors" on page 213.

If a logical partition's processing weight is not capped, its processing weight is the *minimum* share of non-dedicated processing resources guaranteed to the logical partition when all non-dedicated processing resources are in use. But when non-dedicated processing resources are available, the logical partition can borrow them, if necessary, in excess of the share ordinarily provided by its processing weight.

During system activity analysis, the processing activity of a logical partition that shares non-dedicated processing resources is *normalized*. Normalized processing activity is 100% while the logical partition is using the full share of processing resources provided by its processing weight. If a logical partition's processing weight is not capped, its processing activity *exceeds* 100% whenever the logical partition uses non-dedicated processing resources in excess of the share provided by its processing weight.

During system activity analysis, the System Activity window uses labels to identify the types of activity being monitored, and graphics to indicate the amounts of activity as percentages. Since the window's range for displaying activity graphically is 0% to 100%, actual amounts of normalized processing activity that exceed 100% are not displayed graphically. Instead, labels and graphics are altered, as follows, to identify and indicate normalized processing activity that exceeds 100%:

- The label is altered to display the actual percentage of normalized processing activity.
- The graphics are colored differently while normalized processing activity exceeds 100%.

- If the processing activity being monitored includes activity in both the problem state and the supervisor state, the graphics indicate the *ratio* of activity in each state, rather than the actual percentage of activity in each state, while the total normalized processing activity exceeds 100%.

  For example, if the total normalized processing activity is 200%, and the graphics indicate 60% activity in the problem state and 40% activity in the supervisor state, then the actual activity in the problem state is 120% (60% of 200%), and the actual activity in the supervisor state is 80% (40% of 200%).

Note: Open the legend for the System Activity window for more information about the labels and graphics used to identify and indicate processing activity that exceeds 100%:

1. Select **Actions** from the window's menu bar.
2. Select **Show legend** from the menu to display the window's legend.

Channel activity for logical partitions using shared channels

A shared channel can be online or configured online to more than one logical partition at the same time. An input/output configuration data set (IOCDS) defines whether a channel is shared, and which logical partitions can share it. The activation profile used to activate a central processor complex (CPC) determines which IOCDS is used to define the input/output (I/O) configurations of the CPC's logical partitions.

During system activity analysis, the label for a channel activity summary includes an **S** to indicate the channel is shared. The graphics for a shared channel activity summary displays in two portions:

- The first portion of the activity summary displays channel usage by one logical partition: either a specific logical partition or the logical partition for which the channel usage is highest.

  Note: The system activity profile used to start system activity analysis determines which logical partition has its individual channel usage displayed.
- The second portion of the activity summary displays the combined channel usage by all other logical partitions that share it.

While monitoring shared channel activity, you can use the System Activity window to view a detailed snapshot of a shared channel's usage by each logical partition that shares it.

1. Locate the label and graphics that identify and indicate activity on the shared channel.
2. Double-click with the left mouse button on the shared channel's graphics.

   This displays the System Activity EMIF Details window. It displays a pie chart graphic that shows the channel usage by each logical partition that shares it, and the channel's unused capacity, if any.

   Note: System activity analysis is suspended while you view the details of a shared channel's usage. As such, the window displays a snapshot of the shared channel's usage at the time you requested it. The snapshot will not be refreshed with new information.
3. Click **OK** to close the window and resume system activity analysis.
4. Repeat these steps to view another detailed snapshot of the shared channel's usage, if needed.

Customize System Activity

A *system activity profile* is a set of information that defines:

- The system resources you want to monitor during system activity analysis.
- How you want activity summaries of the monitored resources presented.

More specifically, the information in a system activity profile:

- Focuses the measurement of processor activity on specific program status word (PSW) keys or on a specific operating state, if applicable.
- Sets *thresholds* for processor and channel activity, to emphasize activity that does not meet a minimum amount of expected use, or exceeds a maximum amount of expected use.

- Indicates the amount and arrangement of information presented in activity summaries, and how often to update the activity summaries with new information from the system resources being monitored.

A set of sample system activity profiles is provided by IBM with the Support Element Console Application. Consider using the sample system activity profiles for system activity analysis until you become familiar with their contents and purpose. Then you can use the sample profiles as templates for customizing your own system activity profiles.

Table 1. Sample system activity profiles

DEFAULT	This profile is useful for monitoring the activity of all physical processors and the busiest channels. It is customized for displaying the individual and average activity of all central processors (CPs), the individual and average activity of all system assist processors (SAPs), the activity of the 31 most active channels, and IBM Smart Analytics Optimizer.
CHANHIGH	This profile is useful for monitoring the activity of the busiest channels. It is customized for displaying the activity of the 49 most active channels.
CHANLOW	This profile is useful for monitoring the activity of the least busy channels. It is customized for displaying the activity of the 49 least active channels.
LPARSUMA	This profile is useful for monitoring the activity of up to 30 logical partitions and some physical processor activity. It is customized for displaying the individual activity of all logical partitions, the individual and average activity of all CPs, and the individual and average activity of all SAPs.
LPARSUMB	This profile is useful for monitoring the activity of up to 10 logical partitions, all physical processors, and the busiest channels. It is customized for displaying the individual activity of all logical partitions, the average activity of all CPs, and the activity of the 37 most active channels. **Note:** You can customize this profile, or a copy of it, to display activity for up to 30 logical partitions.
PROCESSOR	This profile is useful for monitoring the activity of all physical processors. It is customized for displaying the individual and average activity of all CPs, and the individual and average activity of all SAPs.
PROCLIST	This profile is useful for monitoring the activity of all physical processors and the busiest channels. It is customized for displaying the individual and average activity of all CPs, the individual and average activity of all SAPs, the activity of the 31 most active channels, and IBM Smart Analytics Optimizer.
PROCUSAGEBYKEY	This profile is useful for situations, like tuning applications, that require monitoring CP activity while the program status word (PSW) key is set to a specific value. It is customized for displaying the average activity of all CPs while the PSW key is 0, the average activity of all CPs while the PSW key is 1, the average activity of all CPs while the PSW key is 2, and so on for each of the possible values of the PSW key: 0 through F. The profile is customized also for displaying the average activity of all CPs, regardless of the value of the PSW key.
VMPROCESSOR	This profile is useful for monitoring the activity of all physical processors while using an operating system, like some versions of VM, that may put CPs in an active wait state. It is customized for displaying the individual and average activity of all CPs (excluding activity in active wait states), and the individual and average activity of all SAPs. For more information, see “Effect of an active wait state on processing activity” on page 164.

Table 1. Sample system activity profiles (continued)

VMPROCLIST+	This profile is useful for monitoring the activity of all physical processors and the busiest channels while using an operating system, like some versions of z/VM and VM, that may put CPs in an active wait state. It is customized for displaying the individual and average activity of all CPs (excluding activity in active wait states), the individual and average activity of all SAPs, and the activity of the 31 most active channels. For more information, see "Effect of an active wait state on processing activity" on page 164.

System activity profiles

To prepare for using system activity profiles to start system activity analysis, you can use the Support Element workplace to work with the profiles as needed. Working with system activity profiles includes:

- Viewing a profile
- Customizing a profile
- Creating a new profile
- Deleting a profile
- Preparing to use profiles for monitoring system activity from a Hardware Management Console.

The **Open Activity Profiles** selection from the **Monitors Dashboard** task displays the system activity profiles for the objects you have selected and performs actions on the profiles. You can view an existing profile, make changes to it, delete it, or change the status. You can also specify which profiles are used in the **Activity** task for reporting activity on objects on the Support Element.

To work with system activity profiles:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Select the CPC to work with.
3. Select **Open Activity Profiles** located above the Overview table. If you selected a single object, the Customize Activity Profiles window is displayed. If you selected multiple objects, the Customize System Activity Profile List window is displayed and there are tabs on the right indicating the object names that you selected. You can click on the individual tabs to go to the profile list for each object.
4. Select a profile name then choose an action:
   - Click **Customize** to change the system activity profile for the selected object. The Customize System Activity Profile window is displayed. You can make appropriate changes, then click **Save** to save the changed information.
   - Click **Delete** to remove the selected system activity profile name from the object.
   - Click **Change Status** to change the status of the selected system activity profile name.
   - Click **Reset** to discard the changes you made and return to the options when you opened the task.
5. To exit the task without making any changes, click **Cancel**.

Viewing a system activity profile

View a system activity profile to determine:

- The particular system resources it is customized to monitor.
- The conditions for which a resource's usage is reported or ignored.
- How a resource's usage is presented.

To view a system activity profile, follow the instructions for customizing a system activity profile, but do not make or save any changes. For instructions, see "Customizing a system activity profile" on page 168.

Note: After starting the task for customizing a profile, you can open various windows to get detailed information about the contents of the profile. To avoid changing a profile while you view it, close the first window, Customize System Activity Profile, by clicking **Cancel**. If you did inadvertently change any information in the profile, closing the window in this way will give you an opportunity to discard the changes.

Customizing a system activity profile

Customize a system activity profile to:

- Define the particular system resources you want to monitor.
- Set conditions for which you want each resource's usage reported or ignored.
- Indicate how you want each resource's usage presented.

To customize a system activity profile:

1. Open a list of system activity profiles. For instructions, see "System activity profiles" on page 167.

   This opens the Customize System Activity Profiles List notebook. Its page lists the CPC's system activity profiles, and it provides push buttons for working with them.
2. Select from the list the system activity profile you want to customize, then click Customize.

   This opens the profile. Its information displays on the Customize System Activity Profile window.
3. Generally, use the window's controls to customize the profile information.
4. Review the window's list of activity lines, labeled Line, Component, and Description, to determine which system resources the profile is currently customized to monitor.

   Note: Central processors (CPs) include the general processors, internal coupling facility processors, integrated facility for Linux processors, and integrated facility for application processors.

   Change one or more activity lines to:

   - Define the particular system resources you want to monitor.
   - Set conditions for which you want each resource's usage reported or ignored.
   - Indicate how you want each resource's usage presented.
5. To change an activity line, use the list, the controls labeled Modify line options, and click OK as follows:
   a. From Modify line options, select the radio button labeled Change line.
   b. From the list of activity lines, select the line you want to change.
   c. Click **OK**.

      This opens the Change Line window.
   d. Locate the list labeled New component for this line; it lists radio buttons that describe the particular system resources you can monitor.
   e. Select the radio button that describes the particular system resource you want to monitor, then click OK.

      This opens an additional window, referred to as an options window, for the resource you selected to monitor.
   f. Use the controls on the options window to set conditions for which you want the resource's usage reported or ignored, and to indicate how you want the resource's usage presented.
   g. Click **OK** to set the options and complete customizing the activity line.

      This returns you to the Customize System Activity Profile window, and updates its list of activity lines with your changes.

   Repeat these steps as needed to customize up to 50 lines of activity.

   Note: The activity lines you change are not saved until you save the entire system activity profile. Save the profile, after you finish customizing it, by clicking Save on the Customize System Activity Profile window.

6. In addition to changing activity lines, you can use the other line options on the Customize System Activity Profile window at any time to edit and arrange the list of activity lines as needed. Use the list, the controls labeled Modify line options, and click OK as follows:
   a. From Modify line options, select the radio button that describes how you want to modify the activity lines. For example, if you want to delete a line from the list, select Delete line.
   b. From the list of activity lines, select the line you want to modify with the option you selected.
   c. Click OK to use the selected option to modify the selected line.
7. When you finish changing and arranging activity lines, you are ready to finish customizing the system activity profile and save it. Use the Customize System Activity Profile window as follows:
   a. Optionally, enter in the Description field a brief description of the types of activity the profile can be used to monitor.

      Note: Providing a profile description is recommended. Whenever a list of system activity profiles is opened, either to work with the profiles or to start system activity analysis, profile names and descriptions are listed to help you distinguish between the different profiles and their purposes.
   b. Click Save to save the system activity profile and close it.

Creating a new system activity profile

You are responsible for creating system activity profiles that meet your unique needs for monitoring system activity.

You can use any default system activity profile as a template for creating new profiles. After you create a new profile, you can customize it as needed. After you create and customize your own system activity profiles, you can use them as templates for creating more new profiles.

To create a new system activity profile:

1. Open a list of system activity profiles. For instructions, see "System activity profiles" on page 167.

   This opens the Customize System Activity Profiles List window. Its page lists the CPC's system activity profiles, and it provides controls for working with them.
2. Select from the list the system activity profile you want to use as a template for the new profile, then click **Customize**.

   This opens the profile. Its information displays on the Customize System Activity Profile window. The **Profile name** field identifies the system activity profile you opened. It will be used as a template for the new system activity profile.
3. To create a new profile from the template, enter a new, unique name for the new profile in the **Profile name** field.
4. Customize any other information in the profile as needed. For instructions, see "Customizing a system activity profile" on page 168.
5. Click **Save** to save the profile with the new name and any other information you customized.

   Note: Saving the new profile does not change the system activity profile you used as a template.

Monitoring system activity

A Hardware Management Console typically is used to operate and monitor multiple central processor complexes (CPCs). If you use a hardware management console to operate and monitor your CPC, in addition to its Support Element console, then you can use the hardware management console to monitor the CPC's system activity.

The system activity profiles assigned to the CPC are referred to as its *active* profiles. The active profile initially assigned to the CPC is the default system activity profile named DEFAULT. You can assign the CPC other active profiles as needed, to choose in advance the system activity you want to monitor.

To assign profiles for monitoring system activity:

1. Open a list of system activity profiles. For instructions, see “System activity profiles” on page 167.
   This opens the Customize System Activity Profiles List notebook. Its page lists the CPC's system activity profiles, and it provides push buttons for working with them.
2. Review the information in the list column labeled **Status** to determine which profiles are currently assigned to the CPC for monitoring system activity.

   Note: The column displays **Active for HWMCA** to indicate the profile is assigned to the CPC for monitoring its activity. Otherwise, the column displays **Not active for HWMCA**. You may have to scroll the column to see the entire status.
3. Select from the list the system activity profiles you want to use for monitoring system activity.

   Note: Select all profiles you want to assign as the CPC's active profiles, **including profiles that are already active**.
4. Deselect the active profiles, if any, that you no longer want to use for monitoring system activity.
5. Click **Change status** to assign the selected profiles as the CPC's active profiles.
   This sets the status of each selected profile to **Active for HWMCA**. Afterwards, starting system activity analysis will use the active profiles.

   Note: If system activity analysis of the CPC is already in progress, it will begin using the CPC's newly assigned active profiles shortly after their status is changed.

Environmental Efficiency Statistics

This task allows you to display environmental efficiency data graphically and in table format for the selected CPC. Environmental efficiency data that displays includes the following:
- Power consumption (kW and Btu)
- Temperature (Celsius and Fahrenheit)
- CP utilization percentage

  Note: In addition to CPs; ICFs, IFLs, zIIPs, and zAAPs are also included in this measurement.
- Blade CPU utilization percentage

To display environmental efficiency statistics data:
1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator or service representative user role (see “Establishing a Support Element console session from a Hardware Management Console” on page 3).
2. Open the **Environmental Efficiency Statistics** task. The Environmental Efficiency Statistics window is displayed.
3. Specify a start date and make a selection from the duration list.
4. Click **Refresh** to update the window.
5. From the Chart Content list select the graphical display that you prefer.
6. If you are accessing the Hardware Management Console remotely, click **Export** to save the environmental efficiency data that is currently displayed to a Comma Separated Values (csv) file.
7. When you have completed this task, click **Close**.

Use the online Help to get additional information on displaying environmental efficiency data.

Chapter 15. Console Actions

This section describes the tasks from the **Console Actions** task list that you can use to access information, monitor and operate the Support Element console, and customize console settings.

To launch the **Console Actions** task using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Audit and Log Management

Use this task to choose the audit data types to be generated, viewed, and offloaded to a remote workstation or removable media.

To generate audit report data:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Audit and Log Management** task. The Audit and Log Management window is displayed.
3. Select the report type to be generated.
4. Select the audit data type of report you want to generate from the Audit data types list.

   Note: The audit data types list displays only the data types that the user has authority to view. For example, the User profiles data type is displayed only to users who are authorized to use the **User Profiles** task.
5. Optionally, select **Limit event based audit data to a specific range of dates and times** to limit the report content for the selected event based audit data types to a time and date range.
6. Optionally, select the range of dates and times for the event based audit data types using the **View Calendar** and **View Time** icons to the right of the entry fields.
7. Click **OK** to generate the selected reports.

Use the online Help to get additional information on generating audit report data.

Block Automatic Licensed Internal Code Change Installation

This task, used by an access administrator or a user ID that is assigned access administrator roles, allows you to prevent automatically installed licensed internal code change from being installed outside of an explicitly initiated licensed internal code change installation operation.

Note: In most cases, this setting should not be changed. If this task is set to block automatic licensed internal code change installation, it prevents your system from automatically retrieving critical service or customer alerts, in addition to future enhanced driver maintenance sync port updates.

To block automatic licensed internal code change installation:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Block Automatic Licensed Internal Code Change Installation** task. The Block Automatic Licensed Internal Code Change Installation window is displayed.
3. Select **Block Automatic Licensed Internal Code Change Installation**, then click **Save** to complete the task.

Use the online Help to get additional information about blocking or unblocking automatic licensed internal code installations.

Console Default User Settings

This task, used by an access administrator or a user ID that is assigned access administrator roles, customizes the default appearance and behavior of the interface for the users of the Support Element console workplace.

To set the default user settings for the support element console:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Console Default User Settings** task. The Console Default User Settings window is displayed.
3. Proceed though the tabs to customize the user settings:
   - **Tree Style** - customizes the tree style user interface appearance
   - **Classic Style** - customizes the classic style user interface appearance
   - **Confirmations** - customizes the preferences for using confirmation windows for a subset of console workplace tasks
   - **Colors and Patterns** - sets the colors (or patterns) for indicating exceptions when using the classic style user interface only
   - **Controls** - selects object controls
   - **UI Style** - sets the user interface and determines whether or not the users are allowed to switch the user interface style
4. Click **Apply** to save the settings currently displayed or changed, or

   Click **Reset** to discard any changes you made to the settings after you opened this task and redisplay the current settings, or

   Click **Defaults** to discard any changes you made to the settings at any time and redisplay the original default settings that were provided with this version of the Support Element console.
5. Click **OK** when you have completed the task.

Use the online Help if you need additional information for customizing the default settings.

Change Password

This task allows you to change your password.

The security of information assets is controlled by user identification with passwords. Access to security functions or sensitive data is restricted by user roles. The access administrator user role is used to set up user identifications and passwords, and allow access to a particular user role of operation. The system programmer user role can access sensitive data and control remote access.

Each user is given access to the system through a user identification and password. This password should be kept confidential and changed if necessary to maintain security. Both the user identification and password must have a minimum of four characters with a maximum of eight characters.

To change your password:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Change Password** task. The Change Password window is displayed.
3. Enter your current password and your new password twice, the second time to confirm it.
4. Click **OK** to change your password.

Use the online Help if you need additional information for changing your password.

Console Messenger

Note: To send messages using this task, you must enable **Console messenger** from the Customize Console Services task (see "Establishing a Support Element console session from a Hardware Management Console" on page 3). Enabling **Console messenger** also allows you to receive messages. The **Accept Console Messenger messages** and **Bring Chat Window to foreground on new message** options become available from the **Controls** tab of the User settings task to allow you to customize the way that this task operates for your user ID.

Use this task to provide a simple person-to-person message communication facility between users of the Support Element and Hardware Management Console.

You can send a broadcast message or you can initiate a two-way chat.

Sending a broadcast message

This function allows you to send the same information to all the users on a console at the same time. To send a broadcast message:

1. Open the **Console Messenger** task. The Console Messenger window is displayed. This window allows you to choose the console or user that you want to send a message to and whether or not you want to send a two-way chat or send a broadcast message.

2. To send a broadcast message, select a top level console from the ***Reachable Consoles*** tree view list section of the window and make sure **Broadcast** is displayed in the ***Message Type*** section of the window.
3. Click **OK**. The Send Broadcast Message window is displayed.

   This window indicates who the recipient of your message will be and includes a message area for you to provide information that will be sent to all other user sessions (logged on and disconnected) of the selected console.
4. Specify a message in the **Message** input field, then click **Send**. The Broadcast Message Sent window is displayed indicating whether or not your message was received successfully.
5. Click **Close** to return to the Support Element console workplace.

If you are receiving a broadcast message, the Broadcast Message Received window is immediately displayed on your Support Element console. This window identifies the user that sent the message and displays the message sent by the user.

From this window you can:

- View more information about where the message came from, click **view more info**.
- Begin a two-way chat session with the user session that sent the broadcast message, click **Initiate Chat**.
- End the task and return to the Support Element console workplace, click **Close**.

Initiating a two-way chat

This function allows you to send a message to an individual user. To initiate a two-way chat:

1. Open the **Console Messenger** task. The Console Messenger window is displayed. This window allows you to choose the console or user you want to send the message to and whether or not you want to send a two-way chat or send a broadcast message.
2. To send a two-way chat, select an individual user session located below the reachable console. This automatically changes the ***Message Type*** area to **Two-way Chat**, then click **OK**. The Console Messenger Chat window is displayed.

   This window indicates who you will be sending messages to, a history of the dialogue you will be having with your chat partner, and a message area for you to provide information that will be sent to your chat partner.
3. Specify a message in the **Message** input field, then click **Send**. The Console Messenger Chat window is refreshed with the message you entered now appearing in the **History** area of the window with the prefix **Me**.

   The message is sent to the partner and their Console Messenger Chat window is also refreshed, with the message text appearing in the **History** area with the prefix **Partner** added to it.
4. If both partners need to continue sending messages to each other, specify a message in the **Message** input field and click **Send**.

   Note: To ensure that chat window comes to the foreground in your Support Element console sessions when partners send you messages, select **Bring chat window to foreground on message arrival.** (a check mark is displayed).
5. When you are done conversing with your chat partner, click **Close**.

   Note: The **Status** for your chat partner changes to **Closed by partner** and the **Send** option is no longer enabled, indicating that you have closed the Console Messenger Chat window.

There are other Support Element console tasks, such as the **Users and Tasks** task, that offer an ability to open the **Console Messenger** task to start a two-way chat or send a broadcast message. The steps necessary to open the **Console Messenger** task from these other tasks is mentioned in the description of

those tasks. Once the **Console Messenger** task has been opened, continue with the steps described in this section for information on the procedure for sending a broadcast message or conducting a two-way chat.

Use the online Help if you need additional information for sending and receiving two-way chats and broadcast messages to this console and remote consoles.

Customize API Settings

For more information on SNMP, see *Application Programming Interfaces*, SB10-7030.

You can allow other system management applications to use the Management Application Programming Interfaces (APIs) to the Support Element console application. Management APIs allow applications to exchange information about objects and send commands to an object managed by the Support Element console application. This task allows you to enable or disable an SNMP agent and set up a community name file and event notification information for an SNMP agent from the **SNMP** tab. For more information see *Application Programming Interfaces*.

To customize API settings:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Support Element Settings** (classic style interface only) task.
3. Open the **Customize API Settings** task. The Customize API Settings window is displayed.
4. From this window you can enable SNMP APIs and add, change, or delete community names, SNMPv3 users, and event notification information.
5. Click **OK** to save the SNMP configuration and continue the configuration.

Use the online Help to get additional information about customizing API settings.

Customize Console Services

This task enables or disables Support Element console services. A Support Element console service is a facility or function of the Support Element Console Application that allows the console to interact with other consoles and systems. Enabling a service lets the console provide tasks and perform operations associated with the service. Disabling a service prevents the console from providing tasks and performing operations associated with the service. Services include:

Automatic SE Switchover

Controls whether the Support Element is to be automatically switched to the alternate Support Element.

Network message forwarding

You can use the Support Element workplace to control whether the Support Element console will serve as a network message relay node or not. If the Support Element console is configured to act as a relay, it will provide inter-console forwarding of network messages used by forwarding-enabled Support Element consoles; services, such as console messenger service. This

forwarding can allow these forwarding-enabled services to communicate between console nodes that do not have direct network connectivity with each other.

Console messenger
Controls whether the console messenger facility is active on this Support Element console or not. The console messenger facility allows users of this Support Element console to send and receive instant messages and broadcast messages to other users of this console and remote consoles.

Large retrieves from RETAIN

Controls whether the Support Element can retrieve internal code changes from RETAIN for Engineering Chance (EC) streams that are expected to contain large amounts of data.

To enable or disable Support Element console services:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Customize Console Services** task. The **Customize Console Services** window is displayed.
3. Select **Enabled** or **Disabled** for each service.
4. Click **OK** to complete the task.

Use the online Help to get additional information for enabling or disabling Support Element console services.

Customize Network Settings

This task allows you to view the current network information for the Support Element console and to change the network settings as shown in the following list.

Identification
Contains the host name and domain name of the Support Element console.

Console name
Your Support Element console user name, the name that identifies your console to other consoles on the network. This console name is the short host name, for example:

```
seibm1
```

Domain name
An alphabetic name that Domain Name Services (DNS) can translate to the IP address, For example, DNS might translate the domain name 222.example.com to 198.105.232.4. The long host name consists of console name plus a period plus a domain name, for example:

```
seibm1.endicott.ibm.com
```

Netid Displays the SNA network name of the network which the CPC is attached through. Change this setting only when the network's SNA network name is changed or when the CPC is connected to a different network.

Console description
This description is for your use only. An example might be:

```
Main Support Element Console for customer finance
```

LAN Adapters
A summarized list of all (visible) Local Area Network (LAN) adapters. You can select any of the LAN adapters and click **Details...** to open a window allowing you to work with the basic LAN settings.

Name Services
The Domain Name Services (DNS) and domain suffix values.

Routing
Routing information and default gateway information.

The **Gateway address** is the route to all networks. The default gateway address (if defined) informs the Support Element console where to send data if the target station does not reside on the same subnet as this Support Element console. This information is needed to allow the Support Element console to connect to IBM Service Support System using the internet.

You can assign a specific LAN to be the **Gateway device** or you can choose "any."

You can select **Enable 'routed'** to start the routed daemon.

To customize the network settings:

1. Log on to the Support Element on the Hardware Management console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Support Element Settings** (classic style interface only) task.
3. Open the **Customize Network Settings** task. The Customize Network Settings window is displayed.
4. Proceed through the tabs and provide the appropriate information.
5. Click **OK** to save the changes and exit the task.

Note: Depending on the type of change that you make, the network or console automatically restarts or the console automatically reboots.

Use the online Help to get additional information for customizing the network settings.

Customize Product Engineering Access

This task, used by an access administrator or a user ID that is assigned access administrator roles, enables or disables the authorization of IBM Product Engineering access to the Support Element console. Once product engineering is enabled to access the Support Element console you can decide whether or not product engineering can access the system remotely.

With access authority, IBM Product Engineering can log on the Support Element console with an exclusive user identification that provides tasks and operations for problem determination.

Product Engineering access is provided by a reserved password and permanent user identification. You cannot view, discard, or change the password and user identification, but you can control their use for accessing the Support Element console.

To customize product engineering access:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).

2. Open the **Support Element Settings** (classic style interface only) task.
3. Open the **Customize Product Engineering Access** task. The Customize Product Engineering Access window is displayed.
4. Select the appropriate accesses for product engineering or remote product engineering.
5. Click **OK** to save the changes and exit the task.

Use the online Help to get additional information for customizing product engineering access to your Support Element console.

Customize Support Element Date/Time

You can use the Support Element workplace to start the console action for manually setting the Support Element time-of-day (TOD) clock when the CPC does not or cannot use Server Time Protocol (STP) as a time source.

To set the Support Element TOD clock:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate and open the **Customize Support Element Date/Time** task.

   The Customize Console Date and Time window displays the current date, time, and time-zone offset set for the Support Element TOD clock.
3. Click **Cancel** if no corrections are necessary.
4. Enter corrections, if needed, then click **Customize**.
5. Click **OK**.
6. Click **Refresh** to display the new changes.
7. Click **Cancel** to close the window.

Use the online Help for more information on setting the Support Element TOD clock.

Customize User Controls

This task, used by an access administrator or a user ID that is assigned access administrator roles, defines and customizes user roles. A ***user role*** is a collection of authorizations. A user role can be created to define the set of tasks allowed for a given class of user (*task roles*) or it can be created to define the set of managed objects that are manageable for a user (*managed resource roles*). Once you have defined or customized the user roles, you can use the **User Profiles** task to create new users with their own permissions. (See "User Profiles" on page 186, for more information.)

To customize managed resource roles or task roles:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).

2. Open the **Customize User Controls** task. The Customize User Controls window is displayed.
3. Select either **Managed Resource Roles** or **Task Roles**.
4. Select the object you want to customize.
5. Click **Edit** from the menu bar to display the actions available.
6. Click **Add...**, **Copy...**, **Remove**, **Modify...**, or **Exit** depending on the task you want to perform.

You can also create user roles that have view only access for select tasks. The following view only tasks include:
- Hardware Messages
- Operating System Messages
- Customize/Delete Activation Profiles
- Advanced Facilities
- Configure On/Off

To create a user role that includes view only tasks:
1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Customize User Controls** task. The Customize User Controls window is displayed.
3. Select **Task Roles** and the task role you want to customize.
4. Click **Edit** from the menu bar to display the actions available.
5. Click **Add...** to create a new user role.
6. Select tasks from the Available Tasks group that you want the new user role to have access to. If the task is view only, the View Only Version Available message window is displayed. Click **Yes** if you want to add the view only version of that task for the user role you are creating.
7. When you have completed creating the new user role, click **OK**. From the **Edit** menu bar click **Exit** to close the task.

Use the online Help to get additional information for customizing managed resource roles and task roles.

Domain Security

If you want to customize domain security, use this task to establish and maintain different domains for multiple Hardware Management Consoles and Support Element consoles attached to the same local area network (LAN). Ordinarily, to add or move a CPC from a domain is done from the Hardware Management Console, but this can be accomplished from the Support Element console.

The domain name and password of the console authorize its communication with the objects in its domain. They prevent unauthorized sources attached to the same local area network (LAN) from communication with other objects.

To define the domain security:
1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Domain Security** task. The Domain Security window is displayed.
3. Specify a domain name and domain password. Select the option with which you want the domain to apply.

4. Click **OK** to proceed with the change.

Use the online Help to get additional information for assigning a unique domain name and password.

Logoff or Disconnect

This task allows you to end the current user session and logs off the Support Element console or to disconnect while your tasks continue running. If you disconnect, you can reconnect at a later time to continue working. However, a disconnected session is eventually ended. (This is because disconnected sessions exist only while the Support Element console application is running. If the Support Element console is restarted or the console is shut down or rebooted, all session information is lost.)

Select the log off operation when you no longer need access to the Support Element console. Logging off the console does not affect the status of the CPC or images. After you log off or disconnect, the Welcome to the Primary Support Element Console window is displayed. If you chose to disconnect rather than logoff, when you logon again, the Choose a Disconnected Session window is displayed. You can select the disconnected session to continue working or you can begin a new session. (The number of windows displayed depends on the state of the session when it was disconnected. One of the windows is the main user interface; additional windows are for each task that was running when the session was disconnected.)

The Support Element workplace window closes and the Hardware Management Console workplace window is displayed.

To log off the Support Element console:

1. Open the **Logoff or Disconnect** task. The Choose to Logoff or Disconnect window is displayed.
2. Select **Log off**.
3. Click **OK** to end your session on the Support Element console.

To disconnect from the Support Element console:

1. Open the **Logoff or Disconnect** task. The Choose to Logoff or Disconnect window is displayed.
2. Select **Disconnect**.
3. Click **OK** to disconnect from your session on the Support Element console with the intent of returning at a later time.

Use the online Help if you need additional information about logging off the Support Element console or disconnecting from your session.

Manage Enterprise Directory Server Definitions

This task, used by an access administrator or a user ID that is assigned access administrator roles, creates new enterprise server (LDAP) definitions or edits and removes existing enterprise directory server definitions.

The Lightweight Directory Access Protocol (LDAP) support allows you the option to configure your Support Element console to use an LDAP server to perform user ID and password authentications at logon time. An LDAP server maintains a tree-structured database serving as a convenient place to put hierarchical information, such as a corporate employee directory. Each level of the LDAP tree generally represents a different type of information.

To add, edit, or remove an enterprise directory (LDAP) server:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Manage Enterprise Directory Server Definitions** task. The Manage Enterprise Directory Server Definitions window is displayed.
   - To add a server, click **Add...**. The Add Enterprise Directory (LDAP) Server window is displayed. Provide the appropriate information, then click **OK**.
   - To edit a server, select a server then click **Edit...**. The Edit Enterprise Directory (LDAP) Server window is displayed. Provide the appropriate information, then click **OK**.
   - To remove a server, select a server, then click **Remove**.
3. When you have completed the task, click **Close**.

Use the online Help if you need additional information for setting up an LDAP server.

Manage Print Screen Files

This task allows you to create screen captures of the entire contents of the console or of individual task windows. You can then manage these files by viewing, copying to media, or deleting.

To capture and manage the print screen files:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator, advanced operator, operator, system programmer, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Manage Print Screen Files** task. The Manage Print Screen Files window is displayed.
3. Specify a file name and select a file type from the list that you prefer to have the screen capture saved as.
4. You can capture a window or screen by clicking one of the following options:

   Print Window
   Creates a copy of a task window and gives it a unique file name and the selected file type. A message window is displayed explaining how to get the preferred window to the foreground.

   Print Screen
   Creates a copy of the entire contents of the screen and gives it a unique file name and the file type you selected. A message window is displayed explaining the amount of time you have to arrange the windows on the screen before it is captured.

   Your screen capture is displayed in a table within the task window once the process is complete.
5. You can select a file from the table and then proceed with an option to view the file, copy the file to media, convert to a different file type, delete the file, or rename the file.
6. When you are done and ready to exit, click **Cancel**.

Use the online Help if you need additional information for capturing and managing the print screen files.

Manage SSH keys

This task allows you to install the public key for a host used for secure transfers. It associates a public key with a host address and allows a secure FTP connection from a Hardware Management Console FTP client to an FTP server location.

To manage SSH keys:

1. Open the **Manage SSH Keys** task. The Manage SSH Keys window is displayed.
2. Specify an IP address that you want associated with a secure host key, then click **Add**. This IP address and its corresponding key is displayed in the **Known Host Keys** table.
3. You can select an existing IP address from the table, then click **Delete** to remove it.
4. When you have completed this task, click **Close**.

Use the online Help to get additional information for managing SSH keys.

Migrate Channel Configuration Files

This task allows you to copy the channel's configuration information that was stored under a previous (source) PCHID number to a new (target) PCHID number. If you change the location of the channel card so that it is assigned a new PCHID number, this task can be used to copy the channel's configuration information that was stored under the previous PCHID number to the new PCHID number.

To migrate channel configuration information to a new PCHID:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in system programmer or service representative user roles (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Locate and open the **Migrate Channel Configuration Files** task.

   The Migrate Channel Config Files window displays.
3. Enter the new target PCHID number for the corresponding source PCHID number.
4. Click **OK** to perform the operation.
5. Click **Use CD** if you have a CD with the channel configuration move records to update the target PCHID list.

Use the online Help for more information on completing this task.

Network Diagnostic Information

This task displays network diagnostic information for the console's TCP/IP connection and allows you to send an echo request (ping) to a remote host.

To view information concerning the networking configuration on this Support Element console:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Network Diagnostic Information** task. The Network Diagnostic Information window is displayed.
3. Use the following tabs to view the network information:
   - Ping
   - Interfaces
   - Ethernet Settings
   - Address
   - Routes
   - Address Resolution Protocol (ARP)
   - Sockets
   - Transmission Control Protocol (TCP)
   - User Datagram Protocol (UDP)
   - Internet Protocol (IP) Tables
   - Native Connections
4. Click **Cancel** when you are done viewing the information.

Use the online Help to get additional information on your console's network information.

Object Locking Settings

Notes:

- Because there are really many main user interfaces (one for each logged on user), the Support Element console provides object locking capabilities for each user. This means that users have their own individual object locking settings, managed by using the **Object Locking Settings** task, and their own state information for locked objects. In other words, if you lock or unlock an object, it is not locked or unlocked respectively for other logged-on users.
- If you are using the classic style user interface, this task is found under the **Support Element Settings** console action.

This task allows you to control whether managed objects are automatically locked and whether they are relocked after being used as target objects for a task.

To lock or unlock objects:

1. Open the **Object Locking Settings** task. The Locking window is displayed.
2. Select the setting you want set for the object.
3. Click **OK** to proceed or **Cancel** to exit the task without changing the setting.

Use the online Help to get additional information for changing object locking settings. See also Figure 5 on page 7 for more information.

Password Profiles

This task, used by an access administrator or a user ID that is assigned access administrator roles, creates, customizes, or verifies the password rules assigned to the system users. There are three default password rules that you can choose from if you do not want to create your own. They are basic, strict, and standard.

To set a password profile:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Password Profiles** task. The Password Profiles window is displayed.
3. Select a password rule or create your own and select properties for the password rule.
4. Click **OK** to complete the task or **Cancel** to exit the task

Use the online Help if you need additional information for creating a password profile.

Support Element Settings

The **Support Element Settings** task contains a collection of the following settings-related tasks when using the classic style user interface. Otherwise, these individual tasks can be found under the **SE Management** and **Service Management** nodes when using the tree style user interface:

Customize API Settings
: Enable or disable an SNMP agent, set up a community name file and event notification information. See "Customize API Settings" on page 175 for more information.

Customize Console Services
: Enable or disable remote operation, LIC change, and optical error analysis. See "Customize Console Services" on page 175 for more information.

Customize Network Settings
: View and change network information which includes identifying your console, selecting a Local Area Network (LAN) adapter, specifying Domain Name Services (DNS), and specifying routing information for configuring the console network settings. See "Customize Network Settings" on page 176 for more information.

Customize Product Engineering Access
: View or change authorization of IBM Product Engineering access to the Support Element console. See "Customize Product Engineering Access" on page 177 for more information.

Object Locking Settings
: Control which managed objects are automatically locked and whether they are relocked after being used as target objects for a task. See "Object Locking Settings" on page 183 for more information.

To access the tasks under the Support Element console using the classic user interface:

1. Open **Console Actions** from the **Views** area.

2. Open **Support Element Settings** from the **Console Actions Work Area**. The **Support Element Settings Work Area** is displayed.

Shutdown or Restart

This task enables you to shut down (power off the console) or to restart the application or the console.

To shut down or restart the application or console:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator, advanced operator, operator, system programmer, or service representative user roles (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **Shutdown or Restart** task. The Shutdown or Restart window is displayed.
3. You can select one of the following:
   - Restart console
   - Power-off console
4. Click **OK** to perform the selected action or click **Cancel** to return to the Support Element console workplace.

   Note: If there are other users and tasks running, an additional message is displayed allowing you to send a message (initiates the **Console Messenger** task) to alert the user sessions that you intend to shutdown or restart the console.

Use the online Help if you need additional information about shutting down or restarting the Support Element console.

User Patterns

The "User Templates" on page 187 task and **User Patterns** task control adding or removing console users through your own corporate security environment, such as an LDAP server. A user ID pattern encapsulates all the information needed to create a temporary user definition.

This task, used by an access administrator or a user ID that is assigned access administrator roles, defines:

- The pattern to be used to try and match unknown user IDs not defined to the Support Element to user IDs in a specified LDAP server
- A defined template to be used for matching user IDs
- An LDAP server definition to validate the user ID when processing a logon for users that match the pattern
- The retention time (in days) for modified user setting information
- Optionally, LDAP attributes and LDAP server definition used to determine the user template to be used or domains where the pattern is valid

Note: LDAP server used for authentication can be different from the one used to specify the template and domain names.

To customize a user pattern:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **User Patterns** task. The User Pattern window is displayed.
3. Select the type of string pattern you want to customize.
   - If you are creating a string pattern, select **Add...** from the menu bar. The Add Pattern window is displayed.
   - If the string pattern name exists in the window, select the string pattern name from the list and then select **Modify...** from the menu bar. The Modify Pattern window is displayed.
4. Complete or change the fields in the window, click **OK** when you are done.

Use the online Help for more information for customizing the user patterns.

User Profiles

This task, used by an access administrator or a user ID that is assigned access administrator roles, manages your system users that log on to the Support Element console. A user profile is a combination of a user ID, permissions, authentication mode, and a text description. Permissions represent the authority levels assigned to the user profile for the objects the user has permission to access.

The user ID and password are used to verify a user's authorization to log on to the Support Element console. The user ID can be 4 - 320 characters in length and can be a combination of uppercase and lowercase letters (A-Z, a-z), numbers (0-9), and special characters (@ \ < + : # ' = " & * ( ) ; - / , % _ > . ?). The password is determined by the password rule that is chosen for the user ID. The default choices are *basic*, *strict*, and *standard*, however, other rules may also be available if they were defined in the **Password Profiles** task. All these rules have their own set of specifications for assigning a password. Your access administrator determines what password rule is appropriate for you, whether you must change your password at the next login, and whether you can log on to the Support Element console.

This task also allows you to choose the type of password authentication you want to assign to the user ID. If you choose the **Local Authentication**, then the password authentication is performed by using the Support Element console. If you choose the **LDAP Server**, then the password authentication is delegated to an enterprise director (LDAP) server. You use the **Manage Enterprise Directory Server Definitions** task to define the LDAP server.

The user profile includes managed resource roles and task roles that are assigned to the user. The *managed resource roles* assign permissions for a managed object or group of objects and the *task roles* define the access level for a user to perform on a managed object or group of objects. You can choose from a list of available default managed resource roles or task roles.

To customize a user profile:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **User Profiles** task. The User Profiles window is displayed.
3. Select the type of user ID you want to customize.
   - If you are creating a user ID, point to **User** on the menu bar and when its menu is displayed, click **Add...**. The Add User window is displayed.

Note: When you create a user ID, the new user ID is set to use the default user interface style. If you create a user ID that is copied from an existing user ID, the new user ID gets the user interface style of the user ID it is being copied from.

- If the user ID exists in the window, select the user ID from the list, and then point to **User** on the menu bar and when its menu is displayed, click **Modify...**. The Modify User window is displayed.

4. Complete or change the fields in the window, click **OK** when you are done.

You can also use this task to request text input on the Disruptive Task Confirmation window or have a particular user ID password specified before the user proceeds with a task that causes disruptive actions. To set these options from the User Profiles window:

1. Select the user ID, point to **User** on the menu bar, then click **Modify...**. The Modify User window is displayed.
2. Click **User Properties...**, the User Properties window is displayed.
3. Select **Require password for disruptive actions** (a check mark is displayed), then click **OK**. When this user ID tries to execute a task that causes disruptive actions, the Disruptive Task Confirmation window displays a password input field. The user must specify the password before proceeding with the task. (See "Disruptive tasks" on page 7 for more information.)
4. Select **Require text input for disruptive actions** (a check mark is displayed), then click **OK**. When this user ID tries to execute a task that causes disruptive actions, the Disruptive Task Confirmation window displays a Confirmation Text input area for each affected object. Specify the operating system name, if available, otherwise the system name must be provided to proceed. (See "Disruptive tasks" on page 7 for more information.)

Use the online Help for more information for customizing the user profiles.

User Templates

The **User Templates** task and "User Patterns" on page 185 task control adding or removing console users through your own corporate security environment, such as an LDAP server.

This task, used by an access administrator or a user ID that is assigned access administrator roles, manages your system users, restricted to LDAP authentication, that log on to the Support Element console. The user ID can be 4 - 320 characters in length and can be a combination of uppercase and lowercase letters (A-Z, a-z), numbers (0-9), and special characters (@ \ < + : # ' = " & * ( ) ; - / , % _ > . ?).

The **LDAP Server** authentication is delegated to an enterprise director (LDAP) server. You use the **Manage Enterprise Directory Server Definitions** task to define the LDAP server.

The user template includes managed resource roles and task roles that are assigned to the user. The *managed resource roles* assign permissions for a managed object or group of objects and the *task roles* define the access level for a user to perform on a managed object or group of objects. You can choose from a list of available default managed resource roles or task roles.

To customize a user template:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **User Template** task. The User Templates window is displayed.

3. Select the type of template you want to customize.
   - If you are creating a template name, select **Add...** from the menu bar. The Add Template window is displayed.
   - If the template name exists in the window, select the template name from the list and then select **Modify...** from the menu bar. The Modify Template window is displayed.
4. Complete or change the fields in the window, click **OK** when you are done.

Use the online Help for more information for customizing the user template.

Users and Tasks

This task displays a list of the tasks that are running and the users that are currently logged on to the Support Element console.

To work with the users and tasks:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **User and Tasks** task. The Users and Tasks window is displayed.
3. The following information is displayed in the *Users Logged On* portion of the window:
   - An ID number associated with the user that is logged on
   - User ID you are logged in as and the other user IDs that are logged in to the console
   - Time the user ID logged in
   - Number of tasks running
   - User ID access location
   - Information about tasks that are running.

   The following information is displayed in the *Running Tasks* portion of the window:
   - Task ID number associated to the task that is running
   - Name of the task that is running
   - Object names that may be targeted for that task
   - An ID number associated with the user running the task
   - Time the task was started.

   Notes:
   - If you are assigned a user ID with access administrator roles, you can:
     - Logoff or disconnect any user from the session (click **Logoff** or **Disconnect**).
     - Terminate any task from the session (click **Terminate**).
   - You can only switch to another task in your own session.
   - You can terminate your own session.
4. You can initiate a two-way chat with another user by selecting the user name and clicking **Chat With**. You can also switch to another task that is running in your session by selecting the task and clicking **Switch To**.
5. When you have completed the task, click **Close**.

Use the online Help to get additional information about the tasks that are running and the users currently logged on to the Support Element console..

User Settings

Notes:

- Only a user ID assigned access administrator roles sets the defaults of the Support Element console settings by using the **Console Default User Settings** task.
- Because there are many main users interfaces (one for each logged on user), the Support Element console provides each user the ability to change settings, such as color or patterns and confirmation settings. In other words, if you change confirmation settings or colors and patterns, this does not cause that same change for other logged-on users.

This task enables you to customize settings that control how the Support Element console operates.

You can select the user interface style that you want to work with (tree or classic) if the default has been set to allow you to change the interface. (This option is set by the access administrator from the **Console Default User Settings** task.) You also are able to choose whether you want hover help, single object selection, show tips, or choose when to display or not display confirmation windows.

Tree style user interface

If you are using the tree style user interface, use the following steps to define the user settings:

1. Open the **User Settings** task. The User Settings window is displayed.
2. Proceed through the following tabs to customize your Support Element workplace:

   Tree Style

   Use this tab to select the appearance of the tree style user interface Support Element workplace. This tab is available only for the tree style interface. The following options are available:
   - Banner
   - Tasks pad
   - Navigation icons
   - Work pane icons

   For example, if you want to display the banner when you are using the tree interface, you need to:

   a. Open the **User Settings** task by clicking on the user ID on the task bar or click on the **SE Management** node in the navigation pane and click on **User Settings** in the work pane. The User Settings window is displayed.
   b. Select the **Tree Style** tab. Select Banner if you want it to appear on the workplace (a check mark is displayed).
   c. Click **Apply** to have the changes take affect, click **OK** to close the window.
   d. The banner is displayed as part of the workplace window.

   Confirmations

   Use this tab to customize preferences for confirmation windows that are used for a subset of tasks. The settings options you can select from include:
   - Enabled with object list
   - Enabled without object list
   - Do not show confirmations

You can also select **Use 'No' as the default action** indicating that the default action for the confirmation window is to cancel the task. The **No** button is preselected on the confirmation window so you can press Enter to cancel the task.

Controls

Use this tab to control the following functions:

- Single object selection
- Show tips each time you logon
- Accept Console Messenger messages (This is available only if the **Console messenger** facility is enabled from the **Customize Console Services** task.)
- Bring Chat Window to foreground on new messages (This is available only if the **Console messenger** facility is enabled from the **Customize Console Services** task.)

UI Style

Use this tab to select the user interface style you prefer to work with. You can choose from the following:

- Tree style (see Chapter 2, "Using the tree style user interface," on page 9for more information)
- Classic style (see Chapter 3, "Using the classic style user interface," on page 37for more information)

3. Click **Apply** to save the settings currently displayed or changed, or

   Click **Reset** to discard any changes you made to the settings after you opened this task and redisplay the current settings for this user ID, or

   Click **Defaults** to discard any changes you made to the settings at any time and redisplay the original default settings for this user ID.
4. Click **OK** to save the settings and end the task or click **Cancel** to exit this task without making any changes.

Use the online Help to get additional information for customizing user settings for the Support Element workplace.

Classic style user interface

If you are using the classic style user interface, use the following steps to define the user settings:

1. Open the **User Settings** task. The User Settings window is displayed.
2. Proceed through the following tabs to customize your Support Element workplace:

Confirmations

Use this tab to customize preferences for confirmation windows that are used for a subset of tasks as described above for the tree style user interface.

Colors and Patterns

Use this tab to set color (or patterns) for indicating exceptions on the Support Element workplace. This tab is available only for the classic style user interface. You can adjust color settings for the following situations:

- Modify the default colors (or use gray patterns instead of color) that indicate processor cluster status changes.
- Associate a color or pattern with any of the status values that you indicate as unacceptable, thereby allowing you to distinguish between types of exceptions.
- Change the background color of the Views area for an exception or non-exception situation and change the color associated with pending messages. See "Monitoring system status" on page 42 for more information about status and exception conditions.

Controls

Use this tab to control the following functions:

- Show hover help (This option is available only for the classic style user interface.)
- Single object selection
- Show tips each time you logon
- Accept Console Messenger messages (This is available only if the **Console messenger** facility is enabled from the **Customize Console Services** task.)
- Bring Chat Window to foreground on new messages (This is available only if the **Console messenger** facility is enabled from the **Customize Console Services** task.)

Classic Style

Use this tab to change the appearance for the classic style user interface. You can choose options from the following areas of the task window:

- **Console Actions Layout Style** - allows you to display the console actions in a classic style user interface layout (default), a list format, or arranged in predefined groups.
- **Console Actions Sort Order** - allows you to display the tasks alphabetically or in the original classic style user interface order (default).
- **Show or Hide Areas** - allows you to hide areas of the interface to display more objects in another area.

Note: You can also change the classic style settings for the console actions by opening the pop-up menu from the work area. Right-click on an empty area of the work area, the pop-up menu is displayed. Select the **Style Settings** option and then choose the format you want to change for the console actions. Use the help information from the **User Settings** task for more information on the formatting choices.

UI Style

Use this tab to select the user interface style you prefer to work with. You can choose from the following:

- Tree style (see Chapter 2, "Using the tree style user interface," on page 9 for more information)
- Classic style (see Chapter 3, "Using the classic style user interface," on page 37 for more information)

3. Click **Apply** to save the settings currently displayed or changed, or

   Click **Reset** to discard any changes you made to the settings after you opened this task and redisplay the current settings for this user ID, or

   Click **Defaults** to discard any changes you made to the settings at any time and redisplay the original default settings for this user ID.
4. Click **OK** to save the settings and end the task or click **Cancel** to exit this task without making any changes.

Use the online Help to get additional information for customizing user settings for the Support Element workplace.

View Console Events

The Support Element console automatically keeps records of significant operations and activities, referred to as *console events*, performed either:

- Manually by a console operator.

- Through management-type Application Programming Interfaces (APIs) to the Support Element Console Application.
- Automatically by the Support Element Console Application.

Some console events simply indicate an operation or activity occurred. For example, a console event is logged when a console operator logs on the console.

Other console events are logged in pairs, to indicate when an operation or activity began and when it ended. For example, a console event is logged when a power-on reset is started, and another console event is logged when the power-on reset ends. Console events logged when an operation or activity ends typically also indicate whether the operation or activity succeeded or failed.

This task enables you to view a record of system events occurring on the Support Element console. System events are individual activities that indicate when processes occur, begin and end, succeed or fail.

When an event occurs, the date and time it occurs and a brief description of the event are recorded in the **Console Event Log**.

To view the console events:

1. Log on to the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **View Console Events** task. The View Console Events window is displayed.

   Initially, all events in the table are displayed in descending order, from the most recent event to the oldest event. You can work with the table by using the table icons from the table toolbar. If you place your cursor over an icon a description of the icon is displayed. The icons perform the following functions:

   Show Filter Row
   Displays a row under the title row of the table. Select **Filter** found under a column title to define a filter for that column. This limits the entries in the table. Tables can be filtered to show only those entries most important to you. If you no longer want the **Filter** row to appear, click **Hide Filter Row**.

   Clear All Filters
   Returns the table back to the complete listing.

   Edit Sort
   Performs multi-column sorts of objects in the table in ascending or descending order. Click **OK** when you have defined your preferred order.

   Clear All Sorts
   Returns the table back to the default order.

   Quick Filter
   Allows you to select a filter category to apply to the filter. By default, all columns are filtered, showing only rows containing a cell whose value includes the filter text. When you click the drop-down arrow, a menu is displayed that allows you to restrict the columns to which the filter is applied.
3. When you have finished reviewing the console events, click **Cancel**.

Use the online Help to get additional information about reviewing the console events and using the filtering options for the console events listed.

View Licenses

This task allows you to view the Licensed Internal Code (LIC) that you have agreed to for this Support Element console. This list does not include program and code provided under separate license agreements. This task window appears after the initialization window or to view the license.

To view the licenses:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in operator, advanced operator, system programmer, access administrator, or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **View Licenses** task. The View Licenses window is displayed.
3. A list of the licenses is displayed, click on any of the license links for more information.

   Note: This list does not include programs and code provided under separate license agreements.
4. Click **OK** when you are done viewing this information.

View Security Logs

This task allows you to view the security events logged for the Support Element console. A security event occurs when an object's operational state, status, or settings change or involves user access to tasks, actions, and objects.

To view a security log:

1. Log onto the Support Element on the Hardware Management Console through **Single Object Operations** in access administrator, system programmer or service representative user role (see "Establishing a Support Element console session from a Hardware Management Console" on page 3).
2. Open the **View Security Logs** task. The View Security Logs window is displayed.
3. From the menu bar you have the following options for viewing information:
   - To open security logs, click **File**, then one of the following options:
     - To open an archived security log on a mass readable media device (CD-ROM, DVD-RAM, or USB flash memory drive whose capacity is 1 GB or greater), select **Open Security Log**, **New**. See "USB flash memory drive" on page 7 for more information.
     - To open the Support Element console's default security log, select **Open Security Log**, **Default**).
     - To close the window and end the task, select **Exit**.
   - To search the security log that is currently open, click **Search**, then one of the following options:
     - To search events by the time and date they occurred, select **By Date**.
     - To search for an event by its description, select **By Event**.
     - To search for events by a certain group, select **By Category**.
   - To view or alter the security log options, click **Options**, then one of the following options:
     - To enable the creation of a hardware message when the security log is approaching the maximum size, select **Create hardware message when approaching maximum**, **On**.
     - To disable the creation of a hardware message when the security log is approaching the maximum size, select **Create hardware message when approaching maximum**, **Off**.

  - To enable the creation of a security log event when the underlying network firewall denies a network connection, select **Log security event for network denial events**, **On**.
  - To disable the creation of a security log event when the underlying network firewall denies a network connection, select **Log security event for network denial events**, **Off**.
- To display help for the current window, click **Help**.

4. When you are done viewing the security log and ready to exit the task, click **File**, **Exit**.

Use the online Help if you need additional information for viewing a security log.

Appendix A. Customizing activation profiles

This section describes the **Customize/Delete Activation Profiles** task you can use to customize settings that control how the system operates. Some settings affect system operations directly, while other settings are input for other tasks you use to monitor and operator the system.

To launch the task from the **CPC Operational Customization** task list using the tree style user interface, see Chapter 2, "Using the tree style user interface," on page 9 or if you are using the classic style user interface, see Chapter 3, "Using the classic style user interface," on page 37.

Activation profiles

Customize activation profiles to define the information that sets the operational capabilities and characteristics of the objects you want to activate. There are four types of activation profiles:

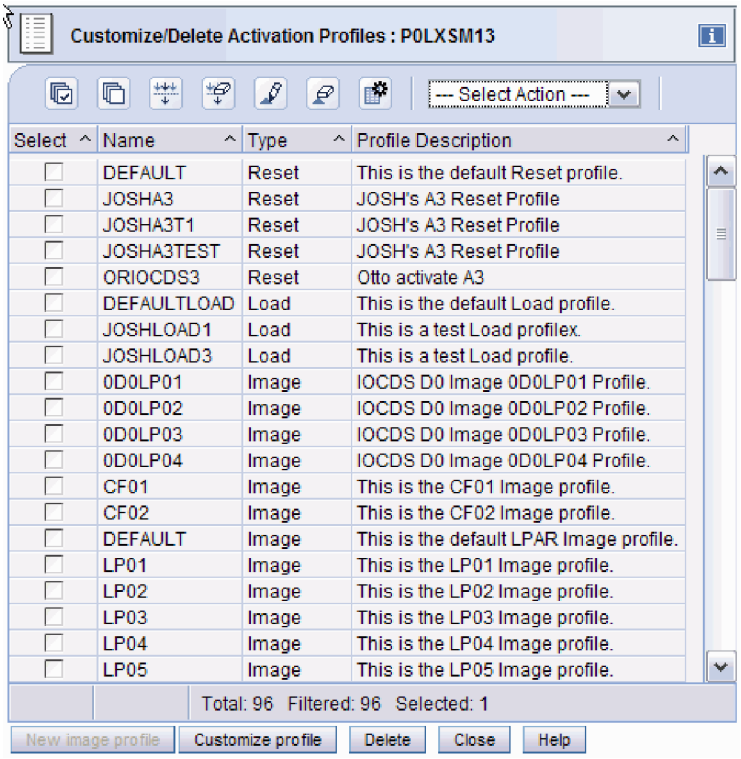


Figure 44. Activation profiles

- A *reset profile* is used to activate a central processor complex (CPC) and its images.
- An *image profile* is used to activate an image of a CPC previously activated.
- A *load profile* is used to load a previously activated image with a control program or operating system.
- A *group profile* is used to define the group capacity value for all logical partitions belonging to that group.

A set of default activation profiles is provided by IBM with the Support Element Console Application. There is one default profile of each type:

Type	Default profile name
Reset	DEFAULT
Image	DEFAULT
Load	DEFAULTLOAD
Group	DEFAULT

The default profiles are not meant to be used to activate your central processor complex (CPC) or its images; the information in them may not be correct for your configuration or needs. Instead, customize the default profiles to meet your needs. Or customize the default profiles to meet your general needs, then use them as templates for creating new profiles that meet your specific needs.

You can perform a complete activation of a central processor complex (CPC) and its images by using a properly customized reset profile:

- When a reset profile is customized for activating the CPC, the reset profile includes the image profiles necessary to activate and load the images. That is, you can customize reset and image profiles at once for performing a complete activation of the CPC and its images:
  - Customize the reset profile for activation.
  - Customize the image profiles included in it for activating and loading one or more images during CPC activation.

You can customize load profiles and image profiles. After you use a reset profile to activate the central processor complex (CPC), you can use individual load profiles or image profiles as follows:

- You can use an image profile to activate a logical partition.

  Activating the logical partition with its image profile, rather than activating the CPC again with a reset profile, allows activating only the logical partition, while maintaining current operational capabilities and characteristics of the CPC and other logical partitions. You can activate an image this way whether you are activating it for the first time, or activating it again.
- You can use a load profile to load its image with an operating system.

  Activating the image with a load profile, rather than activating the logical partition again with an image profile, allows loading the image, while maintaining the rest of the logical partition's current operational capabilities and characteristics. You can load an image this way regardless of whether you are loading it for the first time, or loading it again but with a different operating system.

Customize unique activation profiles for each different way you want to activate the central processor complex (CPC) and its images. You can customize unique activation profiles by giving them unique names. That is, all reset profiles, load profiles, and image profiles you create must have unique names.

Recall that a reset profile includes one or more image profiles. A reset profile includes an image profile by referencing its unique profile name. While you are customizing a reset profile, you have the option of customizing the image profiles included in it. You can also customize load profiles and image profiles individually. Regardless of whether you customize them within reset profiles or individually, load profiles and image profiles remain unique.

- **Example 1:** a reset profile named LPARMODE includes image profiles named LP01 and LP02.

  While customizing the LP01 image profile individually, any changes you make also affects the LPARMODE reset profile. While customizing the LP01 image profile included in the LPARMODE reset profile, any changes you make also changes the individual LP01 image profile.

  While customizing the LP02 image profile individually any changes you make also affects the LPARMODE reset profile. While customizing the LP02 image profile included in the LPARMODE reset profile, any changes you make also changes the individual LP02 image profile.

Profiles for complete activation

A *complete activation* activates the central processor complex (CPC) and its images completely and in a single step. The result of a complete activation is an operational CPC with images loaded and running operating systems.

A properly customized reset profile includes the image profiles necessary to perform a complete activation of the CPC and its images. Using a properly customized reset profile for performing a complete activation is the recommended activation strategy for establishing the CPC's normal, day-to-day operational capabilities and characteristics.

You can perform a complete activation of a central processor complex (CPC) and its images by using a reset profile.

A complete activation means customizing a reset profile to activate the CPC, then load them with operating systems.

Staged activation

A *staged activation* activates the central processor complex (CPC) and its images in steps:

- An initial activation of the CPC and one or more images.
- And any number of subsequent, selective activations of images.

Staged activations are useful for changing the operational capabilities and characteristics of the images, but without performing a complete activation of the CPC. They allow meeting different processing needs at different times of day or on different days of the week. For example, you may want to use one logical partition as a production system during first shift, and use other logical partitions as batch and test systems on second shift.

You could perform a complete activation of the CPC each time you want to change the operational capabilities and characteristics of its images. You can get the same results by planning and performing staged activations instead. Staged activations will not require performing a complete activation of the CPC each time you want to change its operational capabilities and characteristics of its images. Instead, you can activate the CPC once, and then activate only its images when you want to change their operational capabilities and characteristics.

A reset profile is required for performing the initial activation of a staged activation. Afterwards, you can use image profiles to selectively activate logical partitions, and load profiles to selectively load images.

Information and instructions for customizing reset profiles, image profiles, and load profiles are provided in the topics that follow “Profiles for staged activations” on page 225.

Profiles for a complete activation

You can perform a complete activation of a central processor complex (CPC) and its images by using a reset profile.

A complete activation means customizing a reset profile to activate the CPC then load them with operating systems.

- See “Supporting LPAR mode operation” on page 200, “Activating logical partitions during CPC activation” on page 208, and “Loading an operating system during activation” on page 220 along with the other topics that follow them.

Reset profiles

You can use the Support Element workplace to start the task for customizing reset profiles for a central processor complex (CPC). Starting a task is referred to also as opening a reset profile.

To open a reset profile:

1. Locate the **CPC** you want to work with.
2. Locate and open the **Customize/Delete Activation Profiles** task to start it.

   When the profile list of profiles is initially displayed, the highlighted profile is the currently assigned profile.
3. Select from the list the name of the reset profile you want to customize.
4. Click **Customize** to open the selected reset profile.

   After you start the task, use the online Help for more information about the control.

Checking the CPC's assigned activation profile

You can assign a central processor complex (CPC) as its activation profile. Whenever the CPC is activated, it is activated according to the information in its assigned activation profile.

To check and change a CPC's activation profile:

1. Locate the **CPC** to work with.
2. Open a CPC details window of information about the CPC
3. Click **Change options**.

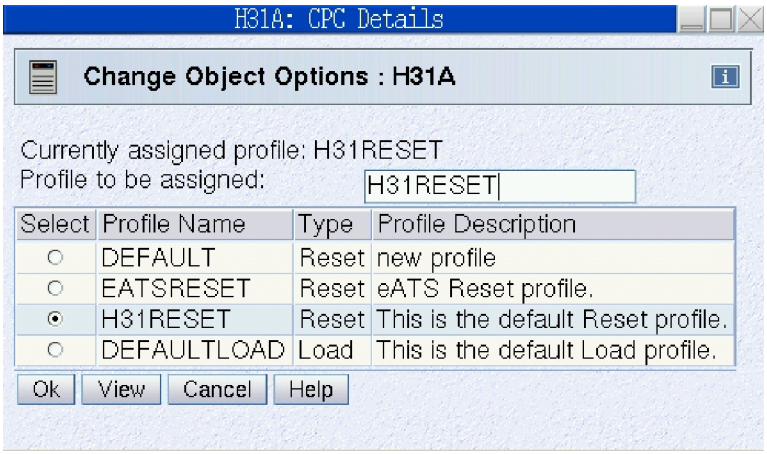


Figure 45. CPC change options window

4. Locate the **Profile name** field from the Change Object Options window.

   It displays the name of the profile currently assigned as the CPC's activation profile.
5. Locate the same name in the **Profile name** column in the list of profiles below the field. Then check the profile's type in the **Type** column.

   Note: The list includes all the reset profiles and load profiles that can be assigned to the CPC.
6. If the assigned profile's type is **Reset**, then no further action is required.
7. Otherwise, the assigned profile's type is **Load**. If you want to assign the CPC a reset profile, use the window to select and save a reset profile.

   To assign the CPC a reset profile instead, use the window to select and save a reset profile.

Navigating a reset profile notebook

A reset profile includes information for activating a central processor complex (CPC) and its images.

Opening a reset profile displays its information on the windows that are organized as pages in a notebook.

The pages are identified in a profile tree view on the left side of the window with a description label. If the reset profile activates the CPC with multiple images, the profile tree view list the names of each image section with the identifying name. The information in each section is used to activate a single object either the CPC or a logical partition.

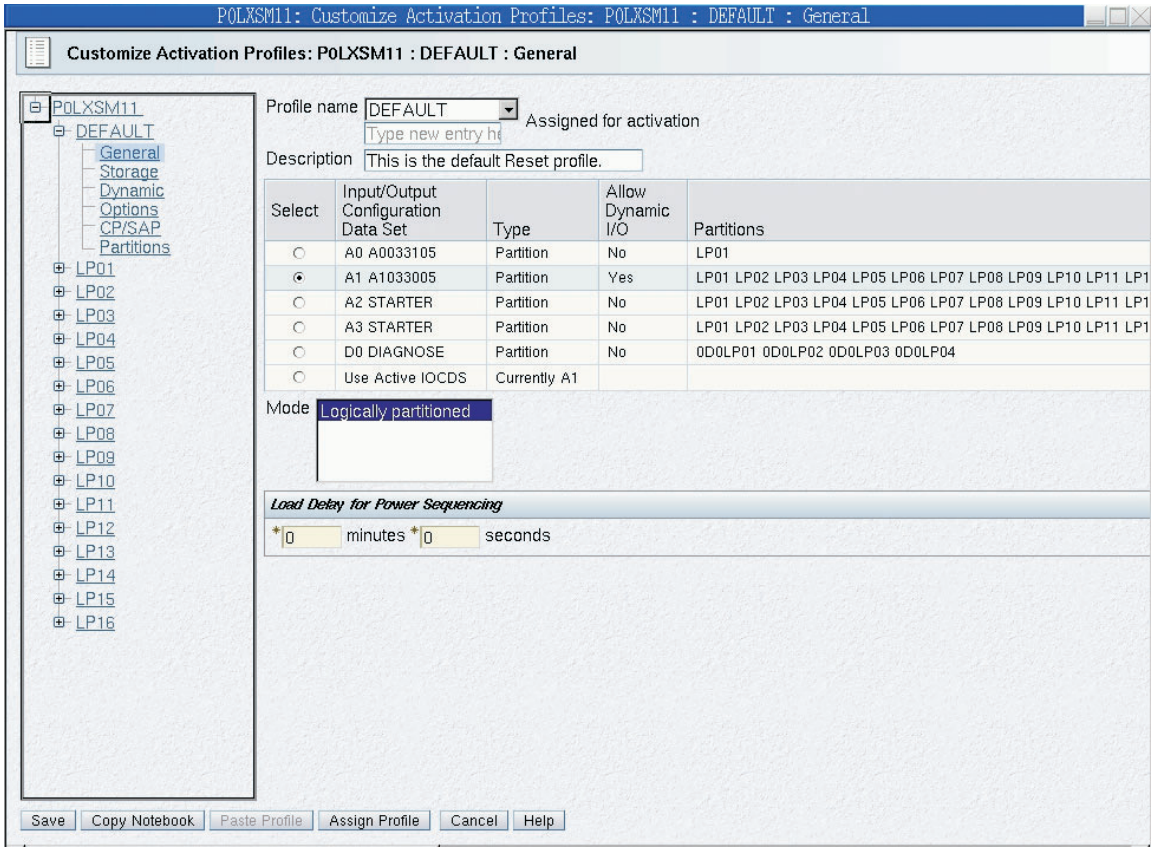


Figure 46. Reset profiles

To use the profile tree view to open each page on the window:

- Click on the description label for each page within a section of the profile you want to open.
- Click on the '+' for each image to get a list of pages in the section of the profile.
- To save the changes made, click **Save**.
- To close the window, click **Cancel**.

Creating a new reset profile

You are responsible for creating reset profiles that meet your unique needs.

You can use the default reset profile as a template for creating new profiles. After you create a new profile, you can customize it as needed. After you create and customize your own reset profiles, you can use them as templates for creating more new profiles.

To create a new reset profile:

1. Open a reset profile.

   For more information, see “Reset profiles” on page 197.
2. Select the General page.

The **Profile name** field identifies the reset profile you opened. It will be used as a template for the new reset profile.

3. To use a different reset profile as a template:
4. Select the list button beside the **Profile name** field.

   This opens a list of the names of all the CPC's reset profiles. The reset profile named DEFAULT is the default reset profile provided by IBM.
5. Select from the list the name of the reset profile you want to use as a template.

   This opens the selected reset profile. Its information replaces the previous profile's information on the pages of the window.
6. Enter a unique name for the new profile in the **Profile name** field.
7. To save the profile with the new name, click **Save**.

   Note: Saving the new profile does not change the reset profile you used as a template.

Assigning a reset profile

After you open a reset profile, you can assign it to the central processor complex (CPC) as its activation profile. Whenever the CPC is activated, it is activated according to the information in its assigned activation profile.

To assign an open reset profile as a CPC's activation profile:

1. After opening and customizing a reset profile, select the General page.

   The **Profile name** field identifies the reset profile that will be assigned to the CPC.
2. To assign the reset profile as the CPC's activation profile, click **Assign profile**.

Supporting LPAR mode operation

The reset profile you use to activate a central processor complex (CPC) can establish the support required to operate the CPC. The reset profile must identify:

- An input/output configuration data set (IOCDS) that supports LPAR mode and the logical partitions you want to activate.
- LPAR mode as the operating mode you want to establish.

An IOCDS is used during a power-on reset to define your input/output (I/O) configuration to the channel subsystem of the CPC. The I/O configuration is the set of all I/O devices, control units, and channel paths available to the CPC. Performing a power-on reset also establishes the operating mode of the CPC.

To customize a reset profile to support operating the CPC:

1. Open a reset profile.

   For more information, see “Reset profiles” on page 197.
2. Select the General page.
3. Select from the **Input/Output Configuration Data Set** list an IOCDS that defines the logical partitions you want to activate.

   Notes:
   a. The **Type** column indicates the operating mode supported by each IOCDS. The column displays **Partition** to indicate an IOCDS supports LPAR mode.
   b. The **Partitions** column displays the names of logical partitions supported by the IOCDS.
4. Select **Logically partitioned** from the **Mode** list as the operating mode you want to establish.

Selecting an IOCDS

The reset profile you use to activate a central processor complex (CPC) can identify the input/output configuration data set (IOCDS) you want to use. The IOCDS must be compatible with the operating mode you want to establish. That is, the IOCDS you select must support the type of operating mode you select.

An IOCDS is used during a power-on reset to define your input/output (I/O) configuration to the channel subsystem of the CPC. The I/O configuration is the set of all I/O devices, control units, and channel paths available to the CPC. Performing a power-on reset also establishes the operating mode of the CPC.

You can use the Image Profile Configuration window to:

- Set up initial parameters when you selected an IOCDS that contains two or more images that were defined in the IOCDS, but currently do not exist in the list of image profiles.
- Create one or more image using the New Image Profile Wizard when you selected an IOCDS that does not contain corresponding image profiles.

The Image Profile Configuration window allows you to automatically assign unique logical partition identifiers to each new image profile and enter a profile description to the new image profiles. You can select an existing image profile and have the existing profile's data copied to all new image profiles that are to be created.

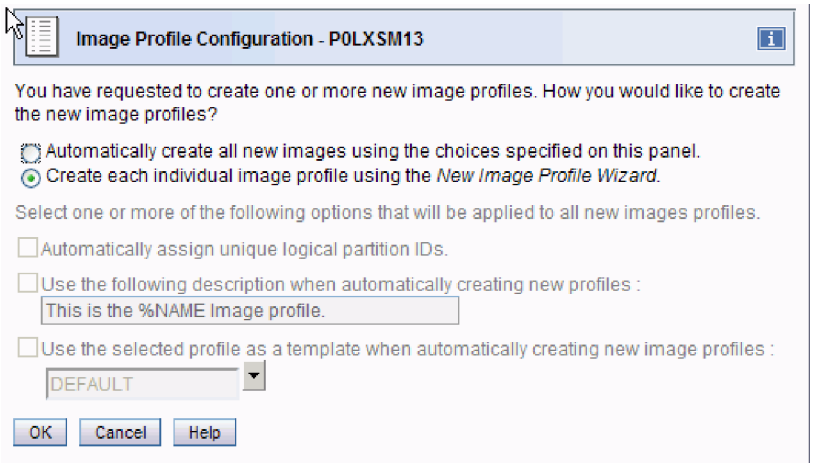


Figure 47. Image profile configuration

You can customize the reset profile to use either a specific IOCDS or the active IOCDS (if you intend to use dynamic I/O configuration, for example). Follow the instructions below for using a specific IOCDS; see "Using the active IOCDS" on page 202 for more information about using the active IOCDS.

To customize a reset profile to select an IOCDS and operating mode:

1. Open a reset profile.

   For more information, see "Reset profiles" on page 197.
2. Select the General page.
3. Select an IOCDS from the **Input/Output Configuration Data Set** list.
4. Select an operating mode from the **Mode** list that is compatible with the IOCDS you selected.

   Note the type of operating mode supported by the IOCDS you selected. The **Type** list column indicates the operating mode supported by each IOCDS:

IOCDS type	Operating mode
Partition	Logically partitioned
Currently *ID*I	The operating mode of the IOCDS is not known because the reset profile will use the active IOCDS when activation is performed; the *ID* identifies the current active IOCDS. Select an operating mode from the **Mode** list that is compatible with the IOCDS you *intend* to make active. For more information, see "Using the active IOCDS."

Using the active IOCDS

The reset profile you use to activate a central processor complex (CPC) can be customized for using the active IOCDS rather than a specific IOCDS. The *active IOCDS* is the IOCDS used for the most recent power-on reset. If you use dynamic I/O configuration, you can change the active IOCDS at any time without performing a power-on reset.

You should customize a reset profile to use the active IOCDS if you intend to use dynamic input/output (I/O) configuration. At least one of the images activated on the CPC must be loaded with an operating system that supports an application or facility for using dynamic I/O configuration. Dynamic I/O configuration is supported by:

- The Hardware Configuration Definition (HCD) application on some z/OS and OS/390 operating systems.
- The dynamic I/O configuration facility of some z/VM and VM operating systems.

To customize an activation profile to use the active IOCDS:

1. Open a reset profile.

   For more information, see “Reset profiles” on page 197.
2. Select the General page.
3. Select **Use active IOCDS** from the **Input/Output Configuration Data Set** list.

   When activation is performed using this reset profile:
   - The last active IOCDS is used if the CPC is not operational.
   - The active IOCDS is used if the CPC is already operational *and* if a power-on reset must be performed to make at least one other profile setting take effect. For more information, see “How using the active IOCDS affects CPC activation.”
4. Note the identifier of the IOCDS that is currently active. See **Currently ID** displayed in the **Type** list column for the **Use active IOCDS** selection. The **ID** is the IOCDS identifier.

   With dynamic I/O configuration, you can change the active IOCDS anytime prior to using this reset profile to activate the CPC.
5. Select an operating mode from the **Mode** list that is compatible with the IOCDS you've made active or *intend* to make active.

   To determine the type of operating mode supported by the IOCDS, locate it in the **Input/Output Configuration Data Set** list. The **Type** list column indicates the operating mode supported by the IOCDS.

How using the active IOCDS affects CPC activation

When a reset profile is used to activate the central processor complex (CPC), several profile settings take effect when a power-on reset is performed during activation. Such settings are referred to here as *power-on reset settings* and include, for example, the CPC's storage allocations. If the CPC is already operational and the reset profile's power-on reset settings are already in effect when activation is performed using the profile, then a power-on reset is not performed during activation. That is, a power-on reset is performed during CPC activation only if it is necessary to make one or more of the reset profile's power-on reset settings take effect.

The input/output configuration data set (IOCDS) setting is one of the reset profile's power-on reset settings, *unless* it is set to **Use active IOCDS**. Activating the CPC with a reset profile customized for using the active IOCDS affects CPC activation as follows:

- If the CPC is not operational, then a power-on reset is performed and the last active IOCDS is used.
- If the CPC is already operational, then:
  - A power-on reset is performed and the active IOCDS is used only if one or more of the reset profile's other power-on reset settings are not already in effect. For example, a power-on reset is performed if the CPC's global input/output (I/O) priority queuing flag is not the same as the global I/O priority queuing flag set in the reset profile.
  - A power-on reset is *not* performed and the active IOCDS is ignored if all of the reset profile's other power-on reset settings are already in effect.

    This may be the case when you use dynamic input/output (I/O) configuration. Using dynamic I/O to change the active IOCDS will not affect whether a power-on reset is performed during CPC activation. Only changing the reset profile's other power-on reset settings will cause a power-on reset to be performed.

Delaying the load while devices power-on

The reset profile you use to activate a central processor complex (CPC) can set a load delay for power sequencing.

Activating a CPC includes initializing its images and can include loading the images. The operating systems are loaded from devices in the input/output (I/O) configuration of the CPC.

If the devices are attached to control units that are powered-on by the CPC during activation, operating systems cannot be loaded from the devices until powering-on their control units is complete.

If you know or can estimate the amount of time it takes for control units to be powered-on, you can delay starting the load for that amount of time, up to 100 minutes. The delay may allow the powering-on to complete before the load begins.

To customize a reset profile to delay the load while control units power-on:

1. Open a reset profile.

   For more information, see "Reset profiles" on page 197.
2. Select the General page.
3. Enter the amount of time to delay the load, from 0 to 59 seconds or 1 to 100 minutes, in the **Load delay for power sequencing** fields.

Supporting dynamic I/O configuration

The reset profile you use to activate a central processor complex (CPC) can establish the hardware support required to use dynamic input/output (I/O) configuration.

Your I/O configuration is the set of all I/O devices, control units, and channel paths you define to your hardware and software.

Performing a power-on reset establishes the *hardware I/O definition*. That is, it defines the I/O configuration to the hardware. Loading the software establishes the *software I/O definition*. That is, it defines the I/O configuration to the software.

Changing the hardware I/O definition requires performing another power-on reset, and changing the software I/O definition requires loading the software again. If the hardware and software support *dynamic I/O configuration*, you can *dynamically change* their I/O definitions. Changes made dynamically, referred to as *dynamic I/O changes*, take effect immediately. Yet they do *not* require a power-on reset or load to make them take effect.

Hardware support for dynamic I/O

Your hardware is the CPC. Dynamic I/O configuration, or simply *dynamic I/O*, is a facility of the CPC's licensed internal code. The hardware support required for using dynamic I/O can be established during power-on reset of the CPC:

- The IOCDS used during power-on reset must support dynamic I/O. The IOCDS must be either:
  - Built using the Hardware Configuration Definition (HCD) application of an z/OS and OS/390 or other operating system that supports dynamic I/O.
  - Written using the DYN option of the input/output configuration program (IOCP) utility of a z/VM and VM operating system that supports dynamic I/O.
- Dynamic I/O must be enabled for the CPC. That is, the CPC must allow dynamically changing its I/O definition.

  Note: Only a power-on reset of the CPC, performed directly or during CPC activation, can initially enable dynamic I/O. Afterwards, you can use the support element workplace at any time, if necessary, to change the dynamic I/O setting. For more information, see "Enabling or disabling dynamic I/O without performing a power-on reset."
- Dynamic I/O must be enabled for a logical partition.

To customize a reset profile for hardware support of dynamic I/O:

1. Open a reset profile.

   For more information, see "Reset profiles" on page 197.
2. Select the General page.
3. Select an IOCDS that supports dynamic I/O from the **Input/Output Configuration Data Set** list.

   Note: The **Allow Dynamic I/O** column displays **Yes** to indicate an IOCDS supports dynamic I/O.
4. Select the Dynamic page.
5. Mark the **Allow dynamic changes to the channel subsystem input/output (I/O) definition** check box.

   The check box displays a check mark when you mark it. The check mark indicates you want to enable dynamic I/O for the CPC.

Enabling or disabling dynamic I/O without performing a power-on reset

Performing a power-on reset of the central processor complex (CPC), either directly or by activating the CPC, establishes many of its initial operational capabilities and characteristics, including whether dynamic input/output (I/O) configuration is enabled or disabled. After a power-on reset of the CPC is performed, changing its operational capabilities and characteristics requires performing another power-on reset.

If a power-on reset of the CPC initially enables dynamic I/O configuration, a task becomes available on the support element workplace for changing the CPC's dynamic I/O setting without performing another power-on reset.

To change the CPC's dynamic I/O setting without performing a power-on reset:

1. Locate the **CPC** to work with.
2. Locate and open the **Enable/Disable Dynamic Channel Subsystem** task to start it.

   The Customize Dynamic Channel Subsystem window displays.
3. Use the window's controls, as follows, to enable or disable dynamic I/O for the CPC:
   a. Review the CPC's current setting for dynamic I/O. The selected **Enabled** or **Disabled**, indicates the current setting.
   b. While dynamic I/O is enabled, select **Disabled** to change the setting to disabled.

c. Or while dynamic I/O is disabled, select **Enabled** to change the setting to enabled.
d. Click **OK** to save the setting and close the window.

Optimizing the performance of an application

You can optimize the performance of an application by selecting a CP/SAP configuration for the central processor complex (CPC) that best suits the instruction processing requirements.

The physical processor units installed in the CPC are used either as central processors (CPs) or system assist processors (SAPs). The model of your machine determines its default configuration of CPs and SAPs. The SAPs, if any, are used exclusively for input/output (I/O) instruction processing.

If other CP/SAP configurations are available, selecting a configuration that configures one or more CPs as additional SAPs may improve the performance of some types of applications (applications that have greater needs for I/O instruction processing, for example). Selecting a non-default CP/SAP configuration may affect how the CPC can be activated.

Effects of changing the CP/SAP configuration

If you intend to activate a CPC, a reduction in the number of available CPs will reduce the number of logical processors you can assign to logical partitions. Activation of a logical partition will fail if the number of logical processors you attempt to assign exceeds the number of CPs available.

To avoid a logical partition activation failure, verify the number of logical processors assigned to a logical partition by its activation profile does not exceed the number of CPs available. For more information about customizing an activation profile to assign logical processors to a logical partition, see "Assigning initial logical or reserved processors" on page 213.

Planning for a fenced book

The reset profile you use to activate a central processor complex (CPC) can determine how the available system processors would be assigned when a hardware problem occurs with one of the system books that cause the book to be fenced or become unavailable for use.

Note: To display this Fenced page, select **Display fenced book page** on the CP/SAP page.

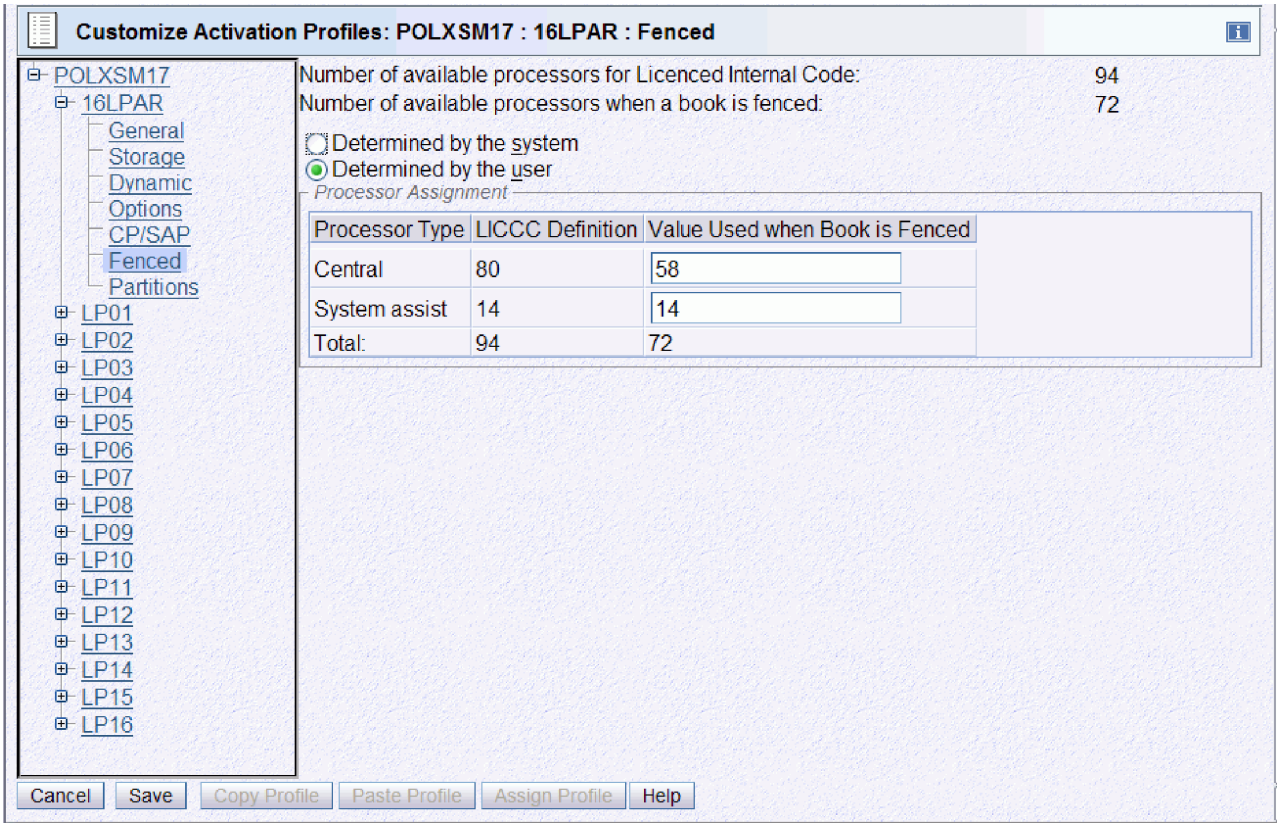


Figure 48. Fenced book page

To customize a reset profile to let the system determine the processor assignment:

1. Open a reset profile.
   For more information, see "Reset profiles" on page 197.
2. Select the Fenced page.
3. Locate the Processor Assignment group box.
4. Select the **Determined by the system** radio button.

To customize a reset profile to set a processor assignment by the user:

1. Open a reset profile.
   For more information, see "Reset profiles" on page 197.
2. Select the Fenced page.
3. Select the **Determined by user** radio button.
4. Locate the Processor Assignment group box.
5. Select the radio button to either:
   - Display processor assignment when a 20 processors book is fenced.
   - Display processor assignment when a 24 processors book is fenced.
6. Type the values in the **Value Used when Book is Fenced** field.

Enabling or disabling the global input/output I/O) priority queuing

The reset profile you use to activate a CPC can enable or disable the global input/output (I/O) priority queuing.

To customize a reset profile for enabling or disabling global input/output (I/O) priority queuing:

1. Open a reset profile.

For more information, see "Reset profiles" on page 197.

2. Select the Options page.
3. Locate the **Enable global input/output (I/O) priority queuing** check box. Then either:
   - Mark the check box to enable global input/output priority queuing. The check box displays a check mark when you mark it.
   - Or unmark the check box to disable global input/output priority queuing. The check box becomes empty when you unmark it.

Releasing I/O reserves under error conditions

The reset profile you use to activate a central processor complex (CPC) can enable automatically resetting the input/output (I/O) interface under particular error conditions.

In a multiple CPC environment, several objects, which can be CPCs or logical partitions, may share the control units, channel paths, and I/O devices included in their I/O definitions.

The following error conditions may cause shared control units to hold reserves on their devices:

- A machine check places the CPC in a check-stopped state.
- Or the control program places an image of the CPC or a logical partition in a non-restartable wait state.

The reserves are held for the CPC or logical partition affected by the error condition. Holding reserves provides the affected object with exclusive use of devices, preventing them from being used by other objects that share the control units.

To release reserves held by shared control units assigned to an object, you must reset the I/O interface. Although resetting the I/O interface will not recover the object from its error condition, it will make the devices attached to shared control units available to other objects.

To customize a reset profile to enable automatically resetting the I/O interface:

1. Open a reset profile.

   For more information, see "Reset profiles" on page 197.
2. Select the Options page.
3. Mark the **Automatic input/output (I/O) interface reset** check box.

   The check box displays a check mark when you mark it. The check mark indicates you want to enable resetting the I/O interface automatically.

Setting processor running time

The reset profile you use to activate a central processor complex (CPC) can set whether you or the CPC determines the processor running time.

When the CPC is activated, the logical processors of logical partitions activated without dedicated processor resources share the remaining processor resources.

Each logical processor is given the same processor running time. *Processor running time* is the amount of continuous time allowed for a logical processor to perform jobs using shared processor resources. Processor running time is referred to also as a *timeslice*.

The processor running time can be dynamically determined by the CPC. That is, the CPC can automatically recalculate the running time whenever the number of active logical processors changes.

You can set the running time to a constant amount. To get optimal use of shared processor resources, IBM recommends letting the CPC dynamically determine the running time.

To customize a reset profile to let the CPC dynamically determine processor running time:

1. Open a reset profile.
   For more information, see “Reset profiles” on page 197.
2. Select the Options page.
3. Locate the Processor running time group box.
4. Select the **Dynamically determined by the system** radio button.

To customize a reset profile to set a constant processor running time:

1. Open a reset profile.
   For more information, see “Selecting an operating mode” on page 209.
2. Select the Options page.
3. Locate the Processor running time group box.
4. Select the **Determined by the user** radio button.
5. Type the constant running time, from 1 to 100 milliseconds, in the **Running time** field.

Note: After activating the CPC, you can use the support element workplace to dynamically change its settings for processor running time. See“Change LPAR Controls” on page 83 for more information.

Setting power saving

The reset profile you use to activate a central processor complex (CPC) can set the energy management power saving option to reduce the average energy consumption of the system.

To customize a reset profile to set the power saving option:

1. Open a reset profile.
   For more information, see “Reset profiles” on page 197.
2. Select the Options page.
3. Locate the Set Power Saving group box.
4. Select the **Custom Energy Management** radio button to use the power saving settings.
5. Select the **Emergency High Performance** radio button to override the power saving settings and use the high performance setting with no power saving.

Activating logical partitions during CPC activation

The reset profile you use to activate a central processor complex (CPC) can also activate one or more logical partitions.

To customize a reset profile to activate logical partitions during CPC activation:

1. Open a reset profile.
   For more information, see “Reset profiles” on page 197.
2. If you have not already done so, customize the reset profile to activate the CPC. For more information, see “Supporting LPAR mode operation” on page 200.
3. Select the Partitions page.
4. Review the logical partition name in each **Partition** field.
   The fields are initialized with the names of logical partitions defined in the input/output configuration data set (IOCDS) selected on the General page of the reset profile.
5. Review the numbers in the **Order** fields beside the logical partition names.
   The fields are initialized with the default activation order of the logical partitions. The logical partition with an order of 1 will be activated first, the logical partition with an order of 2 will be activated second, and so on.
6. Optionally, enter a new order number in the **Order** field of a logical partition to change its activation order.

Note: If you intend to operate one of the logical partitions in coupling facility mode, it should be activated first. That is, you should change the activation order of a coupling facility logical partition to 1.

7. Optionally, delete the order number of a logical partition to *not* activate it during activation of the CPC.

   Note: The names of logical partitions that are not activated will not be saved in the profile. That is, if you delete the order number of a logical partition, its name will be discarded.

The information used to activate a logical partition, though it is included in a reset profile, is actually the logical partition's image profile.

The name of an image profile is the same as the name of the logical partition it activates. So each logical partition has only one image profile.

Since each reset profile that activates a logical partition includes the logical partition's only image profile, changing the logical partition's information in any activation profile changes the same information in all the other profiles as well. That is, if you customize a reset profile for activating a logical partition, for example, changing the reset profile *also* changes the logical partition's information in its image profile *and* in every other reset profile that activates the same logical partition.

Assigning a logical partition identifier

The activation profile you use to activate a logical partition must assign it a unique logical partition identifier.

The logical partition identifier becomes part of the central processor identifier of each logical processor assigned to the logical partition. The central processor identifier is used by subsystems and control programs to distinguish between logical processors.

To customize an activation profile to assign a logical partition identifier:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. In the **Partition identifier** field, type the hexadecimal digit to assign as the logical partition identifier.

   Notes:

   a. The partition identifier can be from X'0' to X'3F'.
   b. The partition identifier must be unique among the identifiers of other logical partitions activated at the same time. If necessary, verify the partition identifier assigned to this image is unique by checking the **Partition identifier** fields on the General pages of the other logical partitions you intend to activate.

Selecting an operating mode

The activation profile you use to activate a logical partition must identify the operating mode you want to establish.

The operating mode describes the architecture that supports the operating system or control program you intend to load. *Coupling facility* and *Linux Only* are examples of operating modes.

To customize an activation profile to select an operating mode:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.

2. If you opened a reset profile, select the name of the logical partition from the profile tree from the left side of the window.
3. Select the General page.
4. Select the operating mode you want to establish from the **Mode** list.

Activating a coupling facility logical partition

The activation profile you use to activate a logical partition can establish the support required to use it as a coupling facility.

A *coupling facility* is a logical partition that supports data sharing among applications running on other systems or logical partitions. A logical partition operating as a coupling facility is referred to here as a *coupling facility logical partition*.

To customize an activation profile to support and activate a coupling facility logical partition:

1. Open a reset profile or an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile:
   a. To activate the coupling facility logical partition during central processor complex (CPC) activation, customize the reset profile to activate the coupling facility logical partition first.

      For more information, see "Activating logical partitions during CPC activation" on page 208.
   b. To customize the information used to activate the coupling facility logical partition, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. Select **Coupling facility** from the **Mode** list.
5. Customize the activation profile to allocate storage to the coupling facility logical partition.

   For more information, see "Allocating central storage (main storage)" on page 219.

Changing the group profile name for the logical partition

A logical partition can become a member of a group which allows determining the allocation and management of processor resources assigned to logical partitions in a group activated by the profile.

To customize the group profile name assigned to the logical partitions:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the Processor page.
4. Locate the Group name in the list.
5. Select the arrow beside the field to list the names of existing group profiles.
6. Select a new group or create your own group profile name.

   Note: If the group profile name is blank, then the logical partition is not assigned to a group.

Using internal coupling facility processors

If internal coupling facility processors are installed in the CPC, you can assign a coupling facility logical partition either central processors, internal coupling facility processors, or dedicated coupling facility processors and shared central processors.

To customize an activation profile to assign logical processors to a coupling facility logical partition:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Saving an image profile" on page 229.

2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. If you select **Coupling Facility** from the **Mode** list, select the Processor page.
5. Select the type of processors you want assigned to the coupling facility logical partition:
   a. Dedicated internal coupling facility processors
   b. Not dedicated internal coupling facility processors
   c. Dedicated internal coupling facility processors and not dedicated central processors.
   d. Dedicated and not dedicated internal coupling facility processors.

   Note: There are other options for assigning processors to the partition that are available, but these other options DO NOT use Internal coupling facility.
6. If you select **z/VM** from the **Mode** list, select the Processor page.
7. Use the Logical Processor Assignments group box to:
   a. Select **Central processors**, **Dedicated processors**, and **Internal coupling facility processors** if you want to assign dedicated *Internal coupling facility processors* to each logical partition.
   b. Select **Central processors** and **Internal coupling facility processors** to assign **not** dedicated *Internal coupling facility processors* to logical partitions when the logical partition is activated.
8. Use the controls available to complete the logical partition assignment for the coupling facility logical partition.

Assign both internal coupling facility processors and not dedicated central processors to the coupling facility logical partition if you want to enable dynamic coupling facility expansion.

You can enable dynamic coupling facility dispatching for the coupling facility logical partition by:
1. Starting the **Operating System Messages** task on its image.
2. Using the task to send it the coupling facility control code command: DYNDISP ON

Using integrated facilities for Linux processor

If integrated facilities for Linux processors are installed in the CPC, you can assign a integrated facilities for Linux logical partition either central processors or integrated facilities for Linux processors.

To customize an activation profile to assign logical processors to an integrated facilities for Linux logical partition:
1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. If you select **LINUX only** from the **Mode** list, select the Processor page.
5. Select the type of processors you want assigned to the integrated facilities for Linux logical partition:
   a. Dedicated integrated facilities for Linux
   b. Not dedicated integrated facilities for Linux

   Note: There are other options for assigning processors to the partition that are available, but these other options DO NOT use integrated facilities for Linux.
6. If you select **z/VM** from the **Mode** list, select the Processor page.
7. Use the Logical Processor Assignments group box to:
   a. Select **Central processors**, **Dedicated processors**, and **Integrated facilities for Linux processors** if you want to assign dedicated *Integrated facilities for Linux processors* to each logical partition.

b. Select **Central processors** and **Integrated facilities for Linux processors** to assign **not** dedicated *Integrated facilities for Linux processors* to logical partitions when the logical partition is activated.

8. Use the controls available to complete the logical partition assignment for the integrated facilities for Linux logical partition.

Using zSeries application assist processor

If zSeries application assist processors are installed in the CPC, you can assign a zSeries application assist processor to a logical partition either central processors or zSeries application assist processors.

To customize an activation profile to assign logical processors to an zSeries application assist logical partition:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.

2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. Select **ESA/390** or **z/VM** from the **Mode** list.
5. Select the Processor page.
6. Use the Logical Processor Assignments group box to:
   a. Select **Dedicated processors**, **Central processors**, and **zSeries application assist processors** if you want to assign dedicated *zSeries application assist processors* to the logical partition.
   b. Select **Central processors**, **zSeries application assist processors** to assign **not** dedicated *zSeries application assist processors* to logical partitions when the logical partition is activated.
7. Use the controls available to complete the logical partition assignment for the zSeries application assist processors logical partition.

   Note: There are other options for assigning processors to the partition that are available, but these other options DO NOT use zSeries application assist processors.

Using System z integrated information processors

If the System z integrated information processors are installed in the CPC, you can assign a System z integrated information logical partition either central processors or System z integrated information processor.

To customize an activation profile to assign logical processors to a System z integrated information logical partition:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.

2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. Select **ESA/390** or **z/VM** from the **Mode** list.
5. Select the Processor page.
6. Use the Logical Processor Assignment group box to:
   a. Select **Dedicated processors** and **Central processors**, and **System z integrated information processors** if you want to assign dedicated *System z integrated information processors* to the logical partition.
   b. Select **Central processors** and **System z integrated information processors** to assign **not** dedicated *System z integrated information processors* to logical partitions when the logical partition is activated.
7. Use the controls available to complete the logical partition assignment for the System z integrated information logical partition.

Setting Workload Manager (WLM) controls

The activation profile you use to activate a logical partition can manage your defined capacity for a logical partition. See "Setting defined capacity" on page 220 to set defined capacity for logical partitions. Workload Manager allows you to run all of your work concurrently while allocating system resources to the most work first. Workload Manager constantly monitors your system, automatically adjusting the resource allocation as necessary.

Note: To customize Internal coupling facility processors (ICFs), Integrated facilities for Linux (IFL), zSeries application assist processors (zAAPs), and System z9® integrated information processors (zIIPs) you must select the processor type from the *Not Dedicated Processor Details* section prior to setting the processing weight values.

To customize an activation profile to allow Workload Manager to manage logical partitions:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. Select **ESA/390**, **LINUX Only**, or **z/VM** from the **Mode** list.
5. Select the Processor page.
6. Unmark the **Initial Capping** box. If there are more than one processor types selected in the processor table, you may need to return to the Not Dedicated Processor Details for each processor type and unmark the Initial Capping box.

   Note: You cannot mark the **Initial Capping** box if the **Enable Workload Manager** is enabled. You must unmark it to allow Initial Capping to be marked.
7. Mark the **Enable Workload Manager** check box to enable Workload Manager.

   A check box displays a check mark when you mark it.
8. Enter the processing weight values for the logical partition that you want to be managed by Workload Manager.

Assigning initial logical or reserved processors

The activation profile you use to activate a logical partition can assign it initial logical or reserved processors.

An initial logical processor is the processor resource defined to operate in a logical partition as a physical central processor. Initial logical processors are the processors a control program uses to perform jobs for the logical partition.

Reserved processors can be defined at partition activation time, but not used during partition activation. The reserved processor is not available when the system is activated, but can become available during concurrent central processor (CP) upgrade.

To customize an activation profile to assign initial logical processors to a logical partition:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the Processor page.
4. Enter the number of initial logical processors to assign to the logical partition or the number of reserved processors.

Note: You cannot specify initial zSeries application assist processors (zAAPs) prior to installation of zSeries application assist processors.

5. Use the controls in the Logical processor assignment group box to allocate processor resources to logical partitions.

   Note: After activating logical partitions, you can use the Support Element workplace to dynamically change its settings for sharing processor resources. See "Change LPAR Controls" on page 83 for more information.

Time offset

The Logical partition system time offset provides for the optional specification of a fixed time offset (specified in days, hours, and quarter hours) for each logical partition activation profile. The offset, if specified, will be applied to the time that a logical partition will receive from a Sysplex Timer or Server Time Protocol (STP). This support can be used to address the following customer environment:

- Different local time zone support in multiple sysplexes using the same Sysplex Timer or STP-only Coordinated Timing Network (CTN).

  Many sysplexes have the requirement to run with a LOCAL=GMT setting in a sysplex (ETRMODE=YES or STPMODE=YES) where the time returned from a store clock (STCK) instruction yields local time. To fulfill this requirement, the time initialized for the Sysplex Timer or STP-only CTN must be local time. With Logical partition time offset support, multiple sysplexes can each have their own local time reported to them from a STCK instruction if wanted. For instance, the Sysplex Timer or STP-only CTN can be set to GMT, one set of sysplex partitions could specify a Logical partition offset minus 5 hours, and a second set of sysplex partitions could specify a Logical partition time offset of minus 6 hours.

To customize the image profile for the system time offset:

1. Open an activation profile customized for activating a CPC.
2. Select **Logical partition system time offset** in the Clock type assignment box
3. Select the Time Offset from the window tree view to set the offset and to choose how you want it applied when the logical partition's clock is set.
4. Click **Save**.
5. Activate the CPC.

Use online Help to guide you through completion of this task.

Ensuring image profile data conforms to current maximum LICCC configuration

The data entered in the image profiles has to be compatible and supported by the Licensed Internal Code Configuration Control (LICCC). If image profile data changes, is imported, or the LICCC definition changes the profiles will be modified automatically to meet the new LICCC configuration. If this option is unchecked, the data entered for an image profile can be outside the valid LICCC configuration.

Note: It is recommended that image profile data conform to the current maximum LICCC configuration.

To customize the image profile to ensure the image profile data conforms to the current maximum LICCC configuration:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the General page.
4. Check **Ensure that the image profile data conforms to the current maximum LICCC configuration** to ensure that the image profile data conforms to the current maximum LICCC configuration.

Controlling access to performance data

The activation profile you use to activate a logical partition can control whether it has global access to performance data.

A logical partition has access to only its own performance data. A logical partition with global access also has access to the performance data of all other logical partitions activated on the same central processor complex (CPC). Performance data includes central processor usage and input/output processor usage by each logical partition.

To customize an activation profile to control global access to performance data:

1. Open a reset profile or open an image profile.
   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the page tab that displays the name of the logical partition.
3. Select the Security page.
4. Locate the **Global performance data control** check box. Then either:
   - Mark the check box to give the logical partition global access to performance data. The check box displays a check mark when you mark it.
   - Or unmark the check box to give the logical partition access to only its own performance data. The check box becomes empty when you unmark it.

Note: After activating logical partitions, you can use the Support Element workplace to dynamically change their security settings, including global performance data control. See "Change LPAR Security" on page 87 for more information.

Controlling I/O configuration changes

The activation profile you use to activate a logical partition can control whether it can change the input/output (I/O) configuration of the central processor complex (CPC) on which it is activated.

Allowing a logical partition to change the I/O configuration enables:

- Reading and writing any input/output configuration data set (IOCDS) of the local CPC.
- Writing an IOCDS to a remote CPC.
- Using dynamic I/O configuration.
- Using the OSA Support Facility to view OSA configuration for other logical partitions.

To customize an activation profile to control changing the I/O configuration:

1. Open a reset profile or open an image profile.
   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Input/output (I/O) configuration control** check box. Then either:
   - Mark the check box to allow using the logical partition to change the I/O configuration. The check box displays a check mark when you mark it.
   - Or unmark the check box to prevent using the logical partition to change the I/O configuration. The check box becomes empty when you unmark it.

Note: After activating logical partitions, you can use the Support Element workplace to dynamically change their security settings, including I/O configuration control. See "Change LPAR Security" on page 87 for more information.

Using dynamic I/O configuration

Dynamic input/output (I/O) configuration is supported by:

- The Hardware Configuration Definition (HCD) application on some z/OS and OS/390 operating systems.
- The dynamic I/O configuration facility of some z/VM and VM operating systems.

Input/output configuration control must be enabled for the logical partition that you want to use dynamic I/O configuration. That is, you must mark the **Input/output (I/O) configuration control** check box on the Security page of the activation profile used to activate the logical partition.

Authorizing control of other logical partitions

The activation profile you use to activate a logical partition can control whether it can be used to issue a subset of control program instructions to other logical partitions activated on the same central processor complex (CPC).

Allowing a logical partition to issue instructions to other logical partitions enables:

- Using it to reset or deactivate another logical partition.
- Using the automatic reconfiguration facility (ARF) to backup another logical partition.

To customize an activation profile to authorize control of other logical partitions:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Cross partition authority** check box. Then either:
   - Mark the check box to allow using the logical partition to control other logical partitions. The check box displays a check mark when you mark it.
   - Or unmark the check box to prevent using the logical partition to control other logical partitions. The check box becomes empty when you unmark it.

Note: After activating logical partitions, you can use the Support Element workplace to dynamically change their security settings, including cross partition authority. See "Change LPAR Security" on page 87 for more information.

Controlling use of reconfigurable channel paths

The activation profile you use to activate a logical partition can control whether it has exclusive use of its reconfigurable channel paths.

A logical partition has exclusive use of its reconfigurable channel paths only while they are configured on. If the channel paths are configured off, they can be configured on to another logical partition.

Isolating a logical partition's reconfigurable channel paths reserves them for the logical partition while they are configured off, and prevents them from being configured on to other logical partitions.

To customize an activation profile to control the use of reconfigurable channel paths:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Logical partition isolation** check box. Then either:

- Mark the check box to isolate the logical partition's offline reconfigurable channels paths. The check box displays a check mark when you mark it.
- Or unmark the check box to make the logical partition's reconfigurable channels paths available to other logical partitions when the channel paths are configured off. The check box becomes empty when you unmark it.

Note: After activating logical partitions, you can use the support element workplace to dynamically change their security settings, including logical partition isolation. See "Change LPAR Security" on page 87 for more information.

Authorizing basic counter set control

The basic counter set authorization control allows authorization to use the basic counter set in analysis of cache performance, cycle counts, and instruction counts while the logical CPU is running.

To customize an activation profile to indicate whether authorization is allowed to use the basic counter set:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Basic counter set authorization control** check box. Then either:
   - Mark the check box to indicate whether authorization is allowed to use the basic counter set authorization control in analysis of cache performance, cycle counts, and instruction counts while the logical CPU is running.
   - Or unmark the check box not to allow authorization to use the basic counter set authorization control.

Authorizing problem state counter set control

The problem state counter set authorization control allows authorization to use the problem state counter set in analysis of cache performance, cycle counts, and instruction counts while the logical CPU is in problem state.

To customize an activation profile to indicate whether authorization for problem state counter set is allowed:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Problem state counter set authorization control** check box. Then either:
   - Mark the check box to indicate whether authorization is allowed to use the problem state counter set authorization control in analysis of cache performance, cycle counts, and instruction counts while the logical CPU is in problem state.
   - Or unmark the check box not to allow authorization to use the problem state counter set authorization control

Authorizing crypto activity counter set control

The crypto activity counter set authorization control allows authorization to use the crypto activity counter set to identify the crypto activities contributed by the logical CPU and the blocking effects on the logical CPU.

To customize an activation profile to indicate whether authorization for crypto activity counter set authorization control:

1. Open a reset profile or open an image profile.

   For more information, see “Reset profiles” on page 197 or “Images profiles” on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Crypto activity counter set authorization control** check box. Then either:
   - Mark the check box to indicate whether authorization is allowed to use the crypto activity counter set authorization control to identify the crypto activities contributed by the logical CPU and the blocking effects on the logical CPU.
   - Or unmark the check box not to allow authorization to use the crypto activity counter set authorization control.

Authorizing extended counter set control

The extended counter sets authorization control allows authorization of the model-dependent extended counter set.

To customize an activation profile to indicate whether authorization for extended counter set authorization control:

1. Open a reset profile or open an image profile.

   For more information, see “Reset profiles” on page 197 or “Creating a new image profile” on page 227.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Extended counter set authorization control** check box. Then either:
   - Mark the check box to indicate whether authorization is allowed to use the extended counter set authorization control. The counters of this set are model dependent.
   - Or unmark the check box not to allow authorization to use the extended counter set authorization control.

Authorizing coprocessor group counter sets control

The coprocessor group counter set authorization control allows authorization to count the crypto activities of a coprocessor.

To customize an activation profile to indicate whether authorization for coprocessor group counter sets authorization control:

1. Open a reset profile or open an image profile.

   For more information, see “Reset profiles” on page 197or “Images profiles” on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Coprocessor group counter sets authorization control** check box. Then either:
   - Mark the check box to indicate whether authorization is allowed to use the coprocessor group counter sets to count the crypto activities of a coprocessor.
   - Or unmark the check box not to allow authorization to use the coprocessor group counter sets authorization control.

Authorizing basic sampling control

The basic sampling authorization control allows authorization to use the basic sampling function. The sample data includes an instruction address, the primary ASN, and some state information about the CPU. This allows tooling programs to map instruction addresses into modules or tasks, and facilitates determination of hot spots.

To customize an activation profile to indicate whether authorization for basic sampling authorization control:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Basic sampling authorization control** check box. Then either:
   - Mark the check box to indicate whether authorization is allowed to use the basic sampling authorization control function.
   - Or unmark the check box not to allow authorization to use the basic sampling authorization control.

Permit AES key import functions

The permit Advanced Encryption Standard (AES) key import functions allow you to enable the new Perform Cryptographic Key Management Operation functions of the CP Assist for Cryptographic Functions (CPACF) feature.

To customize an activation profile to permit AES key import functions:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Permit AES key import functions** check box. Then either:
   - Mark the check box to permit AES key import functions.
   - Or unmark the check box not to permit AES key import functions.

Permit DEA key import functions

The permit Data Encryption Algorithm (DEA) key import functions allow you to enable the new Perform Cryptographic Key Management Operation functions of the CP Assist for Cryptographic Functions (CPACF) feature.

To customize an activation profile to permit DEA key import functions:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Security page.
4. Locate the **Permit DEA key import functions** check box. Then either:
   - Mark the check box to permit DEA key import functions.
   - Or unmark the check box not to permit DEA key import functions.

Allocating central storage (main storage)

The activation profile you use to activate a logical partition can allocate its storage.

The central storage allocated to a logical partition upon activation is its *initial storage*. You must allocate initial central storage to each logical partition you intend to activate.

To customize an activation profile for allocating central storage to a logical partition:

1. Open a reset profile or open an image profile.
   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Storage page.
4. Use the Central storage group box to allocate the logical partition's central storage and to set its central storage origin.

Setting I/O priority queuing values

The activation profile you use to activate a logical partition can control the I/O priority queuing assignment of logical partitions.

To customize an activation profile for I/O priority queuing:

1. Open a reset profile or open an image profile.
   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the page tab that displays the name of the logical partition.
3. Select the Options page.
4. Use the controls to set minimum and maximum I/O priority queuing values.

Setting defined capacity

The activation profile you use to activate a logical partition can control the defined capacity for a logical partition. A defined capacity is the portion of your processor resources you order from IBM.

Your defined capacity can be associated with:

- A license software product. You specify a defined capacity for a product on the product certificate.
- An LPAR. You specify a defined capacity for an LPAR using the appropriate LPAR controls. A defined capacity applies to the entire LPAR, no matter how many applications it contains.

To customize an activation profile to set defined capacity:

1. Open a reset profile or open an image profile.
   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Options page.
4. Enter the defined capacity value for your logical partition.

Loading an operating system during activation

The activation profile you use to activate an object can also load its image with an operating system. The object is a central processor complex (CPC) activated in a logical partition.

To customize an activation profile to load an operating system during an object's activation:

1. Open an applicable activation profile:
   - If the object is a logical partition, either open a reset profile or open its image profile.
     For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.

     Note: The activation profile must *not* be customized to activate the logical partition as a coupling facility. For more information, see "Selecting an operating mode" on page 209.

2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Load page.
4. Mark the **Load during activation** check box.

   The check box displays a check mark when you mark it. The check mark indicates activation will include loading the object's image with an operating system.
5. Use the other controls on the page to provide information about which operating system to load and how to load it.

Setting load attributes

The activation profile you use to load an image can set the load address and load parameter used to perform the load.

The *load address* is the address of the input/output (I/O) device that provides access to the operating system you want to load. The I/O device must be in the I/O configuration that is active when the load is performed. The I/O device may store the operating system or may be used to read the operating system from a storage device.

The *load parameter* is additional information operating systems support to provide you with additional control over the performance or outcome of a load. Check the configuration programming and reference documentation for the operating system to determine the load parameters that are available, and their effect on a load.

To customize an activation profile to set the load address and load parameter:

1. Open an activation profile:
   - Open a reset profile or open its image profile.

     For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.

     Note: The activation profile must *not* be customized to activate the logical partition as a coupling facility. For more information, see "Selecting an operating mode" on page 209.
   - Or open a load profile.

     For more information, see "Load profiles" on page 229.
2. If you opened a reset profile, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the Load page.

   Note: If you opened a load profile, the Load page is the first and only page.
4. Enter the load address in the **Load address** field.
5. Enter the load parameter in the **Load parameter** field.

Using dynamic I/O to set load attributes

The activation profile you use to load an image can enable using dynamic input/output (I/O) configuration, rather than the activation profile, to set the load address and load parameter used to perform the load.

The image must be activated on a CPC that supports dynamic I/O configuration. The image, or at least one of the images activated on the CPC, must be loaded with an operating system that supports an application or facility for using dynamic I/O configuration. Dynamic I/O configuration is supported by:

- The Hardware Configuration Definition (HCD) application on some z/OS and OS/390 operating systems.
- The dynamic I/O configuration facility of some z/VM and VM operating systems.

To customize an activation profile to enable using dynamic I/O to set the load address and load parameter:

1. Open an activation profile:
   - Open a reset profile or open its image profile.

     For more information, see “Reset profiles” on page 197or “Images profiles” on page 225.

     Note: The activation profile must *not* be customized to activate the logical partition as a coupling facility. For more information, see “Selecting an operating mode” on page 209.
   - Or open a load profile.

     For more information, see “Load profiles” on page 229.
2. If you opened a reset profile and the object is a logical partition, select the name of the logical partition from the profile tree on the left side of the window.
3. Select the Load page.

   Note: If you opened a load profile, the Load page is the first and only page.
4. Mark the **Use dynamically changed address** check box.

   The check box displays a check mark when you mark it. The check mark indicates activation will perform each load using the load address set for the image using dynamic I/O configuration.
5. Mark the **Use dynamically changed parameter** check box.

   The check box displays a check mark when you mark it. The check mark indicates activation will perform each load using the load parameter set for the image using dynamic I/O configuration.

Setting a time limit for performing the load

The activation profile you use to load an image sets a time limit for performing the load.

A time limit, or *time-out value*, is the amount of time allowed for performing the load. The load is cancelled if it cannot be completed within the time limit.

To customize an activation profile to set the time limit for performing the load:

1. Open an activation profile:
   - Open a reset profile or open its image profile.

     For more information, see “Reset profiles” on page 197 or “Images profiles” on page 225.

     Note: The activation profile must *not* be customized to activate the logical partition as a coupling facility. For more information, see “Selecting an operating mode” on page 209.
   - Or open a load profile.

     For more information, see “Load profiles” on page 229.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Load page.

   Note: If you opened a load profile, the Load page is the first and only page.
4. Enter the time limit, from 60 to 600 seconds, in the **Time-out value** field.

Setting SCSI attributes

The activation profile you use to load an image can set the SCSI parameters used to perform the load.

The *Worldwide port name* is the number identifying the Fibre Channel port of the SCSI target device. This field contains the 64-bit binary number designating the port name, represented by 16 hexadecimal digits.

The *Logical unit number* is the number of the logical unit as defined by FCP. This field contains the 64-bit binary number designating the unit number of the FCP I/O device, represented by 16 hexadecimal digits. This field is required for SCSI IPL and SCSI dump.

The *Boot program selector* is a decimal value number specifying the program to be loaded from the FCP-load device during SCSI IPL or SCSI dump. Valid values range from 0 to 30.

The *Boot record logical block address* is the load block address field represented by 16 hexadecimal characters, designating the logical-block address of a boot record on the FCP-load device. If no block address is specified, the logical-block address of the boot record is assumed to be zero.

The *OS specific load parameters* is a variable number of characters to be used by the program that is loaded during SCSI IPL or SCSI dump. This information will be given to the IPLed operating system and will be ignored by the machine loader. The IPLed operating system has to support this.

To customize an activation profile to set the SCSI parameters:

1. Open an activation profile:
   - Open a reset profile or open its image profile.

     For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.

     Note: The activation profile must *not* be customized to activate the logical partition as a coupling facility. For more information, see "Selecting an operating mode" on page 209.
   - Or open a load profile.

     For more information, see "Load profiles" on page 229.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.
3. Select the Load page.

   Note: If you opened a load profile, the Load page is the first and only page.
4. Enter the worldwide port name in the **Worldwide port name** field.
5. Enter the logical unit name in the **Logical unit number** field.
6. Enter the boot program number in the **Boot program selector** field.
7. Enter the boot record logical block address in the **Boot record logical block address** field.
8. Enter the OS specific load number in the **OS specific load parameters** field.

Using the Crypto Express3 feature

The activation profile you use to activate a logical partition can prepare it for running software products that utilize the Crypto Express3 feature. Using the feature's cryptographic facilities and functions requires customizing the logical partition's activation profile to:

- Give it access to at least one CEX3A and CEX3C. This is accomplished by selecting from the Usage Domain Index and the Cryptographic Candidate list.
- Load it with an operating system, such as z/OS, that supports using cryptographic functions.
- Install the CP Assist for Cryptographic Facility (CPACF) DES/TDES Enablement feature if planning to use ICSF.

For more information about the cryptographic feature, see "Cryptographic Configuration" on page 116.

To customize an activation profile to allow a logical partition to use cryptographic facilities and functions:

1. Open a reset profile or open an image profile.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. If you opened a reset profile, select the name of the logical partition from the profile tree view on the left side of the window.

3. Select the General page.
4. Select **ESA/390** , **ESA/390 TPF**, **LINUX Only**, or **z/VM** from the Mode list.
5. Select **Crypto** from the profile tree view on the left side of the window. Use the controls on the Crypto page to indicate whether and how you want the logical partition to use the cryptographic functions and facilities.

   Notes:

   - If you intend to use the Integrated Cryptographic Service Facility (ICSF), see "Using the z/OS Integrated Cryptographic Service Facility (ICSF)" for additional instructions for customizing the Crypto page.
   - If you intend to use a Trusted Key Entry (TKE) workstation to manage cryptographic keys, see "Using the Trusted Key Entry (TKE) Workstation feature" for additional instructions for customizing the Crypto page.
   - After activating logical partitions customized to use CEX3A and CEX3C, you can use the Support Element workplace to view the settings of the cryptographic controls set on the Crypto page of their activation profiles. See "View LPAR cryptographic controls" on page 95 for more information.
6. Customize the Load page to load an operating system that supports using cryptographic functions and facilities.

   For more information about loading an operating system, see the topics that follow "Loading an operating system during activation" on page 220.

Using the z/OS Integrated Cryptographic Service Facility (ICSF): The z/OS Integrated Cryptographic Service Facility (ICSF) is a program product that provides secure, high-speed cryptographic services in the operating environment. You can use ICSF services for all logical partitions that are customized for using Crypto Express3 feature.

Note: Some functions of ICSF may fail if you do not have the CP Assist for Cryptographic Functions (CPACF) DES/TDES Enablement feature installed. See the or the for complete information.

The activation profile you use to activate a logical partition can prepare it for using ICSF services. Customize the activation profiles when installing the CP Assist for Cryptographic Functions (CPACF) DES/TDES Enablement feature.

To customize an activation profile for a logical partition to use the ICSF services:

1. Customize a reset profile or image profile to configure the logical partition access to the cryptographic facilities and functions.

   For more information, see "Reset profiles" on page 197 or "Images profiles" on page 225.
2. Select the Crypto page again.
3. If you have not already set the logical partition's controls, set them now:
   a. Select a usage domain index for the logical partition to use for cryptographic functions from the **Usage domain index** list. More than one number should be selected from the **Usage domain index** when z/VM operating environment is running in the logical partition with other guests (for example, Linux) requiring access to the cryptographic hardware.

   Note: The cryptographic number, selected from the Cryptographic Candidate List, coupled with the usage domain index must be unique for each active partition.
4. Select from the Online List the number which specifies the coprocessors to be brought online at partition activation. For each number selected in the Online List, the corresponding number in the Candidate List must be selected.

Using the Trusted Key Entry (TKE) Workstation feature: A Trusted Key Entry (TKE) is a workstation application supported by ICSF to allow an alternative method of securely loading cryptographic keys (DES and PKA master keys and operational keys). A unique set of cryptographic keys is maintained for each domain index within the cryptographic facility. Only one partition can perform TKE functions at a

time. The logical partition with this control is referred to as the TKE host. The other partitions that receive key updates from the TKE host are referred to as the TKE targets.

The activation profile you use to activate a logical partition can prepare it for being a TKE host or TKE target.

To use a TKE workstation to manage requests for secure information or commands to a specific CEX3C, permission must be given. See "TKE commands" on page 118.

To customize an activation profile for a TKE host logical partition:

1. Customize a reset profile or image profile to enable the logical partition to use cryptographic facilities and functions.

   For more information, see "Reset profiles" on page 197 or "Images profiles."
2. Select the Crypto again.
3. If you have not already set the logical partition's controls, set them now:
   a. Select a usage domain index for the logical partition to use for cryptographic functions from the **Usage domain index** list. It must be the same as the usage domain index set for the logical partition in the ICSF installation options data set.

      Note: The cryptographic number, selected from the Cryptographic Candidate List, coupled with the usage domain index must be unique for each active partition.
4. Select from the Online List the number which specifies the coprocessors to be brought online at partition activation. For each number selected in the Online List, the corresponding number in the Candidate List must be selected.
5. From the **Control domain index** list, also select each index that is the same as the usage domain index of each TKE target logical partition you want to manage through a TKE workstation connection to this TKE host logical partition.

Profiles for staged activations

You can perform a staged activation of a central processor complex (CPC) and its images by using a reset profile for an initial activation of the CPC, and then using other types of profiles for selective activations of its images.

Typical staged activations include:

- Using a reset profile to initially activate the CPC and to activate and load one or more logical partitions. Then, at a later time, using load profiles to load one or more previously activated logical partitions with a different operating system, or using image profiles to activate and load one or more logical partitions not previously activated.

  This type of staged activation allows the operator to change the active logical partitions while maintaining the rest of the CPC's current operational capabilities and characteristics.

Images profiles

Customize an image profile for activating a logical partition when you want to activate only the logical partition, after the central processor complex (CPC) that supports it is initially activated.

Optionally, you can customize the image profile to also load the logical partition during activation.

Notes:

- Initially activating a CPC requires customizing and using a reset profile. For more information, see “Supporting LPAR mode operation” on page 200 and the other topics that follow.
- The name of an image profile is the same as the name of the logical partition it activates. Each logical partition has only one image profile.

  Each reset profile that activates a logical partition includes the logical partition's only image profile, so changing the logical partition's information in any activation profile changes the same information in all the other profiles as well. That is, if you customize an image profile for activating a logical partition, for example, changing the image profile *also* changes the logical partition's information in every reset profile that activates the logical partition.

The information used to activate a logical partition, though it is included in a reset profile, is actually the logical partition's image profile.

To open a logical partition's image profile:

1. Locate the **Images** you want to work with.
2. Locate the image with the same name as the logical partition.
3. Locate and open the **Customize/Delete Activation Profiles** task to start it.

   This opens the image profile and the list of load profiles you want to customize. When the list is initially displayed, the highlighted profile is the currently assigned profile for the partition.
4. Select from the list the name of the image profile you want to customize.
5. Click **Customize**.

Checking a logical partition's assigned activation profile: You can assign a logical partition either its image profile or a load profile as its activation profile. Whenever the logical partition is activated, individually rather than with the central processor complex (CPC), it is activated according to the information in its assigned activation profile.

In addition, whenever you start the task for customizing the logical partition's activation profiles, it opens the logical partition's assigned activation profile. After you start the task, you can customize its assigned activation profile. If its assigned activation profile is a load profile, you can also create new load profiles or open and customize any other existing load profiles.

For example, to customize the image profile for a logical partition, its assigned activation profile must be its image profile. You can check, and change if necessary, the logical partition's assigned activation profile before you begin customizing its profiles.

To check or change a logical partition's activation profile:

1. Locate the **Images** you want to work with.
2. Locate the image with the same name as the logical partition.
3. Click **Change options**.

   This opens the Change Object Options window.
4. Locate the **Profile name** field.

   It displays the name of the profile currently assigned as the logical partition's activation profile.
5. Locate the same name in the **Profile name** column in the list of profiles below the field. Then check the profile's type in the **Type** column.

   Note: The list includes the logical partition's image profile and all the load profiles that can be assigned to the logical partition.
6. If the assigned profile's type is **Image**, then no further action is required.

   Whenever you start the task for customizing the logical partition's activation profiles, you will be able to customize the logical partition's image profile.
7. If the assigned profile's type is **Load**, you will be able to customize only load profiles.

To assign the logical partition its image profile instead, use the window to select and save the image profile.

Navigating the image profile notebook: An image profile includes information for activating a logical partition.

Opening an image profile displays its information on the window organized in a profile tree view.

The pages are identified in a profile tree view on the left side of the window with a description label. The description label for each page is a general description of the information on the page.

To use the profile tree view to turn to a different page of the image profile:

- Click on description label in the profile tree view that you want to open.

  A window opens to that page of the image profile.
- To save the changes made, click **Save**.
- To close the window, click **Cancel**.

Creating a new image profile: You are responsible for creating image profiles that meet your unique needs.

You can use the default image profile as a template for creating new profiles. After you create a new profile, you can customize it as needed. After you create and customize your own image profiles, you can use them as templates for creating more new profiles.

To create a new image profile:

1. Open a image profile.

   For more information, see "Images profiles" on page 225.
2. Select the General page.

   The **Profile name** field identifies the image profile you opened. It will be used as a template for the new image profile.
3. To use a different image profile as a template:
4. Click the list button beside the **Profile name** field.

   This opens a list of the names of all the image profiles. The image profile named DEFAULT is the default image profile provided by IBM.
5. Select from the list the name of the image profile you want to use as a template.

   This opens the selected image profile. Its information replaces the previous profile's information on the pages of the notebook.
6. Enter a unique name for the new profile in the **Profile name** field.
7. Click **Save** to save the profile with the new name.

   Note: Saving the new profile does not change the image profile you used as a template.

Creating one or more image profiles: The New Image Profile Wizard tool can be used to configure new image profile parameters for one or more images currently selected in the IOCDS that do not have corresponding image profiles.

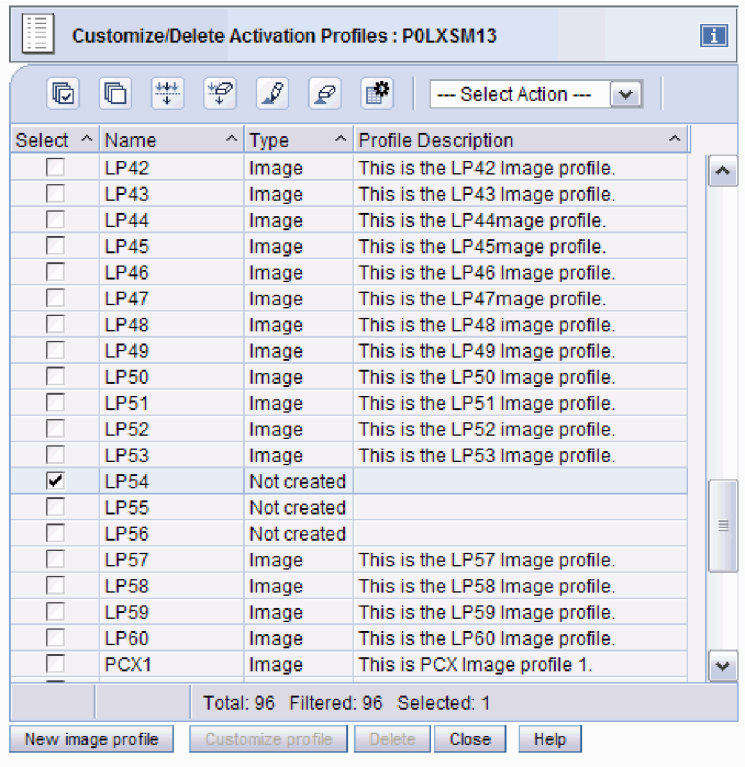


Figure 49. New image profile wizard

1. Select an image profile that is currently not created.
2. Click **New image profile**.
3. Use the New Image Profiles Wizard to create data for the image profile that you selected.
4. Complete the requested information for the image profile you are creating.
5. Click **Finish** to confirm your changes.

Customize multiple image profiles: The Customize Image Profile Wizard tool can be used to modify parameters for two or more of the image profiles that you select on the customize/delete activation profiles list.

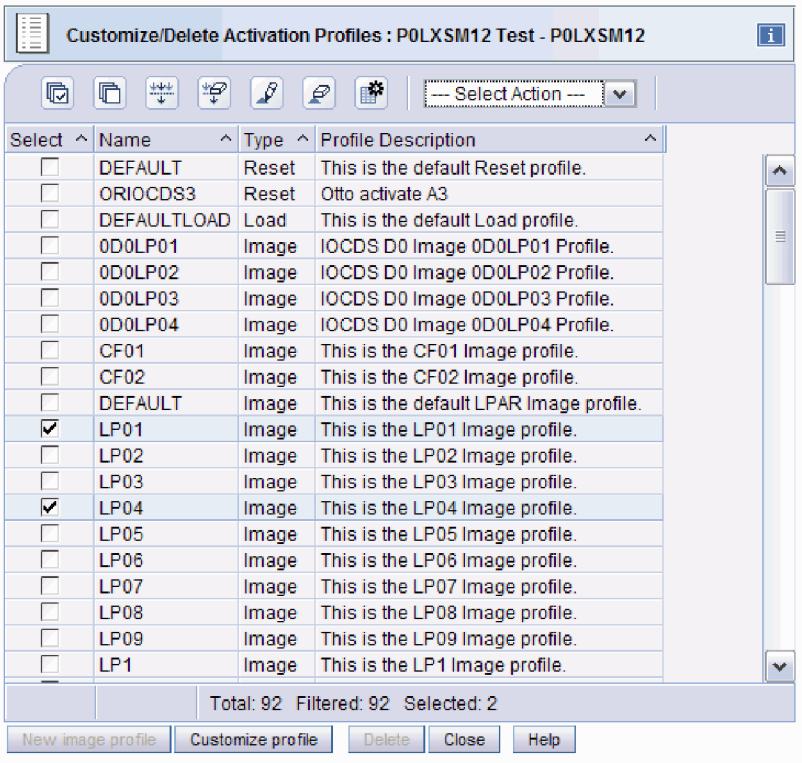


Figure 50. Customize multiple image profile wizard

1. Select two or more image profiles that you want to change parameters.
2. Click **Customize profile**.
3. Select the profiles you want to customize from the menu list. Then click **OK**.
4. Use the Customize Multiple Image Profile Wizard to modify data for two or more of the image profiles that you selected.
5. Click **Next** to start.
6. Check the appropriate check box that you want to make changes.
7. Click **Finish** to confirm your changes.

Saving an image profile: You must save an image profile to save the information you customized on its pages.

To save an open image profile:

1. After opening and customizing an image profile, select the General page.
   The **Profile name** field identifies the image profile that will be saved.
2. Click **Save** to save the image profile and close it.

Load profiles

Customize a load profile for loading an object when you want to only load the object after it is initially activated.

Customize a load profile for loading a logical partition when you want to only load the logical partition again, after it is initially activated on a CPC activated.

Note: Initially activating a logical partition requires customizing the reset profile that activates the CPC. For more information, see "Supporting LPAR mode operation" on page 200, and "Activating logical partitions during CPC activation" on page 208 along with the topics that follow.

To open a load profile:

1. Locate the **CPC** to work with.
2. Locate and open the **Customize/Delete Activation Profiles** task to start it.

   This opens the profile list that you want to customize. When the list of profiles is initially displayed, the highlighted profile is the currently assigned profile for the object.
3. Select from the list the name of the load profile you want to customize.
4. Click **Customize**.

   This opens the selected load profile.

Choosing a CPC load type: normal, clear, SCSI, or SCSI dump: The activation profile you use to load a central processor complex (CPC) can perform either a normal, clear, SCSI, or SCSI dump load.

To customize an activation profile to choose a CPC load type:

1. Open a load profile.

   For more information, see "Load profiles" on page 229.
2. Locate the **Load type** controls to select the following load types:
   - Select **Normal** to perform a normal load, which performs the load without clearing main storage.

     Note: If you intend to perform the store status function during the load, it must be a normal load.
   - Select **Clear** to perform a clear load, which clears main storage during the load.
   - Select **SCSI** to perform a SCSI load (from certain types of channels), which clears main storage during the load.
   - Select **SCSI dump** to perform a SCSI dump (to do a standalone dump from a SCSI IPL type of device).

Performing store status before a normal load: The activation profile you use to load a central processor complex (CPC) can perform the store status function before performing a normal load.

The store status function stores the current values of the processing unit timer, the clock comparator, the program status word, and the contents of the processor registers in their assigned absolute storage locations.

Note: For this reason, store status can be performed only before a normal load; a clear load would clear main storage during the load, including the information stored by the store status function.

Attention: Do *not* customize an activation profile to perform store status if the profile is customized to load an operating system that already automatically performs store status upon being loaded.

To customize an activation profile to perform store status before a normal load:

1. Open a load profile.

   For more information, see "Load profiles" on page 229.
2. Select the Load page.

   Note: If you opened a load profile, the Load page is the first and only page.
3. Locate the **Load type** controls. Select **Normal** to perform a normal load, which performs the load without clearing main storage.
4. Mark the **Store status** check box.

The check box displays a check mark when you mark it. The check mark indicates activation will perform the store status function before performing the load.

Creating a new load profile: You are responsible for creating load profiles that meet your unique needs.

You can use the default load profile as a template for creating new profiles. After you create a new profile, you can customize it as needed. After you create and customize your own load profiles, you can use them as templates for creating more new profiles.

To create a new load profile:

1. Open a load profile.

   For more information, see "Load profiles" on page 229.
2. Locate the **Profile name** field.

   The field identifies the load profile you opened. It will be used as a template for the new load profile.
3. To use a different load profile as a template:
   a. Select the list button beside the **Profile name** field.

      This opens a list of the names of all the load profiles. The load profile named DEFAULTLOAD is the default load profile provided by IBM.
   b. Select from the list the name of the load profile you want to use as a template.

      This opens the selected load profile. Its information replaces the previous profile's information on the notebook page.
4. Enter a unique name for the new profile in the **Profile name** field.
5. Click **Save** to save the profile with the new name.

   Note: Saving the new profile does not change the load profile you used as a template.

Assigning a load profile: After you open a load profile for an object, either a central processor complex (CPC) or logical partition, you can assign it to the object as its activation profile. Whenever the object is activated, it is activated according to the information in its assigned activation profile.

To assign an open load profile as an object's activation profile:

1. After opening and customizing a load profile, the **Profile name** field identifies the load profile that will be assigned to the object.
2. Select the **Assign profile** push button to assign the load profile as the object's activation profile.

Saving a load profile: You must save a load profile to save the information you customized on its page.

To save an open load profile:

1. After opening and customizing a load profile, the **Profile name** field identifies the load profile that will be saved.
2. Click **Save** to save the load profile and close it.

Group profile

Customize a group profile for activating a logical partition group after the central processor (CPC) that supports it is initially activated.

To open a group profile:

1. Locate the **CPC** to work with.

2. Locate and open the **Customize/Delete Activation Profiles** task to start it.

   This opens the profile list that you want to customize. When the list of profiles is initially displayed, the highlighted profile is the currently assigned profile for the object.
3. Select from the list the group profile to customize.
4. Click **Customize**.

   This opens the selected group profile.

Use the online Help for more information.

Creating a new group profile: To customize a logical partition group name, enter a new name in the field. To view or customize an exiting logical partition group name, select the arrow beside the field to list the names of existing group names.

You can use the default group name as a template for creating a new group name.

To create a new group name:

1. Open the group profile.

   For more information, see "Group profile" on page 231.
2. The **Group name** field identifies the group profile name. It can be used as a template for the new group name.
3. Click the list button beside the **Group name** field to use a different group name as a template.

   This opens a list of the names of all the group names. The group named DEFAULT is the default group name provided by IBM.
4. Select from the list the name of the group you want to use as a template.
5. To create a new group name, enter a unique name for the new logical partition in the **Group name** field.
6. Enter a description of the new group name in the **Group description** field.
7. Click **Save** to save the group profile with the new.

Use the online Help for more information.

Setting a group capacity value: The group capacity value can be specified in determining allocation and management of processor resources assigned for a logical partition group. The activation profile you use to activate a logical partition group can control the defined capacity for the logical partition group.

To customize an activation profile to set group capacity:

1. Open the group profile.

   For more information, see "Group profile" on page 231.
2. Enter the group capacity value for your logical partition group.
3. Click **Save** to store the values.

Grouping the CPC for complete activation

You can customize more than one reset profile for performing complete activations of the CPC and its images. You can customize a reset profile for a complete activation of the CPC.

To use a reset profile for activating the CPC, you must assign it to the CPC before performing the activation. Afterwards, to use a different reset profile for activating the CPC, you could assign it to the CPC, replacing the previously assigned profile.

Rather than changing the reset profile assigned to a CPC each time you want to use a different one, you can instead create a unique group with the CPC for each reset profile you want to assign to it.

To assign the CPC a reset profile for activating it:

1. Create a group with the CPC for activating it:
   a. Give the group a meaningful name, like LPARMODE.
   b. Assign the group's CPC the reset profile for activating it in LPAR mode.

Then to activate the CPC with either profile, simply activate the appropriate group.

Grouping the CPC for staged activations

You can customize a reset profile for performing an initial activation of the CPC and customize a load profile for performing a subsequent activation that only loads it. For example, you may:

- Customize the reset profile to activate the CPC and load the operating system used for production.
- And customize the load profile to only load the CPC with the operating system used for performing dumps.

To use the reset profile for activating the CPC, you must assign it to the CPC before performing the activation. Afterwards, to use the load profile for activating the CPC, you could assign it to the CPC, replacing the previously assigned profile.

Rather than changing the activation profile assigned to a CPC each time you want to use a different one, you can instead create a unique group with the CPC for each activation profile you want to assign to it.

For example, to assign the CPC both a reset profile for activating it initially, and a load profile for only loading it:

1. Create a group with the CPC for activating it initially:
   a. Give the group a meaningful name, like PRODUCTION.
   b. Assign the group's CPC the reset profile.
2. Create another group with the CPC for only loading it:
   a. Give the group a meaningful name, like LOADFORDUMP.
   b. Assign the group's CPC the load profile.

Then to activate the CPC with either profile, simply activate the appropriate group.

Grouping images for staged activations

You can customize more than one activation profile for performing staged activations of the CPC and its images. For example, you may:

- Customize a reset profile for an initial activation of the CPC, with support for activating three logical partitions, but initially activating only of one of the logical partitions to support your production environment.
- And customize image profiles for activating the other two logical partitions to support batch processing and testing environments.

Using the reset profile for activating the CPC and one logical partition still automatically assigns *each* logical partition an image profile of the same name as its activation profile. Afterwards, you may want to deactivate the first logical partition, and then activate the other two logical partitions.

To help distinguish between the different purposes of the logical partitions, you can create a unique group with the logical partitions that support each purpose.

So, for example, to use one logical partition for production, and the other two logical partitions for batch processing and testing:

1. Create a group with the logical partition used for production.
   Give the group a meaningful name, like PRODUCTION.

2. Create another group with the logical partitions used for batch processing and testing. Give the group a meaningful name, like BATCHANDTEST.

Then to establish either environment, simply activate the appropriate group after deactivating the other group.

Note: The logical partitions in either group will be activated according to the information in the image profiles automatically assigned to them by the initial activation of the CPC.

Appendix B. Using the System (Sysplex) Time task

Use this task to view or setup time synchronization for a server (CPC) using Server Time Protocol (STP).

Server Time Protocol (STP) is a time synchronization architecture designed to provide the capability for multiple servers (CPCs) to maintain time synchronization with each other and to form a Coordinated Timing Network (CTN). STP is designed for servers (CPCs) that have been configured to be in a Parallel Sysplex® or a sysplex (without a Coupling Facility), as well as servers (CPCs) that are not in a sysplex, but need to be time synchronized. STP is designed as a message-based protocol allowing timekeeping information to be sent between servers (CPCs) and Coupling Facilities (CFs) over InterSystem Channel-3 (ISC-3) links configured in peer mode or Infiniband (IFB) links.

There are two types of CTNs supported by STP:

1. *Mixed CTN* is a timing network that contains a collection of servers and has at least one STP-configured server stepping to timing signals provided by the Sysplex Timer. The CTN ID must be a valid STP network ID and the ETR network ID must be in the range of 0 to 31.
2. *STP-only CTN* is a timing network that contains a collection of servers configured to be in STP timing mode.

The window displays the following tabs:

- Timing Network
- Network Configuration
- STP Configuration
- STP Status
- ETS Configuration
- PPS Control.

Use the online help if you need additional information about the **System (Sysplex) Time** task. You can also go to Resource Link, http://www.ibm.com/servers/resourcelink click **Education** in the navigation bar, choose the appropriate **Mainframe**, then select **Introduction to Server Time Protocol (STP)**.

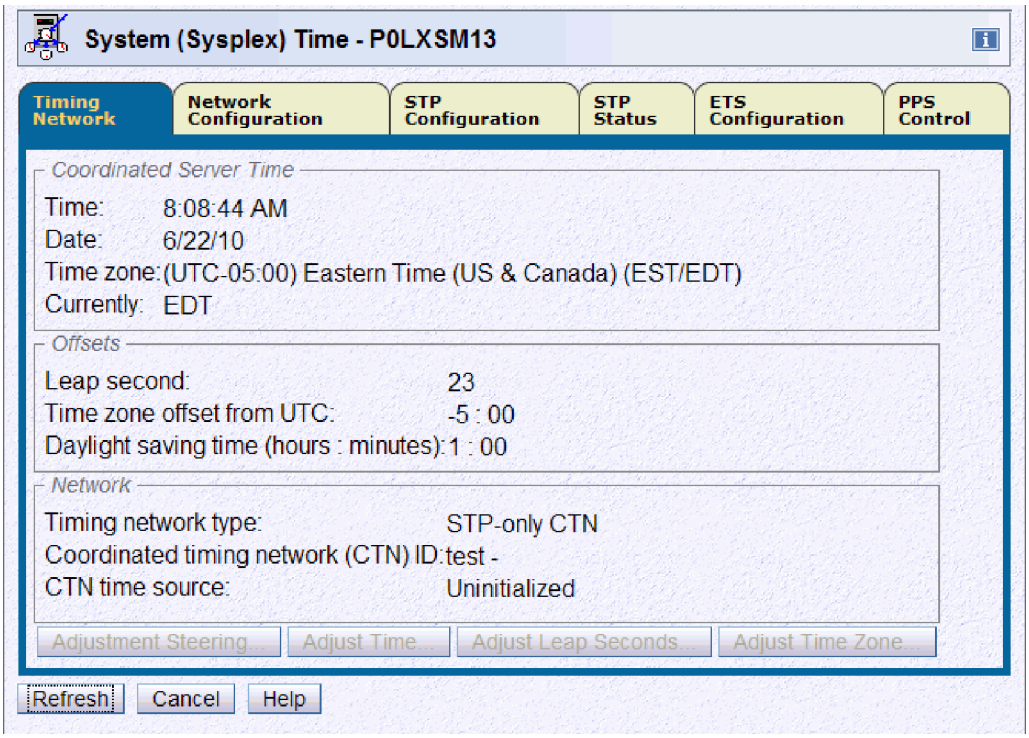


Figure 51. System (Sysplex) Time window

Timing network

Select the **Timing Network** tab to display the overall timing information for the Coordinated Timing Network (CTN) including the current date and time, local offsets, and general network information. The information displayed is identical on each server in the same CTN.

In an STP-only CTN adjustments can be made for the management of time, leap seconds, and time zones. These adjustments are available on every server in the STP-only CTN but are only enabled on the Current Time Server to ensure all time and offset adjustments are done at the server providing time information to all members of the STP-only CTN. Any changes that are made are sent to the Current Timer Server (CPC) or the CPC being set up to be the Current Time Server. From there they are distributed throughout the timing network. Depending on the state of the coordinated timing network and the role of the server (CPC) in the Coordinated Timing Network (CTN) the following adjustments can be made:

- **Adjustment Steering...** allows you to view detailed steering information for an entire STP-only CTN that indicates the amount of time the clock needs to be adjusted. The server (CPC) is gradually adjusting its clock by steering towards the new Coordinated Server Time (CST).
  - Setting the time manually on the console
  - Dialing out to the External Time Source via the Hardware Management Console
  - Migrating from an STP-only CTN to a Mixed CTN
  - Accessing the External Time Source (ETS) via Network Time Protocol (NTP).
- **Adjust Time...** allows you to make a slight adjustment to current Coordinated Server Time (CST). Click **Access External Time Source** to get the adjustment amount from an external time source (if one is set up) or manually enter an amount. Click **OK** to send the amount specified to the STP facility.

- **Adjust Leap Seconds...** allows you to display or change the current leap seconds to a new leap second offset and when that adjustment should happen. Click **OK** to have the new leap second amount or changed schedule time take affect.
- **Adjust Time Zone...**allows you to display or change the current time zone and daylight saving time. Click **Define...** to set up a time zone not found in the list of time zones. Make further changes to the daylight saving time start and end, then click **OK** to save the changes.

Network configuration

Select the **Network Configuration** tab to manage or view the STP-only CTN configuration. The changes are sent to the Current Time Server (CPC) or the CPC being set up to be the Current Time Server. The changes are then distributed throughout the network. The Network Configuration window allows you to:

- Select **Apply** when you are ready to send a new configuration for the STP-only CTN to the STP facility or to migrate from an STP-only CTN to a Mixed CTN. **Apply** is disabled until the initial values are set in the STP-only CTN.
- **Initialize Time...** to set up initial time values (leap second offset, time zone, or date and time) for a CPC that will act as the Current Time Server for a CTN.
- **Initialize Time...** to set up initial time values (leap second offset, time zone, or date and time) for a CPC that will act as the Current Time Server for a CTN.
- **Deconfigure** to deconfigure the Preferred Time Server, Backup Time Server, and Arbiter.

  Note: This action is extremely disruptive and should only be done in order to shut down your STP-only CTN.

STP configuration

Select the **STP Configuration** tab to allow you to:

- Configure this server (CPC) or remove it from participating in a Mixed CTN.
- Configure this server (CPC) or remove it from participating in an STP-only CTN.

Configuration changes made only affect this particular CPC. They are no applied to an entire timing network.

Note: A decimal number from 0 to 31 can be specified in the ETR network ID portion of the CTN ID so that the CPC can participate in a Mixed CTN.

STP status

Select the **STP Status** tab to display the following STP status information for a specific CPC:

- *Timing state* indicates the timing state the CPC is operating in. If it has a value of anything other than Synchronized then the server is not actively participating in a CTN.
- *Usable clock source* indicates whether a usable STP-clock source is available in order to synchronize the server TOD.
- *Timing mode* indicates the timing mode of your server (CPC) within the CTN.
- *Stratum level* indicates the hierarchy of this server within the timing network. A stratum level of 0 indicates the server has no time source.
- *Maximum timing stratum level* indicates how far a CPC can be from the active Stratum 1 and still be in a synchronized state.
- *Maximum STP version* indicates the highest level of STP facility code that the server (CPC) is capable of using.
- *System Information* identifies the CPCs that are directly attached to the CPC for STP purposes. The CPC's Infiniband and coupling links that are initialized to transport STP messages are listed using the

PCHID addresses and are grouped according to the system that is directly attached to the links. Additionally, the stratum level, active STP version, and maximum STP version for each directly attached system is shown.

- *Local Uninitialized STP links* identifies the possible Infiniband and coupling links defined in the IODF that may be used by this server to exchange STP messages.

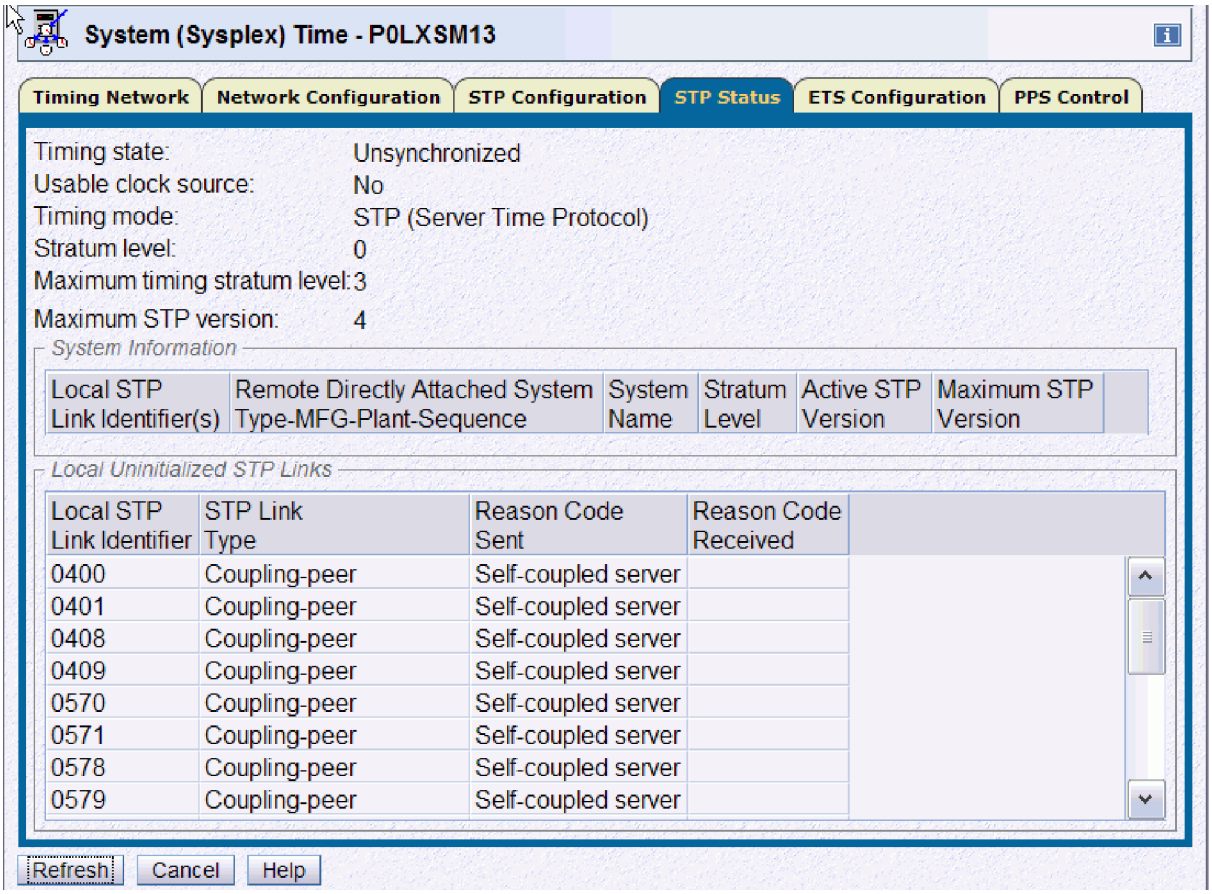


Figure 52. STP status page

ETS configuration

Select the **ETS Configuration** tab to view or modify the ETS configuration for your server (CPC). See Figure 54 on page 240.

How this page is used depends on the role of the CPC in the STP-only CTN. The note that appears on the page indicates the role of the CPC and recommends the actions that should be taken.

You can:

- **Use dial out if configured on Hardware Management Console** to allow the server (CPC) to dial out to the External Time Source (ETS) via the Hardware Management Console. Use the Hardware Management Console to select the **External Time Source** tab from the Customize Outbound Connectivity window, then set up the parameters to be used when dialing an ETS in support of the server (CPC) that is participating in the STP-only CTN.
- **Use NTP** if the server (CPC) needs to access an NTP server as the External Time Source (ETS). It allows up to two NTP servers to be configured for use and displays information about these servers.

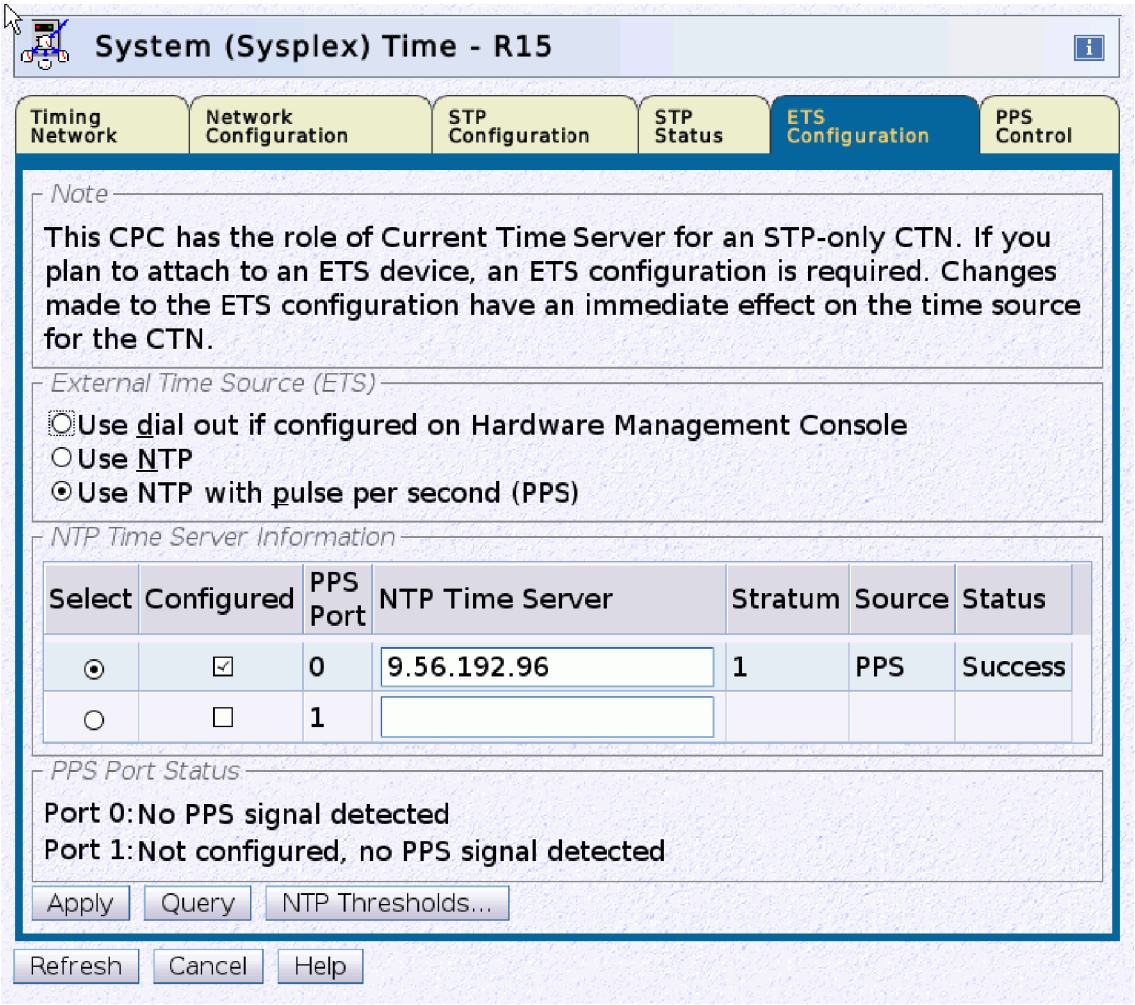


Figure 53. ETS configuration page using the NTP option

- If the server (CPC) does not require an External Time Source (ETS) to be configured, **Use dial out if configured on Hardware Management Console** is the default setting.
- **Use NTP with pulse per second (PPS)** to configure an External Time Source (ETS) which provides enhanced time accuracy for the CTN. A highly stable and accurate pulse per second (PPS) output from the NTP server, that precisely indicates the start of a second, should be attached to the PPS port of the System z server in the CTN. One NTP server can be configured to each PPS port.

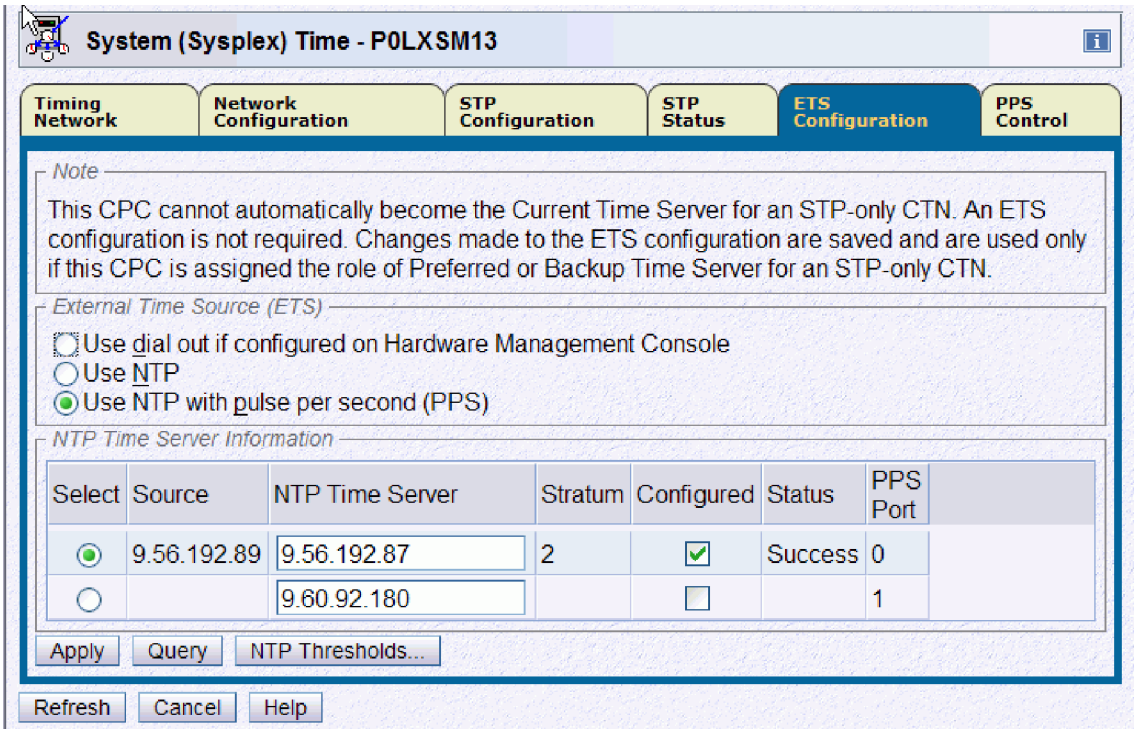


Figure 54. ETS configuration page using NTP with PPS option

PPS control

Select the **PPS Control** tab to diagnose problems with a pulse per second (PPS) port. This page displays whether PPS signals are detected at a PPS port, allows internal diagnostics to be run on each port, shows when a port has been fenced by Licensed Internal Code, and allows a port to be reset.

Note: This page is used only by IBM Product Engineering or IBM Support Services.

To setup and perform an internal diagnostic test on a PPS port:

- Select the **ETS Configuration** tab and verify that the PPS port to be tested is not configured for PPS use. If it is configured, uncheck the Configured column for the appropriate PPS port, then click **Apply**.
- Verify there is no active PPS cable connected to the PPS port to be tested.
- Select the **PPS Control** tab to perform an internal diagnostic test on a PPS port.
- Select **Test**, then click **Apply**.
- Click **Internal Test**, after the button becomes enabled, to run an internal diagnostic test on the port to determine whether or not the PPS hardware is functioning properly.
- When finished with the test, select **PPS input**, then click **Apply** to allow the port to receive PPS signals from an ETS.

Use the online Help for additional information.

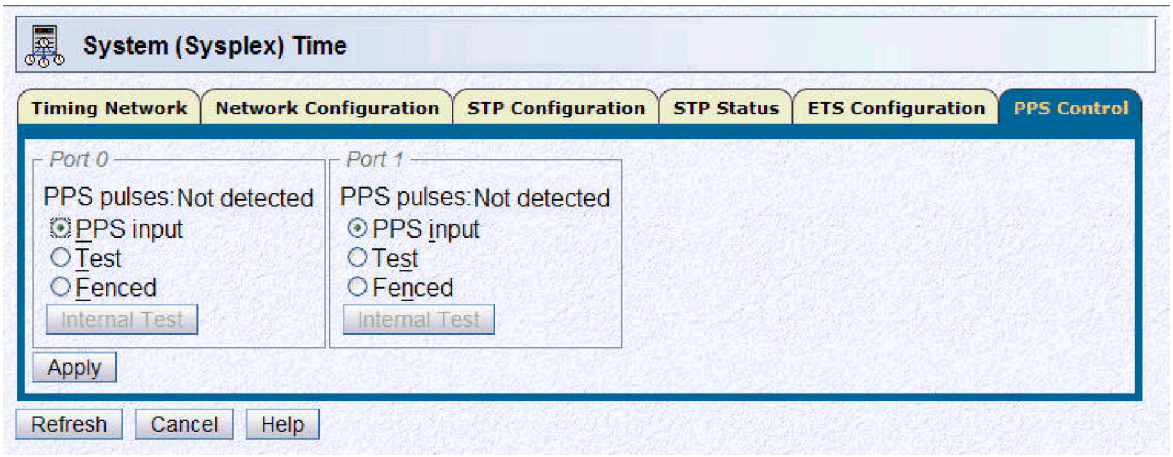


Figure 55. PPS control page

Appendix C. Notices

This information was developed for products and services offered in the USA

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785 USA

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION " AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and

cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

IBM, the IBM logo, and ibm.com® are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate US registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at http://www.ibm.com/legal/us/en/copytrade.shtml.

Adobe is a registered trademark of Adobe Systems Incorporated in the United States, and/or other countries.

InfiniBand is a registered trademark of the InfiniBand Trade Association.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other product and service names might be trademarks of IBM or other companies.

Electronic emission notices

The following statements apply to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions contained in the installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors, by installation or use of this equipment other than as specified in the installation manual, or by any other unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformlté aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A est conform à la norme NMB-003 du Canada.

European Union (EU) Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Telephone: 0049 (0) 711 785 1176
Fax: 0049 (0) 711 785 1283
email: tjahn@de.ibm.com

EC Declaration of Conformity (In German)

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 89/336/EWG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem “Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)“. Dies ist die Umsetzung der EU-Richtlinie 89/336/EWG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 18. September 1998 (bzw. der EMC EG Richtlinie 89/336) für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraf 5 des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraf 4 Abs. (1) 4:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

update: 2004/12/07

People's Republic of China Class A Compliance Statement

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may need to perform practical actions.

声　明

此为A级产品，在生活环境中，
该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其
干扰采取切实可行的措施。

Japan Class A Compliance Statement

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

この装置は，クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。　VCCI－A

Korean Class A Compliance Statement

이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니
판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의
지역에서 사용하는 것을 목적으로 합니다.

Taiwan Class A Compliance Statement

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user will be required to take adequate measures.

警告使用者:
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Index

D

E

F

G

H

I

L

M

N

O

P

Q

R

S

T

U

V

W

Z

Printed in USA

SC28-6906-01