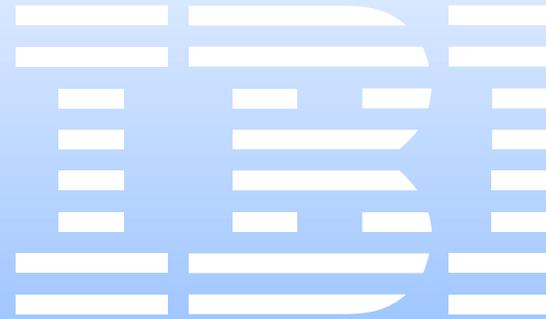


Automated Tape Allocation Manager
for z/OS and OS/390

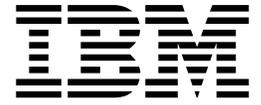


User's Guide

Version 1 Release 1



Automated Tape Allocation Manager
for z/OS and OS/390



User's Guide

Version 1 Release 1

Note!

Before using this information and the product it supports, be sure to read the general information under notices.

Ninth Edition (February 2004)

This documentation edition applies to Version 1, Release 1 of IBM Automated Tape Allocation Manager for z/OS and OS/390 (product number 5697-H62) and to all subsequent releases and modifications until otherwise indicated in new editions. This documentation edition replaces SC27-1610-06. Edition SC27-1610-07 was a customized document that was not made generally available.

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About this book

This book describes how to use Automated Tape Allocation Manager for z/OS and OS/390 to maximize usage of costly tape units across images to minimize wait time and maximize availability. The book contains detailed information, such as field descriptions, sample JCL, and line commands, to help the user of Automated Tape Allocation Manager to fully benefit from the use of this product.

Who should read this book

The *Automated Tape Allocation Manager User's Guide* is intended for systems programmers and administrators who understand the issues relating to sharing system resources and offline storage. The authors of this book assume that the readers are data processing professionals familiar with MVS and its conventions.

Conventions and terminology used in this book

In this book, Automated Tape Allocation Manager for z/OS and OS/390 is referred to as "Automated Tape Allocation Manager" or simply as "ATAM" where the context makes the meaning clear. Other conventions include:

- **Monospaced font** - Identifies example code and line commands
- **Bold font** - Identifies the names of fields

How this book is organized

This book is divided into the following chapters:

- Chapter 1, *Automated Tape Allocation Manager*, provides a general description of how ATAM can benefit your organization.
- Chapter 2, *Configuring Automated Tape Allocation Manager*, walks through all of the steps that must be performed to customize ATAM for your environment.
- Chapter 3, *Current Allocation Status*, explains how to use the Current Status option to check the level of activity of your tape drives.
- Chapter 4, *Activity Reporting*, describes the reports you can use to monitor tape drive activities.
- *Appendices*. There are several appendices that provide supplemental material for migrating from another tape product, using operator commands, modifying the PARMLIB, understanding VTS load balancing, using VOLSER-to-unit preferencing, describing LRU device selection, addressing compatibility issues, and explaining error messages.

Summary of Changes

This section summarizes the significant improvements or enhancements for Automated Tape Allocation Manager V1.1 and refers you to relevant sections of this book for more information. Changes made to this book since the product's initial release include:

- *Random device selection instead of sequential selection.* In previous releases, ATAM cycled sequentially through its pool of managed tape drives when searching for an available tape device, which resulted in extensive use of the low-range devices. To improve the selection process, ATAM now randomly selects a device from its pool of managed tape drives, which spreads usage more evenly across the tape device list. For more information, refer to "Default Processing for ATAM" on page 2.
- *Default processing now excludes devices at startup.* Another processing change relates to how ATAM handles discovered tape devices at startup. Previously, ATAM automatically *selected* all of the tape drives that were discovered when ATAM started. Now ATAM *excludes* all of the tape devices from ATAM's management until the PARMLIB is processed. You can use commands in the PARMLIB to indicate which devices you want ATAM to manage. For more information, refer to "Default Processing for ATAM" on page 2.
- *List of devices at startup.* The list of available tape devices is automatically displayed when ATAM is started.
- *New ALL parameter for Select and Exclude commands.* A new parameter, *ALL*, has been created for the Select (S) and Exclude (X) commands to select all of the devices at one time. These commands can be used in the ATAM PARMLIB or from a console. Refer to Appendix B, "ATAM Console Operator Commands," on page 39 for details.
- *New EXITCOMPAT command.* A new console command, *EXITCOMPAT*, enables you to check if multiple exit routines are found on the MVS recovery allocation exit, IEF_ALLC_OFFLN. You can also use a Y/N parameter with *EXITCOMPAT* to instruct ATAM to turn on/off the exit compatibility. Refer to Appendix B, "ATAM Console Operator Commands," on page 39 for details.
- *New configuration field for LRU Device Selection.* You can now choose whether you want ATAM to use a process referred to as *Least Recently Used device selection* to select the tape unit to be varied online. Essentially, the tape unit that has been dormant the longest will be the first that ATAM will attempt to use. This ensures that all available tape units are used for requests, not just a few. For more information, refer to the table of field descriptions for "Step 8: Configure Automated Tape Allocation Manager" on page 11.
- *Migration from CA-MIA to ATAM.* A new appendix has been added to provide instructions on how to migrate from Unicenter® CA-MIA™ Tape Sharing for z/OS to IBM Automated Tape Allocation Manager for z/OS and OS/390. For details, read Appendix A, "Migration Considerations," on page 31.
Note: For easier reading, Unicenter CA-MIA Tape Sharing for z/OS will be referred to as simply "CA-MIA" throughout this book, and IBM Automated Tape Allocation Manager for z/OS and OS/390 will be referred to as "ATAM".
- *VTS load balancing.* With ATAM's VTS load balancing feature, all of the VTS libraries are used, not just the last library. This is accomplished through ATAM's STORCLAS ACS exit, which uses a unique storage class name for each VTS library. Refer to Appendix E, "VTS load balancing exit," on page 57 for details.

- *New message command.* The "R=" command enables you to specify a message that ATAM is to automatically respond to and the reply that is to be issued when the message does not contain a device name. Refer to Appendix B, "ATAM Console Operator Commands," on page 39 for details.
- *Volser-to-unit preferencing.* You can restrict one or more series of VOLSER ID's to a specific set of tape units. Refer to Appendix F, "Volser-to-Unit Preferencing Exit," on page 61 for details.

Chapter 1. Introduction to Automated Tape Allocation Manager

This chapter introduces you to the functionality provided by Automated Tape Allocation Manager, referred to as "ATAM" for easier reading. Information on device processing, as well as hardware and software requirements are also listed in this chapter.

Uses for ATAM

Getting the most out of your investment in tape drives is important to every MVS shop. You want your equipment to be up and running 24 x 7, and you want the most productive use of your drives. What you do not want is a backlog of job requests while waiting for tape drives that are sitting idle simply because they have not been freed for use. Also you do not want your drives sitting idle while owned by one MVS image when, at the same time, a job waits on another image.

Automated Tape Allocation Manager (ATAM) solves these problems and more by handling tape unit allocations across multiple MVS images. It does so in direct response to actual user and job requests. ATAM continually checks the tape units which it has been configured to manage, and looks for opportunities to vary offline those units that are no longer in use. By doing this, ATAM frees the devices for use as new requests come in for tape units. ATAM also works the request side of tape management by instantly responding to requests for tape unit allocations without any required operator intervention.

ATAM is completely flexible and can fit any MVS environment. ATAM automatically identifies which version of JES is installed, JES2 or JES3. ATAM does not attempt to manage any tape drives that are JES3-controlled. Tuning and configuration parameters can be established that fit your environment. They can also be dynamically changed to accommodate changes in work load and priorities without any need to undergo an outage in the product's operation. A complete set of ISPF-based panels is provided that enables you to easily establish your ATAM configuration. These panels include online help to ease the setup procedure.

From a reporting standpoint, ATAM also provides many advantages. Available reports include:

- All recorded tape unit activity
- Tape activity by job and step
- Usage by tape unit
- A record of failed automatic allocations

These reports can be tailored by the use of common commands, such as SORT, FIND, and PRINT.

In addition to detailed reporting, you also have the ability, through the ISPF interface, to quickly and easily access the state of your tape units and ATAM. The Current Status display provides you a quick and easy way to see what is in use, what is idle, and how it is being used.

With the detailed reports, as well as the ability to easily look at your current status, you have the information you need to assess if your tape units are being fully utilized. The detailed reports can tell you when a tape drive was allocated to a job and if the job

had to wait for a drive. With this detail, you can not only respond to your customers quickly, but you can also see bottlenecks and configure accordingly.

The bottom line is that ATAM streamlines and automates your tape unit management, and reduces or eliminates the need for operator intervention in tape unit allocation. It optimizes the availability of your hardware and promotes efficiency. It does not force a method for "doing business" on you, but rather is flexible enough to tailor to meet your specific requirements. Most of all, it shortens the return on investment (ROI) in your hardware.

Default Processing for ATAM

In previous releases of ATAM, the philosophy in determining which devices to manage has been to find all of the TAPE class devices on the system and mark them as "selectable." Next, the PARMLIB would be processed, which is where you would place commands to exclude the devices you did not want ATAM to manage. However, this process posed problems when the PARMLIB was unavailable or empty. In addition, when a newly introduced tape device was detected by ATAM, the device was automatically marked as "selectable" before you had an opportunity to decide whether to allow ATAM to manage this device or exclude it.

In this release, the process is different. Now ATAM discovers all of the tape devices, then the devices are automatically **excluded** from ATAM's management. ATAM will only select the devices explicitly defined as "selectable" in the PARMLIB. You can select one device, multiple devices, or all devices. You can also combine the Select (S) and Exclude (X) commands to select a range of devices, but exclude a specific device in that range. For more details on the Select and Exclude commands, refer to Appendix B, "ATAM Console Operator Commands," on page 39.

A second change has been made in how ATAM chooses which tape device to use. Previously, ATAM cycled sequentially through its pool of managed tape drives from the beginning of the table to the end each time it assigned a tape device. This resulted in extensive use of the low-range devices, and, in some cases, localizing access to a single control unit. The existing Least Recently Used (LRU) option, although helpful in evenly spreading tape usage across the managed tape pool, does not address this issue.

To solve this problem, ATAM has been modified to introduce a more random approach to device assignment. This was done to spread tape device and channel path usage across the list of managed devices and channel paths, substantially reducing the possibility of directing all allocations to a single group of tape devices.

Note: Randomization is only utilized if there are nine (9) or more offline devices available to ATAM.

Prerequisites

This section lists any hardware and software requirements that must be fulfilled prior to using ATAM.

Hardware Requirements

ATAM supports 3480 and other assign-capable devices. When used with 3480 tape drives, ATAM requires drives that are Model G or later.

Software Requirements

ATAM can be used on any supported release of z/OS or OS/390.

Chapter 2. Configuring Automated Tape Allocation Manager

ATAM is a product that performs its tasks at the system level. Like any other product that operates at this level, care must be taken when installing and configuring the product. Failure to follow the instructions outlined in the product documentation can result in a negative impact on your system. Before attempting to install and operate ATAM, please follow these simple steps:

1. Check the ATAM web page:
<http://www.ibm.com/software/stormgmt/atam/>
Follow the [Library] link to download the latest copy of the ATAM product documentation.
2. Check PSP buckets for the latest product maintenance. Apply PTFs as indicated.
3. Follow installation steps carefully and accurately.

Follow the installation instructions in the Program Directory. Once you have installed ATAM, you must customize it before you can use it.

Customization summary

After you install ATAM, you must tailor some files for your system. The following steps configure your system.

Step	Description	Reference
1	Check the load library authorization, VTS load balancing, runtime environment, and auto-switchable requirements before starting the customization process.	"Step 1: Check requirements" on page 4.
2	Create the VSAM control file.	"Step 2: Create the VSAM control file" on page 4.
3	Create the log file.	"Step 3: Create the log file" on page 5.
4	Verify access.	"Step 4: Verify access" on page 6.
5	Customize and initiate the started task JCL.	"Step 5: Customize and initiate the started task JCL" on page 6.
6	Run the CLIST to go to the main menu.	"Step 6: Access the ATAM ISPF interface" on page 7.
7	Specify each MVS system and libraries.	"Step 7: Configure MVS system parameters" on page 9.
8	Specify parameters for each MVS system.	"Step 8: Configure Automated Tape Allocation Manager" on page 11.
9	Create the ATAM PARMLIB member.	"Step 9: Create the ATAM PARMLIB member" on page 13.
10	Stop and restart the started task.	"Step 10: Starting and stopping the started task" on page 14.

Customizing Automated Tape Allocation Manager

After you install ATAM, follow these steps to tailor some of the files for your system.

Step 1: Check requirements

Before using ATAM, check to ensure that the following requirements have been met:

- The load library containing ATAM must be APF authorized.
- Ensure you are set up with an LE runtime environment.
- If you are using more than one Virtual Tape Server (VTS), be sure to read and follow the steps outlined in Appendix E, “VTS load balancing exit,” on page 57 and consider how implementing VTS load balancing affects your installation process.
- Make sure the devices you want ATAM to manage are **not** defined as auto-switchable. ATAM manages tape devices that are assign capable, such as 3480's or later, but will ignore any devices that are configured as autoswitchable.

Contact your systems administrator if you encounter difficulties starting ATAM.

Step 2: Create the VSAM control file

ATAM uses a VSAM control file to maintain product configuration information. ATAM does *not* use this file to maintain device status information or to coordinate tape sharing between systems. There is no requirement to share this file between multiple systems. Each ATAM started task can have its own VSAM control file if so desired.

If you prefer to share one VSAM control file among multiple systems, the advantages are:

- You only maintain one copy of the VSAM control file, so any changes you make to that file are applied to all of the systems.
- Configuration changes for multiple systems can be made through ATAM's interface (TSO/ISPF panels), instead of requiring separate logons to each system.

To create a VSAM control file, edit member ATHCNTFL in your SATHSAMP library and submit it. This JCL creates the configuration VSAM file. The sample JCL and instructions for changing it are shown below:

```
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSUT1 DD *
DUMMY RECORD TO SATISFY VSAM REQUIREMENT FOR A NON-EMPTY INITIAL FILE.
/*
//SYSIN DD *

DELETE 'ATH.V2R1.CONTROL'

SET MAXCC = 0
```

(CONTINUED ON NEXT PAGE)

```

DEFINE CLUSTER                                -
( NAME ('ATH.V2R1.CONTROL')                  -
  CYLINDERS (1 1)                            -
  SHAREOPTIONS (2 3)                         -
  INDEXED                                     -
  RECORDSIZE (1024 1024)                    -
  KEYS (32 0)                                -
  REUSE )                                     -
DATA ( NAME ('ATH.V2R1.CONTROL.DATA')) -
INDEX ( NAME ('ATH.V2R1.CONTROL.INDEX'))

REPRO INFILE(SYSUT1) OUTDATASET('ATH.V2R1.CONTROL') REUSE

```

JCL Portion	Modification
NAME	Change the highlevel qualifier in the CONTROL data set name to meet your site's standards. In the example, the data set name is ATH.V2R1.CONTROL, where ATH.V2R1 is the highlevel qualifier.
DATA	Change the highlevel qualifier in the DATA data set name to meet your site's standards. In the example, the data set name is ATH.V2R1.CONTROL.DATA, where ATH.V2R1 is the highlevel qualifier.
INDEX	Change the highlevel qualifier in the INDEX data set name to meet your site's standards. In the example, the data set name is ATH.V2R1.CONTROL.INDEX, where ATH.V2R1 is the highlevel qualifier.
OUTDATASET	Use the same highlevel qualifier and data set name that you entered for the NAME line. In the example, the data set name is ATH.V2R1.CONTROL, where ATH.V2R1 is the highlevel qualifier.

Note: If ATAM is controlling tape drives that are shared among multiple MVS systems, control files and log files can be placed on a common DASD that is shared among all of the systems that use the tape drives. In order for an MVS image to participate in tape sharing, there must be an ATAM started task running on that image.

Step 3: Create the log file

A log file is required for ATAM. The DDNAME "LOGFILE" identifies the sequential data set that ATAM uses to record tape allocation activity. The log file is also used as input for reports produced through ATAM's interface (TSO/ISPF panels).

As distributed, ATAM continually appends to the specified log file. There is no requirement to share this file between multiple systems. Generally, you may want to specify a separate log file for each instance of ATAM to simplify management.

The JCL for generating the log file is in member ATHLOGF in the SATHSAMP library. The sample JCL and instructions for changing it are shown below:

```

//LOGF EXEC PGM=IEFBR14
//LOGFILE DD DSN=ATH.V2R1.LOGFILE,DISP=(NEW,CATLG,DELETE),RECFM=FB,
// UNIT=SYSDA,LRECL=260,BLKSIZE=27820,SPACE=(27820,(200,50))

```

JCL Portion	Modification
LOGFILE DD DSN	Type the data set name of the log file, changing the highlevel qualifier to meet your site's naming standards. In the sample JCL, the data set name is ATH.V2R1.LOGFILE, where ATH.V2R1 is the highlevel qualifier.
UNIT	Type the unit name. In the example, the unit is SYSDA.

As distributed, ATAM continually appends to the specified log file. There is no requirement to share this file between multiple systems. If the log file is placed on shared DASD, multiple instances of ATAM can share the same log file. A more common approach, however, is to allocate a separate log file for each instance of ATAM to simplify management.

Since new records are continuously appended to the log file, many installations find it helpful to allocate a GDG for the LOGFILE. This creates a "+1" generation each time the ATAM started task is recycled.

For disk storage planning considerations, assume one 260-byte record per tape mount.

Step 4: Verify access

Verify that the ATAM started task has READ access to ATHPARMS and UPDATE access to the LOGFILE. Failure to ensure that the started task has UPDATE access to the LOGFILE will result in 913 ABENDS.

Step 5: Customize and initiate the started task JCL

The sample JCL procedure for the started task is in the highlevel.SATHSAMP library, member name ATHPROC. Edit this member and add it to MVS for started tasks initiation. The default procedure name is ATHPROC. The sample JCL is shown below:

```
//ATAM      EXEC PGM=ATH#MAIN,TIME=1440
//STEPLIB  DD   DSN=ATH.V2R1.SATHLOAD,DISP=SHR
//LOGFILE  DD   DSN=ATH.V2R1.LOGFILE,DISP=SHR
//ATHPARMS DD   DSN=ATH.V2R1.CONTROL,DISP=SHR
```

You must customize the sample JCL to work in your environment. It is important to ensure that the dataset names in the CLIST match the ones used in the JCL for the started task. The changes you must make to the sample JCL are:

JCL Portion	Modification
STEPLIB DD	Type the data set name of the installed load library for ATAM. If you do not specify a load library, the default is SATHLOAD. In the sample JCL, the data set name is ATH.V2R1.SATHLOAD.
LOGFILE DD	Type the data set name of the log file. In the sample JCL, the data set name is ATH.V2R1.LOGFILE.

JCL Portion	Modification
ATHPARMS DD	Type the data set name of the ATHPARMS. In the sample JCL, the data set name is ATH.V2R1.CONTROL.

DDNAME "ATHPARMS" identifies the VSAM file used to store ATAM configuration parameters. This file must be populated with the required administrative and configuration parameters through the product's ISPF panels prior to starting the ATAM started task (STC).

This VSAM file is *not* used to coordinate tape sharing between multiple systems. As a result, there is no requirement to place this file on shared DASD for multiple instances of ATAM to use it.

This file need not be shared between systems. The only advantage to sharing this file is that ATAM product parameters for any system can be updated from a single TSO/ISPF session. Since product parameter changes occur infrequently, there is no inherent value in sharing this VSAM file between multiple copies of ATAM, however, many shops do so.

When you are finished with customizing the JCL for the started task, you are ready to configure ATAM for its first use as described in the following sections.

Note: Do not attempt to start the started task until you have completed the configuration process, including specifying an Exit Library, or the started task will fail.

Step 6: Access the ATAM ISPF interface

To access ATAM, run the CLIST. However, you must first tailor the two CLISTs found in the SATHSAMP library, which are ATH and ATHCLIST, to work in your environment.

The first sample CLIST, ATH, is shown below:

```
PROC 0 CLISTLIB(ATH.V2R1.SATHSAMP)

CONTROL NOMSG
FREE FILE(ATHCLIST)
CONTROL MSG

ALLOC FILE(ATHCLIST) DATASET('&CLISTLIB') SHR REU

ALTLIB ACTIVATE APPLICATION(CLIST) FILE(ATHCLIST)

ISPEXEC SELECT CMD(ATHCLIST) NEWAPPL(ATH) PASSLIB

ALTLIB DEACTIVATE APPLICATION(CLIST)
FREE FILE(ATHCLIST)
```

CLIST Line	Modification
PROC 0 CLISTLIB()	<p>Type the high level qualifier of your installed ATAM libraries, followed by the name of the sample library. In the sample CLIST, the PROC line is:</p> <pre>PROC 0 CLISTLIB(ATH.V2R1.SATHSAMP)</pre> <p>In this example, ATH.V2R1 is the highlevel qualifier and SATHSAMP is the sample library.</p> <p>Note: Make sure the CLIST allocates the same data sets that were specified in “Step 5: Customize and initiate the started task JCL” on page 6. The dataset names in the CLIST must match the ones used in the JCL for the started task.</p>

The second sample CLIST, ATHCLIST, is shown below:

```
PROC 0 PRDLIB(ATH.V2R1)

CONTROL NOMSG
FREE FILE(ATHPARMS)
FREE FILE(LOGFILE)
CONTROL MSG

ISPEXEC LIBDEF ISPMLIB DATASET ID('&PRDLIB..SATHMENU') COND STACK
ISPEXEC LIBDEF ISPLLIB DATASET ID('&PRDLIB..SATHPENU') COND STACK
ISPEXEC LIBDEF ISPLLIB DATASET ID('&PRDLIB..SATHLOAD') COND STACK
ALLOC FILE(ATHPARMS) DA('&PRDLIB..CONTROL') SHR REUSE
ALLOC FILE(LOGFILE) DA('&PRDLIB..LOGFILE') SHR REUSE

ATH$MAIN
```

You must customize the sample CLIST to work in your environment. It is important to ensure that the dataset names in the CLIST match the ones used in the JCL for the started task, which were specified in “Step 5: Customize and initiate the started task JCL” on page 6. The changes you must make are:

CLIST Line	Modification
PROC 0 PRDLIB	Type the high level qualifier in between the parentheses. The sample CLIST uses ATH.V2R1 for the highlevel qualifier.
ATHPARMS	Type the data set name of the VSAM control file in between the parentheses. In the sample CLIST, the line containing the ATPARMS data set is ALLOC FILE(ATHPARMS) DA(ATH.V2R1.CONTROL), where ATH.V2R1 is the highlevel qualifier.
LOGFILE	Type the data set name of the log file in between the parentheses. In the sample CLIST, the line containing the LOGFILE data set is ALLOC FILE(LOGFILE) DA(ATH.V2R1.LOGFILE), where ATH.V2R1 is the highlevel qualifier.

When you are done modifying the ATHCLIST member, copy this member to your system CLIST library.

When you run the CLIST, the ATAM main menu appears. The main menu is shown below:

```

ATH$MAIN ----- Automated Tape Allocation Manager for z/OS and OS/390 -----
Option ==> _____

      1 Current Status                               User ID: myuserid
      2 Activity Reporting                           Date...: 2003/08/14
      S Setup and Configuration                     Release: V1R1

      A About Automated Tape Allocation Manager
      X Exit Automated Tape Allocation Manager
  
```

Step 7: Configure MVS system parameters

The first time you run ATAM, you must set some general MVS configuration options, then provide specific parameters for each MVS image on which ATAM will operate. These configuration settings control the way that ATAM runs and how it varies tape devices on and offline. You can control your tape allocation activity, tailoring your methods to meet your specific needs.

To configure general MVS options, follow these steps:

1. Type **S** and press Enter to access the ATAM Setup screen.

```

-----ATAM Setup-----
Command ==>

Control Dataset Name ==> ATP.SAMPLE.CONTROL

MVS Info:

MVS System ID      ==> ABCD      (1-4 Character System ID)

Valid command selection values are:

      1: MVS Specific Information
      2: ATAM Configuration Parameters
  
```

2. Type an **MVS System ID** as described below:

Field	Description
Control Dataset Name	(Display only) This is the name of the control data set that was established at installation. You cannot change this field.
MVS System ID	Type the one- to four-character ID of the MVS system on which you want to perform tape allocation activities. Note: This is the four-character SMF system ID, not the IEASYS00 member SYSNAME specification.

Command line values

Type a valid code in the Command line to display one of the lower level screens.
Valid values are:

Value	Description
1	Type 1 to enter information specific to a particular MVS system, including the load library information.
2	Type 2 to enter information for tape allocation processing, such as the amount of time or the number of times to perform activities.

MVS specific information

To update information for a specific MVS system, type 1 in the Command line on the ATAM Setup screen and press Enter. The Update Parameters for MVS System *ssid* screen appears.

```

----- Update Parameters for MVS System ABCD -----
Command ==>

Enter or Update Specific MVS Parameters :

  ATAM Parameter Member  ==>
  Exit Load Library      ==>
  
```

Enter the following MVS system parameters:

Parameter	Description
ATAM Parameter Member	Type the one- to eight-character name of the PARMLIB member that contains optional startup commands for ATAM. You must provide a name in this field even if the member does not exist. If a member does exist, it must be located in a data set available to the current PARMLIB concatenation. Note: For more information on the PARMLIB member, refer to Appendix C, "Using the PARMLIB Member," on page 49.
EXIT Load Library	Type the data set name of the load library that contains the ATAM exit. This is usually the same load library that is used in the STEPLIB DD in the started task JCL for ATAM. The default name for the EXIT Load Library field is SATHLOAD. In the sample JCL for the started task, member ATHPROC, the STEPLIB DD data set name is highlevel.SATHLOAD.

Note: You must specify an EXIT load library and press Enter to update the control file *before* you start the started task. Otherwise, the started task will fail to start.

Press Enter, then PF3 to exit this screen and return to the ATAM Setup screen.

Step 8: Configure Automated Tape Allocation Manager

To enter parameters for ATAM, type 2 in the Command line on the ATAM Setup screen and press Enter. The ATAM Configuration screen appears.

```

ATHPNL2  V1R1 ----- ATAM Configuration ----- 2003/08/28 15:41:24.65
Option ==> _____

MVS ID: ABCD
-----
Operational Mode: 1 1) Active 2) Passive
-----
Offline Unit Polling Interval..... 30_ Seconds
Online Unit Polling Interval..... 5_  Seconds
Online Unit Iteration Count..... 5_  Iterations
Reconfiguration Termination Limit..... 15_ Dynamic Changes
Vary Online Wait Time..... 30_  Seconds
Vary Online Maximum Attempts..... 20_  Attempts

Surround WTOR Responses in Quotes..... Y    (Y or N)
Exclude all Tape Units if No Parmlib Member... Y    (Y or N)
Use LRU Algorithm when Selecting Tape Units... Y    (Y or N)

Press ENTER to save, END to exit.

```

This screen allows you to tailor the process for allocating tape drives. There are several options you can specify to customize how tape drives are varied online or offline.

Operational parameter

The **Operational Mode** field allows you to set the method for allocation that you want ATAM to perform. Select one of the following modes:

Operational Mode	Description
Active	Type 1 to indicate that you want ATAM to automatically vary tape drives online in response to demands for tape drive units.
Passive	Type 2 to indicate that you want ATAM to continually check for drives that are not being used and return them to "free" status (selectable and unallocated). In passive mode, ATAM will not attempt to vary a tape unit online.

ATAM configuration parameters

The ATAM configuration parameters are described next. The first time you use this screen, the default values appear in the fields.

Parameter	Description
Offline Unit Polling Interval	Enter a number between 001 and 999 to indicate the number of seconds to wait between attempts to see if a device is available to be varied offline or is still offline. The default is 30 seconds.

Parameter	Description
Online Unit Polling Interval	Enter a number between 000 and 999 to indicate the number of seconds to wait between attempts to vary an online device to offline. The default is 5 seconds.
Online Unit Iteration Count	Enter a number between 0000 and 9999 to indicate the number of times to attempt to see if a device can be varied offline. The default is 5 iterations. Note: It is recommended that you do not type a value of 0 for this parameter, but instead, code the value that fits your environment. If you type a 0 value in this field, ATAM will continue to attempt to find a device until it succeeds or until the started task is ended.
Reconfiguration Termination Limit	Enter a number between 001 and 999 to indicate the number of times that ATAM will tolerate dynamic Input/Output Definition File (IODF) reconfigurations before terminating the started task. The purpose of this limit is to conserve ECSA memory. The default limit is 15 dynamic changes.
Vary Online Wait Time	Enter a number between 000 and 999 to indicate the number of seconds that ATAM must wait between attempts to find an available tape unit, and then vary the device online. The default is 30 seconds.
Vary Online Maximum Attempts	Enter a number between 0000 and 9999 to indicate the maximum number of times that ATAM will attempt to find an available device for a job, and then vary the device online for that job. The default is 20 attempts. Note: It is recommended that you do not type a value of 0 for this parameter, but instead, code the value that fits your environment. If you type a 0 value in this field, ATAM will continue to attempt to find a device until it succeeds or until the started task is ended.
Surround WTOR Responses in Quotes	Type Y to display quote marks (") around write-to-operator messages. Otherwise, type N . The default is Y , surround responses with quotes.
Exclude all Tape Units if No PARMLIB Member	Recently, the default processing for ATAM was changed from automatically selecting all of the tape devices discovered by ATAM to <i>excluding</i> all of the tape devices at startup until the PARMLIB is processed. Therefore, this field is no longer used.

Parameter	Description
Use LRU Algorithm when Selecting Tape Units	<p>Specify Y (default) or N to indicate whether you want ATAM to employ "Least Recently Used" (LRU) logic when selecting a tape device to be varied online. With this logic, the tape unit that has been dormant the longest will be the first that ATAM will attempt to use. This ensures that all available tape units are used for requests, not just a few.</p> <p>Type N if you want to use ATAM's default device processing, which is randomized device selection. Randomization is only utilized if there are nine (9) or more offline devices available to ATAM.</p> <p>Least Recently Used (LRU) device selection operates by tracking the date and time that each tape unit was utilized while under the control of ATAM, meaning:</p> <ul style="list-style-type: none"> • the last date and time the tape device was successfully varied online • the last date and time the tape device was varied offline • the last date and time a failure occurred when attempting to vary the tape device online. <p>By tracking all of these events, the ATAM started task can sort this date and time information to determine which tape unit to vary online when a request for a tape unit is received. The tape unit that has been dormant the longest will be the first unit that ATAM will try to use. If it is not available, ATAM will attempt to use the next one in the sorted list, and so on.</p>

Press Enter, then PF3 to exit this screen and return to the ATAM Setup screen.

If you want to return to the default settings for ATAM, type the **DEFAULT**, or **DEF**, command in the Option line. This returns the settings for the ATAM Configuration screen to their defaults.

Additional MVS Images

If you want to run ATAM on additional MVS images, you must specify customization information for each MVS image. To do this, repeat the customization process for each MVS image, starting with "Step 7: Configure MVS system parameters" on page 9 and continuing onto "Step 8: Configure Automated Tape Allocation Manager" on page 11. When you have finished customizing all the MVS images on which you want to use ATAM, go to "Step 10: Starting and stopping the started task" on page 14.

Step 9: Create the ATAM PARMLIB member

At product start up, ATAM searches the system PARMLIB concatenation for the member name that you specified in the **ATAM Parameter Member** field in "Step 7: Configure MVS system parameters" on page 9. Unless you want to manually specify each tape device for ATAM to manage each time ATAM starts, you must create a PARMLIB member and specify, through the Select (S) command, which devices you want ATAM to manage.

Refer to Appendix B, "ATAM Console Operator Commands," on page 39 for more information on the commands you can use in the PARMLIB. Additional information

about an ATAM PARMLIB can be found in Appendix C, "Using the PARMLIB Member," on page 49.

Step 10: Starting and stopping the started task

Once you have set your configuration parameters on the ATAM Configuration screen, you must stop and restart the started task for those settings to take effect.

To start the started task, issue the following MVS Start command:

```
S ATHPROC
```

Notes:

1. If the started task fails to start, check to ensure that you specified an EXIT load library on the MVS Parameters screen (option S.1 from the ATAM main menu), then press Enter to update the control file. The started task requires the name of the EXIT load library.
2. The same control file is used for both the ISPF started task and the ATAM started task.

To stop the started task, issue the following MVS Stop command:

```
P ATHPROC
```

This command assumes that you kept the name of the started task as provided in the sample JCL, which is `h1q.SAMPLIB(ATHPROC)`. If you changed the name of the started task, you must use that name in the MVS Stop command to stop the task.

Notes:

1. If you decide not to stop the started task, the new configuration settings will take effect the next time the started task is stopped and started.
2. Avoid using the MVS FORCE command to terminate ATAM. Unpredictable results may occur otherwise, including the termination of active MVS systems.

How the started task works with Automated Tape Allocation Manager

ATAM requires a started task component that runs in its own address space. The started task establishes and provides the operating environment required by ATAM.

Note: If this started task is not available, there will be no automatic allocation of tape units.

The started task does not cause activity to occur or undesirable resource use. Once active, it services requests from users of ATAM. The majority of its activity is spent waiting for requests of this nature.

IPLs and the automatic started task

You should set up the ATAM started task to start automatically when MVS is IPLed. You can do this by adding the appropriate command to the COMMAND member within SYS1.PARMLIB. You may need to consult your MVS support personnel to use this automatic startup.

Note: You need one ATAM started task for each MVS image that is sharing tape devices.

Chapter 3. Current Allocation Status

After you have set the configuration options for your MVS systems, and stopped and restarted the started task, use the **Current Status** option to verify that ATAM is working as you configured it. The **Current Status** option helps you determine the level of activity that is related to your tape drives, such as:

- the number of tape drives that are varied offline, ready for use
- the number of tape drives that are varied online, but not allocated
- the number of tape drives that are online and allocated
- the current status of each tape drive in your environment.

Accessing the Current Status screen

To access the Current Status screen, type **1** in the Option line of the ATAM main menu and press Enter. The Current Status screen appears, as shown in the following example:

```
Row 1 of 6 ----- Current Status ----- 2003/08/14 08:04:45
Option ==>                                SCROLL ==> PAGE

          ATH Service Task: ATH          Current Status: ACTIVE

          Task Started: 08/13/03        5:25:19
-----
UNITS: Discovered:      38  Selectable:    6  Online:      0
      Allocated:        0   Pending:      0
-----
USAGE:      Allocation Failures:    0  Forced Waits:    0
      Successful Allocations:      1
-----
----- Selectable Units -----
Cmd  Unit  Selectable  Online  Allocated  Pending  Allocations
-   -   -   -   -   -   -
-   0650   Y         N         N         N         0
-   0651   Y         N         N         N         0
-   0652   Y         N         N         N         0
-   0653   Y         N         N         N         0
-   0660   Y         N         N         N         0
-   0690   Y         N         N         N         1
***** Bottom of Data *****

Valid Line Commands: (A-Allocations)
```

To refresh the current status display, simply press Enter. ATAM will obtain the current data available and display it.

Note: Do not type a line command (Cmd column) or a command in the Option line before pressing Enter to refresh the data. Otherwise, ATAM will process the command instead of refreshing the data display.

Display fields

The information on this screen is for display only.

Field	Description
ATH Service Task	The name of the started task used by ATAM for processing.
Current Status	Indicates the status of the started task: <ul style="list-style-type: none">• Active - the started task is running.• Inactive - the started task is not running.
Task Started	Indicates the date and time that the started task was initialized. The format for the date is MM/DD/YY and the format for the time is HH:MM:SS.
Units Discovered	Indicates the number of tape units that are actually defined to this MVS system.
Units Selectable:	Indicates the number of tape units that are available for use.
Units Online	Indicates the number of tape units that are currently assigned to a job.
Units Allocated	Indicates the number of tape units that are currently allocated.
Units Pending	Indicates the number of tape units that are allocated for a job, but are not online.
Allocation Failures	Indicates the number of events for which a tape unit could not be automatically allocated.
Forced Waits	Indicates the number of times a tape request was forced to wait for an available tape unit.
Successful Allocations	Indicates the number of events that were successfully allocated.
Unit	Indicates the name of the tape drive.
Selectable	Indicates whether this specific tape drive is currently available for selection.
Online	Indicates whether this specific tape unit is currently online.
Allocated	Indicates whether this specific tape unit is currently allocated to an MVS image.
Pending	Indicates whether this tape unit is pending, but not online.
Allocations	Indicates the number of times this specific tape unit was successfully allocated on this MVS image.

Line command

There is only one valid line command for the Current Status screen:

Line Command	Description
A	Allocation - This provides a display-only screen where you can view the allocation activity for this specific tape unit. For descriptions of the fields on the Allocation Activity screen, refer to "Reviewing allocation activity" on page 18..

Optional commands

In addition to the A line command, there are commands you can enter in the Option line of the Current Status screen to find a string, sort the data, and print the current display. Each of these commands is described below.

FIND

Syntax:

`FIND string or F string`

Find the first occurrence of the specified string in the scrollable area of the display.

Example:

`FIND 652`

In the example above, the FIND command will look for the text "652" in the scrollable area of the screen. If it finds this text, for example, if "652" is the name of one of your tape units, the FIND command will place the line containing that text at the top of the scrollable area.

SORT

Syntax:

`SORT UNIT|SELECT|ONLINE|ALLOCATED|PENDING|ALLOCS`

Sort the rows in the scrollable area by the specified column. The sort keywords are listed in the same order as the columns on the report.

Example:

`SORT UNIT`

In the example above, the SORT command will sort the lines in the scrollable area based on the ID in the UNIT column.

PRINT

Syntax:

`PRINT`

Print the information in the scrollable area of the screen.

Example:

`PRINT`

Reviewing allocation activity

When you type **A** next to a specific tape unit on the Current Status screen and press Enter, the Allocation Activity screen is displayed. This screen contains display-only information about the allocations made to the tape unit you selected on the Current Status screen. The Allocation Activity screen is shown next.

```

Row 1 of 6 ----- Allocation Activity ----- 2003/08/14 09:11:16
Option ==>                                     SCROLL ==> PAGE

-----
Unit  Date      Time      Event      Job Name  Job Step  DDNAME  DSN
0690 08/12/03   4:00:10  ALLOCATE   DAILY001  STEP1    TAPE    DAILY.BKUP
0690 08/13/03   4:00:03  ALLOCATE   DAILY001  STEP1    TAPE    DAILY.BKUP
0690 08/14/03   4:00:04  ALLOCATE   WEEKLY04  STEP1    TAPE    WEEKL.BKUP
0690 08/07/03   4:00:04  ALLOCATE   WEEKLY04  STEP1    TAPE    WEEKL.BKUP
0690 08/08/03   4:00:04  ALLOCATE   DAILY001  STEP1    TAPE    DAILY.BKUP
0690 08/09/03   4:00:05  ALLOCATE   WEEKLY03  STEP1    TAPE    WEEKL.BKUP
***** Bottom of Data *****

```

Display fields

The columns on the Allocation Activity screen contain information that is displayed for your review. The report columns are described in the following table:

Column	Description
Unit	Indicates the name of the tape unit that was used to satisfy the allocation (only valid for ALLOCATE events).
Date	Indicates the date that the event occurred. The format is MM/DD/YY.
Time	Indicates the time that the event occurred. The format is HH:MM:SS.
Event	Describes what happened for this job. Possible events are: <ul style="list-style-type: none"> ALLOCATE - The tape unit was successfully allocated for the job driving the event. ATAM Start - The started task for ATAM was started. ATAM Term - The started task for ATAM ended normally. FAIL - ATAM could not allocate a tape device for an allocation request. The MVS default option was then invoked. WAIT - An allocation request had to wait for a tape unit to become available. This same request may or may not have failed at a later time.
Job Name	Indicates the name of the job that is driving the request.
Job Step	Indicates the name of the job step within the job that is driving the request.
DDNAME	Indicates the DDNAME within the job step of the job that is driving the request.
DSN	Indicates the name of the data set that is either being read from or written to for this job.

Optional commands

There are three commands you can enter in the Option line of the Allocation Activity screen to find a string, sort the data, and print the current display. Each of these commands is described below.

FIND

Syntax:

```
FIND string or F string
```

Find the first occurrence of the specified string in the scrollable area of the display.

Example:

```
FIND 690
```

In the example above, the FIND command will look for the text "690" in the scrollable area of the screen. If it finds this text, the FIND command will place the line containing that text at the top of the scrollable area.

SORT

Syntax:

```
SORT UNIT|DATE|TIME|EVENT|JOB|STEP|DDN|DSNME
```

Sort the rows in the scrollable area by the specified column. The sort keywords are listed in the same order as the columns on the report. The keywords refer to the following columns:

- UNIT - Sort by the tape unit ID
- DATE - Sort by the Date column
- TIME - Sort by the Time column
- EVENT - Sort by the Event column
- JOB - Sort by the job name
- STEP - Sort by the job step name
- DDN - Sort by the DD name
- DSNME - Sort by the data set name, which is the DSN column

Example:

```
SORT UNIT
```

In the example above, the SORT command will sort the lines in the scrollable area based on the ID in the UNIT column.

PRINT

Syntax:

```
PRINT
```

Print the information in the scrollable area of the screen.

Example:

PRINT

When you are finished reviewing the allocation activity of this tape drive, press PF3 to return to the Current Status screen. You can either choose another tape drive for which you want to review allocation activity or press PF3 again to return to the main menu.

Chapter 4. Activity Reporting

The **Activity Reporting** option on the Automated Tape Allocation Manager main menu provides several reports to help you monitor tape drive activities. There are four primary reports for you to choose from, which are:

1. All activity
2. Job activity
3. Allocation activity
4. Failed allocations

Each of these reports is described in detail in this chapter.

Common Fields

All of the reports have two items at the top of the screen that enable you to navigate the reports: the **SCROLL** field and the **Row N of N** field. These fields are described below.

The **SCROLL** field in the upper right corner works in the same manner as on other ISPF screens. The **SCROLL** field accepts a value or keyword to specify the scroll amount. Valid entries are: PAGE, CSR, MAX, DATA, HALF, or a number.

The **Row N of N** area indicates the number of the top row in the current view of the report and the total number of rows in the report. If you page down (F8), the first number will change to the top row of this view, while the second number (total rows) remains the same. This helps you see where you are in the report. If there are no rows for a report (the report is empty), the message "No rows to display" appears in place of the "Row N of N" message.

Common Commands

There are three commands you can type in the Option line on any of the reports to find a string, sort the data, and print the current display. Each of these commands is described below.

FIND

Syntax:

FIND *string* or F *string*

Find the first occurrence of the specified string in the scrollable area of the display.

Example:

FIND 652

In the example above, the FIND command will look for the text "652" in the scrollable area of the screen. If it finds this text, the FIND command will place the line containing that text at the top of the scrollable area.

SORT

Syntax:

```
SORT EVENT|DATE|TIME|UNIT|JOB|STEP|DDN|DSNME
```

Sort the rows in the scrollable area by the specified column. The sort keywords are listed in the same order as the columns on the report. The keywords refer to the following columns:

- EVENT - Sort by the Event column
- DATE - Sort by the Date column
- TIME - Sort by the Time column
- UNIT - Sort by the tape unit ID
- JOB - Sort by the job name
- STEP - Sort by the job step name
- DDN - Sort by the DD name
- DSNME - Sort by the data set name, which is the DSN column

Example:

```
SORT UNIT
```

In the example above, the SORT command will sort the lines in the scrollable area in ascending order based on the ID in the UNIT column. Ascending order is the default.

If you want to change the order to descending order, type a "D" after the column name. This is shown in the following example:

```
SORT UNIT D
```

PRINT

Syntax:

```
PRINT
```

Print the information in the scrollable area of the screen.

Example:

```
PRINT
```

Accessing the Activity Reporting option

To access the **Activity Reporting** screen, type **2** in the Option line of the ATAM main menu and press Enter. A window appears, as shown in the following example:

```
ATH$MAIN ----- Automated Tape Allocation Manager for z/OS and OS/390 -----
Option ==> 2_____

1 Current Status                               User ID: myuserid
2 Activity Reporting                           Date...: 2003/03/14
S +-----+                                     Release: V1R1
A |----- Select Activity Report -----|
X | Option ==>                             |
  |                                         |
  | 1 All Activity                         |
  | 2 Job Activity                         |
  | 3 Allocation Activity                   |
  | 4 Failed Allocations                   |
  |                                         |
  | X Exit Reporting Menu                  |
  +-----+
+-----+
```

You must type a number in the Option line to choose the report you want to view. Valid choices are:

Value	Description
1	All Activity. View a report listing all of the activities for all of the tape drives.
2	Job Activity. View a report listing all of the activities based on job name.
3	Allocation Activity. View a report listing all of the allocations that occurred for all of the tape drives.
4	Failed Allocations. View a report listing all of the allocations that were requested by jobs, but did not occur or that failed during the job.

All Activity report

To select the All Activity report, type **1** in the Option line of the Select Activity Report window and press Enter. The All Activity report lists all of the activities associated with ATAM, and is initially sorted by the Date column. An example is shown below:

```

Row 1 of 48 ----- All Activity ----- 2003/08/14 12:08:37
Option ==>                                SCROLL ==> CSR
-----
EVENT      Date      Time      Unit  Job Name  Job Step  DDNAME  DSN
ATAM Start 08/11/03  1:32:25  N/A   N/A       N/A      N/A    N/A
ALLOCATE   08/11/03  1:33:05  0651  ABCDE    STEP1    SYSOUT  WXYZ.CRASH
ALLOCATE   08/11/03  1:52:16  0652  ABCDE    STEP1    SYSOUT  WXYZ.TEST.
ALLOCATE   08/11/03  2:46:48  0652  ABCD5    STEP1    SYSOUT  WXYZ.TEST.
ALLOCATE   08/11/03  4:00:04  0690  WEEKLY04 STEP1    TAPE    WEEKL.BKUP
ATAM Start 08/11/03  14:14:54 N/A   N/A       N/A      N/A    N/A
ATAM Term  08/12/03  1:52:58  N/A   N/A       N/A      N/A    N/A
ATAM Start 08/12/03  1:55:28  N/A   N/A       N/A      N/A    N/A
ALLOCATE   08/12/03  4:00:04  0690  DAILY001 STEP1    TAPE    DAILY.BKUP
ATAM Start 08/12/03  12:56:34 N/A   N/A       N/A      N/A    N/A
ATAM Term  08/12/03  13:41:11 N/A   N/A       N/A      N/A    N/A
ATAM Start 08/12/03  13:41:45 N/A   N/A       N/A      N/A    N/A
ALLOCATE   08/12/03  13:42:14 0652  ABCDE    STEP1    SYSOUT  WXYZ.TEST.
ATAM Term  08/12/03  14:05:32 N/A   N/A       N/A      N/A    N/A
ATAM Start 08/12/03  14:59:25 N/A   N/A       N/A      N/A    N/A
ALLOCATE   08/12/08  14:59:55 0652  ABCDE    STEP1    SYSOUT  WXYZ.TEST.
ATAM Term  08/12/03  15:08:07 N/A   N/A       N/A      N/A    N/A
ATAM Start 08/12/03  15:08:32 N/A   N/A       N/A      N/A    N/A

```

All of the information on this screen is for display only. However, you can enter commands in the Option line to find, sort, and print the data in the scrollable area of the report. For more information on the column headings and the type of data listed in the report, refer to "Display columns for All Activity report" on page 24.. For information on commands you can use in the Option line, refer to "Common Commands" on page 21..

Display columns for All Activity report

The columns in the All Activity report contain information that is for display only. The report columns are described in the following table.

Column	Description
Event	<p>Describes what happened for this job. Possible events are:</p> <ul style="list-style-type: none"> • ALLOCATE - The tape drive was successfully allocated for the job driving the event. • ATAM Start - The started task for ATAM was started. • ATAM Term - The started task for ATAM ended normally. • FAIL - ATAM could not allocate a tape device for an allocation request. The MVS default option was then invoked. • WAIT - An allocation request had to wait for a tape unit to become available. This same request may or may not have failed at a later time.

Column	Description
Date	Indicates the date that the event occurred. The format is MM/DD/YY.
Time	Indicates the time that the event occurred. The format is HH:MM:SS.
Unit	Indicates the name of the tape drive used to satisfy the allocation (only valid for ALLOCATE events).
Job Name	Indicates the name of the job that is driving the request.
Job Step	Indicates the name of the job step within the job that is driving the request.
DDNAME	Indicates the DDNAME within the job step of the job that is driving the request.
DSN	Indicates the name of the data set that is either being read from or written to for this job.

Job Activity report

To select the Job Activity report, type 2 in the Option line of the Select Activity Report window, and press Enter. The Job Activity report lists all of the job activities, and is initially sorted by the job name. An example of a Job Activity report is below:

```
Row 1 of 170 ----- Job Activity ----- 2003/08/14 13:25:36
Option ==>                                     SCROLL ==> CSR
```

Job Name	Job Step	Event	Date	Time	Unit	DDNAME	DSN
ABCDE	STEP1	ALLOCATE	08/08/03	17:15:34	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/08/03	17:06:02	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/08/03	15:08:52	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/13/03	1:59:03	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/08/03	17:34:13	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/08/03	17:23:31	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/08/03	14:59:55	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/07/03	1:52:16	0652	SYSOUT	ABCD.TEST.
ABCDE	STEP1	ALLOCATE	08/07/03	1:33:04	0551	SYSOUT	ABCD.CRASH
ABCDE	STEP1	ALLOCATE	08/08/03	13:42:14	0652	SYSOUT	ABCD.TEST.
ABCD5	STEP1	ALLOCATE	08/07/03	2:46:48	0652	SYSOUT	ABCD.TEST.
DAILY003	STEP1	ALLOCATE	08/03/03	4:00:10	0690	TAPE	DAILY.BKUP
DAILY003	STEP1	ALLOCATE	08/13/03	4:00:04	0690	TAPE	DAILY.BKUP
DAILY003	STEP1	ALLOCATE	08/08/03	4:00:04	0690	TAPE	DAILY.BKUP
DAILY003	STEP1	ALLOCATE	08/09/03	4:00:04	0690	TAPE	WEEKL.BKUP
DAILY004	STEP1	ALLOCATE	08/14/03	4:00:04	0690	TAPE	WEEKL.BKUP
DAILY004	STEP1	ALLOCATE	08/07/03	4:00:04	0690	TAPE	WEEKL.BKUP

All of the information on this screen is provided for your review. However, you can enter commands in the Option line to find, sort, and print the data in the scrollable area of the report. For more information on the column headings and the type of data listed in the report, refer to "Display columns for Job Activity report" on page 27.. For information on commands you can use in the Option line, refer to "Common Commands" on page 21..

Display columns for Job Activity report

The columns in the Job Activity report contain information that is for display only. The report columns are described in the following table:

Column	Description
Job Name	Indicates the name of the job that is driving the request.
Job Step	Indicates the name of the job step within the job that is driving the request.
Event	Describes what happened for this job. Possible events are: <ul style="list-style-type: none">• ALLOCATE - The tape drive was successfully allocated for the job driving the event.• FAIL - ATAM could not allocate a tape device for an allocation request. The MVS default option was then invoked.• WAIT - An allocation request had to wait for a tape unit to become available. This same request may or may not have failed at a later time.
Date	Indicates the date that the event occurred. The format is MM/DD/YY.
Time	Indicates the time that the event occurred. The format is HH:MM:SS.
Unit	Indicates the name of the tape drive used to satisfy the allocation (only valid for ALLOCATE events).
DDNAME	Indicates the DDNAME within the job step of the job that is driving the request.
DSN	Indicates the name of the data set that is either being read from or written to for this job.

Allocation Activity report

To view the Allocation Activity report, type 3 in the Option line of the Select Activity Report window, and press Enter. The Allocation Activity screen lists all of the jobs with an allocation activity, and is initially sorted by the unit ID. An example of this report is shown below:

```
Row 1 of 89 ----- Allocation Activity ----- 2003/08/14 13:49:50
Option ==>                                     SCROLL ==> CSR
```

Unit	Date	Time	Event	Job Name	Job Step	DDNAME	DSN
0651	08/07/03	1:33:04	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.CRASH
0652	08/08/03	17:15:34	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/08/03	17:06:02	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/08/03	15:08:52	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/13/03	1:59:03	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/08/03	17:34:13	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/08/03	17:23:31	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/07/03	2:46:48	ALLOCATE	ABCD5	STEP1	SYSOUT	ABCD.TEST.
0652	08/07/03	1:52:16	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/08/03	13:42:14	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0652	08/08/03	14:59:55	ALLOCATE	ABCDE	STEP1	SYSOUT	ABCD.TEST.
0690	08/14/03	4:00:04	ALLOCATE	WEEKLY04	STEP1	TAPE	WEEKL.BKUP
0690	08/13/03	4:00:04	ALLOCATE	DAILY003	STEP1	TAPE	DAILY.BKUP
0690	08/03/03	4:00:10	ALLOCATE	DAILY003	STEP1	TAPE	DAILY.BKUP
0690	08/08/03	4:00:04	ALLOCATE	DAILY003	STEP1	TAPE	DAILY.BKUP
0690	08/07/03	4:00:04	ALLOCATE	WEEKLY04	STEP1	TAPE	WEEKL.BKUP
0690	08/09/03	4:00:04	ALLOCATE	WEEKLY03	STEP1	TAPE	WEEKL.BKUP

All of the information on this screen is for your review of ALLOCATE events only. However, you can enter commands in the Option line to find, sort, and print the data in the scrollable area of the report. For more information on the type of data listed in the report, refer to "Display columns for Allocation Activity report" on page 29.. For information on commands you can use in the Option line, refer to "Common Commands" on page 21..

Display columns for Allocation Activity report

The columns on the Allocation Activity report contain information that is for display only. The information provided on this screen is described in the following table.

Column	Description
Unit	Indicates the name of the tape drive used to satisfy the allocation (only valid for ALLOCATE events).
Date	Indicates the date that the event occurred. The format is MM/DD/YY.
Time	Indicates the time that the event occurred. The format is HH:MM:SS.
Event	Describes what happened for this job. The only event in this report is ALLOCATE, which means that the tape drive was successfully allocated for the job driving the event.
Job Name	Indicates the name of the job that is driving the request.
Job Step	Indicates the name of the job step within the job that is driving the request.
DDNAME	Indicates the DDNAME within the job step of the job that is driving the request.
DSN	Indicates the name of the data set that is either being read from or written to for this job.

Failed Allocations report

To select the Failed Allocations report, type **4** in the Option line of the Select Activity Report window, and press Enter. The Failed Allocations screen is displayed. It lists all of the jobs with unsuccessful allocations, and is initially sorted by the job name. An example is shown below:

```
Row 1 of 2 ----- Failed Allocations ----- 2003/08/16 14:23:53
Option ==>                                SCROLL ==> CSR

-----
Job Name Job Step Event      Date      Time      Unit DDNAME DSN
ABCD5    STEP1    FAIL      08/15/03 13:46:48 0690 SYSOUT ABCD.TEST
DAILY001 STEP1    FAIL      08/15/03 13:46:48 0690 TAPE   DAILY.BKUP
```

Use this screen to review job allocations with a status of FAIL only. You can enter commands in the Option line to find, sort, and print the data in the scrollable area of the report. For more information on the column headings and the type of data listed in the report, refer to "Display columns for Failed Allocations report.". For a list of commands for the Option line, refer to "Common Commands" on page 21.

Display columns for Failed Allocations report

The columns on the Failed Allocations report contain information that is for display only. The information on this screen is described in the following table:

Column	Description
Job Name	Indicates the name of the job that is driving the request.
Job Step	Indicates the name of the job step within the job that is driving the request.
Event	Describes what happened for this job. The only event reported on this screen is FAIL, which means that ATAM could not allocate a tape device for an allocation request. The MVS default option was then invoked.
Date	Indicates the date that the event occurred. The format is MM/DD/YY.
Time	Indicates the time that the event occurred. The format is HH:MM:SS.
Unit	Indicates the name of the tape drive used to satisfy the allocation (only valid for ALLOCATE events).
DDNAME	Indicates the DDNAME within the job step of the job that is driving the request.
DSN	Indicates the name of the data set that is either being read from or written to for this job.

Appendix A. Migration Considerations

ATAM operates as a low-level OS/390 and z/OS system tool, managing tape devices across disparate MVS images within and across sysplex environments. When considering a change from CA-MIA to ATAM, you may need these products to cooperatively manage their tape devices in order to test ATAM and ease into migration. This appendix provides information on how to smoothly migrate from CA-MIA to ATAM and also how to enable them to co-exist on the same images until you are ready to migrate completely to ATAM.

The first and second sections of this appendix describe the test and production processes you must follow to migrate from CA-MIA to ATAM. These are the "plug and play" migration steps.

The third section provides more details on the steps you must take to enable CA-MIA and ATAM to co-exist on the same image for a longer test period. When in co-existence mode, ATAM works as a "relief valve," accessing ATAM-assigned drives only when CA-MIA exhausts its pool of managed devices. ATAM has been specially enhanced to enable it to run concurrently with CA-MIA. This allows you to test ATAM without shutting down CA-MIA, and to gradually assign more and more devices over to ATAM's management as part of the migration path.

Migrating from CA-MIA to ATAM

CA-MIA and ATAM were not designed to work together on the same image although ATAM has been enhanced to allow this to occur. This section assumes that your intention is to test that ATAM is working as expected, then completely migrate from CA-MIA to ATAM. Information is provided on the considerations and steps to follow when implementing ATAM in an environment that is currently using CA-MIA

To migrate from CA-MIA to ATAM, *CA-MIA should be shutdown on the system before ATAM is started*. By definition, CA-MIA and ATAM share tape devices between multiple systems. In order to test ATAM on one system while continuing to run CA-MIA on one or more other systems, **it is imperative that the two products NOT be allowed to manage the same set of devices concurrently**. Failure to ensure that this does not happen could negatively impact your production processing. BEWARE!

Example Environment

For the purposes of this document, assume the following:

1. There are two systems: SYSA and SYSB.
2. You have eight (8) tape units and their device addresses are 0280-0287.
3. The same tape unit device addresses refer to the same physical devices on both systems (e.g., 0280 on SYSA is the same physical device as 0280 on SYSB).
4. All of the tape units are assign-capable devices (e.g., 3480's or higher).
5. CA-MIA is currently installed on both systems and is managing all eight of these tape units.
6. You want to install ATAM on SYSA while leaving CA-MIA in operation on SYSB.

The steps for installing and testing ATAM on SYSA are described next.

Step 1: Select the devices each product will manage.

Let's assume that you want to test ATAM on SYSA using four tape units: device addresses 0280 through 0283. CA-MIA will continue to manage the remaining four devices: addresses 0284-0287.

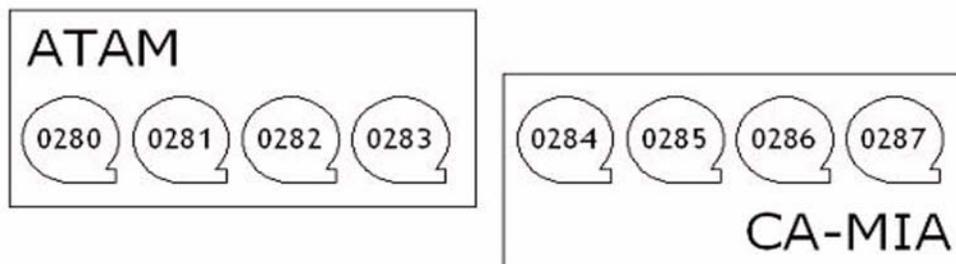


Figure 1. Devices can be managed by one product or the other, but not both!

Step 2: Install ATAM on SYSA.

Install the software, but do **NOT** start the ATAM started task. Refer to the *Program Directory for IBM Automated Tape Allocation Manager for z/OS* for installation instructions.

Step 3: Create an ATAM PARMLIB Member.

Create a PARMLIB member for ATAM on SYSA as outlined in these sections:

- “Step 7: Configure MVS system parameters” on page 9.
- “Step 9: Create the ATAM PARMLIB member” on page 13.
- Appendix C, “Using the PARMLIB Member,” on page 49.

Continuing with our example, the PARMLIB member should contain the following record:

```
S,0280-0283
```

When ATAM starts, it automatically *excludes* all of the devices that it discovers until the PARMLIB is processed. The Select (S) command, shown above, in the PARMLIB instructs ATAM to select device addresses 0280-0283 for ATAM to manage.

Step 4: Remove devices 0280-0283 from CA-MIA control on SYSB.

Follow these steps:

1. Use a CA-MIA command to remove devices 0280 through 0283 from CA-MIA control on SYSB.
Note: Refer to the CA-MIA documentation to determine the necessary command(s) and syntax.
2. Make any necessary changes to the CA-MIA configuration on SYSB to ensure that it will not attempt to manage devices 280-283 upon product restart.
Note: For an example of how this was done at one test site, refer to “Enabling CA-MIA and ATAM to co-exist” on page 35. However, be sure to refer to the latest CA-MIA documentation for the command syntax.

Step 5: Shut down CA-MIA on SYSA.

Ensure that CA-MIA will not restart automatically and that it will not attempt to manage device addresses 0280-0283 if CA-MIA is restarted. Make any necessary CA-MIA configuration changes as directed in the CA-MIA documentation.

Step 6: Check for existing Allocation Recovery exits.

ATAM installs a module as a z/OS installation exit, IEF_ALLC_OFFLN, which is the Allocated or Offline Device Installation exit. However, CA-MIA and ATAM were not designed to operate in this allocation recovery exit at the same time.

1. Issue the following console command to check for existing allocation recovery exits:

```
D PROG,EXIT,EX=IEF_ALLC_OFFLN
```

If you receive the following message then, yes, CA-MIA is active as indicated by the presence of module MIAALOCX:

```
CSV461I 11.10.55 PROG,EXIT DISPLAY 101
IEF_ALLC_OFFLN MIAALOCX A
```

2. If CA-MIA is active, ensure that CA-MIA is shutdown and its exit is not installed before proceeding further with ATAM startup.

Note: If you prefer, you can disable the CA-MIA allocation recovery exit. An example of how this was done at one test site is listed in “Enabling CA-MIA and ATAM to co-exist” on page 35. Always check the latest CA-MIA documentation for the appropriate commands and syntax.

3. If another product or locally written module is installed in Allocation Recovery, you will receive the following messages from ATAM at start up:

```
ATH012W MULTIPLE EXIT ROUTINES DETECTED. RESULTS MAY BE UNPREDICTABLE
ATH012I IEF_ALLC_OFFLN EXIT DETECTED: <module name> STATE: <state>
ATH241W EXITCOMPAT=N AND OTHER IEF_ALLC_OFFLN EXIT(S) DETECTED. ATH#ALOC IS
DISABLED.
```

These messages tell you that the default mode of operation is to disable ATAM's exit processing because ATAM found another installed exit. You can include the EXITCOMPAT=Y command in the ATAM PARMLIB to override this behavior and activate ATAM's exit processing. Refer to “EXITCOMPAT” on page 47 for more details on how to use this command.

Step 7: Complete the ATAM configuration and product start up.

Following instructions in Chapter 2, “Configuring Automated Tape Allocation Manager,” on page 3, complete the installation and configuration of ATAM on SYSA.

Installation for ATAM testing is complete

At this point, ATAM is running on SYSA and is managing device addresses 0280 through 0283. CA-MIA is operating on SYSB and is managing device addresses 0284 through 0287.

Operations staff should begin to familiarize themselves with the commands and operations of ATAM on SYSA. Refer to Appendix B, “ATAM Console Operator Commands,” on page 39 for more information on console operator commands.

ATAM can be stopped and started on SYSA at will, but it will only manage the devices specified in the PARMLIB member.

Migrating to Production

Use the steps below to move ATAM into production after you have completed any testing of ATAM, replacing the use of CA-MIA.

Step 1: Install ATAM on SYSB.

Install the software, but do **NOT** start the ATAM started task. Refer to the *Program Directory for IBM Automated Tape Allocation Manager for z/OS* for installation instructions.

Step 2: Create an ATAM PARMLIB Member

Create a PARMLIB member for ATAM on SYSB as outlined in these sections:

- “Step 7: Configure MVS system parameters” on page 9.
- “Step 9: Create the ATAM PARMLIB member” on page 13.
- Appendix C, “Using the PARMLIB Member,” on page 49.

The PARMLIB member should contain the following record:

```
S,0280-0287
```

When ATAM starts, it automatically *excludes* all of the devices that it discovers until the PARMLIB is processed. The Select (S) command, shown above, in the PARMLIB instructs ATAM to select device addresses 0280-0287 for ATAM to manage.

Update the PARMLIB member for ATAM on SYSA as well, making it look the same as the PARMLIB member for SYSB (above).

Step 3: Shut down CA-MIA on SYSB.

Ensure that CA-MIA will not restart automatically, and that it will not attempt to manage device addresses 0280-0287 if CA-MIA is restarted. Make any necessary CA-MIA configuration changes as directed in the CA-MIA documentation.

Step 4: Complete the ATAM configuration and product start up.

Following instructions in Chapter 2, “Configuring Automated Tape Allocation Manager,” on page 3, complete the installation and configuration of ATAM on SYSB.

ATAM is now managing devices 0280 - 0287 on SYSB.

Step 5: Add remaining devices to SYSA.

Issue the following console command on SYSA to instruct ATAM to manage the devices that were excluded during parallel testing with CA-MIA.

```
F ATH,S,0284-0287 (where ATH is the name of the ATAM started task)
```

Alternatively, you could recycle the ATAM started task on SYSA and it would process the PARMLIB member at start up. However, issuing this console command is sufficient. Refer to Appendix B, “ATAM Console Operator Commands,” on page 39 for more information on how to use the console commands.

Enabling CA-MIA and ATAM to co-exist

While ATAM was not originally designed to co-exist with CA-MIA on the same image, specific enhancements have been made to ATAM to enable it to work concurrently with CA-MIA. This enables you to have a longer time frame for testing ATAM and for becoming familiar with ATAM's many commands and unique features. Co-existence also allows you to have a progressive migration path from CA-MIA to ATAM by gradually removing drives from CA-MIA's control and assigning them to ATAM.

ATAM's unique ability to manage tape devices without requiring a shared communications link (i.e. shared DASD files) involves making use of the MVS allocation recovery exit, which requires that ATAM-managed devices be offline. This is contrary to CA-MIA's design, which requires that its managed devices be online. However, important to their ability to co-exist is the fact that both products offer the ability to exclude devices from their sphere of influence.

Excluding and selecting devices with ATAM is as simple as typing a Select (S) or Exclude (X) console command. In outside testing, it was determined that there were a few steps that needed to be taken to exclude tape devices from CA-MIA's control and assign them to ATAM. In general, these steps accomplish two objectives:

- Disable the CA-MIA allocation recovery exit.
- Modify the CA-MIA list of managed devices by issuing a series of CA-MIA commands and modifying the control file.

An example of how to perform these processes is described in this section.

IMPORTANT: The examples of CA-MIA commands used in this section are specific to one test site and are not generic CA-MIA commands. You must refer to the CA-MIA documentation regarding these commands before attempting to perform any of the steps.

Example environment

The following information describes the sample scenario around which these steps were developed:

- Devices D10 - D11 are assigned to CA-MIA and devices D12 - D13 to ATAM.
- The command symbol that begins each command is a "not" symbol (–) in this example, but can be any symbol your site has defined to use with CA-MIA commands.

Steps for excluding devices from CA-MIA and assigning them to ATAM

Table 1 contains notes, comments, and command examples provided by a site who performed co-existence testing. This information is included "as is" in an effort to assist you in your migration efforts. Please be sure to consult CA-MIA documentation for specific syntax.

Table 1. Examples of commands for modifying CA-MIA to give control to ATAM

Step	Description
1	<p>Define as OVG to CA-MIA the devices you want to assign to ATAM. Refer to the following example:</p> <pre>–VARY(D10-D13) OVG GLOBAL</pre> <p>Issue this command on one system only. This prevents any system from using the drives until you are done testing.</p>
2	<p>Modify the CA-MIA control file by excluding these same devices from the list (i.e., D10 - D13). It may be best to create a new control file (device list).</p>
3	<p>Force CA-MIA to read the new control file. Refer to the following example when you are ready to re-synchronize CA-MIA:</p> <pre>–RESYNCH DEVLIST=device_list_name</pre> <p>This tells CA-MIA to read the device list from this member. If you created a new control file, be sure to use the new device_list_name.</p>
4	<p>Define the excluded devices as NOTOVG to CA-MIA. An example of how this could be done is shown below:</p> <pre>–VARY(D10-D13) NOTOVG LOCAL</pre> <p>This command allows the drives to become usable again, allowing ATAM to vary the devices on and offline.</p>
5	<p>(Optional) If you do not know the name of the CA-MIA allocation recovery exit, type the following command to display it:</p> <pre>D PROG,EXIT,EN=IEF_ALLC_OFFLN</pre> <p>A message will display the name of the allocation recovery exit belonging to CA-MIA. In the example below, the name of the active (A) CA-MIA exit is MIAALOCX:</p> <pre>CSV461I 11.10.55 PROG,EXIT DISPLAY 101 IEF_ALLC_OFFLN MIAALOCX A</pre>
6	<p>Disable the CA-MIA allocation recovery exit. The command must be issued on all MVS images running ATAM and would look similar to this:</p> <pre>SETPROGEXIT,MODIFY,EXITNAME=IEF_ALLC_OFFLN,MODNAME=MIAALOCX,STATE=INACTIVE</pre> <p>Note: ATAM now offers an EXITCOMPAT command which was designed specifically to allow ATAM to co-exist with CA-MIA. This command enables you to override CA-MIA's exit and activate ATAM's exit processing. Refer to "EXITCOMPAT" on page 47 for more information on the EXITCOMPAT command.</p>
7	<p>Start ATAM, then assign devices to ATAM. To start ATAM, type the following at a command line:</p> <pre>S ATAM</pre> <p>To assign all of the devices to ATAM, you would type the following Modify (F) command, assuming "ATAM" is the name of the started task for ATAM:</p> <pre>F ATAM,S,D10-D13</pre>

After completing the steps above, ATAM will be able to manage all of the devices, D10-D13, leaving CA-MIA to manage other devices, such as D14-D1F.

This completes the information about enabling CA-MIA and ATAM to co-exist until you are ready to migrate all devices to ATAM.

Appendix B. ATAM Console Operator Commands

Automated Tape Allocation Manager (ATAM) offers several different console operator commands that can be used to display the status of ATAM and to dynamically alter the ATAM configuration. All commands are intended to be modifiers of the MVS modify (F) command, and use the following format:

F *ATHPROC*,command

The table below describes this format:

Table 2. Format of operator commands

Item	Description
F	This is the letter used for the MVS "modify" command.
ATHPROC	This refers to the job name of the ATAM started task, which in this example is <i>ATHPROC</i> .
command	This refers to an ATAM operator command. All of the operator commands are described in this appendix. Most of the commands consist of a single letter, followed by command modifiers, if required.

For example, if an operator wanted to list (L) the status of tape devices known to ATAM, the operator would type the following command:

F *ATHPROC*,L

All of the examples in this appendix assume the commands are being run on the local system, such as SYSA.

Please note that any dynamic changes made to the ATAM configuration with console operator commands are not saved between the stop and start cycle of the ATAM started task. If you wish to issue a series of commands for each ATAM started task cycle, you must save the commands in a PARMLIB member. Commands contained in the ATAM PARMLIB member are executed each time ATAM is started. For more information on how to use an ATAM PARMLIB member, refer to Appendix C, "Using the PARMLIB Member," on page 49.

The L command

The L command lists the status of all of the tape units known to ATAM.

Note: This command is run automatically each time ATAM is started, and displays the list of available devices. If you currently use this command in your PARMLIB, you no longer need to do so unless you want to validate the results of any Select commands in the PARMLIB.

The following example shows how you use the List (L) command to list the status of all tape units on the local system.

F *ATHPROC*,L

When you type the "L" command, you will see results like that shown below.

```
ATH041I TAPE LIST: 0500 S 0501 S 0502 S 0503 S
ATH041I TAPE LIST: 0550 O 0551 O 0552 O 0553 O
ATH041I TAPE LIST: 0560 S 0561 O 0568 x 0569 x
ATH041I TAPE LIST: 056A x 056B x 056c x 056D x
ATH041I TAPE LIST: 056E x 056F x 0570 x 0571 x
ATH041I TAPE LIST: 0572 x 0573 x 0574 x 0575 x
ATH041I TAPE LIST: 0576 x 0577 x 0578 x 0579 x
ATH041I TAPE LIST: 057A x 057B x 057C x 057D x
ATH041I TAPE LIST: 057E x 057F x 0590 A
```

In the ATH041I messages in the example, the single character to the right of the device address, such as the S in 0500 S, indicates the current status of the device. Refer to the chart below:

Table 3. Definitions of letters used for device status

Letter	Description
A	The device is currently allocated to a job step.
O	The drive is currently online, but not allocated, to the specified system.
P	The device is in a "pending offline" state, also referred to as "vary offline."
S	The device is selectable and is being managed by ATAM.
X	The device is excluded. It is not being managed by ATAM.

The R Command

Use the R operator command to instruct ATAM to automatically reply to the specified write-to-operator-reply (WTOR) message. See also "The W Command" on page 44

Table 4. Syntax and parameters for R command

Item	Description
Syntax	R[=msgid,reply,offset]
Parameters	<p>msgid</p> <p>This parameter is the message identifier that ATAM is to watch for while in operation.</p> <p>reply</p> <p>This parameter is the response that ATAM is to use as the reply to the WTOR message.</p> <p>offset</p> <p>This parameter is the specific <i>offset</i> (location), starting at position 1, that is used to qualify the match. In order for ATAM to respond to this WTOR, the <i>reply</i> parameter must match the text found in the message at the specified <i>offset</i>. For the "R=" command, the location does not have to be exact. ATAM will scan up to seven (7) bytes forward to try and match the text. The offset to the matching string in the message is required so that ATAM will not issue invalid responses. An example is provided in the next section.</p>

Look at the command shown below.

```
F ATHPROC,R=XYZ123A,U,48
```

When message XYZ123A is discovered as an outstanding WTOR, then respond with "U" if "U" is found in position 48 of the message text. In other words, the operator is using this command to tell ATAM how to respond when it comes across message XYZ123A. ATAM is to respond with "U" as long as there is a "U" in the 48th position of the message text.

When you type this example command above, the following messages inform you that ATAM will do as you asked:

```
ATH057I WTOR QUEUE SCANNING IS ACTIVE  
ATH051I ACTIVE WTOR MSGID XYZ123A HAS REPLY U AND OFFSET 48
```

Now look at the sample XYZ123A message below:

```
-----1-----+-----2-----+-----3-----+-----4-----+-----  
14 XYZ123A LET ME KNOW WHAT YOU WANT TO DO: REPLY U OR M
```

Referring to the sample message above, ATAM automatically replies to open reply number 14 with "U", because "U" is found at position 48 within the message text for message XYZ123A.

The S command

The *S* command lists the current status of all of the tape units that ATAM is managing, which are the tape units that are marked as "selectable" to ATAM. With the *S* command, you can set or display the tape device addresses being managed by ATAM.

When ATAM is started, it automatically discovers all of the tape devices on the system and builds a table in memory of the addresses it has discovered. ATAM will, by default, *exclude* all of the devices in the table. This is done before any commands in the ATAM parameter data set (PARMLIB) are processed. Use the select (*S*) command in the PARMLIB to explicitly define one or more tape devices that you want ATAM to manage whenever ATAM is started.

When using the *S* command alone, meaning without any additional parameters, ATAM displays the list of device addresses that it is currently managing. If you use the *S* command in combination with parameters, you can select a specific device address, a range of tape devices, or all tape devices for ATAM to manage. These parameters are described in the next table.

Table 5. Syntax and parameters for S command

Item	Description
Syntax	S{,xxx[-yyyy] ALL}
Parameter for selecting one device	S,xxx This parameter specifies that tape device address xxx is to be managed by ATAM.

Table 5. Syntax and parameters for S command

Item	Description
Parameter for selecting a range of tape devices	<p>S,xxxx-yyyy</p> <p>This parameter indicates that ATAM is to manage tape device addresses in the range <i>xxxx</i> through <i>yyyy</i>, inclusive.</p> <p>When you specify a range of tape units, such as S,0130-013F, ATAM looks at the low and high device addresses to ensure that these devices have already been discovered by ATAM. If not, then the entire command is ignored.</p> <p>Note: Device addresses 0000 and FFFF are special values that will always be accepted. If you are unsure of the actual values on your system, specify a range that begins with 0000 or ends with FFFF. You could also use the "S,ALL" command to select all of the tape devices on your system.</p>
Parameter for selecting all tape devices	<p>ALL</p> <p>Select all of the tape devices available to ATAM at start up by using the ALL parameter.</p>

Example #1

The following example shows how you use the Selectable (S) command to list the status of all selectable tape units.

```
F ATHPROC,S
```

When you type the "S" command above, you will see a list of tape devices, as shown in the example below.

```
ATH041I TAPE LIST: 0500 S 0501 S 0502 S 0503 S
ATH041I TAPE LIST: 0550 S 0551 S 0552 S 0553 S
ATH041I TAPE LIST: 0560 S 0561 O 0590 A
```

Example #2

This example shows how to specify that ATAM is to manage device address "28D":

```
F ATHPROC,S,28D
```

Example #3

This example instructs the ATAM started task to begin managing device addresses "280" through "283":

```
F ATHPROC,S,280-283
```

Example #4

This example instructs ATAM to manage all of the tape devices that were discovered when ATAM started:

```
F ATHPROC,S,ALL
```

Example #5

This example shows how to combine the "S" and "X" commands. First the "S" command instructs ATAM to select all of the tape devices on the system, then the "X" command tells ATAM to exclude one device address:

```
F ATHPROC,S,ALL          *SELECT ALL DEVICES ON THE SYSTEM
F ATHPROC,X,0500        *EXCLUDE ONE DEVICE (0500)
```

The T command

The *T* command allows you to display or modify ATAM configuration parameters. Most of these parameters are related to internal timing algorithms. Modifying configuration parameters should not be done without consulting ATAM Technical Support.

Note: Each time that ATAM is started, regardless of the presence or contents of the ATAM parameter data set (PARMLIB), ATAM displays the current setting of the configuration parameters for your review. If you currently specify these commands in your ATAM PARMLIB, you no longer need to do so unless you want to validate the results of any Select commands that are in the PARMLIB.

When the *T* command is used alone, meaning without any command parameters, it causes ATAM to display the current settings for all of the parameters. The configuration parameters are:

- T1 = Offline Unit Polling Interval
- T2 = Online Unit Polling Interval
- T3 = Online Unit Iteration Count
- T4 = Reconfiguration Termination Limit
- T5 = Vary Online Wait Time
- T6 = Vary Online Maximum Attempts
- T7 = Reserved for future use.
- T8 = Reserved for future use.

Refer to Appendix D, "Understanding Configuration Parameters," on page 53 for more details on configuration parameters and how to assign appropriate values to them.

Table 6. Syntax and parameters for T command

Item	Description
Syntax	T[z=nnn]
Parameters	z=nnn This parameter assigns a new value of <i>nnn</i> to the tuning parameter <i>z</i> , where <i>z</i> is a number.

Example #1

The following example shows how you how to display the current settings of ATAM tuning parameters:

```
F ATHPROC,T
```

When you type the command above, you may see results like that shown below.

```
ATH045I TIMES: T1=060, T2=060, T3=005, T4=015  
ATH045I TIMES: T5=030, T6=020, T7=000, T8=000
```

Example #2

This example shows how to dynamically assign a value of 30 seconds to the T1 tuning parameter, which is the Offline Unit Polling Interval.

```
F ATHPROC,T1=30
```

When you type the command above, the T1 value is changed to 30, as shown in the results below:

```
ATH045I TIMES: T1=030, T2=060, T3=005, T4=015  
ATH045I TIMES: T5=030, T6=020, T7=000, T8=000
```

The V command

The V command displays the current version number for ATAM. There are no parameters associated with this command.

The following example shows how you use the Version (V) command to display the current version number for ATAM.

```
F ATHPROC,V
```

When you type the command above, you will see results like this:

```
ATH001I ATAM - ACTIVE MODE - VERSION V1R01M00  
  
ATH045I TIMES: T1=030, T2=060, T3=005, T4=015  
ATH045I TIMES: T5=030, T6=020, T7=000, T8=000
```

The W Command

Use the W operator command to set or display an automated response to outstanding write-to-operator (WTOR) messages. ATAM can automatically respond to WTORS, but only one rule can be specified for a given message identifier.

When the W command is used alone, meaning without any parameters, ATAM displays the current list of WTORS that are being monitored for an automated response. See also "The R Command" on page 40.

Table 7. Syntax and parameters for W command

Item	Description
Syntax	W[=msgid,reply,offset]

Table 7. Syntax and parameters for W command

Item	Description
Parameters	<p>msgid</p> <p>This parameter is the unique message identifier that ATAM is to watch for while in operation.</p> <p>reply</p> <p>This parameter is the text that ATAM is to use when replying to the message.</p> <p>offset</p> <p>This parameter is the column position (number) within the message text where the beginning character of the device identifier is located. When determining the column position, the first position is column 1, not column 0.</p>

Example #1

Use the following command to display the list of WTORs currently being monitored by ATAM:

```
F ATHPROC,W
```

When you type this command, messages similar to the following are displayed:

```
ATH057I WTOR QUEUE SCANNING IS ACTIVE
ATH051I ACTIVE WTOR MSGID IEF433D HAS REPLY NOHOLD AND OFFSET 48
ATH051I ACTIVE WTOR MSGID IEF238D HAS REPLY WAIT AND OFFSET 20
```

Example #2

This example shows a command that is telling ATAM to automatically respond to message ABC123A with a value of "Y" when an ATAM-managed tape device identified by esoteric "TAPECART" is available for use. The command is shown below:

```
F ATHPROC,W=ABC123A,Y,26
```

Now look at the sample ABC123A message below:

```
-----1-----2-----+
15 ABC123A SOME JOB NEEDS A TAPECART - REPLY Y IF AVAILABLE
```

Referring to the sample message above, ATAM automatically replies to open reply number 15 with "Y", because "TAPECART" is found at position 26 within the message text for message ABC123A.

The X command

When ATAM is started, it automatically discovers all of the tape devices on the system and builds a table in memory of the addresses it has discovered. ATAM will, by default, *exclude* all of the devices in the table before any commands in the PARMLIB are processed. This is done to ensure that you have total control over which devices you want ATAM to manage.

You must use the Select (S) command (and parameters) in the PARMLIB to specify which device(s) you want ATAM to manage at start up. Use the exclude (X) command if you want to prohibit ATAM from managing a previously selected device.

Table 8. Syntax and parameters for X command

Item	Description
Syntax	X[,xxxx xxxx-yyyy ALL[,O]]
Parameter for excluding one device	X,xxxx This parameter identifies the single, specific device address that you do not want ATAM to manage.
Parameter for excluding a range of devices	X,xxxx-yyyy This parameter specifies a range of device addresses that you do not want ATAM to manage. When you specify a range of tape units, such as X,0130-013F, ATAM looks at the low and high device addresses to ensure that these devices have already been discovered by ATAM. If not, then the entire command is ignored. Note: Device addresses 0000 and FFFF are special values that will always be accepted. If you are unsure of the actual values on your system, specify a range that begins with 0000 or ends with FFFF.
Parameter to exclude all tape devices	X,ALL Exclude all of the tape devices available to ATAM at start up by using the ALL parameter.
Parameter for varying a device offline	O This optional parameter indicates that you want ATAM to issue a <i>vary offline</i> request for the specified device(s). Note: ATAM will not issue a <i>vary offline</i> request for a drive that has a volume mounted, or for a job that has specified RETAIN/KEEP for the device.

Example #1

The following example instructs ATAM not to manage device address 28D:

```
F ATHPROC,X,28D
```

Example #2

This example shows how to remove four devices from ATAM's control:

```
F ATHPROC,X,280-283
```

Example #3

This example specifies that ATAM is not to manage device 28E and requests that an attempt be made to place the drive offline:

```
F ATHPROC,X,28E,0
```

Example #4

This example instructs ATAM to exclude all of the devices that ATAM discovered at startup:

```
F ATHPROC,X,ALL *EXCLUDE ALL DEVICES ON THE SYSTEM
```

Note: By default, ATAM automatically excludes all of the tape devices that are discovered at startup. However, if you included an "S,ALL" command in the PARMLIB to select all of the devices, you could "re-exclude" them later by using the "X,ALL" command shown in this example.

Example #5

This example instructs ATAM to manage all of the tape devices on the system, then exclude one device address:

```
F ATHPROC,S,ALL *SELECT ALL DEVICES ON THE SYSTEM
F ATHPROC,X,0500 *EXCLUDE ONE DEVICE (0500)
```

Expected Results

For all of these examples, you will see the following messages upon command execution:

```
ATH106I COMMAND ACCEPTED
ATH107I COMMAND SUCCESSFUL
```

EXITCOMPAT

When using ATAM, you will want to know if ATAM is the only product requiring an exit routine or if there is another vendor's product competing for the same exit routine, causing unpredictable results. ATAM issues the following messages during product initiation if multiple exit routines are found on the MVS recovery allocation exit, IEF_ALLC_OFFLN.

```
ATH012W MULTIPLE EXIT ROUTINES DETECTED. RESULTS MAY BE UNPREDICTABLE
ATH012I IEF_ALLC_OFFLN EXIT DETECTED: <module name> STATE: <state>
ATH241W EXITCOMPAT=N AND OTHER IEF_ALLC_OFFLN EXIT(S) DETECTED. ATH#ALOC IS DISABLED.
```

These messages tell you that the default mode of operation is to disable ATAM's exit processing because ATAM found another installed exit. You can include the EXITCOMPAT=Y command in the ATAM PARMLIB to override this behavior and activate ATAM's exit processing.

When you use the EXITCOMPAT command alone, without any parameters, ATAM displays the status of the exit setting. The parameters allow you to change the exit setting, as described below.

Table 9. Syntax and parameters for EXITCOMPAT command

Item	Description
Syntax	EXITCOMPAT[=Y/N]

Table 9. Syntax and parameters for EXITCOMPAT command

Item	Description
Parameters	<p>Y</p> <p>This parameter turns on exit compatibility and displays the new setting.</p> <p>N</p> <p>This parameter turns off exit compatibility and displays the new setting.</p>

Example #1

The following example displays the current exit setting:

```
F ATHPROC,EXITCOMPAT
```

Example #2

This example shows how to turn on the exit compatibility, and displays the new setting:

```
F ATHPROC,EXITCOMPAT=Y
```

Example #3

This example shows how to turn off the exit compatibility, and displays the new setting:

```
F ATHPROC,EXITCOMPAT=N
```

Appendix C. Using the PARMLIB Member

The ATAM PARMLIB member allows you to further customize ATAM to fit your particular tape unit environment. By using specific commands in the ATAM PARMLIB member, you can create a script of valid commands that will be executed each time you start the ATAM started task. For a list of these commands and the command syntax, refer to Appendix B, "ATAM Console Operator Commands," on page 39.

In previous releases of ATAM, the philosophy in determining which devices to manage has been to find all of the TAPE class devices on the system and mark them as "selectable." Next, the PARMLIB would be processed, which is where you would place commands to exclude the devices you did not want ATAM to manage. However, this process posed problems when the PARMLIB was unavailable or empty. In addition, when a newly introduced tape device was detected by ATAM, the device was automatically marked as "selectable" before you had an opportunity to decide whether to allow ATAM to manage this device or exclude it.

In this release, the process is different. Now ATAM discovers all of the tape devices, then the devices are automatically **excluded** from ATAM's management. ATAM only selects the devices explicitly defined as "selectable" in the PARMLIB. You can select one device, multiple devices, or all devices. You can also combine the Select (S) and Exclude (X) commands to select a range of devices, but exclude a specific device in that range. For more details on the Select and Exclude commands, refer to Appendix B, "ATAM Console Operator Commands," on page 39.

Combining the Select (S) and Exclude (X) commands in a PARMLIB

As stated in the previous section, ATAM automatically excludes all of the tape devices it discovers at startup and then processes any commands in the PARMLIB. If you want ATAM to manage one, multiple, or all of the discovered tape devices each time ATAM is started, you must use a Select (S) command in the PARMLIB to tell ATAM which devices to manage.

However, you may decide that you want to combine the Select command with an Exclude command so that a range of tape devices, or all tape devices are automatically selected whenever ATAM is started, but one or more specific devices are excluded from ATAM's management.

For example, let us assume that you have told ATAM, through a Select (S) command in the PARMLIB, to manage tape device addresses 0280-02FF and 03B0-03BF:

```
S,0280-02FF
```

```
S,03B0-03BF
```

If you decide later that you do not want ATAM to manage devices 02F0-02FF, you would type the following statement in your PARMLIB member:

```
X,02F0-02FF      NOTE: WE ARE EXCLUDING DEVICE RANGE 02F0-02FF
```

Now ATAM will manage tape drives 0280-02FF and 03B0-03BF, with the exception of 02F0 through 02FF.

You can specify a single tape unit or a range of tape units. When you specify a range of tape units, such as X,0130-013F, ATAM looks at the low and high device addresses

to ensure that these devices have already been discovered by ATAM. If not, then the entire command is ignored.

Note: Device addresses 0000 and FFFF are special values that will always be accepted. If the actual values on your system are subject to change, specify a range that begins with 0000 or ends with FFFF.

Syntax rules

This section describes the syntax rules you must follow in the PARMLIB member. The rules are listed below:

- A command must start in the first column.
- Only one command per line is processed.
- Each command is terminated by the first blank encountered.
- Comments must be separated from the command by at least one blank.
- Any record with an asterisk (*) in the first column is treated as a comment.

Specifying a PARMLIB member name

Use the ATAM PARMLIB member, which is read by ATAM at start up, to specify which tape devices you want ATAM to manage. If tape device addresses are not excluded in the PARMLIB member, ATAM will automatically discover and manage all eligible tape devices that it can find on the system.

To specify the name of the ATAM PARMLIB member, follow these steps:

1. Choose option S, **Setup and Configuration** on the ATAM main menu.
2. Choose option 1 for **MVS Specific Information** on the ATAM Setup screen.
3. On the "Update Parameters for MVS System ssid" screen, type the PARMLIB member name in the **ATAM Parameter Member** field.

The ATAM PARMLIB member must exist in your system PARMLIB concatenation when the ATAM task is started. If a PARMLIB member does not exist in this concatenation, ATAM will issue a message, "ATH047E MEMBER xxxxxxxx NOT FOUND IN PARMLIB," and continue processing normally.

Frequently Asked Questions

This section contains questions and answers that may help you understand more about using PARMLIBs with the ATAM started task.

Q: Can I add a PARMLIB DDname to the ATAM started task JCL to indicate which library I want it to look in for the member?

A: No, ATAM uses Logical Parmlib Support to determine the system PARMLIB concatenation that was specified for your system during the IPL.

To identify your system PARMLIB concatenation, issue the following "display" (D) console command:

```
D PARMLIB
```

An example of the response to the D PARMLIB command is shown below:

```
IEE251I 11.38.04 PARMLIB DISPLAY 645
PARMLIB DATA SETS SPECIFIED AT IPL
ENTRY  FLAGS  VOLUME  DATA SET
   1     S    OS280T  SYS1.ADCD08.PARMLIB
   2     S    OS39M1  SYS1.PARMLIB
```

One of the PARMLIB data sets listed in the example above must contain the member that was specified in the "ATAM Parameter Member" field (option S.1 from the ATAM main menu). For example, if you typed ATAM001 in the "ATAM Parameter Member" field then member ATAM001 must exist in one of the libraries listed in the output from the D PARMLIB command.

Q: If I change the member name in the "ATAM Parameter Member" field (option S.1 from the ATAM main menu), do I have to recycle the ATAM started task?

A: Yes, ATAM only searches for and executes the PARMLIB member contents at product initialization.

Appendix D. Understanding Configuration Parameters

Internally, Automated Tape Allocation Manager (ATAM) consists of two key components, one that operates *proactively* and one that operates *reactively*. This appendix describes the configuration parameters that are used in each component, along with the effects caused by changing the parameter values. The product-provided defaults will work well in most shops.

You will find the configuration parameters listed on the ATAM Configuration screen. To display this screen, choose option **S**, Setup and Configuration, on the ATAM main menu, then choose option **2**, ATAM Configuration Parameters, on the ATAM Setup screen. An example of this screen is shown below:

```
ATHPNL2  VIR1 ----- ATAM Configuration ----- 2003/08/28 15:41:24.65
Option ==> _____

MVS ID: ABCD
-----
Operational Mode: 1 1) Active 2) Passive
-----
Offline Unit Polling Interval..... 30_ Seconds
Online Unit Polling Interval..... 5_  Seconds
Online Unit Iteration Count..... 5_  Iterations
Reconfiguration Termination Limit..... 15_ Dynamic Changes
Vary Online Wait Time..... 30_  Seconds
Vary Online Maximum Attempts..... 20_  Attempts

Surround WTOR Responses in Quotes..... Y    (Y or N)
Exclude all Tape Units if No Parmlib Member.... Y    (Y or N)
Use LRU Algorithm when Selecting Tape Units.... Y    (Y or N)

Press ENTER to save, END to exit.
```

By changing the parameters listed above, you can tailor the process of allocating tape drives. There are six "T" parameters on the screen, which are:

- T1 = Offline Unit Polling Interval
- T2 = Online Unit Polling Interval
- T3 = Online Unit Iteration Count
- T4 = Reconfiguration Termination Limit
- T5 = Vary Online Wait Time
- T6 = Vary Online Maximum Attempts

These parameters are discussed in more detail in this appendix, with the exception of parameter T4, Reconfiguration Termination Limit. The T4 parameter is not part of the "proactive/reactive" processing described in this appendix. The purpose of the T4 parameter is to specify the maximum number of dynamic IODF configurations that you want ATAM to automatically detect and resolve.

Proactive processing

The proactive component is responsible for checking the status of the tape devices being managed by ATAM, and ensuring that devices not currently in use are kept in an offline state. The following configuration parameters are used in the proactive component:

- T1 = Offline Unit Polling Interval
- T2 = Online Unit Polling Interval
- T3 = Online Unit Iteration Count

How this component works

Every T1 seconds, ATAM examines its in-memory list of managed devices and checks for changes to the unit control blocks (UCBs). If there are no changes, ATAM goes back to sleep. If UCB changes are detected, and the device is online, ATAM attempts to vary it offline. If the device does not go offline, then ATAM sleeps for T2 seconds and retries the "vary offline" request. This process is repeated until the device is successfully brought offline or until T3 attempts have been made, whichever occurs first.

Changing the value of T1

Although the processing requirements for checking UCBs is minimal, decreasing the value of T1 will cause this processing to occur more frequently. As a result, ATAM will perform more work and, therefore, use more CPU time to do it. Installations that perform a large number of tape mounts on multiple systems may want to decrease the value of T1 to ensure that unused drives are readily available on the system that needs them.

Increasing the value of T1 instructs ATAM to check UCBs less often. Increasing T1 will reduce the amount of work that ATAM has to do. Due to the fact that "vary offline" requests will happen less frequently, tape devices will be left online for a longer period of time after the previous job has de-allocated the drive. Installations that perform a small number of tape mounts, or who do not often run into allocation problems, may want to consider increasing the value of T1.

How T2 and T3 are used

The value specified for T2 determines how long ATAM sleeps between attempts to vary offline a device that is currently online and unused. The T2 parameter only comes into play if the vary offline request fails.

The T3 parameter is used to determine how many times ATAM will attempt to vary a device offline. T2 and T3, in effect, determine how "persistent" ATAM is about getting a device varied offline.

Reactive processing

The reactive component of ATAM is responsible for providing jobs with tape devices on an "as needed" basis. The following configuration parameters are used in the reactive component:

- T5 = Vary Online Wait Time
- T6 = Vary Online Maximum Attempts

How this component works

The reactive component of ATAM spends the majority of its time sitting idle in MVS allocation recovery. It acts as a "front-end" to allocation recovery, meaning before allocation-related WTOs appear (such as IEF238D). When a job requests a tape device, ATAM determines whether it currently has a device that can be used to satisfy the request. If a device is available, then the device is varied online and is allocated by the job. This component (reactive) then goes back to sleep.

How T5 and T6 are used

If no devices are immediately available to service the allocation request, then ATAM sleeps for T5 seconds and checks its list of devices again. This process is repeated until a device is available for the job or until T6 attempts have been made, whichever occurs first. If no device is available after T6 attempts, then there is simply not enough hardware available to service the number of requests at this point in time.

What happens next

If the reactive component of ATAM is unable to service a request, then standard allocation recovery processing takes place. IEF238D messages appear followed by IEF433D messages. ATAM automatically responds to IEF238D with "WAIT" and IEF433D with "NOHOLD". It also posts this message:

```
ATH085I ALLOCATION TYPE MESSAGE DETECTED, NO VARY OFFLINES WILL BE ATTEMPTED
```

ATAM then temporarily suspends "vary offline" processing until the situation has cleared.

Considerations for T5 and T6

The objective of ATAM is to make the most efficient use of existing tape devices while reducing human intervention. Installations that frequently have short-duration tape requests may want to consider increasing the values of T5 and T6. These parameters work together. Start with small increases to T5. Increasing the value of T5 will give you more time for existing tape jobs to complete, and will release the tape device for use by another job. T6 determines how many times to process a T5-based wait.

Installations that often find themselves in allocation may have reached the ceiling on their existing hardware investment. Infrequent, but lengthy, allocation conditions might be addressed by increasing the values of T5 and T6, or by considering adjustments to the batch workload mix at the time of these problems.

Displaying initial settings

ATAM automatically displays the current settings of the configuration parameters each time ATAM initiates, regardless of the presence or contents of the ATAM parameter data set (PARMLIB). An example of the messages that display is shown below:

```
ATH045I TIMES: T1=030, T2=005, T3=005, T4=015
```

```
ATH045I TIMES: T5=030, T6=020, T7=000, T8=000
```

```
ATH041I TAPE LIST: uuuu t uuuu t uuuu t uuuu t
```

These messages help identify ATAM's operating mode and managed tape environment even if you have an empty or missing PARMLIB. These messages are the result of ATAM internally issuing the T and L commands upon initiation. If you currently specify these commands in your PARMLIB, you no longer need to do so unless you want to validate the results of any Select commands in your PARMLIB.

Note: For more information on the T and L commands, refer to Appendix B, "ATAM Console Operator Commands," on page 39.

Appendix E. VTS load balancing exit

When using z/OS to share two or more DFSMS-managed Virtual Tape Servers (VTS), a problem occurs when identifying which VTS library in the concatenation is specified as the STORGRP. The IBM Allocation Recovery exit, IEF_ALLC_OFFLN, only sees the units of the last library used, not the units of the other VTS libraries. This, in turn, causes Automated Tape Allocation Manager (ATAM) to see only the units from the last library.

With ATAM's VTS load balancing feature, all of the VTS libraries are used, not just the last library. This is accomplished through ATAM's STORCLAS ACS exit that uses a unique storage class name for each VTS library. This exit works in conjunction with your DFSMS STORCLAS and STORGRP ACS routines so that only one library name will be passed to MVS Allocation for a unit assignment. This library assignment will be based on the criteria for VTS load balancing in ATAM's STORCLAS ACS exit routine.

Modifying storage class and group names

To implement VTS load balancing, you need to make changes to the DFSMS STORCLAS and STORGRP ACS routines, then update the ATAM STORCLAS exit with the new storage classes. Follow the steps below:

1. Using DFSMS, define and activate storage class names. You need to define:
 - a. A "generic" storage class name that can be used for any VTS library, such as SCVTS.
 - b. Specific storage class names for each VTS library, such as SCVTS1 for library 1, SCVTS2 for library 2, etc.
2. Update the DFSMS **STORCLAS** ACS routine with these new storage class names. Assign each name using the &STORCLAS variable, such as:

```
&STORCLAS = 'SCVTS' (any VTS library)
```

```
&STORCLAS = 'SCVTS1' (VTS library 1)
```

```
&STORCLAS = 'SCVTS2' (VTS library 2)
```

3. Update the DFSMS **STORGRP** ACS routine so it can test for the ATAM-redirected assignment of the &STORCLAS variable. Perform the following steps to modify the DFSMS STORGRP ACS routine:
 - a. Update the &STORCLAS variable with the new storage class names, such as &STORCLAS = 'SCVTS'.
 - b. Update the &STORGRP variable with the storage group that represents the VTS library you want to associate with each storage class. For example, if storage group SGLIB2 (VTS library 2) should be associated with storage class SCVTS2, then the variables would look like this:

```
&STORCLAS='SCVTS2'
```

```
&STORGRP='SGLIB2' /*Storage group representing library 2
```

The screen below provides an example of how the STORGRP ACS routine may look when you have updated it with new storage classes and group assignments for three VTS libraries.

```

WHEN (&STORCLAS='SCVTS1') /*ATAM redirected to Library 1*/
DO
  SET &STORGRP='SGLIB1'
EXIT
END

WHEN (&STORCLAS='SCVTS2') /*ATAM redirected to Library 2*/
DO
  SET &STORGRP='SGLIB2'
EXIT
END

WHEN (&STORCLAS='SCVTS3') /*ATAM redirected to Library 3*/
DO
  SET &STORGRP='SGLIB3'
EXIT
END

WHEN (&STORCLAS='SCVTS') /*ATAM not active, use any VTS*/
DO
  SET &STORGRP='SGLIB1','SGLIB2','SGLIB3'
EXIT
END

```

- Next, update the ATAM member, ATH#VTSO, in the highlevel.SAMPLIB library to include the new storage classes. This is the ATAM STORCLAS exit that will perform the VTS load balancing.

Note: An example of the high-level qualifier for ATAM is ATH.PR0110, but the HLQ is based on how the ATAM product libraries were named at your site.

The instructions for modifying the JCL in ATH#VTSO are listed in the member. A part of the code described in this member is shown below for your reference:

```

*-----*
* CHANGE THE VALUE "SCVTS" TO MATCH YOUR INSTALLATION'S STORCLAS* 00850001
* NAME FOR THE STORCLAS THAT TELLS SMS TO SELECT ANY VTS. * 00860001
*-----* 00870001
*-----* 00880001
VTSB_CLAS DC AL2(VTSB_CLAS_NAME#) 00890001
VTSB_CLAS_NAME DC C'SCVTS' DO NOT EXCEED 8 CHARACTERS 00900001
VTSB_CLAS_NAME# EQU *-VTSB_CLAS_NAME 00910001
DS (8-VTSB_CLAS_NAME#)C 00920001
*-----* 00930001
* VTS STORCLAS LIBRARY DEFINITION SECTION. * 00940001
* ADD YOUR STORCLAS DEFINITIONS TO MATCH THE STORCLAS THAT MATCH* 00950001
* EACH LIBRARY. * 00960001
* * 00970001
*-----* 00980001
*-----* 00990001
VTSB_SC# EQU 3 <= CHANGE TO MATCH TOTAL NUMBER IN TABLE 01000001
VTSB_LIBRARIES DS OF START ON FULL WORD BDY 01010001
VTSB_SC1 DC AL2(VTSB_SC1#) 01020001
VTSB_SC1_NAME DC C'SCVTS1' STORCLAS FOR VTS 1 01030001
VTSB_SC1# EQU *-VTSB_SC1_NAME 01040001
DS (8-VTSB_SC1#)C 01050001
01060001
VTSB_SC2 DC AL2(VTSB_SC2#) 01070001
VTSB_SC2_NAME DC C'SCVTS2' STORCLAS FOR VTS 2 01080001
VTSB_SC2# EQU *-VTSB_SC2_NAME 01090001
DS (8-VTSB_SC2#)C 01100001
01110001
VTSB_SC3 DC AL2(VTSB_SC3#) 01120001
VTSB_SC3_NAME DC C'SCVTS3' STORCLAS FOR VTS 3 01130001
VTSB_SC3# EQU *-VTSB_SC3_NAME 01140001
DS (8-VTSB_SC3#)C 01150001
01160001

```

The lines in italics in the example show where the storage class name is added to the JCL in ATH#VTSO.

5. When you are done adding the new storage classes to the ATH#VTSO member of `highlevel.SAMPLIB`, assemble and link this JCL, following the instructions in the member.
6. Stop and restart the ATAM started task to recycle the product.

ATAM is now ready to perform VTS load balancing. In actual use, the ATAM exit is run before the DFSMS STORGRP ACS routine to ensure the new storage classes are passed to the STORGRP ACS routine. This allows the STORGRP ACS routine to assign the appropriate library to ensure that all VTS libraries are used.

Disabling VTS load balancing

If you decide you do not want to use VTS load balancing, you can disable ATAM's STORCLAS exit by doing the following:

1. Delete member ATH#VTSO from the `highlevel.LOADLIB` library, which is in the ATAM started task STEPLIB.
Note: The high level qualifier (HLQ) may be ATH.PR0110 or another HLQ assigned by your system administrator when ATAM was installed.
2. Stop and restart the ATAM started task to recycle the product.

These instructions are also listed in the ATH#VTSO member for your reference.

Appendix F. Volser-to-Unit Preferencing Exit

ATAM allows you to restrict the selection of available tape units by specific criteria. Now you can restrict one or more series of VOLSER ID's to a specific set of tape units. For example, if tape VOLSERS 005000 through 009999 are physically located at a remote data center, you can tell ATAM to direct mount requests to the tape device addresses at that data center. This is one example of *volser-to-unit preferencing*.

Modify ATH#VALD

To use volser-to-unit preferencing, you must modify a model ATAM exit, ATH#VALD, in the *highlevel*.SAMPLIB library, where *highlevel* is the highlevel qualifier assigned to the ATAM product libraries by your system administrator. The ATH#VALD member contains instructions on how to modify the member to specify criteria for volser-to-unit preferencing.

Assemble and link ATH#VALD

When you have modified the ATH#VALD member, you must assemble and link edit the module into your *highlevel*.LOADLIB library, where *highlevel* is the highlevel qualifier assigned to the ATAM product libraries by your system administrator.

Another member, \$ASMVALD, in the *highlevel*.SAMPLIB library, contains the JCL to perform the assemble and link edit processes. Refer to \$ASMVALD for instructions on assembling and linking the ATH#VALD member so volser-to-unit preferencing is used whenever ATAM is run.

Note: An ATH#VALD module must be present in the ATAM LOADLIB for volser-to-unit preferencing to work. If you do not want to use this feature, you do not need to put ATH#VALD in the ATAM load library.

Enabling ATH#VALD for use

When you first implement ATH#VALD exit, or whenever you change the exit you already have in place, you must perform the following steps:

1. Stop the ATAM started task.
2. Assemble and link edit your customized ATH#VALD load module into the ATAM load library.
3. Start the ATAM started task.

Disabling ATH#VALD

If you decide not to use volser-to-unit preferencing, you can disable this feature by doing the following:

1. Stop the ATAM started task.
2. Delete the ATH#VALD load module from the ATAM load library.
3. Restart the ATAM started task.

Appendix G. Notes on using ATAM with other products

This appendix provides tips on how to use ATAM with other products. These tips were developed when using or testing ATAM at sites that also use IBM Tivoli Storage Manager (TSM) or IBM Hierarchical Storage Management (HSM). This information is provided in an effort to be proactive in helping you address common issues, saving you time as well.

Refer to the appropriate section below.

Using ATAM with TSM

ATAM manages tape devices by maintaining them offline. TSM allocates tape devices using dynamic allocation in a way that precludes offline devices from consideration. When TSM's initial allocation attempt fails, TSM issues message ANR5373I and waits for a response.

When ATAM is the reason tape resources are offline, the appropriate response to the ANR5373I message is *W* for "wait." This response causes TSM to retry its dynamic allocation in a manner that will consider offline devices, giving ATAM the opportunity to resolve the allocation.

Using ATAM with HSM

When HSM attempts to allocate a tape resource that results in either ATAM issuing the ATH101D message or the MVS allocation recovery exit issuing the IEF238D message, the proper response for the ATH101D message is *C* for Cancel. In this case, HSM will issue its own message, ARC0381A, giving you the option to instruct HSM to wait and try again or actually terminate the request.

Appendix H. Error Messages from the ATAM Started Task

All messages generated by the Automated Tape Allocation Manager (ATAM) started task are listed in this appendix. A description of each message and suggestions on how you can resolve the problem are provided, where possible.

All messages have a severity code printed as the last character of the message ID. The severity codes are described in the following table:

Severity Code	Description
I	Information only. No user action required.
W	Warning message. Results may not be as expected.
E	Error message. Some may be user-correctable. Read the User Response to determine the course of action.
D	Operator intervention required.

ATH001I **ATAM - ACTIVE MODE - VERSION X.X.XX**

Explanation: This message lists the version of ATAM that you are using. It also indicates that ATAM has been started in the active processing mode.

User Response: None required.

ATH002I **ATAM - PASSIVE MODE - VERSION X.X.XX**

Explanation: This message lists the version of ATAM that you are using. It also indicates that ATAM has been started in the passive processing mode.

User Response: None required.

ATH003W **ATAM DETECTED ANOTHER ACTIVE ATAM ADDRESS-SPACE, TERMINATING THIS TASK**

Explanation: The ATAM started task found another active ATAM started task. The started task will terminate after this message is displayed.

User Response: Either use the existing ATAM started task or stop the existing started task and restart ATAM.

ATH004I **ATAM MUST BE EXECUTED AS A STARTED TASK**

Explanation: The only way to run ATAM is by using a started task.

User Response: Verify the name of the started task for ATAM (ATH was used in the sample JCL for the started task) and try executing the started task, such as S ATH.

ATH005I **ATAM INITIALIZATION COMPLETE**

Explanation: This message informs you that the initialization process for ATAM is done.

User Response: None required.

ATH006I **CONFIGURATION CHANGE DETECTED**

Explanation: This message is displayed if a dynamic I/O configuration change is detected by ATAM.

User Response: None required.

ATH007I **ATAM RE-INITIALIZATION COMPLETE**

Explanation: The re-initialization process is done.

User Response: None required.

ATH008I **NO TAPE UNITS DETECTED, ATAM TERMINATING**

Explanation: No selectable tape units were discovered on the MVS image. ATAM will terminate after this message is displayed.

User Response: None required.

**ATH009I ATAM TERMINATION
REQUESTED**

Explanation: A normal shutdown of the ATAM started task has begun.

User Response: None required.

**ATH010I ATAM TABLE BUILD LIMIT
EXCEEDED, ATAM TERMINATING**

Explanation: The number of dynamic I/O configuration changes has exceeded the threshold established for ATAM. The ATAM started task will terminate after this message is displayed.

User Response: Please verify that the value for the Reconfiguration Termination Limit in the ATAM configuration is correct, and then restart the ATAM started task.

**ATH011I ATAM WAITING 15 SECONDS
BEFORE TERMINATING**

Explanation: This is for your information.

User Response: None required.

**ATH012I IEF_ALLC_OFFLN EXIT DETECTED:
module STATE: state**

Explanation: This message is issued whenever message ATH012W is issued. Its purpose is to display the other modules that are installed as the z/OS IEF_ALLC_OFFLN installation exit. The module listed in the message is the module name that was detected and the "state" will either be ACTIVE or INACTIVE.

User Response: See message ATH012W, which explains the actions you can take.

**ATH012W MULTIPLE EXIT ROUTINES
DETECTED, RESULTS MAY BE
UNPREDICTABLE**

Explanation: ATAM installs a module as a z/OS installation exit, IEF_ALLC_OFFLN, which is the Allocated or Offline Device Installation exit. The ATH012W message displays when there is at least one other non-ATAM module, either a vendor product or locally written, installed as well. Message ATH012I will be issued to display the name of the other module(s). Additionally, the z/OS operator command shown below will display the exit installed as the Allocated or Offline Device Installation exit:

```
D PROG,EXIT,EN=IEF_ALLC_OFFLN,DIAG
```

User Response: See the ATH012I command or D PROG command results to determine if there are other modules installed as IEF_ALLC_OFFLN. If another module is varying tape drives online, then ATAM's behavior may be unpredictable. If another module manages tape drives,

then place the drives it manages in ATAM's "exclude" list. Refer to "Combining the Select (S) and Exclude (X) commands in a PARMLIB" on page 49 for instructions.

**ATH013E EXIT ATAM VERSION
INCOMPATIBILITY ERROR, ATAM
TERMINATING WITH A
DIAGNOSTIC DUMP**

Explanation: A mixture of ATAM releases and/or maintenance was detected while the ATAM started task was attempting to start. A diagnostic dump will be generated, and the started task will terminate.

User Response: Please verify that all installation or maintenance procedures completed successfully.

ATH014I xx,xxx TAPES DETECTED

Explanation: The xx,xxx refers to the number of tapes discovered on the MVS image.

User Response: None required.

**ATH020E ERROR PROCESSING WTOR
MESSAGE xxxxxxxxxxxx**

Explanation: The xxxxxxxxxxxx refers to the ID of the message that could not be processed.

User Response: Verify that the W operator command or PARMLIB command was specified correctly.

**ATH021E INVALID WTOR MESSAGE FLAG
COMBINATION DETECTED**

Explanation: An unexpected error occurred while trying to process a WTOR message.

User Response: ATAM will attempt to recover from this error. If this message is received repeatedly, please contact IBM Customer Support for additional diagnostic information.

**ATH022E BAD RETURN CODE FROM
EDTINFO, WTOR PROCESSING
SUSPENDED**

Explanation: An error occurred while attempting to access the table of eligible devices.

User Response: ATAM will attempt to recover from this error. If this message is received repeatedly, please contact IBM Customer Support for additional diagnostic information.

**ATH023E ATAM LOGIC ERROR, DYNAMIC
IODF UPDATE SUSPECTED**

Explanation: ATAM was unable to locate a device. The most likely cause is a dynamic change to the I/O configuration.

User Response: ATAM will attempt to recover from this error. If the message continues to display, please recycle the ATAM started task. If this fails to cure the problem, please contact IBM Customer Support for additional diagnostic information.

ATH024E **ATAM RETURNED NON-TAPE
DEVICE OR AN INTERNAL LOGIC
ERROR HAS OCCURRED**

Explanation: The requested device was not a tape unit.

User Response: Please recycle the ATAM started task. If this fails to cure the problem, please contact IBM Customer Support for additional diagnostic information.

ATH025E **ATAM UNABLE TO LOAD
MODULE *module_name*, ATAM
TERMINATING**

Explanation: An unexpected error occurred while trying to load the specified ATAM module into CSA. The storage required by this module is minimal so failure to load may suggest a general CSA/ECSA storage utilization problem. ATAM terminates.

User Response: Resolve any CSA/ECSA storage problems and attempt to restart ATAM. If this message is received repeatedly, please contact IBM Customer Support for additional diagnostic information.

ATH026E **ATAM UNABLE TO FIND MODULE
module_name, ATAM TERMINATING**

Explanation: An unexpected error occurred while trying to locate the specified ATAM module in the STEPLIB concatenation. This suggests that the module is not in the STEPLIB concatenation or the ATAM STEPLIB concatenation is incorrect. ATAM terminates.

User Response: Verify that the ATAM procedure STEPLIB concatenation properly references the ATAM load library, then attempt to restart ATAM. If this message is received repeatedly, please contact IBM Customer Support for additional diagnostic information.

ATH027I **NON-ASSIGN-CAPABLE DEVICE
devtype DETECTED ON UNIT *uuuu***

Explanation: During initiation, ATAM detected a device that is not "assign capable." The device is on the unit named in the message and, if managed by ATAM, will require special handling to share between ATAM-defined MVS images.

User Response: To share this device among MVS images, the device must be defined to ATAM and ATAM must be started on all ATAM-defined MVS images.

ATH028I **NON-ASSIGN-CAPABLE DEVICE
devtype ON UNIT *uuuu* status**

Explanation: During initiation, ATAM detected a device with a device type that is not "assign capable." The device is on the unit specified in the message. The *status* is one of the following:

- HAS NO OPERATIONAL PATHS
- IS NOT CONNECTED

In either case, the message indicates that the device is physically unavailable to the MVS image. Bid requests issued by this image for this device will fail, while bid requests received by this image communicate success back to the requestor.

User Response: If the device is legitimately unavailable, no response is needed. Otherwise, make the device available and restart the ATAM address space.

ATH029I **DEVICE *devtype* ON UNIT *uuuu*
UNSELECTABLE**

Explanation: ATAM was unable to change the status of the managed device on the unit named in the message because the device is unavailable on this image. The MVS image does not have a physical connection to the device. If this is the case at ATAM initiation, message ATH028I will appear in the ATAM JESMSGLG.

User Response: Re-connect the device if possible. Do not try to make this device selectable.

ATH031W **NO BASE CONFIGURATION
FOUND, USING DEFAULTS**

Explanation: You have not entered parameters for this MVS image, so ATAM is using default values for the parameters.

User Response: Select option S, Setup and Configuration, on the ATAM Main Menu to enter parameters for each MVS image on which you want to run ATAM.

ATH032I **BASE CONFIGURATION LOADED**

Explanation: ATAM is using the parameters you entered through the Setup and Configuration option.

User Response: None required.

ATH033I **PASSIVE MODE SELECTED**

Explanation: You selected passive mode, which tells ATAM to continually check for drives that are not being used and return them to "free" status (selectable and unallocated). In passive mode, ATAM will not attempt to vary a tape unit online.

User Response: None required.

ATH034I ACTIVE MODE SELECTED

Explanation: You selected active mode, which tells ATAM to automatically vary tape drives online in response to demands for tape drive units.

User Response: None required.

ATH035I VTS BALANCE MODE ENABLED

Explanation: This message tells you that VTS (virtual tape server) load balancing feature has been enabled. Refer to Appendix E, "VTS load balancing exit," on page 57 for details.

User Response: None required.

ATH036I VTS BALANCE MODE STOPPED

Explanation: This message tells you that the VTS (virtual tape server) load balancing feature has been stopped. Refer to Appendix E, "VTS load balancing exit," on page 57 for more information on this feature.

User Response: None required.

ATH037I VTS BALANCE SUPPORT INSTALL ERROR

Explanation: This message tells you that an error occurred while attempting to use the VTS (virtual tape server) load balancing feature. Refer to Appendix E, "VTS load balancing exit," on page 57 for information on this feature.

User Response: Contact IBM Technical Support for assistance.

ATH040W UNKNOWN COMMAND: xxxxxx

Explanation: You entered a command that ATAM does not recognize.

User Response: Check the syntax and spelling of this command or type a different command.

ATH041I *system name* TAPE LIST: uuuu t uuuu t uuuu t uuuu t

Explanation: This message displays a list of tapes where uuuu refers to the tape unit ID and t is one of the following values:

- ? =unknown
- A = Allocated
- O = Online
- P = Pending offline
- S = Selectable
- U = Unavailable. Device is physically disconnected from the MVS image.

- X = Excluded

User Response: None required.

ATH042W UNIT xxxx UNKNOWN.

Explanation: The xxxx refers to the invalid tape unit ID. The specified unit is not known to ATAM.

User Response: Use a valid tape unit ID.

ATH043W INVALID RANGE SPECIFIED, ADDRESSES DECREASING.

Explanation: One or both of the values you specified for the range are not valid.

User Response: Change one or both of the values you typed for the range.

ATH044I NO TAPE UNITS DEFINED AS SELECTABLE

Explanation: None of the tape units defined for this MVS image are available for use.

User Response: Contact your systems programmer to define one or tape units as selectable by this MVS image.

ATH045I TIMES: T1=mmm T2=nnn, T3=ooo, T4=ppp.

Explanation: This message tells you the values that are currently set for your tuning parameters. T1 refers to the first tuning parameter, T2 the second parameter, and so on. All of the values are numeric.

- T1=mmm. The Office Unit Polling Interval is set for mmm seconds.
- T2 = nnn. The Online Unit Polling Interval is set to nnn seconds.
- T3 = ooo. The Offline Unit Iteration Count is set to ooo iterations.
- T4 = ppp. The Reconfiguration Termination Limit is set to ppp dynamic changes.

User Response: None required. For more information on the tuning parameters, refer to "ATAM configuration parameters" on page 11.

ATH045I TIMES: T5=mmm T6=nnn, T7=ooo, T8=ppp.

Explanation: This message tells you the values that are currently set for your tuning parameters. T5 refers to the fifth tuning parameter, T6 the sixth parameter, and so on. All of the values are numeric.

- T5 = mmm. The Vary Online Wait Time is set for mmm seconds.
- T6 = nnn. The Vary Online Maximum Attempts is set to nnn attempts.

- T7 and T8 are currently not defined and are reserved for future use.

User Response: None required. For more information on the tuning parameters, refer to “ATAM configuration parameters” on page 11.

ATH046W INVALID SYNTAX: xxxxxx

Explanation: The command contained invalid syntax.

User Response: Re-enter the command using valid syntax.

ATH047W MEMBER xxxxxxxx NOT FOUND IN PARMLIB.

Explanation: The default parmlib member was not found in the current PARMLIB concatenation. ATPARMxx is the name of the default parmlib member for ATAM, where xx is the major version release number for this version of ATAM, such as 02.

User Response: None required.

**ATH048I PARMLIB MEMBER xxxxxxxx
COMMAND IS yyyyyy**

Explanation: The xxxxxxxx refers to the name of the PARMLIB member, and yyyyyy is the specific command.

User Response: None required.

**ATH049W CANNOT SPECIFY A M=XX
COMMAND FROM WITHIN A
PARMLIB MEMBER**

Explanation: You placed the M=xx command in the PARMLIB member for ATAM, but this command can only be used as a console command.

User Response: Remove the M=xx command from the PARMLIB member for ATAM.

**ATH050I DIAGNOSTIC MESSAGES ARE
SUPPRESSED**

Explanation: This is an informational message.

User Response: None required.

**ATH050I DIAGNOSTIC MESSAGES
GENERATED**

Explanation: This is an informational message.

User Response: None required.

**ATH051I WTOR MSGID xxxxxxxxxxxx HAS
REPLY yyyyyyyyyyyy AND OFFSET
nnn**

Explanation: The xxxxxxxxxxxx refers to the message ID, the yyyyyyyyyyyy indicates the type of reply for this message, and OFFSET nnn refers to the exact location from the start of the message, denoted by msgid, where ATAM can find the tape unit ID.

User Response: None required.

**ATH052W WTOR ENTRIES FOR
ALLOCATION TYPE MESSAGES
CANNOT BE UPDATED**

Explanation: You cannot modify the established response to the selected message.

User Response: Do not attempt to modify the established response for this message.

**ATH053I SCANNING OF WTOR QUEUE RE-
ACTIVATED**

Explanation: This is an informational message.

User Response: None required.

**ATH054W SCANNING OF WTOR QUEUE
ALREADY ACTIVE**

Explanation: You attempted to activate the WTOR queue, but it is already active, so the command to activate it (again) is ignored.

User Response: None required.

**ATH055I SCANNING OF WTOR QUEUE DE-
ACTIVATED**

Explanation: This is an informational message.

User Response: None required.

**ATH056W SCANNING OF WTOR QUEUE
ALREADY DE-ACTIVATED**

Explanation: You attempted to de-activate the WTOR queue, but it is already de-activated, so the command to de-activate it (again) is ignored.

User Response: None required.

**ATH057I WTOR QUEUE SCANNING IS/IS
NOT ACTIVE**

Explanation: This is an informational message.

User Response: None required.

ATH058W **WTOR MSGID xxxxxxxxxxxx NOT DEFINED**

Explanation: The specified WTOR message is not defined to ATAM.

User Response: None required.

ATH059I **UNIT xxxx SELECT=x, REASON=xxxx**

Explanation: The xxxx refers to the tape unit ID, the x after SELECT represents either Y or N, and the xxxx after REASON indicates why the unit was/was not selected.

User Response: No user action required.

ATH060I **TAPE LIST:**

Explanation: This is an informational message that lists the IDs of the tapes.

User Response: No user action required.

ATH061I **TAPE LIST FOR ATAM SYSTEM - ssss uuuu t vvvvvv aaaaaaa [hh:mm:ss]**

Explanation: This message lists the IDs of tape units that are currently allocated, or online and available, and are associated with the system listed in the message. The information provided for each tape unit includes:

- *sss* - system name
- *uuuu* - unit ID
- *t* - the state of the tape unit
- *vvvvvv* - volume
- *aaaaaaaa* - allocating address space
- *hh:mm:ss* - hours, minutes, seconds that passed waiting for a mount. The time values only appear when a value of "M" for mount is assigned to the "t" variable (t=M).

User Response: No user action required.

ATH062E **UNKNOWN ATAM SYSTEM - *system name***

Explanation: The ATAM system listed in the message is undefined.

User Response: You may have typed the name incorrectly. Verify the name of the ATAM system that you want to use and try again.

ATH063I **DEFAULT SYSID SET TO - *system name***

Explanation: This message indicates a successful F ATH,N=xxxx command. The default designation of all

global commands will be the system name listed in the message.

User Response: No action required.

ATH064I **TARGET SYSID FOR ATAM COMMANDS: *system name***

Explanation: This message displays the name of the target system ID, meaning the default ATAM system filter, when one is not specified.

User Response: No user action required.

ATH065I **sss uuuu vvvvvv aaaaaaa hh:mm:ss**

Explanation: This is the output of an F ATH,M command, where:

- *sss* - system name
- *uuuu* - unit ID
- *vvvvvv* - volume
- *aaaaaaaa* - allocating address space
- *hh:mm:ss* - hours, minutes, seconds that passed waiting for a mount

User Response: No user action required.

ATH066I ***system name* NO RESPONSE**

Explanation: The system listed in the message did not respond to a global command that you entered.

User Response: No user action required.

ATH068I **VARY OFFLINE FOR UNIT *unit name* SKIPPED**

Explanation: When the F ATH,X=uuuu,0 command was issued to vary offline the tape unit listed in the message (uuuu), the "vary offline" was skipped because the drive was already offline.

User Response: No user action required.

ATH080I **ATAM BLOCK DELETED**

Explanation: This is an informational message.

User Response: None required.

ATH081I **ATAM BLOCK CHAINED FROM SSCT**

Explanation: This is an informational message.

User Response: None required.

**ATH082I SELECTABLE FREE ONLINE TAPE
DETECTED**

Explanation: This is an informational message.

User Response: None required.

ATH083I VARY OFFLINE ATTEMPTED.

Explanation: This is an informational message.

User Response: None required.

**ATH084I VARY ONLINE OF PENDING
OFFLINE UNIT ATTEMPTED.**

Explanation: This is an informational message.

User Response: None required.

**ATH085I ALLOCATION TYPE MESSAGES
DETECTED, NO VARY OFFLINES
WILL BE ATTEMPTED.**

Explanation: One or more WTORs requesting allocation of a tape unit have been received, but the request could not be automatically responded to by ATAM. This message will continue to be displayed until a response is provided for all outstanding WTORs. During this time, ATAM will not attempt to vary offline any tape units currently online to the local MVS image. Once all of the WTORs have been cleared, ATAM will return to normal processing.

User Response: Free or add tape units and respond to the WTOR(s).

**ATH090I ESOTERIC xxxxxxxx DETECTED IN
WTOR yyyyyyyyyyyy FOR REPLY ID
nnnn**

Explanation: ATAM found the specified ESOTERIC unit name in the WTOR message it is processing. This message is informational only.

User Response: None required.

**ATH091I UNIT MADE AVAILABLE, AND
REPLY ISSUED TO WTOR**

Explanation: This is an informational message.

User Response: None required.

**ATH092I NO DEVICE AVAILABLE TO
SATISFY WTOR REQUEST**

Explanation: No tape units matching the required criteria could be located. Automatic allocation failed, and a WTOR is posted requesting operator intervention.

User Response: Respond to the WTOR that was issued.

**ATH093I STORAGE OBTAINED FOR
EDTINFO WORKAREA**

Explanation: This is an informational message.

User Response: None required.

**ATH094I STORAGE RELEASED FOR
EDTINFO WORKAREA**

Explanation: This is an informational message.

User Response: None required.

**ATH096W NO VALID ATAM RESPONSES TO
DISPLAY.**

Explanation: The current query had no matches on the ATAM system(s) specified.

User Response: None required.

**ATH101D JOB xxxxxxxx NEEDS A TAPE,
REPLY C TO CANCEL, M FOR
MANUAL ALLOCATION, W FOR
WAIT-NO HOLD OR I FOR
INFORMATION.**

Explanation: ATAM automatic allocation failed for the specified job. There may not be enough drives to meet the demand or that are usable by ATAM to meet the need.

User Response: Try adjusting the polling interval, especially if you have recently added extra images to your sysplex. The polling interval indicates how long you want ATAM to look for drives to take offline.

- Increasing the polling interval will make drives available longer on the specific system they are varied on to.
- Decreasing the polling interval will make the drives more sharable between the different images.

For more information on polling intervals, refer to "Step 8: Configure Automated Tape Allocation Manager" on page 11 and to Appendix D, "Understanding Configuration Parameters," on page 53.

Note: When HSM attempts to allocate a tape resource that results in either ATAM issuing the ATH101D message or the MVS allocation recovery exit issuing the IEF238D message, the proper response to the ATH101D message is C for Cancel. In this case, HSM will issue its own message, ARC0381A, giving you the option to instruct HSM to wait and try again or actually terminate the request.

**ATH102W NO SELECTABLE TAPE UNITS
AVAILABLE.**

Explanation: This is an informational message.

User Response: None required.

**ATH103W UNEXPECTED EXIT LOCATION,
ATAM INTERNAL ERROR**

Explanation: ATAM has detected storage that potentially has been disrupted.

User Response: Please contact IBM Customer Support for additional diagnostic assistance.

**ATH104W INVALID DIRECT SSCT ADDRESS,
ATAM INTERNAL ERROR**

Explanation: ATAM has detected storage that potentially has been corrupted.

User Response: Please contact IBM Customer Support for additional diagnostic assistance.

**ATH105E UNABLE TO GET STATUS TABLE
LOCK. ATAM INTERNAL ERROR**

Explanation: Either the system is extremely slow or hung, or an internal coding error has occurred.

User Response: A restart of the ATAM address space may be required if the problem persists. Contact IBM Customer Support if you need assistance.

ATH106I COMMAND ACCEPTED

Explanation: This message indicates that the Select (S) or Exclude (X) action command will be attempted on the ATAM system(s) specified.

User Response: None required.

ATH107I COMMAND SUCCESSFUL

Explanation: This message indicates that the Select (S) or Exclude (X) action command was successful on the system(s) specified.

User Response: None required.

**ATH108W COMMAND COMPLETED WITH
ERRORS**

Explanation: This message indicates that the Select (S) or Exclude (X) action command was completed, but one or more errors occurred.

User Response: Look at any additional error messages for more information.

ATH110I BID FOR DEVICE *uuuu* status

Explanation: This message describes the bid status for the named device. The *status* of a bid is one of the following:

- INITIATED. The bid process has been initiated.
- FAILED, NOT MANAGED. The bid failed because one of the ATAM-defined MVS images is not managing the device.
- FAILED, OUTBID. The bid failed because one of the ATAM-defined MVS images had a lower bid for the device.
- FAILED, IN USE. The bid failed because one of the ATAM-defined MVS images is currently using the device.
- SUCCESSFUL. The bid for this device was successful.

If the message returned is from one of the ATAM-defined MVS images, message ATH067W with the MVS image name precedes the ATH110I message. An example is shown below:

```
ATH067W RS22 ATH110I BID FOR DEVICE 056I FAILED, IN USE
```

User Response: None

**ATH123I ATAM WAIT FOR UNIT *uuuu*
FAILED**

Explanation: The job attempted to acquire the unit listed in the message via the bid process, but failed because one of the other ATAM-defined MVS images is using the device.

User Response: None

**ATH124I ATAM WAIT FOR UNIT *uuuu* HAS
EXPIRED**

Explanation: The job attempted to acquire the unit specified in the message via the bid process, but failed because the wait time expired before ATAM responded to the bid. The T7 parameter establishes the amount of time a bid waits for a response. The default is 30 seconds, which is the maximum recommended value.

User Response: None

**ATH125I ATAM JOB *jobname* WAITING FOR
devtype DEVICE ON UNIT *uuuu***

Explanation: The job listed in the message (*jobname*) is attempting to acquire a device of a specific device type (*devtype*) on the named unit (*uuuu*) and is now waiting for a response to the bid request. The allocation recovery exit interrupts the wait once the ATAM address space responds to the bid. If the time for the wait exceeds the number of seconds specified in the T7 parameter, the allocation recovery exit interrupts the wait and issues message ATH124I.

User Response: None

ATH126I ATAM WAIT FOR UNIT uuuu
 POSTED

Explanation: The job succeeded in acquiring the named unit via the bid process.

User Response: None

ATH140I JOB xxxxxxxx, STEP yyyyyyy,
 DDNAME zzzzzzzz REQUIRES AT
 LEAST 1 TAPE UNIT

Explanation: The xxxxxxxx refers to the job name, yyyyyyy refers to the specific step in the job, and zzzzzzzz refers to the specific DD line in the step that is requesting one or more tape units.

User Response: None required.

ATH141I ACCEPTABLE OFFLINE UNITS
 ARE:

Explanation: This message appears before a list of offline units.

User Response: None required.

ATH142I ACCEPTABLE NON-ACCESSIBLE
 UNITS ARE:

Explanation: This message appears before a list of non-accessible units.

User Response: None required.

ATH143I xabc y xbcd y xcde y xdef y

Explanation: This is the list of tape units that accompanies another error message. The tape unit IDs are represented by xabc, xbcd, xcde, xdef, and the letter y is one of the following values:

- ? = Not validated/unknown
- X = Excluded
- S = Selectable
- P = Pending offline
- O = Online
- A = Allocated

User Response: None required.

ATH190I ATAM - VERSION x.x.xx

Explanation: This message lists the version of ATAM that you are using.

User Response: None required.

ATH191I ATAM REQUESTING WAIT +
 NOHOLD

Explanation: This is an informational message.

User Response: None required.

ATH192I ATAM REQUESTING DEFAULT
 PROCESSING

Explanation: This is an informational message.

User Response: None required.

ATH193I ATAM REQUESTING CHECK OF
 ONLINE UNITS

Explanation: This is an informational message.

User Response: None required.

ATH241I EXITCOMPAT=NO AND NO
 OTHER EXITS DETECTED.
 IEF_ALLC_OFFLN EXIT ATH#ALOC
 IS ENABLED.

Explanation: This message is in response to the ATAM started task command, EXITCOMPAT=NO. When there are no other z/OS IEF_ALLC_OFFLN exits installed on the system, the ATAM exit, which is module ATH#ALOC, is enabled for processing.

User Response: This message is for your information only. No action required.

ATH241W EXITCOMPAT=NO AND OTHER
 EXITS DETECTED.
 IEF_ALLC_OFFLN EXIT ATH#ALOC
 IS DISABLED.

Explanation: This message is in response to the ATAM started task command, EXITCOMPAT=NO. One or more z/OS IEF_ALLC_OFFLN exits were installed on the system. Since EXITCOMPAT=NO, the ATAM exit, which is module ATH#ALOC, is disabled for processing. ATAM will not bring drives online. The ATAM started task remains active.

User Response: Evaluate the other exits that are installed and determine if they can coexist with ATAM. See the User Response section of message ATH012W for further action. Also refer to "EXITCOMPAT" on page 47 for more details on how to use this command.

ATH242I EXITCOMPAT=YES SPECIFIED OR
 DEFAULTED. IEF_ALLC_OFFLN
 EXIT ATH#ALOC IS ENABLED.

Explanation: Either the product default of EXITCOMPAT=YES is in effect or the command EXITCOMPAT=YES was issued. The z/OS IEF_ALLC_OFFLN exit installed by ATAM exit, which is module ATH#ALOC, is operational.

User Response: This message is for your information only. No action required. Refer to "EXITCOMPAT" on page 47 for more details on how to use this command.

Appendix I. Error Messages from ISPF

The error messages in this appendix are based on issues with ISPF or with entries made on ATAM's screens. For easier reading, "Automated Tape Allocation Manager" is referred to as "ATAM" in this appendix. All messages generated by ATAM have a severity code printed as the last character of the message ID. The severity codes are described in the following table:

Severity Code	Description
I	Information only. No user action required.
W	Warning message. Results may not be as expected.
E	Error message. Some may be user-correctable. Read the User Response to determine the course of action.

ATH001I Copyright Screen

Explanation: This screen lists the copyright information for this product.

User Response: No action required.

ATH002E Invalid Selection. Please enter a Valid Option or an X to Exit

Explanation: You have typed an invalid letter or number in the Option line.

User Response: Type a letter or number for an option listed on this screen, or type X to exit.

ATH030E Invalid Selection. The only valid selection is A (Allocation Activity).

Explanation: You have typed an invalid selection in the line command (Cmd) column.

User Response: Type A in the line command (Cmd) column to select Allocation Activity or type X in the Option line to exit.

ATH031E Truncation Error. A truncation error displaying the panel - RC=16.

Explanation: An internal error occurred while attempting to display the Current Status panel. The return code is listed in the message (16 in the example above).

User Response: Contact IBM customer support to report the problem.

ATH032E Severe Error. A severe error occurred while trying to display the panel - RC=20.

Explanation: An internal error occurred while attempting to display the current status panel. The return code is listed in the message.

User Response: Contact IBM customer support to report the problem.

ATH033E Unexpected RC. An unexpected return code was received while attempting to display the panel - RC=24.

Explanation: An internal error occurred, indicated by the return code (RC), while attempting to display the Current Status panel.

User Response: Contact IBM customer support to report the problem.

ATH034E Invalid Selection. Please enter a Valid Menu option.

Explanation: You have typed a letter or number in the Option line that is not associated with any option on this screen.

User Response: Type a valid character based on the menu options for this screen.

ATH035E Invalid value. Please enter a Y (Yes) or N (No).

Explanation: You have typed a letter other than Y or N. The only valid letters are Y and N.

User Response: Type a Y for "Yes" or an N for "No".

ATH612E Invalid Mode. Active (1) or Passive (2) are the only valid modes.

Explanation: You have typed a letter or number other than 1 or 2 for the mode field. The only acceptable entries for this field are 1 for "Active" mode or 2 for "passive" mode.

User Response: Type 1 for Active mode or 2 for Passive mode.

ATH617I Invalid Value. The specified value is incorrect. Please enter a decimal value of at least 1.

Explanation: The value you typed is not valid for this field because the value is either non-numeric or out of range.

User Response: Type a value that is numeric and within the acceptable range for this field.

ATH901E Dataset not found. The Rocket Software default load library could not be located.

Explanation: ATAM could not find the load library.

User Response: Ensure that the load library name is correct.

ATH902E No MVS system name. An MVS subsystem ID has to be entered for processing.

Explanation: You did not specify an MVS system name on the ATAM Setup screen. Choose option S from the main menu and type the name of the MVS system on which you want to perform tape allocation activities.

User Response: Type an MVS system name in the MVS System ID field on the ATAM Setup screen.

ATH904E VSAM open error. The specified dataset could not be opened for I/O.

Explanation: The dataset could not be opened.

User Response: There may be related WTOR messages that were also issued as a result of this error. Attempt to determine the cause of the error from these other messages. If the problem persists, contact IBM customer support.

ATH905E VSAM read error. An unexpected return code from VSAM was encountered while doing a read of the control file.

Explanation: There is a problem reading the control file, which generated a return code.

User Response: There may be related WTOR messages that were also issued as a result of this error. Attempt to determine the cause of the error from these other messages. If the problem persists, contact IBM customer support.

ATH906I Record updated. The control file record for MVS system *system name* has been successfully updated.

Explanation: An updated record was successfully written to the control file.

User Response: None required.

ATH907E Error in VSAM update. An unexpected return code from VSAM was encountered while doing an update operation of the control file.

Explanation: There was a problem with the control file during an "update" operation. Look at the return code for the severity of the problem.

User Response: There may be related WTOR messages that were also issued as a result of this error. Attempt to determine the cause of the error from these other messages. If the problem persists, contact IBM customer support.

ATH908I Record added. The control file record for MVS system *system name* has been successfully added.

Explanation: A new record was successfully written to the control file for the MVS system listed in the message.

User Response: None required.

ATH909E Invalid value. Please enter a 1 or a 2.

Explanation: You have typed an invalid value where ATAM expects a 1 or 2.

User Response: Type 1 or 2 and press Enter.

ATH910E Error in VSAM add. An unexpected return code from VSAM was encountered while doing an add operation to a control file.

Explanation: There was a problem with the control file during an "add" operation. Look at the return code for the severity of the problem.

User Response: There may be related WTOR messages that were also issued as a result of this error. Attempt to determine the cause of the error from these other messages. If the problem persists, contact IBM customer support.

ATH911E **No find string specified. The (F)IND command was entered but no parameters were specified.**

Explanation: You used the (F)IND command, but didn't indicate what value or words you want to find.

User Response: Type a string after you type F or FIND.

ATH912I **Find string not found. The requested find string was not found.**

Explanation: The string you typed after the (F)IND command could not be found.

User Response: No action required.

ATH913E **Invalid Primary Command Entered. An unknown primary command has been entered.**

Explanation: You typed a letter or string that is not a primary command.

User Response: Type a different, valid command.

ATH914E **Unknown column entered. An unknown column was specified using the SORT command.**

Explanation: The column name you typed after the SORT command is not correct. You may have typed it

incorrectly or typed the name of a column that does not exist on this screen.

User Response: Type the name of an existing column after the SORT command.

ATH915E **Column Unsortable. SORT is not supported for the specified column.**

Explanation: The column you specified after the SORT command cannot be sorted.

User Response: Type a different column name after the SORT command.

ATH916E **Column not specified. Sort column not entered. Column name or number must be specified.**

Explanation: You must type either the name or number of a column after the SORT command so it knows which column to sort.

User Response: Type a column name or number after the SORT command.

ATH940E **Dataset not found. The specified dataset could not be found in the MVS catalog.**

Explanation: The specified data set could not be located.

User Response: Please verify that you entered the proper dataset name and that the data set exists.

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Automated Tape Allocation Manager for z/OS and OS/390
User's Guide
Version 1 Release 1

Publication No. SC27-1610-08

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	<input type="checkbox"/>				

How satisfied are you that the information in this book is:

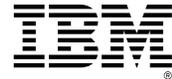
	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	<input type="checkbox"/>				
Complete	<input type="checkbox"/>				
Easy to find	<input type="checkbox"/>				
Easy to understand	<input type="checkbox"/>				
Well organized	<input type="checkbox"/>				
Applicable to your tasks	<input type="checkbox"/>				

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_____ Phone No.	_____



Cut or Fold
Along Line

SC27-1610-08

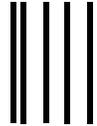
International Business Machines Corporation
Department HHX/H3
PO BOX 49023
SAN JOSE CA
U. S. A. 95161-9023



Fold and Tape

Please do not staple

Fold and Tape



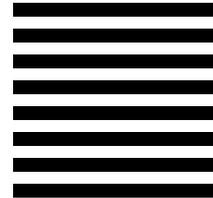
NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

SC27-1610-08



Fold and Tape

Please do not staple

Fold and Tape

Cut or Fold
Along Line



Program Number: 5697-H62

SC27-1610-08



