



ADSTAR Distributed Storage Manager

# AFS/DFS Backup Clients

*Version 2*

**Note**

Before using this information and the product it supports, read the general information under "Notices" on page xi.

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## About This Book

ADSTAR Distributed Storage Manager (ADSM) AFS/DFS Backup Clients system support allows you to back up and restore AFS/DFS files and volumes/filesets. This book provides information to help you set up and use the ADSM AFS/DFS Backup Clients on an AIX workstation. You should be familiar with your AIX workstation, your operating system, your AFS/DFS file backup systems, and your basic ADSM system administration.

The following publications provide additional information.

*Table 1. Related Books*

<b>Title</b>	<b>Number</b>
<i>ADSTAR Distributed Storage Manager Using the Application Programming Interface</i>	SH26-4002
<i>ADSTAR Distributed Storage Manager Installing the Clients</i>	SH26-4049
<i>ADSTAR Distributed Storage Manager Using the UNIX** Backup-Archive Clients</i>	SH26-4053
<i>AFS Command Reference Manual</i>	—
<i>AFS System Administrator's Guide</i>	—
<i>IBM Distributed Computing Environment 2.1 for AIX: DFS Administration Guide and Reference</i>	—
<i>Getting Started: Managing IBM RISC System/6000</i>	GC23-2378

The ADSM library is also available in softcopy on the following CD-ROMs:

<b>CD-ROM</b>	<b>Number</b>
<i>AIX Base Collection Kit</i>	SK2T-2066
<i>AS/400 Base Collection Kit</i>	SK2T-2171
<i>IBM SystemView for AIX</i>	SK2T-1451
<i>MVS Base Collection Kit</i>	SK2T-0710
<i>VM Base Collection Kit</i>	SK2T-2067
<i>VSE Base Collection Kit</i>	SK2T-0060



## Reading Syntax Diagrams

This section describes how to read the syntax diagrams used in this book.

To read a syntax diagram, follow the path of the line. Read from left to right and top to bottom.

- The  $\blacktriangleright$ — symbol indicates the beginning of a syntax diagram.
- The — $\blacktriangleright$  symbol at the end of a line indicates the syntax diagram continues on the next line.
- The  $\blacktriangleright$ — symbol at the beginning of a line indicates a syntax diagram continues from the previous line.
- The — $\blacktriangleleft$  symbol indicates the end of a syntax diagram.

Syntax items, such as a keyword or variable, can be:

- On the line (required element)
- Above the line (default element)
- Below the line (optional element).

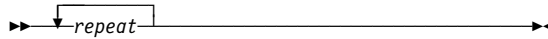
Syntax Diagram Description	Example
<p><b>Abbreviations:</b></p> <p>Uppercase letters denote the shortest acceptable truncation. If an item appears entirely in uppercase letters, it cannot be truncated.</p> <p>You can type the item in any combination of uppercase or lowercase letters.</p> <p>In this example, you can enter KEYWO, KEYWORD, or KEYWOrd.</p>	<p><math>\blacktriangleright</math>—KEYWOrd—<math>\blacktriangleleft</math></p>
<p><b>Symbols:</b></p> <p>Enter these symbols exactly as they appear in the syntax diagram.</p>	<ul style="list-style-type: none"> <li>* Asterisk</li> <li>{ } Braces</li> <li>:</li> <li>,</li> <li>= Equal Sign</li> <li>- Hyphen</li> <li>() Parentheses</li> <li>.</li> <li>Space</li> </ul>
<p><b>Variables:</b></p> <p>Italicized lowercase items (<i>var_name</i>) denote variables.</p> <p>In this example, you can specify a <i>var_name</i> when you enter the KEYWORD command.</p>	<p><math>\blacktriangleright</math>—KEYWOrd—<i>var_name</i>—<math>\blacktriangleleft</math></p>

## Syntax Diagram Description

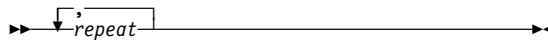
## Example

### Repetition:

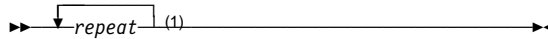
An arrow returning to the left means you can repeat the item.



A character within the arrow means you must separate repeated items with that character.



A footnote by the arrow references the number of times you can repeat the item.



### Note:

<sup>1</sup> Specify *repeat* as many as 5 times.

### Required Choices:

When two or more items are in a stack and one of them is on the line, you *must* specify one item.



In this example, you *must* choose A, B, or C.

### Optional Choice:

When an item is below the line, that item is optional. In the first example, you can choose A or nothing at all.

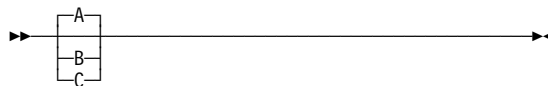


When two or more items are in a stack below the line, all of them are optional. In the second example, you can choose A, B, C, or nothing at all.



### Defaults:

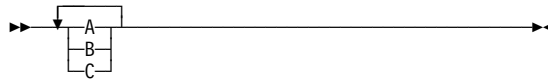
Defaults are above the line. The default is selected unless you override it. You can override the default by including an option from the stack below the line.



In this example, A is the default. You can override A by choosing B or C. You can also specify the default explicitly.

### Repeatable Choices:

A stack of items followed by an arrow returning to the left means you can select more than one item or, in some cases, repeat a single item.



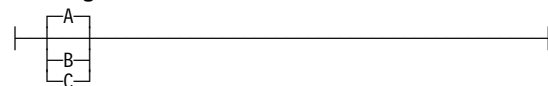
In this example, you can choose any combination of A, B, or C.

### Syntax Fragments:

Some diagrams, because of their length, must fragment the syntax. The fragment name appears between vertical bars in the diagram. The expanded fragment appears between vertical bars in the diagram after a heading with the same fragment name.



### The fragment name:





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## Chapter 1. Overview

ADSTAR Distributed Storage Manager (ADSM) AFS/DFS backup clients system support consists of the following programs:

- AFS file backup GUI and command-line clients
- DFS file backup GUI and command-line clients
- AFS volume backup agent
- DFS fileset backup agent.

Each program is described in more detail below.

**For AFS/DFS file backup:** This book must be used together with the *ADSM Using the UNIX\*\* Backup-Archive Clients* manual.

**For AFS/DFS volume/fileset backup:** This book must be used together with the AFS/DFS manuals.

---

### AFS File Backup GUI and Command-Line Clients

The AFS file backup GUI and command-line clients allow you to back up and restore AFS files and directories. In addition, they back up AFS access control lists (ACLs) and recognize AFS volume mount points.

---

### DFS File Backup GUI and Command-Line Clients

The DFS file backup GUI and command-line clients allow you to back up and restore DFS files and directories. In addition, they back up DFS access control lists (ACLs) for files and directories and recognize DFS fileset mount points.

---

### AFS Volume Backup Agent

The AFS volume backup agent is an interface program between the AFS volume backup system (backup, buserver, and butc commands) and an ADSM server. Functionally, it replaces the BackUp Tape Coordinator (butc), the tape-device interface program of the volume backup system. This replacement program, called BackUp To ADSM (buta), serves as an interface program to an ADSM server.

The AFS **backup** command starts the backup and restore operations that direct the operations to buta instances. System administrators should familiarize themselves with the AFS volume backup system (backup and buserver commands) located in the AFS manuals since the buta program is used as a part of that system and works like a special version of butc. See the chapters on backup system commands in your AFS manuals.

---

## DFS Fileset Backup Agent

Similar to the AFS volume backup agent, the DFS fileset backup agent is an interface program between the DFS fileset backup system and an ADSM server. *Fileset* in DFS is equivalent to *volume* in AFS. The DFS fileset backup system consists of these commands: `bak`, `bakserver`, and `butc`.

The ADSM agent program functionally replaces the BackUp Tape Coordinator (`butc`) program, the tape-device interface program of the fileset backup system. This replacement program, called BackUp To ADSM (`buta`), serves as an interface program to an ADSM server.

The DFS `bak` command starts the backup and restore operations that direct the operations to `buta` instances. System administrators should familiarize themselves with the fileset backup system of DFS since the `buta` program is used as a part of that system and works like a special version of `butc`. See the chapters on backup configuration, and backup and restoring data discussed in the *IBM Distributed Computing Environment 2.1 for AIX: DFS Administration Guide and Reference* manual.

---

## Benefits of Using the AFS/DFS buta Programs

The AFS/DFS buta programs offer several benefits over using Transarc's butc program to back up or restore volumes/filesets. Table 2 below compares the characteristics of the butc and the buta programs.

*Table 2. Comparing the butc and the buta Programs*

<b>Characteristics of butc</b>	<b>Characteristics of buta</b>
<ul style="list-style-type: none"><li>• Each butc instance requires a tape device. It is not always practical to run butc on each file server.</li><li>• There is no disk buffering.</li><li>• It is not practical to use high-performance tape libraries.</li></ul>	<ul style="list-style-type: none"><li>• The buta program provides a single point of control through the ADSM server for all tapes.</li><li>• Disk buffering allows multiple incoming buta streams per tape drive.</li><li>• The number of buta instances you start is limited only by network constraints, thereby providing a possibility of increased performance.</li><li>• The buta program allows backup copies using the ADSM <i>copy storage pool</i> function.</li></ul>

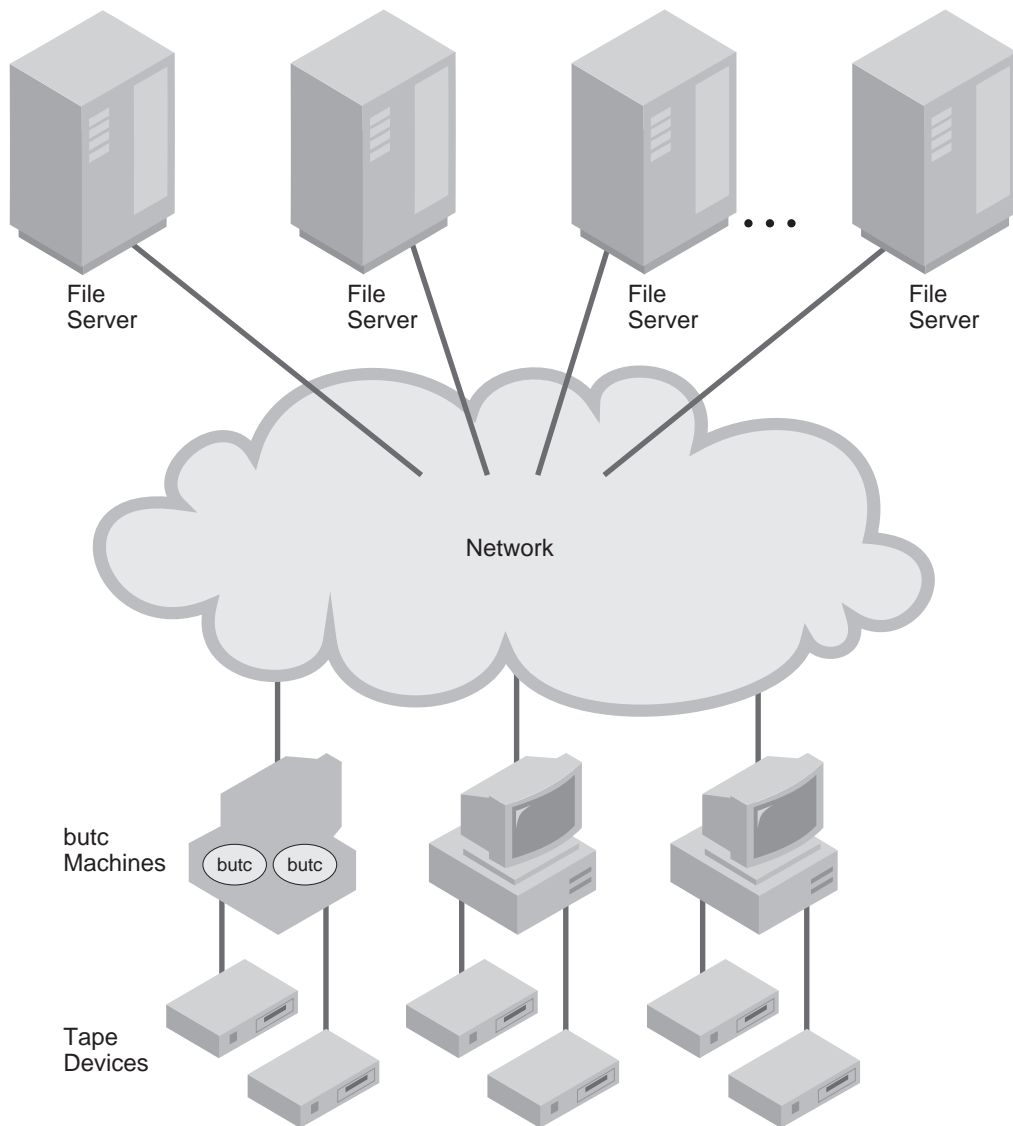


Figure 1. AFS Backup With butc

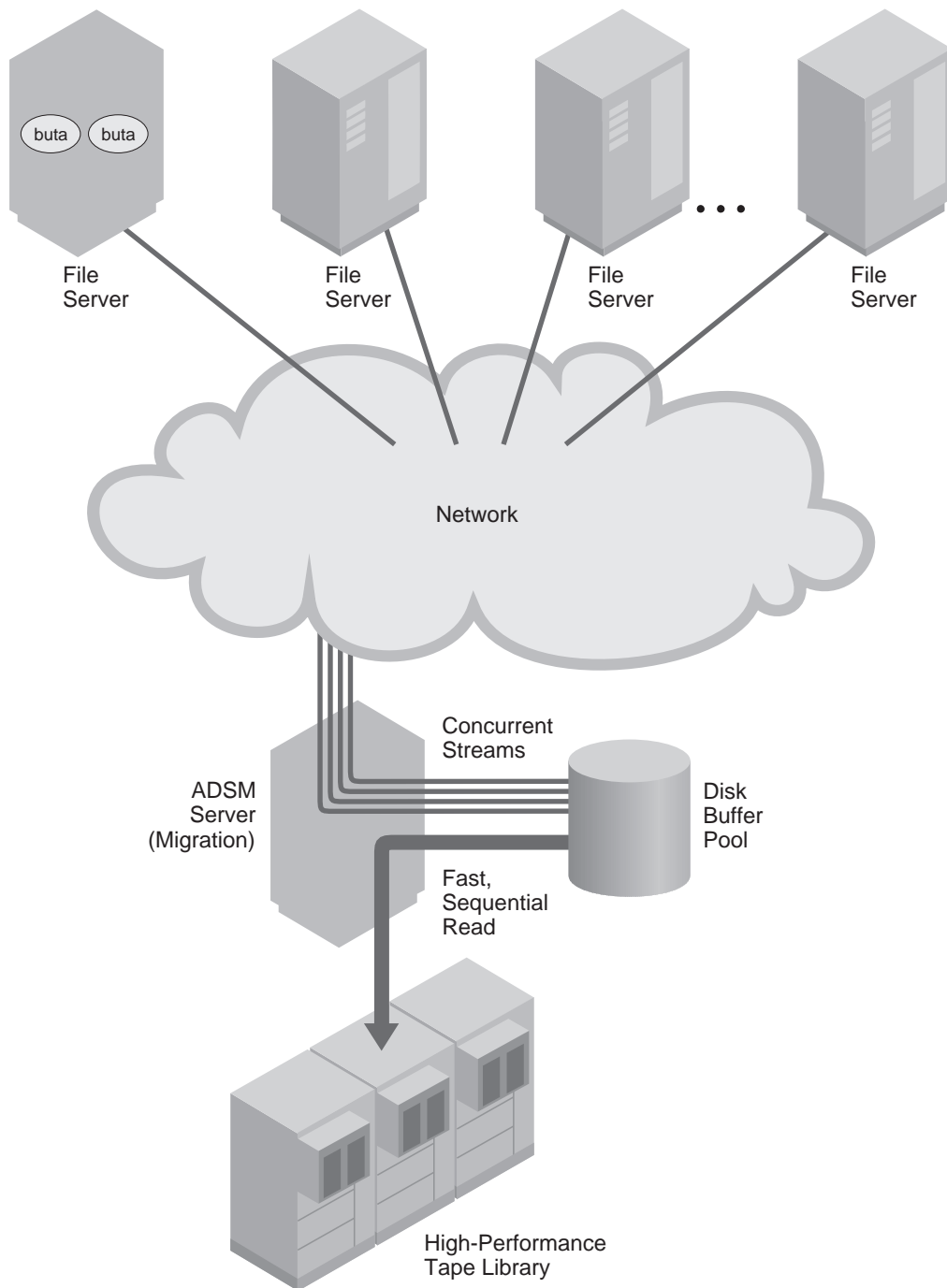


Figure 2. AFS/DFS Backup With buta





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## Chapter 2. Installing The AFS/DFS Backup Clients

This chapter describes the installation instructions for the AFS/DFS backup clients, and the AFS/DFS volume/fileset backup agents.

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### Preparing for Installation

This section provides required and optional tasks for a root user, optional tasks and special considerations for users, and the AIX client environment requirements.

#### Required Root User Tasks

A root user must install AFS/DFS backup clients on an AIX workstation. Additional required setup tasks for the root user include:

- Copying and modifying the sample client system options file:
  - To identify the ADSM servers to contact
  - To provide necessary communication information
  - To choose a password option, if a password is required.
- Copying the sample client user options file
- Registering the workstation with an ADSM server.

#### Optional Root User Tasks

Optional root user tasks include:

- Modifying the default client user options file
- Creating an include-exclude options file.
- Creating a DFS include-exclude options file.

#### Optional User Tasks and Considerations

Optional user tasks include:

- Copying and modifying the sample client user options file
- Setting up environment variables.

Special considerations for backing up and restoring AFS/DFS files on an AIX workstation include:

- Using the AFS/DFS versions of executable files
- Identifying AFS/DFS user accounts for backup and restore.

## AIX Client Environment

This section describes the hardware and software requirements for the AFS/DFS backup clients.

### Hardware Requirements

- A RISC System/6000
- Memory: 16 MB

### Operating System

You will need an IBM AIX 4.1 or later for ADSM AFS/DFS file backup clients (command-line or GUI). You will need an IBM AIX 4.1.4 for AFS/DFS buta.

---

## Installing AFS/DFS

To install the AFS/DFS file backup clients on an AIX workstation, use the System Management Interface Tool (SMIT). For detailed information about using SMIT, see *Getting Started: Managing IBM RISC System/6000* and read the SMIT windows during the installation process.

When you install AFS/DFS on an AIX workstation, the AFS/DFS file backup clients reside in **/usr/lpp/adsm/bin**.

The AFS volume backup agent (buta) files are installed in the **/usr/afs/buta** directory. The DFS fileset backup agent (buta) files are installed in the **/var/dce/dfs/buta** directory.

If you are installing AFS buta, the AFS client must be installed first. If you are installing DFS buta, the DCE client must be installed first.

## Install Using SMIT

The AIX 4.1 system supports two versions of SMIT: ASCII and Motif. Motif is the more common. With the ASCII version, you select an item and press Enter. With the Motif version, you click on the item you want. Procedures for both are presented below.

1. Log in as the root user.

**Note:** If you are using the Motif version of SMIT, you must be in the X Window System environment. Enter **xinit** if you are not.

2. Enter **smit** on the command line. The System Management screen displays.  
Enter **smitty** if you are using the ASCII version of SMIT.
3. Select **Software Installation and Maintenance** on the System Management menu.
4. Select **Install and Update Software** on the Software Installation & Maintenance menu.
5. Select **Install / Update Selectable Software (Custom Install)** on the Install and Update Software menu.

6. Select **Install / Update From All Available Software** on the Select Install / Update Selectable Software (Custom Install) screen.
7. Select **INPUT Device/Directory for Software** on the Install / Update From All Available Software screen.
8. Select **List** for a list of directories and input devices.
9. Move the cursor to select **/usr/sys/inst.images (Install Directory)** and press Enter. The Install/Update From All Available Software screen displays.
10. Select **List** and select SOFTWARE to Install. The SOFTWARE to Install menu displays.
11. Place the cursor on each of the following clients that you want to install:
  - adsm.afs.client
  - adsm.butaaafs.client
  - adsm.dfs.client
  - adsm.butadfs.client
12. Press **F7=Select** to select the clients, and then press Enter.
13. Press Enter on the Install / Update From All Available Software screen. The following message is displayed:
 

```
ARE YOU SURE?
```
14. Press Enter a second time. Installation begins.
 

If you are using Motif, click on **Done** when the installation is complete.

After installation, if you decide to move the ADSM files from the installation directory to another directory, ensure that you maintain the same directory structure for all directories and files below **/usr/lpp/adsm/bin**, **/usr/afs/buta**, or **/opt/dcelocal/var/dfs/buta**.

If you move the ADSM files from the installation directory to another directory, complete the following steps:

1. Make sure the permissions of the installed files have not changed.
2. Update the directory locations of the bit map files that are in the ADSM X Window System resource file (DSMX) to the new directory where ADSM has been installed. See Table 3.
3. Update the symbolic links for the installed files in the **/usr/bin** directory.
4. Make sure every user of ADSM sets the DSM\_DIR environment variable to the new directory.

Table 3 (Page 1 of 2). ADSM Backup-Archive Client Bit Map Files

File Name	Description
dsm	Executable file for the backup-archive client graphical user interface (GUI).
dsmadm	Executable file for the administrative client command-line interface.
dsmafs	A version of dsm that also handles AFS ACLs and AFS mount points.

*Table 3 (Page 2 of 2). ADSM Backup-Archive Client Bit Map Files*

<b>File Name</b>	<b>Description</b>
dsm.afs	A version of dsm that also handles AFS ACLs.
dsmafs.driv	AFS driver program.
dsmc	Executable file for the backup-archive command-line interface.
dsmcafs	A version of dsmc that also handles AFS ACLs and AFS mount points.
dsmc.afs	A version of dsmc that also handles AFS ACLs.
dsmcdfs	A version of dsmc that also handles DFS ACLs and DFS mount points.
dsmdfs	A version of dsm that also handles DFS ACLs and DFS mount points.
dsm.icon	Bitmap for the ADSM icon.
dsm sna.driv	SNA driver program for APPC communications.
ibmlogo.bit	Bit map for the IBM logo.
info.bit	Bit map for the Info Box icon.
question.bit	Bit map for the Question Box icon.
wait.bit	Bit map for the Wait Box icon.
warn.bit	Bit map for the Warning Box icon.

---

## Part 2. AFS/DFS File Backup Clients

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## Chapter 3. The AFS File Backup Clients

There are four pair of AIX file backup clients (GUI and command-line) available today. This abundance is a result of runtime requirements for the AFS/DFS file backup clients that include requirements for the:

- Presence of the AFS/DFS kernel extension
- Product licensing.

The AFS/DFS file backup clients allow you to back up and restore AFS/DFS files and directories. In addition, they back up AFS/DFS access control lists (ACLs), and recognize AFS/DFS mount points.

**Note:** The AFS/DFS versions of ADSM executable files are only available for AIX.

---

### Contrasting the AIX File Backup Clients

The current AIX AFS/DFS file backup clients, `dsmafs`, `dsmcafs`, `dsmdfs`, and `dsmcdfs`, include new functions that are not available in the following AIX clients: `dsm`, `dsmc`, `dsm.afs`, and `dsmc.afs`. Table 4 summarizes the differences.

*Table 4. Differences Between AIX File Backup Clients*

AIX clients	What they can do
<code>dsm</code> , <code>dsmc</code>	They back up AFS files.
<code>dsm.afs</code> , <code>dsmc.afs</code>	They back up AFS files and access control lists (ACLs).
<code>dsmafs</code> , <code>dsmcafs</code>	They back up AFS files, ACLs, and mount points. These programs include the current AFS file backup support and other new functions aiding AFS file backup.
<code>dsmdfs</code> , <code>dsmcdfs</code>	They back up DFS files, ACLs, and mount points. These programs include the current DFS file backup support and other new functions aiding DFS file backup.

### Select `dsmafs` and `dsmcafs`

The two commands shown below contain current AFS file backup functions.

**`/usr/lpp/adsm/bin/dsmafs`** Starts a GUI session with the current AFS support.

**`/usr/lpp/adsm/bin/dsmcafs`** Starts a command-line session with the current AFS support.

If you want all users to select the same ADSM backup clients with the current AFS support, perform the following steps:

1. Delete or rename **dsm** and **dsmc**.
2. Rename **dsmafs** and **dsmcafs** to **dsm** and **dsmc**.

Then, users can enter **dsm** to start a GUI session or **dsmc** to start a command-line session with the current AFS support.

---

## Setting the EXCLUDE.FS Option

Because of the length of time it would take, you do not want ADSM to start an incremental backup of the entire AFS directory tree beginning with **/afs** to locate the files it can back up. Nor do you want a user to click on **/afs** in the backup window of the ADSM GUI client, which would scan *all* AFS cells.

To prevent users from starting an incremental backup from the root of AFS, enter **exclude.fs /afs** in a file specified by the include-exclude option. This option prevents **/afs** from appearing in the File Systems for Backup/Archive list in the GUI, and prevents users from starting backups that back up or scan an entire AFS tree.

For more information about the EXCLUDE.FS option, see “EXCLUDE” on page 33.

---

## Understanding Potential Backup Problems Caused by AFS Mount Points

AFS allows any user to add *volume mount points* in any directory where they have write access. A user can use the AFS **fs mkmount** command to do this.

**Note:** AFS mount points are UNIX symbolic links with a special syntax.

Mount points can cause problems for a backup program that crosses the tree formed with these mount points. For example, user foo creates a mount point for user.foo volume in his own home directory, and forms a cycle in foo's directory tree. The backup program would enter an infinite loop that looks like this:

```
/afs/xyz-cell/u/foo
/afs/xyz-cell/u/foo/foo
/afs/xyz-cell/u/foo/foo/foo
⋮
```

User foo can also create a mount point for a root volume of a foreign cell, thereby expanding foo's subdirectory to include a large tree that would be unimportant to back up.

The following options address these problems:

- AFSBACKUPMNTPNT
- VIRTUALMOUNTPOINT
- DOMAIN

The following sections describe these options.



## Understand the AFSBACKUPMNTPT Option

By default, ADSM AFS file backup clients do not cross AFS mount points. This avoids the potential problems mentioned in the previous section. The AFS mount points are backed up the same way in which symbolic links are backed up (the name of the mounted volume is backed up similarly to the way in which a path name of a symbolic link is backed up). For example, if you define `/afs/almaden.ibm.com/u/luan` as an ADSM VIRTUALMOUNTPOINT, and you enter this command:

```
incremental /afs/almaden.ibm.com/u/luan
```

ADSM performs the following incremental backup for `/luan`:

1. Backs up any files under `/luan` that are eligible for backup.
2. Backs up directories under `/luan` that are not AFS mount points.
3. Backs up mount point information for any AFS mount point under `/luan`.

**Note:** ADSM does not process files or subdirectories under any AFS mount point it encounters under `/luan`. Processing stops at each mount point.

If you want the file backup clients to cross AFS mount points, set the AFSBACKUPMNTPT option to *No*. ADSM then backs up the mount point *as a directory* rather than as a symbolic link to the target volume. The default setting of the AFSBACKUPMNTPT option is *Yes*.

For more information about the AFSBACKUPMNTPT option, see “AFSBACKUPMNTPT” on page 28.

## Set the VIRTUALMOUNTPOINT and DOMAIN Options

After you exclude */afs* as a file space using the EXCLUDE.FS option, add ADSM virtual mount points for the portions of AFS that you want to back up.

**Note:** This is different from an AFS *volume mount point*.

It is recommended that you specify an ADSM virtual mount point for every AFS volume that you want to back up, and that you set AFSBACKUPMNTPT to *Yes* (the default).

Use the VIRTUALMOUNTPOINT option to specify a virtual mount point for each volume that you want to back up. For example, if you are an AFS administrator and you want to schedule incremental backups for all of your AFS user volumes, you can define a virtual mount point for each directory that begins a user volume as shown in the example below:

```
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/ajkay
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/albrecht
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/alissue
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/arcaixop
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/archem
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/ashish
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/ashokas
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/awl
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/backus
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/barbt
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/basmith
:
```

Then, you can set corresponding DOMAIN options in your client user options file to include the virtual mount points in your default client domain as shown in the example below:

```
DOMAIN /afs/almaden.ibm.com/u/ajkay
DOMAIN /afs/almaden.ibm.com/u/albrecht
DOMAIN /afs/almaden.ibm.com/u/alissue
DOMAIN /afs/almaden.ibm.com/u/arcaixop
DOMAIN /afs/almaden.ibm.com/u/archem
DOMAIN /afs/almaden.ibm.com/u/ashish
DOMAIN /afs/almaden.ibm.com/u/ashokas
DOMAIN /afs/almaden.ibm.com/u/awl
DOMAIN /afs/almaden.ibm.com/u/backus
DOMAIN /afs/almaden.ibm.com/u/barbt
DOMAIN /afs/almaden.ibm.com/u/basmith
:
```

You can then schedule an incremental backup using the **dsmcafs incremental** command at a selected interval.

For more information about the VIRTUALMOUNTPOINT option, see “VIRTUALMOUNTPOINT” on page 36. For more information about the DOMAIN option, see “DOMAIN” on page 31.

---

## Setting the ACLs and Kerberos Login

The **dsmcafs** program must have the read and list (rl) permissions on all directories that you need to back up. If you want to allow the backup program to access the files, set up the directory ACLs correctly. For example, if you want to back up:

```
/afs/xyz-cell/u/foo
```

and, if the AFS principal, *afsback*, is created to back up AFS files, enter the following **find** command:

```
find /afs/xyz-cell/u/foo -type d -print | xargs /local/bin/fs \  
setacl -acl afsback rl -dir
```

To set up a **cron** job to perform the ADSM backup from an AFS client machine, enter the following lines in the cron job script file:

```
/local/bin/klog -principal afsback -pipe </etc/security/.kpasswd  
/usr/bin/dsmcafs incremental -servername=admserv -tapeprompt=no
```

**Note:** The **cron** job must have root identity for the ADSM client to back up files from all owners.

As an alternative, you can run the file backup client program using an ID within the `system:administrators` group without setting up directory ACLs.

---

## Restoring AFS Files

If *user restore* is allowed, users must be allowed to log on to the AFS client machine where the incremental backup was performed.



---

## Chapter 4. The DFS File Backup Clients

There are four pair of AIX file backup clients (GUI and command-line) available today. This abundance is a result of runtime requirements for the AFS/DFS file backup clients that include requirements for the:

- Presence of the AFS/DFS kernel extension
- Product licensing.

The AFS/DFS file backup clients allow you to back up and restore AFS/DFS files and directories. In addition, they back up AFS/DFS access control lists (ACLs), and recognize AFS/DFS mount points.

**Note:** The AFS/DFS versions of ADSM executable files are only available for AIX.

---

### Contrasting the AIX File Backup Clients

The current AIX AFS/DFS file backup clients, `dsmafs`, `dsmcafs`, `dsmdfs`, and `dsmcdfs`, include new functions that are not available in the following AIX clients: `dsm`, `dsmc`, `dsm.afs`, and `dsmc.afs`. Table 5 summarizes the differences.

*Table 5. Differences Between AIX File Backup Clients*

AIX clients	What they can do
<code>dsm</code> , <code>dsmc</code>	They back up AFS files.
<code>dsm.afs</code> , <code>dsmc.afs</code>	They back up AFS files and access control lists (ACLs).
<code>dsmafs</code> , <code>dsmcafs</code>	They back up AFS files, ACLs, and mount points. These programs include the current AFS file backup support and other new functions aiding AFS file backup.
<code>dsmdfs</code> , <code>dsmcdfs</code>	They back up DFS files, ACLs, and mount points. These programs include the current DFS file backup support and other new functions aiding DFS file backup.

### Select `dsmdfs` and `dsmcdfs`

The two commands shown below contain current DFS file backup functions.

**`/usr/lpp/adsm/bin/dsmdfs`** Starts a GUI session with the current DFS support.

**`/usr/lpp/adsm/bin/dsmcdfs`** Starts a command-line session with the current DFS support.

If you want all users to select the same ADSM backup clients with the current DFS support, perform the following steps:

1. Delete or rename **dsm** and **dsmc**.
2. Rename **dsmdfs** and **dsmcdfs** to **dsm** and **dsmc**.

Then, users can enter **dsm** to start a GUI session or **dsmc** to start a command-line session with the current DFS support.

---

## Setting the EXCLUDE.FS Option

Because of the length of time it would take, you do not want ADSM to start an incremental backup of the entire DFS directory tree beginning with */...* to locate the files it can back up. Nor do you want a user to click on */...* in the backup window of the ADSM GUI client, which would scan *all* DFS cells.

To prevent users from starting an incremental backup from the root of DFS, enter **exclude.fs /...** in a file specified by the include-exclude option. This option prevents */...* from appearing in the File Systems for Backup/Archive list in the GUI, and prevents users from starting backups that back up or scan an entire DFS tree.

For more information about the EXCLUDE.FS option, see “EXCLUDE” on page 33.

---

## Understanding Potential Backup Problems Caused by DFS Mount Points

DFS allows users to add *fileset mount points* in any directory where they have write access. A user can use the DFS **fts crmount** command to do this.

**Note:** DFS mount points are UNIX symbolic links with a special syntax.

Mount points can cause problems for a backup program that crosses the tree formed with these mount points. For example, users can create loops by adding DFS fileset mount points in certain ways.

A user can also create a mount point for a root fileset of a foreign cell, thereby expanding the user's subdirectory to include a large tree that would be unimportant to back up.

The following options address these problems:

- DFSBACKUPMNTPT
- VIRTUALMOUNTPOINT
- DOMAIN

The following sections describe these options.

### Understand the DFSBACKUPMNTPT Option

By default, ADSM DFS file backup clients do not cross DFS mount points. This avoids the potential problems mentioned in the previous section. The DFS mount points are backed up the same way in which symbolic links are backed up (the name of the mounted volume is backed up similarly to the way in which a path name of a symbolic link is backed up). For example, if you define `/.../almaden.ibm.com/fs/u/luan` as an ADSM VIRTUALMOUNTPOINT, and you enter this command:

```
incremental /.../almaden.ibm.com/fs/u/luan
```

ADSM performs the following incremental backup for `/luan`:

1. Backs up any files under `/luan` that are eligible for backup.
2. Backs up directories under `/luan` that are not DFS mount points.
3. Backs up mount point information for any DFS mount point under `/luan`.

**Note:** ADSM does not process files or subdirectories under any DFS mount point it encounters under `/luan`. Processing stops at each mount point.

If you want the file backup clients to cross DFS mount points, set the DFSBACKUPMNTPT option to *No*. ADSM then backs up the mount point as a *directory* rather than as a symbolic link to the target volume. The default setting of the DFSBACKUPMNTPT option is *Yes*.

For more information about the DFSBACKUPMNTPT option, see “DFSBACKUPMNTPT” on page 29.

## Set the VIRTUALMOUNTPOINT and DOMAIN Options

After you exclude */...* as a file space using the EXCLUDE.FS option, add ADSM virtual mount points for the portions of DFS that you want to back up.

**Note:** This is different from a DFS *fileset mount point*.

It is recommended that you specify an ADSM virtual mount point for every DFS fileset that you want to back up, and that you set DFSBACKUPMNTPT to *Yes* (the default).

Use the VIRTUALMOUNTPOINT option to specify a virtual mount point for each fileset that you want to back up. For example, if you are a DFS administrator and you want to schedule incremental backups for all of your DFS user filesets, you can define a virtual mount point for each directory that begins a user fileset as shown in the example below:

```
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/ajkay
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/albrecht
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/alisue
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/arcaixop
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/archem
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/ashish
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/ashokas
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/awl
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/backus
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/barbt
VIRTUALMOUNTPOINT /.../almaden.ibm.com/fs/u/basmith
:
```

Then, you can set corresponding DOMAIN options in your client user options file to include the virtual mount points in your default client domain as shown in the example below:

```
DOMAIN /.../almaden.ibm.com/fs/u/ajkay
DOMAIN /.../almaden.ibm.com/fs/u/albrecht
DOMAIN /.../almaden.ibm.com/fs/u/alisue
DOMAIN /.../almaden.ibm.com/fs/u/arcaixop
DOMAIN /.../almaden.ibm.com/fs/u/archem
DOMAIN /.../almaden.ibm.com/fs/u/ashish
DOMAIN /.../almaden.ibm.com/fs/u/ashokas
DOMAIN /.../almaden.ibm.com/fs/u/awl
DOMAIN /.../almaden.ibm.com/fs/u/backus
DOMAIN /.../almaden.ibm.com/fs/u/barbt
DOMAIN /.../almaden.ibm.com/fs/u/basmith
:
```

You can then schedule an incremental backup using the **dsmdfs incremental** command at a selected interval.

For more information about the VIRTUALMOUNTPOINT option, see “VIRTUALMOUNTPOINT” on page 36. For more information about the DOMAIN option, see “DOMAIN” on page 31.



---

## Setting the ACLs and DCE Login

The **dsmcdfs** program must have the read and list (rl) permissions on all directories and the read (r) permission on all files that you need to back up. If you want to allow the backup program to access the files, set up the directory ACLs correctly. For example, if you want to back up:

```
../../xyz-cell/fs/u/foo
```

and, if the DFS principal, *dfsback*, is created to back up DFS files, enter the following **find** commands:

```
find ../../xyz-cell/fs/u/foo -type d -print | xargs /usr/bin/dcecp -c \  
acl modify -add user:dfsback:rx
```

```
find ../../xyz-cell/fs/u/foo -type d -print | xargs /usr/bin/dcecp -c \  
acl modify -ic -add user:dfsback:rx
```

```
find ../../xyz-cell/fs/u/foo -type d -print | xargs /usr/bin/dcecp -c \  
acl modify -io -add user:dfsback:r
```

```
find ../../xyz-cell/fs/u/foo ! -type d -print | xargs /usr/bin/dcecp -c \  
acl modify -add user:dfsback:r
```

To set up a **cron** job to perform the ADSM backup from a DFS client machine, enter the following lines in the cron job script file:

```
/usr/bin/dce_login dfsback <pwd> -exec \  
/usr/bin/dsmcdfs incremental -servername=admserv -tapeprompt=no
```

**Note:** The **cron** job must have root identity for the ADSM client to back up files from all owners.

As an alternative, you can run the file backup client program using the DCE root identity without setting up the ACLs.

---

## Restoring DFS Files

If *user restore* is allowed, users must be allowed to log on to the DFS client machine where the incremental backup was performed.



---

## Chapter 5. Setting Processing Options

This chapter provides information about new and changed options for the AFS/DFS file backup clients. The table below lists the processing options, their function, and the page location in this book to go to for more information.

*Table 6. Processing Options*

<b>Option</b>	<b>Function</b>	<b>Page</b>
AFSBACKUPMNTPT	Specifies whether you want ADSM to see an AFS mount point as a mount point or as a directory.	28
DFSBACKUPMNTPT	Specifies whether you want ADSM to see a DFS mount point as a mount point or as a directory.	29
DFSINCLEXCL	Specifies the path and file name of your DFS include-exclude options file.	30
DOMAIN	Specifies the file systems you want to include in your client domain for incremental backup.	31
EXCLUDE	Excludes files, directories, and file systems from ADSM backup services.	33
VIRTUALMOUNTPOINT	Defines a virtual mount point for a file system if you want ADSM to consider files for backup beginning with a specific directory within that file system.	36

---

## AFSBACKUPMNTPNT

The AFSBACKUPMNTPNT option specifies whether you want ADSM to see an AFS mount point as a mount point or as a directory. If ADSM sees it as a mount point, it backs up only the name of the mounted volume during a backup operation. It does not back up the subtree starting from the mount point directory.

### Context

This option is placed in the client system options file or the client user options file. It is valid only when you use dsmafs and dsmcafs.

### Syntax

▶▶ AFSBackupmntpnt  Yes  No ▶▶

### Parameters

#### Yes

If you specify *Yes*, all AFS mount points are viewed as *mount points*. ADSM backs up only the mount point information (the name of the mounted volume) for any mount point it encounters during a backup operation. This is the default.

#### No

If you specify *No*, all AFS mount points are viewed as *directories*. ADSM backs up the contents of files and subdirectories of any mount point it encounters during a backup operation.

### Examples

**Options file:** AFSBACKUPMNTPNT No

**Command line:** Not applicable

---

## DFSBACKUPMNTPTNT

The DFSBACKUPMNTPTNT option specifies whether you want ADSM to see a DFS mount point as a mount point or as a directory. If ADSM sees it as a mount point, it backs up only the name of the mounted fileset during a backup operation. It does not back up the subtree starting from the mount point directory.

### Context

This option is placed in the client system options file or the client user options file. It is valid only when you use dsmdfs and dsmcdf.

### Syntax

►►—DFSBackupmntpnt— Yes  
 No—►►

### Parameters

#### Yes

If you specify *Yes*, all DFS mount points are viewed as *mount points*. ADSM backs up only the mount point information (the name of the mounted fileset) for any mount point it encounters during a backup operation. This is the default.

#### No

If you specify *No*, all DFS mount points are viewed as *directories*. ADSM backs up the contents of files and subdirectories of any mount point it encounters during a backup operation.

### Examples

**Options file:** DFSBACKUPMNTPTNT *No*

**Command line:** Not applicable

---

## DFSINCLEXCL

Root User

The DFSINCLEXCL option specifies the path and file name of your DFS include-exclude options file, if you use one. You can use a DFS include-exclude options file to exclude DFS files or directories from backup and to assign different management classes to specific files or groups of files.

A DFS include-exclude options file that the DFSINCLEXCL option points to is used *only* when DFS files are examined for backup.

**Note:** A separate DFS include-exclude options file is required because the prefix */...* means the global root in DFS. In a DFS include-exclude options file, the */...* prefix is interpreted as the global root of DFS, and the */....* prefix is used to match zero or more directories.

### Context

This option is placed in the client system options file.

### Syntax

▶▶—DFSInclExcl *filespec*—————▶▶

### Parameter

**filespec**

The *filespec* parameter specifies the path and file name of your DFS include-exclude options file.

### Examples

**Options file:**     dfsinclExcl /usr/lpp/adsm/bin/backup.excl.dfs

**Command line:** Not applicable

---

## DOMAIN

The DOMAIN option specifies the file systems you want to include for incremental backup in your client domain. When you select this option in your client user options file, it defines your *default client domain*. ADSM uses your default client domain in the following situations to determine which file systems to process during an incremental backup:

- You run an incremental backup using the **incremental** command without specifying which file systems to process.
- Your ADSM administrator defines a schedule to run an incremental backup for you, but does not specify which file systems to process.

If you do not specify the file systems using the DOMAIN option, the default is selected (all locally-mounted file systems, excluding **/tmp**).

**Note:** You can include a virtual mount point in your client domain. For information about defining a virtual mount point, see “VIRTUALMOUNTPOINT” on page 36.

When you select this option, the **incremental** command adds the file systems specified on the command to those defined in your client user options file. For example, if you enter:

```
DOMAIN /u /usr /datasave
```

in your client user options file, and you enter:

```
dsmc incremental -domain="/fs1 /fs1"
```

on the command line, ADSM performs an incremental backup for these file systems: **/u**, **/usr**, **/datasave**, **/fs1**, and **/fs2**.

If you select both the *filesystem* parameter and the DOMAIN option on the **incremental** command, ADSM ignores the DOMAIN option and processes only those file systems in the *filesystem* parameter. For example, if you enter the following, ADSM performs an incremental backup only for the **/usr** and **/data** file systems:

```
dsmc incremental /usr /data -domain="/fs1 /fs2"
```

When you specify a file system to include in your domain, you can specify the file system name, or specify the file system symbolically.

### Context

This option is placed in the client user options file.

**Note:** Use of environment variables is valid *only* when you use dsmafs, dsmdfs, dsmcafs, and dsmcdfs.

### Syntax

```
▶▶ [DOMAIN] [ALL-LOCAL] domain ▶▶
```

## Parameters

### domain

The *domain* parameter specifies the file systems to include in your default client domain. When you use *domain* with the **incremental** command, you specify the file systems to process in addition to those specified in your default client domain. The default value, *ALL-LOCAL*, specifies all local file systems will be backed up.

A file system specification can contain environment variables. For example, if you define these variables in the `.profile` file in a Bourne or Korn shell:

```
export LOCALCELL=almaden.ibm.com
export USER=shaw
```

Or, if you add these environment variables to `.login` in your `$HOME` directory in the C shell:

```
setenv LOCALCELL almaden.ibm.com
setenv USER shaw
```

You can enter this domain specification:

```
DOMAIN /afs/${LOCALCELL}/u/${USER}
```

**Note:** Precede the environment variable names with a dollar sign (\$) and enclose it in braces.

The specification above resolves to:

```
DOMAIN /afs/almaden.ibm.com/u/shaw
```

## Examples

**Options file:** DOMAIN /u /usr /fs1

**Command line:** -domain="/fs1 /fs2"



---

## EXCLUDE

If you installed the ADSM backup-archive client on your workstation:

- Select the EXCLUDE option to exclude a file or group of files from ADSM backup services. For example, you might want to exclude:
  - All temporary files
  - Any local caches of network files
  - All files containing compiled object code that you can easily reproduce using other methods
  - Operating system files.

When you exclude files in this way, they are not considered for backup during an incremental or selective backup.

- Select the EXCLUDE.DIR.BACKUP option to exclude an entire directory from ADSM backup services. For example, you might want to exclude a particular sub-directory within a directory when you back up the directory. When you exclude a directory, you can still choose to back up specific files within the directory using selective backup.

**Note:** This option is valid *only* when you use dsmafs, dsmdfs, dsmcafs, and dsmdfs.

- Select the EXCLUDE.FS option to exclude an entire file space from incremental backup. For example, you can select this option to prevent users from starting an incremental backup from the root of AFS or DFS. When you exclude a file space, it does not appear in the File Systems for Backup/Archive List in the GUI. You can, however, use selective backup to back up specific files in a file space that you excluded.

**Note:** This option is valid *only* when you use dsmafs, dsmdfs, dsmcafs, and dsmdfs.

If you installed the ADSM backup-archive client on your workstation, select the EXCLUDE option (in an include-exclude options file identified with the INCLEXCL or DFSINCLEXCL option) to exclude a file or group of files, directories, or filespaces from backup services. Any files, directories, or filespaces you exclude with this option are not considered for backup or migration.

To exclude a file from backup only, select the EXCLUDE.BACKUP option.

**Note:** When you select the EXCLUDE option in a DFS include-exclude options file identified with the DFSINCLEXCL option, it excludes files from backup *only*. ADSM does not include space management support for DFS.

You can select wildcard characters to exclude a broad range of files or directories. Then, if necessary, you can select the INCLUDE option to make exceptions.

## Context

This option is placed in an include-exclude options file or in a DFS include-exclude options file.

An include-exclude options file is identified with the INCLEXCL option in the client system options file.

A DFS include-exclude options file is identified with the DFSINCLEXCL option in the client system options file, and is used only when DFS files are examined for backup or archive.

**Note:** In a DFS include-exclude options file, the */...* prefix is interpreted as the global root of DFS. Select the */....* prefix to match zero or more directories.

## Syntax



## Parameters

### **.BACKUP**

The *.BACKUP* parameter excludes a file or group of files from backup services *only*. For example:

```
EXCLUDE.BACKUP /users/home1/file1
                /..../*.0
```

### **.DIR.BACKUP**

The *.DIR.BACKUP* parameter excludes an entire directory from backup services *only*. For example:

```
EXCLUDE.DIR.BACKUP /var/vice/cache
EXCLUDE.DIR.BACKUP /.../tmp
EXCLUDE.DIR.BACKUP ./:/fs/usr/nshaw
```

### **.FS**

The *.FS* parameter excludes an entire file space or an entire AFS or DFS tree from incremental backup services *only*. For example:

```
EXCLUDE.FS /afs
EXCLUDE.FS /...
```

### **.SPACEMGMT**

The *.SPACEMGMT* parameter excludes a file from space management services *only*. For example:

```
EXCLUDE.SPACEMGMT /users/home1/file1
```

**Note:** This parameter is valid *only* when specified in an include-exclude options file identified with the INCLEXCL option. It *is not valid* in a DFS include-exclude options file identified with the DFSINCLEXCL option.

### **pattern**

The *pattern* parameter identifies the file or group of files that you want to exclude from backup services. When used with EXCLUDE.BACKUP or EXCLUDE.SPACEMGMT, end the pattern with a file specification. If the pattern contains a blank space, enclose it in quotation marks.

## **Examples**

### **Options file specified by the INCLEXCL option:**

```
exclude /unix
exclude /.../core
exclude /.../.SpaceMan/.../*
exclude /home/shaw/proj1/*
include /home/shaw/proj1/devplan
exclude.backup /home/shaw/proj1/devplan
include /home/shaw/proj1/status
exclude.spacemgmt /home/shaw/proj1/status
exclude.dir.backup /tmp
exclude.dir.backup /.../tmp
exclude.fs /afs
```

### **DFS Options file specified by the DFSINCLEXCL option:**

```
include /.../testdce.sanjose.ibm.com/fs/usr/shaw/proj1
exclude /.../testdce.sanjose.ibm.com/fs/usr/shaw/*
exclude /.../testdce.sanjose.ibm.com/temp
exclude /.../core
exclude /.../temp
exclude.dir /.../tempdir
exclude.fs /...
```

**Command line:** Not applicable

---

## VIRTUALMOUNTPOINT

Root User

The VIRTUALMOUNTPOINT option defines a virtual mount point for a file system with files that you want ADSM to consider for backup beginning with a specific directory within that file system. The VIRTUALMOUNTPOINT option also defines virtual mount points for multiple file systems. You can define more than one virtual mount point within the same file system. Select the VIRTUALMOUNTPOINT option to define virtual mount points for both local and remote file systems.

Selecting the VIRTUALMOUNTPOINT option to identify a directory within a file system provides a direct path to the files you want to back up, saving processing time. It is more efficient to define a virtual mount point within a file system than to define the file system with the DOMAIN option, and then to use the EXCLUDE option in your include-exclude options file to exclude the files you do not want ADSM to consider for backup.

When you define a virtual mount point, you can specify a path name for the directory or, you can specify the path name as an environment variable.

**Note:** If the directory you want to specify as a virtual mount point is a symbolic link, set the FOLLOWSYMBOLIC option to *Yes*. If this option is set to *No* (the default), ADSM does not allow you to use a symbolic link as a virtual mount point.

After you define a virtual mount point, you can include it for incremental backup services by specifying the path and directory name in the DOMAIN option in either the default client user options file or in the **incremental** command. Users can also specify the path and directory name of the virtual mount point selecting the DOMAIN option in their own client user options files and using the **incremental** command.

### Context

This option is placed in the client system options file.

### Syntax

▶▶ `VIRTUALMountpoint directory` ▶▶

## Parameters

### directory

The *directory* parameter defines the path and directory name, or a symbolic specification for the directory you want to use as the virtual mount point for a file system.

If you want to specify the directory symbolically, first define the full path or a subset of the path as an environment variable. For example, if you define the following variable in the `.profile` file in a Bourne or Korn shell:

```
export AFSCELL=/afs/almaden.ibm.com
export DFSCELL=testdce.ibm.com
```

Or, if you add this environment variable to `.login` in your `$HOME` directory in the C shell:

```
setenv AFSCELL /afs/almaden.ibm.com
setenv DFSCELL = testdce.ibm.com
```

You can define a virtual mount point like this:

```
VIRTUALMOUNTPOINT ${AFSCELL}/u/shaw
VIRTUALMOUNTPOINT ../../${DFSCELL}/fs/usr/shaw
```

**Note:** Precede the environment variable names with a dollar sign (\$) and enclose it in braces.

Use of environment variables is valid *only* when you use `dsmafs`, `dsmdfs`, `dsmcafs`, and `dsmcdf`s.

The specification above resolves to:

```
VIRTUALMOUNTPOINT /afs/almaden.ibm.com/u/shaw
VIRTUALMOUNTPOINT ../../testdce.ibm.com/fs/usr/shaw
```

**Note:** You can use a single environment variable to define multiple virtual mount points. For example:

```
export VIRTUALMPTS="/afs/almaden.ibm.com/u/luan/project1\
/afs/almaden.ibm.com/u/luan/project2\
/afs/almaden.ibm.com/u/luan/project3"
```

Then, you can set the `VIRTUALMOUNTPOINT` option in your client system options file like this:

```
VIRTUALMOUNTPOINT ${VIRTUALMPTS}
```

If you want to include the virtual mount points in your client domain, set the `DOMAIN` option like this:

```
DOMAIN ${VIRTUALMPTS}
```

**Note:** You cannot use wildcard characters in the path or in the directory names.

Define only one virtual mount point with each `VIRTUALMOUNTPOINT` option you include in your client system options file. Use the `VIRTUALMOUNTPOINT` option as many times as necessary to define all of the virtual mount points you want to use.

## Examples

**Options file:**

```
virtualmountpoint /afs/xyzcorp.com/u/bob  
virtualmountpoint /afs/xyzcorp.com/u/bob/test/data  
virtualmountpoint ../../testdce/fs/usr/shaw
```

**Command line:** Not applicable

---

## Part 3. AFS/DFS Volume/Fileset Backup Agents

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---

## Chapter 6. Using the AFS Volume Backup Agent

Transarc's AFS backup commands back up AFS volumes to tape devices using the BackUp Tape Coordinator (butc) program that prompts for the tapes to which it writes the backup data. Each machine running butc is connected to a tape device that can be a simple drive or a stacker. This AFS volume backup system consists of the following commands:

**backup**  
**buserver**  
**butc**

The ADSM agent program, BackUp To ADSM (buta), is a replacement for butc, the tape interface program of the volume backup system. The AFS buta program performs as an interface between the AFS backup commands and an ADSM server, allowing you to back up and restore AFS data by volume. AFS buta accomplishes these tasks using ADSM application programming interface (API) function calls. Through the ADSM API, each full or incremental volume dump is sent to an ADSM server as a file with the same name as that of the volume.

The volume dump files associated with a dump are stored within a single file space in ADSM storage named with the dump ID string. An ADSM administrator can delete an AFS backup dump from ADSM storage by deleting the file space in which it is stored. When an AFS backup dump is deleted from ADSM storage, it should also be removed from the AFS backup database using the AFS **backup** command. ADSM provides a utility program with buta, called *delbuta*, that performs both of these tasks for you by deleting the unwanted old dumps from both the AFS backup database and the ADSM server simultaneously.

To improve the performance of backup operations, you can start multiple instances of buta at one time, running on the same machine and on different machines.

If you have a small cell and a busy network between file servers and the ADSM server, and your ADSM server is on AIX, you might want to run only one buta instance on the ADSM server to back up all volumes. You can also run one buta instance on each file server machine sequentially, allowing only one buta instance to run at any time to back up its local volumes to ADSM.

If you have a large cell and a dedicated network between file servers and the ADSM server, you might want to run one buta instance on every file server, backing up its local volumes so that you can finish the full dumps within the time window allowed. A large number of buta dumps can be performed simultaneously. The ideal number of concurrent dumps depends on the configurations of your network and servers.

**Important:** All instances of buta running on one or more machines must use the same ADSM node name and password.

**Note:** System administrators should familiarize themselves with the AFS volume backup system (backup and buserver commands) since the buta program is used as a

part of that system and it works like a special version of butc. Refer to the chapters on backup system commands in the AFS manuals.

---

## Setting Up the AFS Volume Backup Agent

Before you start the AFS buta program, you need to define environment variables, install the API, and perform administration tasks. The next sections describe these procedures.

### Installation

Install the ADSM API and the buta program on selected machines.

**Note:** The selected machines must also have the AFS Client installed. This then becomes a buta machine. See Chapter 2, “Installing The AFS/DFS Backup Clients” on page 9 for installation procedures.

### ADSM API Client Configuration

Follow the steps below to define ADSM environment variables and options.

1. Specify the client system options file (dsm.sys), the client user options file (dsm.opt), and the API error log file (dserror.log) that you want to use for buta backups using the DSMI\_CONFIG, DSMI\_DIR, and DSMI\_LOG environment variables. See Table 7 for examples of how to specify these files.

If you do not define these environment variables, ensure the default paths are correct.

**Note:** The default paths for DSMI\_CONFIG and DSMI\_DIR are different for different versions of the ADSM API. See the README file for the API version you are using to determine the default locations.

Table 7. How to Specify the Options Files

Variable	What it does	Example
DSMI_CONFIG	Points to the client user options file (dsm.opt).	export DSMI_CONFIG=/usr/afs/backup/dsm.opt
DSMI_DIR	Points to the directory that contains the client system options file (dsm.sys).	export DSMI_DIR=/usr/afs/backup
DSMI_LOG	Points to the directory that contains the API error log file (dserror.log).	export DSMI_LOG=/usr/afs/backup

**Note:** Do not place a slash (/) at the end of the directory path.

2. Set the TAPEPROMPT option to *no*, and the COMPRESSALWAYS option to *yes* in the client user options (dsm.opt) file. For example:

```
servername      seaside
tapeprompt      no
compressalways  yes
```

3. Set the PASSWORDACCESS option to *prompt* in the client system options (dsm.sys) file.
4. Set the COMPRESSION option to *yes* in the client system options (dsm.sys) file if you want to compress data before sending it to an ADSM server. For example, set the contents of **/usr/afs/buta/dsm.sys** to::

```
servername      seaside
tcpport         1500
tcpserveraddress seaside.almaden.ibm.com
passwordaccess  prompt
compression     yes
```

5. To ensure that language support works correctly, create a symbolic link to the message catalog directory in the DSMI\_DIR directory. For example, if your DSMI\_DIR environment variable equals **/usr/afs/buta**, create the following symbolic link:

```
/usr/afs/buta/en_US -> /usr/lpp/adsm/bin/en_US
```

## Add the AFS Backup Host

Follow the steps below to add the buta host to the coordinator host database.

1. Perform a **klog admin** first.
2. Add the buta host to the coordinator host database using this **backup** command:

```
backup> addhost <machine name> <port offset>
```

The *machine name* parameter is the same as the buta machine name, and the *port offset* parameter is the same as the port offset you specify to start buta.

## ADSM Administration

Follow these steps to perform ADSM administration tasks.

1. Ensure that the environment variables DSM\_CONFIG, DSM\_DIR, and DSM\_LOG (or DSMG\_CONFIG, DSMG\_DIR, and DSMG\_LOG for the graphical administrative user interface) are set appropriately, or the defaults are acceptable.
2. Register a buta node name with an ADSM server using this **dsmadm** command:

```
register node <node name> <passwd> backdelete=yes
```

**Note:** Register only *one* buta node name for all buta instances. The same node name and password should be used for all instances of buta. The node name you select should be different from any of your machine names.

3. Assign your buta node to an ADSM policy domain containing a policy set and a management class with a backup copy group appropriate for your buta needs. This can be the default policy domain.

A backup copy group contains an attribute specifying the destination for your AFS backup dumps. If you want your AFS backup dumps stored in a storage pool separate from other types of backups, your ADSM administrator must define a backup copy group specifying that storage pool in the active policy set of the policy domain to which your buta node is assigned.

## Start the buta Program

To start the buta program on a buta machine, do the following:

1. Perform a **klog admin** first.
2. Select the right version of buta to use. Two versions of the buta program are installed in the `/usr/afs/buta` directory. The program named **buta.afs34a:** works with the AFS 3.4a **backup** and **buserver** commands.

Another program named **buta.afs34a.patch** works with the AFS 3.4a patch version (AFS 3.4 revision 4.40 and after) **backup** and **buserver** commands.

3. Rename the selected version of the buta program to **buta**.
4. Enter this **buta** command:

```
buta -port <port offset> -node <node name> -password <node password>  
      -server <server name>
```

Where the node name and password are the node name and its password that were registered with an ADSM server in the previous section. The server name is the server stanza name from the `dsm.sys` file rather than a network host name.

## Backup Commands

You can now use AFS backup commands as usual, specifying a port offset number you defined for each **buta** command that you enter.

BackUp To ADSM supports all AFS backup commands *except* the following:

```
backup labeltape  
backup readlabel  
backup restoredb  
backup savedb  
backup scantape  
backup setexp
```

**Note:** See *ADSTAR Distributed Storage Manager Installing the Clients* for detailed instructions on how to install ADSM programs, update options files, and register a client node.

---

## Using the buta Command

Use the **buta** command to start a buta process on a buta machine.

Enter the **buta** command over a connection to a buta machine. You must open a separate connection for each buta instance.

If you run **buta** in the foreground, the connection on which you enter the command is not available for subsequent commands. The buta program uses the connection as a dedicated monitoring connection/window on which to display trace information or prompts. The monitoring connection/window must remain open as long as buta is running. To stop buta, enter an interrupt signal, such as Ctrl-C, in the monitoring window.

If you run buta in the background, use the *-alwaysonit* parameter to prevent prompting for options if a volume fails to dump.

The **buta** command writes output to the following two files on the local disk of the buta machine:

***/usr/afs/buta/TL.port offset***

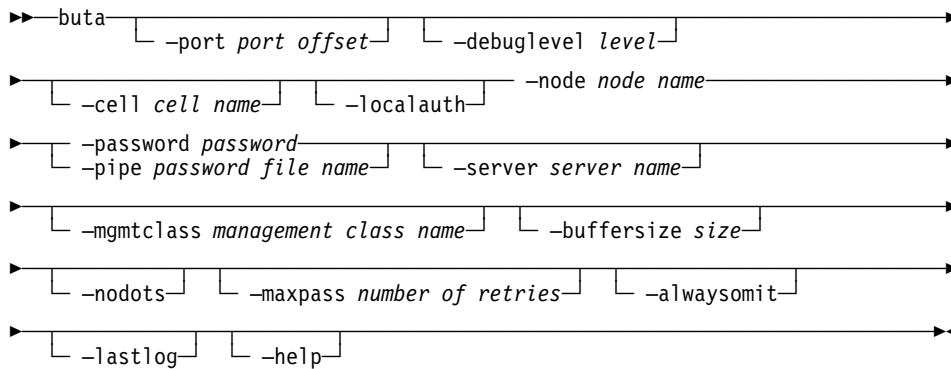
A log file that contains information about the processing of operations. For example, when you enter the **backup dump** command, the log file lists both the names of volumes that are dumped successfully, and the names of volumes that incurred some failures during the dump.

***/usr/afs/buta/TE.port offset***

An error log file that contains information about any problems encountered during the processing of operations. For example, when you enter the **backup dump** command, the error log file lists only the names of the volumes that incurred some failures during the dump.

The **buta** command appends information to the log file each time you enter the command. It also appends information to the error log file whenever it encounters a problem. Check the log files periodically to ensure that dumps and restores are completing successfully.

## Format



**Note:** The `-node` command parameter, and a choice of either the `-password` or `-pipe` command parameters, are required.

## Parameters

### **-port** *port offset*

Specifies the port offset number associated with the buta instance to be started.

A port offset number is a unique number assigned to a buta instance. When entering an AFS backup command, specify the port offset number of the buta instance that is to execute the command. The default is 0. Valid values are 0 through 58510. You can assign the port offset numbers in sequence, or you can skip numbers.

### **-debuglevel** *level*

Determines the amount of information buta displays as the output. The values are 0, 1, and 2, with an increasing amount of debugging information provided. The default is 0.

### **-cell** *cell name*

The cell against which you want the buta instance to run. You must be listed in the `/usr/afs/etc/UserList` file in the cell you specify, and you must authenticate to the specified cell before using this argument. The default is the local cell of the machine on which the buta instance is run.

### **-localauth**

Constructs a server ticket using a key from `/usr/afs/etc/KeyFile`.

### **-node** *node name*

The ADSM node name that the buta program uses.

### **-password** *password*

The ADSM password for the node name used by the buta program. If you do not use this option, you must use the `-pipe` option.

**-pipe** *password file name*

Reads the ADSM password for the ADSM client node from the specified file. If you do not use this option, you must use the `-password` option.

**-server** *server name*

The ADSM server to which you want to send backup dumps. The ADSM server name should be a stanza name from the `dsm.sys` file rather than a network host name. The default is the default server specified in the `dsm.sys` file.

This parameter *is required* for all `buta` command invocations if you use multiple ADSM servers for `buta` backup. **If you do not use this command parameter, you might not be able to restore the backups properly.**

It is recommended that you **always** use this parameter even if you are not using multiple ADSM servers. This prevents you from encountering any restore problems if you later decide to use multiple ADSM servers.

**-mgmtclass** *management class name*

The name of the ADSM management class to bind to the dump files. A management class contains an attribute that specifies the destination storage pool for the dump. The default is the default management class specified by your ADSM administrator.

**-buffersize** *size*

The size of the ADSM buffer that is used to collect AFS volume dump data from AFS volume servers. Specify the size in kilobytes. The default is 128 Kbytes.

**-nodots**

Prevents the dump progress indicator dots from being printed. By default, the **buta** command prints one dot (.) each time a full buffer is dumped to, or restored from, the ADSM server.

**-maxpass** *number of retries*

The number of automatic retries for dumping a volume before prompting for one of these options:

- Retry
- Omit the volume
- End the dump

**-alwaysomit**

Prevents prompting for options after the last automatic retry for each volume that failed to dump. Failed volumes are always omitted. Use this option if you run the **buta** command in the background.

**-lastlog**

Specifies that `buta` uses a separate error and log file for the last pass. The file names are the normal file names ending with **.lp**. For example, **TL.0.lp** is the name of the last-pass log file for port 0, and **TE.1.lp** is the name of the last-pass error file for port 1.



### **-help**

Prints the online help for this command. Do not use any other arguments or flags with this argument.

## **Examples**

*Table 8. Examples of Tasks and Commands*

<b>Task</b>	<b>Command</b>
Start an instance of buta at port offset 99.	<code>buta -port 99 -node afsback -password secret1</code>
Start an instance of buta at port offset 0 and send the backup dump to a server named jaguar.	<code>buta -node afsback -password secret1 -server jaguar</code>

---

## **Using delbuta to Delete Backup Dumps**

An AFS backup dump can be deleted from ADSM storage by deleting the file space in which it is stored. An ADSM administrator with the appropriate authority can delete a file space from within an ADSM administrative client session.

When an AFS backup dump is deleted from ADSM storage, it should also be deleted from the AFS backup database. An AFS administrator can delete a backup dump from the AFS backup database using an AFS **backup** command.

To delete an AFS backup dump from both ADSM storage *and* the AFS backup database, the **delbuta** command is used. To use this command, you must have the appropriate authority to delete file spaces from ADSM storage, and you must hold AFS administrative tokens.

Before you use the **delbuta** command, update the `delbuta.set_info` file. This file is installed in the same directory as that of the `buta` program. Both the AFS backup commands and the ADSM administrative client should have been installed or made available on the same machine.

### **Update the delbuta.set\_info File**

The `delbuta.set_info` file contains parameters that the **delbuta** command uses. You can edit this file using an editor of your choice.

**Note:** Because this file contains your ADSM administrator password, protect it with the appropriate permissions.

For more information about `delbuta`, see Chapter 8, “Using the `delbuta` Utility Command” on page 61.



---

## Chapter 7. Using the DFS Fileset Backup Agent

Similar to the AFS volume backup agent, the DFS fileset backup agent performs as an interface program between the DFS fileset backup system (same as volume backup system in AFS) and an ADSM server. The DFS fileset backup system consists of the following commands:

**bak**  
**bakserver**  
**butc**

The ADSM agent program, BackUp To ADSM (buta), is a replacement for the BackUp Tape Coordinator (butc), the tape interface program of the fileset backup system. The DFS buta program performs as an interface between the DFS backup commands and an ADSM server, allowing you to back up and restore DFS data by fileset. DFS buta accomplishes these tasks using ADSM application programming interface (API) function calls. Through the ADSM API, each full or incremental fileset dump is sent to an ADSM server as a file with the same name as that of the fileset.

The fileset dump files associated with a dump are stored within a single filespace in ADSM storage named with the dump ID string. An ADSM administrator can delete a DFS backup dump from ADSM storage by deleting the file space in which it is stored. When a DFS backup dump is deleted from ADSM storage, it should also be removed from the DFS backup database using the DFS **bak** command. ADSM provides a utility program with buta, called *delbuta*, that performs both of these tasks for you by deleting the unwanted old dumps from both the DFS backup database and the ADSM server simultaneously.

To improve the performance of backup operations, you can start multiple instances of buta at one time, running on the same machine and on different machines.

If you have a small cell and a busy network between file servers and the ADSM server, and your ADSM server is on AIX, you might want to run only one buta instance on the ADSM server to back up all filesets. You can also run one buta instance on each file server machine sequentially, allowing only one buta instance to run at any time to back up its local filesets to ADSM.

If you have a large cell and a dedicated network between file servers and the ADSM server, you might want to run one buta instance on every file server, backing up its local filesets so that you can finish the full dumps within the time window allowed. A large number of buta dumps can be performed simultaneously. The ideal number of concurrent dumps depends on the configurations of your network and machines.

**Important:** All instances of buta running on one or more machines must use the same ADSM node name and password.

For information about DFS file backup, see Chapter 4, “The DFS File Backup Clients” on page 21.

**Note:** System administrators should familiarize themselves with the DFS fileset backup system since the buta program is used as a part of that system and it performs like a special version of butc. Refer to the chapters on “Backup Configuration” and “Backup and Restoring Data” in the *IBM Distributed Computing Environment 2.1 for AIX: DFS Administration Guide and Reference*.

---

## Setting Up the DFS Fileset Backup Agent

Getting started with the DFS fileset backup agent requires the following setup procedures.

### Installation

Install the ADSM API and the buta program on selected machines. This then becomes a buta machine.

See Chapter 2, “Installing The AFS/DFS Backup Clients” on page 9 for installation procedures.

**Note:** The selected machines must have the DCE client installed.

The current version of the buta program, *buta.dfs21*, is installed in the */var/dce/dfs/buta* directory. All references of buta in this book refer to this current version. You can rename this program to buta if you choose.

### ADSM API Client Configuration

Follow the steps below to define ADSM environment variables and options.

1. Specify the client system options file (*dsm.sys*), the client user options file (*dsm.opt*), and the API error log file (*dsierror.log*) that you want to use for buta backups using the *DSMI\_CONFIG*, *DSMI\_DIR*, and *DSMI\_LOG* environment variables. See Table 9 for examples of how to specify these files.

If you do not define these environment variables, ensure the default paths are correct.

**Note:** The default paths for *DSMI\_CONFIG* and *DSMI\_DIR* are different for different versions of the ADSM API. See the README file for the API version you are using to determine the default locations.

Table 9. How to Specify the Options Files

Variable	What it does	Example
<i>DSMI_CONFIG</i>	Points to the client user options file ( <i>dsm.opt</i> ).	<code>export DSMI_CONFIG=/var/dce/dfs/buta/dsm.opt</code>
<i>DSMI_DIR</i>	Points to the directory that contains the client system options file ( <i>dsm.sys</i> ).	<code>export DSMI_DIR=/var/dce/dfs/buta</code>
<i>DSMI_LOG</i>	Points to the directory that contains the API error log file ( <i>dsierror.log</i> ).	<code>export DSMI_LOG=/var/dce/dfs/buta</code>

**Note:** Do not place a slash (/) at the end of the directory path.

2. Set the TAPEPROMPT option to *no*, and the COMPRESSALWAYS option to *yes* in the client user options (dsm.opt) file. For example:

```
servername      seaside
tapeprompt      no
compressalways  yes
```

3. Set the PASSWORDACCESS option to *prompt* in the client system options (dsm.sys) file.

4. Set the COMPRESSION option to *yes* in the client system options (dsm.sys) file if you want to compress data before sending it to an ADSM server. For example, the contents of **/usr/dfs/buta/dsm.sys**:

```
servername      seaside
tcpport         1500
tcpserveraddress seaside.almaden.ibm.com
passwordaccess  prompt
compression     yes
```

5. To ensure that language support works correctly, create a symbolic link to the message catalog directory in the DSMI\_DIR directory. For example, if your DSMI\_DIR environment variable equals **/var/dce/dfs/buta**, create the following symbolic link:

```
/var/dce/dfs/buta/en_US -> /usr/lpp/adsm/bin/en_US
```

## DCE Configurations

Follow the steps below to configure your machines either for a client-only machine, or for all machines.

### Steps Required for a Client-Only Machine

If your buta machine is configured as a DCE client but *not* as a DFS server machine of some type, such as a file server machine or a backup database machine, you **must** perform the steps listed in the section entitled, “Steps Required for Client-Only Machines,” from the chapter on configuring a tape coordinator machine located in the *IBM Distributed Computing Environment for AIX 2.1: DFS Administration Guide and Reference*.

Verify that these directories were created as a part of the buta installation rather than **/var/dce/dfs/backup** (buta does not need this backup directory).

```
/var/dce/dfs  
/var/dce/dfs/buta
```

### Steps Required for All Machines

Perform the following steps to configure *any* machine as a buta machine.

**Important:** Follow the procedures listed in this section rather than the section in the *IBM Distributed Computing Environment 2.1 for AIX: DFS Administration Guide and Reference*.

If the machine you want to configure is a DCE client machine but *not* a DFS server machine of some type, perform all of the steps discussed in “Steps Required for a Client-Only Machine” first before you perform the steps here.

If the machine is configured as some type of DFS server machine, you do not need to perform the steps listed in “Steps Required for a Client-Only Machine.”

1. Ensure the DFS **bak** command is available on the local machine. The **bak** command should be in the **/opt/dcelocal/bin** directory.
2. Enter the **bos lsadmin** command to verify that the individuals who are to use the backup system are included in the appropriate administrative lists and that you are included in the admin.bak list. This allows you to enter the **bak addhost** command.
3. To add someone to a list, enter the **bos addadmin** command.
4. Enter the **bos status** command to verify that the bakserver process is running on the backup database machines of the cell.
5. Enter the **bak addhost** command to create an entry in the backup database for each buta instance, defining its tcID:

```
$ bak addhost -tapehost <machine> -tcid <tc_number>
```

The machine name is the buta machine above, and the *tc\_number* is the same as the *tc\_number* used when you started buta.

**Note:** You can add multiple buta instances on the same machine.

## ADSM Administration

Follow these steps to perform ADSM administration tasks.

1. Ensure the environment variables DSM\_CONFIG, DSM\_DIR, and DSM\_LOG (or DSMG\_CONFIG, DSMG\_DIR, and DSMG\_LOG for the graphical administrative user interface) are set appropriately, or the defaults are acceptable.
2. Register a buta node name (for example, dfsback) with an ADSM server using this **dsmadm** command:

```
register node <node name> <passwd> backdelete=yes
```

**Note:** Register only *one* buta node name for all buta instances. The same node name and password should be used for all instances of buta. The node name you select should be different from any of your machine names.

3. Assign your buta node to an ADSM policy domain containing a policy set and a management class with a backup copy group appropriate for your buta needs. This can be the default policy domain.

A backup copy group contains an attribute specifying the destination for your DFS backup dumps. If you want your DFS backup dumps stored in a storage pool separate from other types of backups, your ADSM administrator must define a backup copy group specifying that storage pool in the active policy set of the policy domain to which your buta node is assigned.

## Start the buta Program

To start the buta program on a buta machine, do the following:

1. Perform a **dce\_login** as a privileged administrator (for example, cell\_admin).
2. Enter this **buta** command:

```
buta -tcid <tc_number> -node <node name> -password <node password>  
-server <server name>
```

Where the node name and password are the node name and its password that were registered with an ADSM server in the previous section. The server name is the server stanza name from the dsm.sys file rather than a network host name.

## Backup Commands

You can now use DFS backup commands as usual, specifying a port offset number you defined for each **buta** command that you enter.

Fileset backup supports all DFS backup commands *except* the following:

- bak labeltape
- bak readlabel
- bak restoredb
- bak savedb
- bak scantape
- bak setexp

**Note:** See *ADSTAR Distributed Storage Manager Installing the Clients* for detailed instructions on how to update options files and register a client node.

---

## Using the buta Command

Use the **buta** command to start a buta process on a buta machine.

Enter the **buta** command over a connection to a buta machine. You must open a separate connection for each buta instance.

If you run buta in the foreground, the connection on which you enter the command is not available for subsequent commands. The buta program uses the connection as a dedicated monitoring connection/window on which to display trace information or prompts. The monitoring connection/window must remain open as long as buta is running. To stop buta, enter an interrupt signal, such as Ctrl-C, in the monitoring window.

If you run buta in the background, use the *-alwaysomit* parameter to prevent prompting for options if a fileset fails to dump.

The **buta** command writes output to the following two files on the local disk of the buta machine:

***/var/dce/dfs/buta/TL.tclD***

A log file that contains information about the processing of operations. For example, when you enter the **bak dump** command, the log file lists both the names of filesets that are dumped successfully, and the names of filesets that are omitted from the dump.

***/var/dce/dfs/buta/TE.tclD***

An error log file that contains information about any problems encountered during the processing of operations.

For example, when you enter the **bak dump** command, the error log file lists only the names of the filesets omitted from the dump.

The *tclD* parameter is the Tape Coordinator number of the associated buta instance.



The **buta** command appends information to the log file each time you enter the command. It also appends information to the error log file whenever it encounters a problem. Check the log files periodically to ensure that dumps and restores are completing successfully.

**Note:** Unlike **butc**, **buta** does not require a TapeConfig file.

## Format

```

▶▶ buta [-tcid coordinator ID] [-debuglevel 0 | 1]
▶ [-cell cell name] -node ADSM node name
▶ [-password ADSM password] [-pipe ADSM password file name] [-server ADSM server name]
▶ [-mgmtclass ADSM management class name]
▶ [-buffersize ADSM buffer size] [-nodots]
▶ [-maxpass number of retries] [-alwaysomit] [-lastlog]
▶ [-help]

```

**Note:** The **-node** command parameter, and a choice of either the **-password** or **-pipe** command parameters, are required.

## Parameters

### **-tcid** *coordinator ID*

Specifies the Tape Coordinator ID associated with the **buta** instance you want to start. The issuer of backup commands uses this number when indicating that this **buta** instance is to execute a command. Legal values are numbers 0 through 1023. A **bak addhost** command must be entered first to register the **-tcid, hostID** pair in the backup database. The *hostID* is the name of the machine where the **buta** command is entered.

### **-debuglevel** *0 | 1*

Determines the amount of information **buta** displays as the output. The values are 0 and 1, with an increasing amount of debugging information provided. The default value is 0.

### **-cell** *cell name*

The cell against which you want the **buta** instance to run. You must authenticate to the specified cell before using this argument. The default is the local cell of the machine on which the **buta** instance is run.

The specified **buta** communicates with the backup server in the indicated cell. It manipulates data only in the specified cell. An entry must be defined for **buta** in the backup database of the specified cell. The entry must define a unique port offset number for the **buta** in that cell.

- node** *ADSM node name*  
Specifies the ADSM node name used by the buta program.
- password** *ADSM password*  
Specifies the password of the ADSM node. Use the `-password` or `-pipe` parameter to provide the password. If you use both, the `-password` parameter overrides the `-pipe` parameter.
- pipe** *ADSM password file name*  
Reads the password for the ADSM client node from the specified file.
- server** *ADSM server name*  
The ADSM server to which you want to send backup dumps. The ADSM server name should be a stanza name from the `dsm.sys` file rather than a network host name. The default is the default server specified in the `dsm.sys` file.  
  
This parameter *is required* for all buta command invocations if you use multiple ADSM servers for buta backup. **If you do not use this command parameter, you might not be able to restore the backups properly.**  
  
It is recommended that you *always* use this parameter even if you are not using multiple ADSM servers. This prevents you from encountering any restore problems if you later decide to use multiple ADSM servers.
- mgmtclass** *ADSM management class name*  
The name of the ADSM management class to bind with the dump files. A management class contains an attribute that specifies the destination storage pool to use for the dump.
- buffersize** *ADSM buffer size*  
The size of the ADSM buffer that is used to collect DFS fileset dump data from DFS fileset servers. Specify the size in kilobytes. The default buffer size is 128 Kbytes.
- nodots**  
Prevents the dump progress indicator dots from being printed. By default, the **buta** command prints one dot (.) each time a full buffer is dumped to the ADSM server.
- maxpass** *number of retries*  
The number of automatic retries for dumping a fileset before prompting for one of these options:  
  - Retry
  - Omit the fileset
  - End the dump
- alwayssomit**  
Prevents prompting for options after the last automatic retry for each fileset that failed to dump. Always omit failed filesets.
- lastlog**  
Specifies that buta uses separate error and log files for the last pass. The file names are the normal file names ending with **.lp**. For example, **TL.0.lp** is the

name of the last-pass log file for tape coordinator 0, and **TE.1.ip** is the name of the last-pass error file for tape coordinator 1.

**-help**

Prints the online help for this command. Do not use any other arguments or flags with this argument.

## Examples

*Table 10. Examples of Tasks and Commands*

<b>Task</b>	<b>Command</b>
Start an instance of buta with tape coordinator ID 99.	<code>buta -tcid 99 -node dfsback -password secret1</code>
Start an instance of buta with tape coordinator ID 0 and send the backup dump to a server named jaguar.	<code>buta -node dfsback -password secret1 -server jaguar</code>

---

## Using delbuta to Delete Backup Dumps

A DFS backup dump can be deleted from ADSM storage by deleting the file space in which it is stored. An ADSM administrator with the appropriate authority can delete a file space from within an ADSM administrative client session.

When a DFS backup dump is deleted from ADSM storage, it should also be deleted from the DFS backup database. A DFS administrator can delete a backup dump from the DFS backup database using a DFS **bak** command.

To delete a DFS backup dump from both ADSM storage *and* the DFS backup database, the **delbuta** command can be used. To use that command, you must have the appropriate authority to delete file spaces from ADSM storage, and you must hold DFS administrative tokens.

Before you use the **delbuta** command, update the `delbuta.set_info` file. This file is installed in the same directory as that of the `buta` program. Both the DFS **bak** commands and the ADSM administrative client should have been installed or made available on the same machine.

### Update the `delbuta.set_info` File

The `delbuta.set_info` script file contains parameters that the **delbuta** command uses. You can edit this file using an editor of your choice.

**Note:** Because this file contains your ADSM administrator password, protect it with the appropriate permissions.

For more information about `delbuta`, see Chapter 8, “Using the `delbuta` Utility Command” on page 61.

---

## Chapter 8. Using the delbuta Utility Command

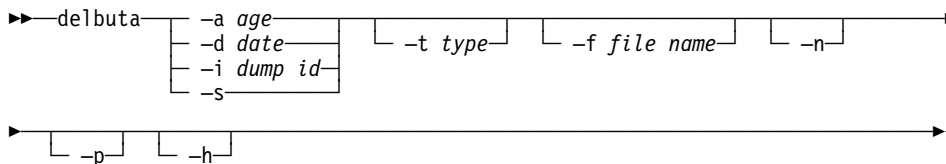
This chapter provides information about the **delbuta** utility command. This command allows an AFS administrator to delete an AFS backup dump from both ADSM storage and the AFS backup database.

---

### Deleting Backup Dumps With delbuta

Select the **delbuta** command to delete backup dumps from both ADSM storage and the AFS or DFS backup database, or to synchronize the ADSM file space database with the backup database. You must hold administrative credentials to use this command unless you are performing a test run and you select the **-f** parameter. To perform a test run, set **delbuta\_dryrun=print** in the `delbuta.set_info` file, or enter the **delbuta** command with the **-n** parameter.

#### syntax



#### Parameters

##### **-a** *age*

Indicates the age of a backup dump in days. To be eligible for deletion, a backup dump must be the age you specify or older.

##### **-d** *date*

Specifies a date in one of these formats:

```
yyyy.mm.dd  
yyyy/mm/dd  
yy/mm/dd  
yy/m/d
```

To be eligible for deletion, a backup dump must have a creation date the same as, or earlier than, the date you specify.

##### **-i** *dump id*

Specifies the dump ID of the backup dump you want to delete.

##### **-s**

Synchronizes the ADSM file space database with the AFS or DFS backup database. Each ADSM backup that was created using the **buta** command is identified and checked for a corresponding backup dump entry in the backup database. If a match is not found, the backup dump is deleted from the ADSM file space.

**Note:** Do not use any other arguments or flags with this argument.

**-t type**

Indicates the type of backups you want to delete. The types are:

- f** Full backups only. Delete only full backups that are eligible for deletion based on the age, date, or dump ID you specify.
- i** Incremental backups only. Delete only incremental backups that are eligible for deletion based on the age, date, or dump ID you specify.
- a** Additional incremental backups. Delete any full or incremental backups that are eligible for deletion based on the age, date, or dump ID you specify, and delete any additional incremental backups that are based on those backups.

This is the default.

**-f file name**

Indicates the name of a file containing a list of backup dumps. The format of the file must be identical to the output format from an AFS **backup dumpinfo** command, or a DFS **bak dumpinfo** command. The **delbuta** command uses this file instead of retrieving similar information from AFS using the **backup dumpinfo** command, or from DFS using the **bak dumpinfo** command. It also deletes any listed backups based on the age, date, dump ID, and type you specify.

**-n** Provides a preview of what the **delbuta** command would do given the specified arguments. When you use this parameter, the **delbuta** command does not delete any backup dumps.

**-p** Causes the **delbuta** program to display a prompt prior to each deletion.

**-h** Displays help information for the **delbuta** command.

**Note:** Do not use any other arguments or flags with this argument.

## Examples

Table 11. Examples of Tasks and Commands

Task	Command
Delete all full and incremental backup dumps that are 30 days or older, and delete all incremental backups that are associated with those backup dumps.	<code>delbuta -a 30</code>
Delete only incremental backups that were created on or before May 15, 1996 and display a prompt before each deletion.	<code>delbuta -d 1996.05.15 -t i -p</code>

## The delbuta Parameters at a Glance

The table below lists the **delbuta** parameters, their function (specified in the `delbuta.set_info` file), and the page location to go to in this book for more information.

Table 12. *delbuta* Parameters

Parameter	Function	Page
delbuta_adsm_admin_name	Specifies your administrator name registered with the ADSM server on which are stored the backup dumps you want to delete.	63
delbuta_adsm_admin_password	Specifies your ADSM administrator password.	64
delbuta_adsm_bin	Specifies the location of the ADSM client executable files.	65
delbuta_adsm_node	Specifies the name of the client node from which the backup dumps were sent.	66
delbuta_adsm_server	Specifies the name of the ADSM server on which the backup dumps you want to delete are stored.	67
delbuta_afsbackup	Specifies the location of the AFS <b>backup</b> command.	68
delbuta_buta_flag	Specifies whether you want the <b>delbuta</b> command to delete any other backup dumps that meet the selection criteria.	69
delbuta_dryrun	Indicates whether you want the <b>delbuta</b> command to actually delete backup dumps, or just report what it would do.	70
delbuta_workfile	Specifies the name of a file that the <b>delbuta</b> command can use as a work file.	71

---

## delbuta\_adsm\_admin\_name

### Purpose

Select the *delbuta\_adsm\_admin\_name* parameter to specify your administrator name registered with the ADSM server on which are stored the backup dumps you want to delete. You must have the appropriate authority to delete file spaces.

### syntax

▶▶—delbuta\_adsm\_admin\_name=*administrator name*————▶▶

### Parameter

#### administrator name

Specifies an administrator name registered with the ADSM server on which the backup dumps you want to delete are stored.

### Example

```
delbuta_adsm_admin_name=richard
```

---

## **delbuta\_adsm\_admin\_password**

Select the `delbuta_adsm_admin_password` option to specify your ADSM administrator password.

### **Syntax**

▶▶—`delbuta_adsm_admin_password=password`————▶▶

### **Parameter**

#### **password**

The password for the administrator name you specify with the `delbuta_adsm_admin_name` option.

### **Example**

```
delbuta_adsm_admin_password=secret1
```



---

## delbuta\_adsm\_bin

Select the `delbuta_adsm_bin` option to specify the location of the ADSM client executable files.

### Syntax

```
▶▶—delbuta_adsm_bin="directoryspec"—————▶▶
```

### Parameter

#### **directoryspec**

The path name of the directory that contains the ADSM client executable files.

### Example

```
delbuta_adsm_bin="/usr/lpp/adsm/bin"
```

---

## delbuta\_adsm\_node

Select the `delbuta_adsm_node` option to specify the name of the client node for which the backup dumps were sent.

### Syntax

▶▶—`delbuta_adsm_node=node name`————▶▶

### Parameter

#### **node name**

The name of the client node for which the backup dumps you want to delete were sent.

### Example

```
delbuta_adsm_node=puma
```

---

## delbuta\_adsm\_server

Select the `delbuta_adsm_server` option to specify the name of the ADSM server on which the backup dumps you want to delete are stored.

### Syntax

```
▶▶ delbuta_adsm_server=[DEFAULT | server name] ▶▶
```

### Parameters

#### DEFAULT

Specifies that you want to delete backup dumps from the default server specified in the client system options file (`dsm.sys`).

#### *server name*

The name of the server from which you want to delete backup dumps.

### Examples

```
delbuta_adsm_server=default  
delbuta_adsm_server=server1
```

---

## delbuta\_afsbackup

Select the `delbuta_afsbackup` option to specify the location of the AFS **backup** command. This option should *only* be used in an AFS environment. It should be omitted in the DFS environment.

### Syntax

```
▶▶—delbuta_afsbackup="directoryspec"—————▶◀
```

### Parameter

#### **directoryspec**

The path name of the directory in which the AFS **backup** command is stored.

### Example

```
delbuta_afsbackup="/usr/afsws/etc/backup"
```

---

## delbuta\_buta\_flag

Select the `delbuta_buta_flag` option to specify whether you want the **delbuta** command to delete backup dumps created by buta only, or to delete any other backup dumps (buta-created, or not) that meet the selection criteria you specify.

### Syntax

►► `delbuta_buta_flag=value` ◀◀

### Parameters

#### value

The valid values for this option are:

#### **2#1000**

Specifies that the command is to delete only backup dumps created by buta that meet the specified selection criteria.

#### **2#0000**

Specifies that the command is to delete any backup dumps that meet the specified selection criteria, regardless of whether they were created by buta or not.

### Examples

```
delbuta_buta_flag=2#1000  
delbuta_buta_flag=2#0000
```

---

## delbuta\_dryrun

Select the `delbuta_dryrun` option to indicate whether you want the **delbuta** command to delete backup dumps that meet the selection criteria you specify (real mode), or to print a report that lists the actions it would take given the options you specify for the **delbuta** command (test mode).

### Syntax

▶▶ `delbuta_dryrun=value` ◀◀

### Parameters

#### value

The valid values for this option are:

"" (Null) This value sets the command to real mode. The **delbuta** command deletes the backup dumps you specify from both ADSM storage and the backup database.

**Note:** If you select the `-n` option with the **delbuta** command, it runs in test mode even if you use this value to set the mode to real mode in the **delbuta.set\_info** file.

#### print

This value sets the command to test mode. The command prints a report of the actions it would take given the options you specify, but it does not delete any backups.

### Examples

```
delbuta_dryrun=""  
delbuta_dryrun=print
```

---

## delbuta\_workfile

Select the `delbuta_workfile` option to specify the name of a file that the **delbuta** command can use as a work file.

### Syntax

```
▶▶—delbuta_workfile="filename"—————▶▶
```

### Parameter

#### **filename**

The name of a file that the **delbuta** command can use as a work file. The file can be any scratch file. The default is `/tmp/delbuta.work`.

### Example

```
delbuta_workfile="/tmp/workfile"
```





---

## Part 4. Appendix



---

## Appendix A. Reporting Problems

Make sure you are using the correct version of buta.

For AFS, see “Start the buta Program” on page 45.

For DFS, see “Installation” on page 52.

***If you encounter a problem or cannot start buta, collect this information:***

- The dsm.sys file
- The dsm.opt file
- The use of ADSM API environment variables. To obtain the current settings of these environment variables, use the following **dsmdmc** command:

```
set | grep DSMI
```

- The node information on the ADSM server. To obtain this information, enter:

```
query node <nodename> format=detail
```

***If buta starts successfully and then you encounter a problem, collect this information:***

- A problem description file that includes the **buta** command you used and the buta session output you received when the problem occurred.
- The tape log files (TX.x or TX.x.lp if you used the -lastlog option of the **buta** command).
- The tape error files (TE.x or TE.x.lp if you used the -lastlog option of the **buta** command).
- The ADSM API error log file (dsierror.log).
- The ADSM API trace file. If possible, recreate the backup problem with the trace flag turned on. Add the following lines in the dsm.opt file.

***For AFS:***

```
tracefile /usr/afs/buta/dsitrace.log
traceflag api session comm
```

***For DFS:***

```
tracefile /var/dce/dfs/buta/dsitrace.log
traceflag api session comm
```

**Note:** These trace flags can generate a large trace file. You might want to use a different path if the `/usr/afs/buta/dsitrace.log` file or `/var/dce/dfs/buta/dsitrace.log` file will cause a space problem in the file system.



---

## Appendix B. Troubleshooting

Listed below are symptoms, probable causes, and solutions.

---

**You started buta and received the following messages:**

```
Error opening English version of the message repository.  
Ending Program.  
dsmInit failed: rc=4, dsmRSMmsg error rc=4.  
Wait 3 minutes before retrying.
```

**Probable Cause:** Your National Language Support (NLS) system was not set up correctly.

**Solution:** Create a symbolic link to the message catalog directory in the DSMI\_DIR directory. For example, if your DSMI\_DIR environment variable equals /usr/afs/buta, create the following symbolic link:

```
/usr/afs/buta/en_US -> /usr/lpp/adsm/bin/en_US
```

---

**You started buta and received the following message:**

```
dsmInit failed:ANS4368S (RC67)  
Session Rejected: The server is not licensed for this platform type.  
See your system administrator.  
Wait 3 minutes before retrying.
```

**Probable Cause:** Your ADSM server does not have the license for Open System Environments.

**Solution:** Request your ADSM administrator to purchase the license from IBM for the ADSM Open System Environments support, and to register the license key with the server using the “register license” ADSM administrative command.

---

**You entered an AFS backup command or a DFS bak command and received a message from buta similar to the following :**

```
fs: fileset (0,,7) inconsistent on server : 9.113.39.6,  
in cell: arc.sanjose.ibm.com
```

**Probable Cause:** You had a previously failed restoration attempt for this fileset.

**Solution:** Delete the fileset; then, terminate and restart buta.

**Note:** Whenever you experience abnormal terminations of dump/restore requests, terminate and restart buta.



---

## Glossary of Terms and Abbreviations

The terms in this glossary are defined as they pertain to the ADSM library. If you do not find a term you are looking for, you can refer to the *IBM Dictionary of Computing*, McGraw-Hill, 1994. In the United States and Canada you can order this publication by calling McGraw Hill at 1-800-2MC-GRAW.

This glossary may include terms and definitions from:

- The *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright (ANSI). Copies may be purchased from the American National Standards Institute, 11 West 42nd Street, New York, New York 10036.
- The *Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC2/SC1).

### A

**absolute.** A copy group mode value that indicates that a file is considered for incremental backup even if it has not changed since the last time it was backed up. See *mode*. Contrast with *modified*.

**active policy set.** The policy set within a policy domain that contains the most recently activated policy. This policy set is used by all client nodes assigned to the current policy domain. See *policy set*.

**active version.** The most recent backup copy of a file stored in ADSM storage for a file that currently exists on a file server or workstation. An active version remains active and exempt from deletion until it is replaced by a new backup version, or ADSM detects during an incremental backup that the user has deleted the original file from a file server or workstation.

**administrative client.** A program that runs on a file server, workstation, or mainframe. This program allows administrators to control and monitor ADSM servers through ADSM administrator commands. Contrast with *backup-archive client*.

**administrator.** A user who has been registered to the server as an administrator. Administrators can be assigned one or more privilege classes. Administrators can use the administrative client to enter ADSM server commands and queries according to their privileges.

**ADSM.** ADSTAR Distributed Storage Manager

**ADSTAR Distributed Storage Manager (ADSM).** A client/server program that provides storage management and data access services to customers in a multivendor computer environment.

**Advanced Program-to-Program Communications (APPC).** An implementation of the SNA LU6.2 protocol that allows interconnected systems to communicate and share the processing of programs. See *Systems Network Architecture Logical Unit 6.2* and *Common Programming Interface Communications*.

**APPC.** Advanced program-to-program communications.

**archive.** A function that allows users to copy one or more files to a long-term storage device. Archive copies may be accompanied by descriptive information, may imply data compression software usage, and may be retrieved by archive date, file name, or description. Contrast with *retrieve*.

**archive copy.** A file or group of files residing in an archive storage pool in ADSM storage.

**archive copy group.** A policy object that contains attributes which control the generation, destination, and expiration of archive files. The archive copy group belongs to a management class.

**archive retention grace period.** The number of days ADSM retains an archive copy when the server is unable to rebind the file to an appropriate management class.

**authentication.** The process of checking and authorizing a user's password before allowing that user access to the ADSM server. Authentication can be turned on or off by an administrator with system privilege.

**authorization rule.** A specification that allows another user to either restore or retrieve a user's files from ADSM storage.

## B

**backup.** A function that allows users to copy one or more files to a storage pool to protect against data loss. Contrast with *restore*.

**backup-archive client.** A program that runs on a file server, PC, or workstation and provides a means for ADSM users to back up, archive, restore, and retrieve files. Contrast with *administrative client*.

**backup copy group.** A policy object that contains attributes which control the generation, destination, and expiration of backup files. The backup copy group belongs to a management class.

**backup retention grace period.** The number of days ADSM retains a backup version when the server is unable to rebind the file to an appropriate management class.

**backup version.** A file, directory, or file space that a user has backed up that resides in a backup storage pool in ADSM storage. Though there may be more than one backup version of a file in ADSM storage, only one is considered the active version. See *active version* and *inactive version*.

**bindery.** A database that consists of three system files for a NetWare 3.11 or 3.12 server. The files contain user IDs and user restrictions.

**binding.** The process of associating a file with a management class name.

## C

**central scheduling.** A function that allows an administrator to schedule backup and archive operations from a central location. The operations can be scheduled on a periodic basis or on an explicit date.

**client.** A program running on a file server, PC, workstation or terminal that requests services of another program called the server. There are two types of ADSM clients: administrative client and backup-archive client. See *administrative client* and *backup-archive client*.

**Client Access/400.** A software product that supports advanced program-to-program communications (APPC) in the DOS, OS/2, and Microsoft Windows environments and provides a set of end user services.

**client domain.** The set of drives, file systems, or volumes selected by a user for processing during a backup or archive operation.

**client node.** A file server or workstation on which the backup-archive client program has been installed that has been registered with the server.

**client options file.** A user-editable file that contains processing options to identify ADSM servers, select communication methods, specify backup, archive, restore, and retrieve options, define scheduling options, and to choose formats for date, time, and numbers. Also called the **dsm.opt** file.

**client polling.** A client/server communication technique where the client node queries the server for scheduled work.

**client/server.** A communications network architecture in which one or more programs (clients) request computing or data services from another program (the server).

**client system options file.** A file, used on UNIX clients, that contains a number of processing options which identify the ADSM servers to be contacted for services. This file also specifies communications options, backup and archive processing options, and scheduling options. Also called the **dsm.sys** file. See *client user options file*.

**client user options file.** A user-editable file, used on UNIX clients, that contains processing options to identify the ADSM server to contact, to specify backup, archive, restore, and retrieve options, and to select formats for date, time, and numbers. Also called the **dsm.opt** file. See the *client systems options* file.

**closed registration.** A registration process in which an ADSM administrator must register workstations as client nodes with the server. Contrast with *open registration*.

**command line interface.** A type of user interface where commands are specified on the command line. Contrast with *graphical user interface*.

**Common Programming Interface Communications (CPIC).** A programming interface that allows program-to-program communication using SNA LU6.2. See *Systems Network Architecture Logical Unit 6.2*.

**communication method.** The method by which a client and server exchange information. For ADSM backup-archive clients, the method can be 3270,



PWSCS, SNA LU6.2, or TCP/IP. See *Programmable Workstation Communication Service*, *Systems Network Architecture Logical Unit 6.2*, and *Transmission Control Protocol/Internet Protocol*.

**communication protocol.** A set of defined interfaces that allows computers to communicate with each other.

**copy group.** A policy object that contains attributes which control the generation, destination, and expiration of backup and archive files. There are two kinds of copy groups: backup copy group and archive copy group. Copy groups belong to management classes. See *frequency*, *destination*, *mode*, *retention*, *serialization*, and *version*.

**CPIC.** Common Programming Interface Communications.

## D

**default management class.** A management class assigned to a policy set that is used to govern backed up or archived files when a user does not explicitly associate a file with a specific management class through the include-exclude list.

**destination.** A copy group attribute that specifies the storage pool to which a file will be backed up or archived. At installation, ADSM provides two storage destinations named BACKUPPOOL and ARCHIVEPOOL.

**domain.** See *policy domain* or *client domain*.

**dsm.opt file.** See *client options file* and *client user options file*.

**dsm.sys file.** See *client system options file*.

**dynamic.** A copy group serialization value that specifies that ADSM accepts the first attempt to back up or archive an object, regardless of any changes made during backup or archive processing. See *serialization*. Contrast with *shared dynamic*, *shared static*, and *static*.

## E

**error log.** A text file written on disk that contains ADSM processing error messages. These errors are detected and saved by the ADSM server.

**exclude.** The process of identifying files in an include-exclude list to prevent them from being backed up whenever a user or schedule issues an incremental or selective backup operation.

**expiration.** The process by which files are identified for deletion because their expiration date or retention period has passed. Backed up or archived files are marked for deletion based on the criteria defined in the backup or archive copy group.

## F

**file server.** A dedicated computer and its peripheral storage devices that are connected to a local area network that stores both programs and files that are shared by users on the network.

**file space.** A logical space on the ADSM server that contains a group of files. In ADSM, users can restore, retrieve, or delete file spaces from ADSM storage. On systems such as DOS or OS/2, a file space is a logical partition and is identified by a volume label. On UNIX systems, a file space is a logical space that contains a group of files backed up or archived from the same file system (or part of a file system defined with the VIRTUALMOUNTPOINT option in the client system options file).

**frequency.** A copy group attribute that specifies the minimum interval, in days, between incremental backups.

**fuzzy backup.** A backup version of a file that might not accurately reflect what is currently in the file because ADSM backed up the file while the file was being modified.

**fuzzy copy.** An archive copy of a file that might not accurately reflect what is currently in the file because ADSM archived the file while the file was being modified.

## G

**gigabyte (GB).** (1) One billion ( $10^9$ ) bytes. (2) When referring to memory capacity, 1 073 741 824 in decimal notation.

**graphical user interface (GUI).** A type of user interface that takes advantage of a high-resolution monitor, includes a combination of graphics, the object-action paradigm, and the use of pointing devices, menu bars, overlapping windows, and icons. Contrast with *command line interface*. See *windowed interface*.

**GUI.** Graphical user interface.

## H

**hierarchical storage management client.** A program that runs on a workstation or file server to provide space management services. It automatically migrates eligible files to ADSM storage to maintain specific levels of free space on local file systems, and automatically recalls migrated files when they are accessed. It also allows users to migrate and recall specific files.

**hive.** On Windows NT, a registry subkey that corresponds to a set of files in the `\system32\config` directory.

**HSM.** Hierarchical Storage Management

## I

**inactive version.** A copy of a backup file in ADSM storage that either is not the most recent version or the corresponding original file has been deleted from the client file system. Inactive backup versions are eligible for expiration according to the management class assigned to the file.

**include-exclude file.** On UNIX clients, a file that contains statements which ADSM uses to determine whether to back up certain files and to determine the associated management classes to use for backup or archive. See *include-exclude list*.

**include-exclude list.** A list of INCLUDE and EXCLUDE options that include or exclude selected files for backup.

An EXCLUDE option identifies files that should not be backed up. An INCLUDE option identifies files that are exempt from the exclusion rules or assigns a management class to a file or a group of files for backup or archive services. The include-exclude list is defined either in the include-exclude file (for UNIX clients) or in the client options file.

**incremental backup.** A function that allows users to back up files or directories from a client domain that are not excluded in the include-exclude list and that meet the requirements for frequency, mode, and serialization as defined by a backup copy group of the management class assigned to each file. Contrast with *selective backup*.

**IPX/SPX.** Internetwork Packet Exchange/Sequenced Packet Exchange.

## L

**Local Area Network (LAN).** A variable-sized communications network placed in one location. It connects servers, PCs, workstations, a network operating system, access methods, and communications software and links.

## M

**management class.** A policy object that is a named collection of copy groups. A management class is associated with a file to specify how the server should manage backup versions or archive copies of workstation files. See *binding* and *copy group*.

**migration.** The process of copying a file from a local file system to ADSM storage and replacing the file with a stub file on the local file system.

**mode.** A copy group attribute that specifies whether a backup file should be created for a file that was not modified since the last time the file was backed up. See *absolute* and *modified*.

**modified.** A backup copy group attribute that indicates that a file is considered for backup only if it has been changed since the last backup. A file is considered changed if the date, size, owner, or permissions have changed. See *absolute* and *mode*.

## N

**Named Pipe.** A type of interprocess communication which allows message data streams to be passed between peer processes, such as between a client and a server.

**NDS.** NetWare Directory Services.

**NETBIOS.** Network Basic Input/Output System. An operating system interface for application programs used on IBM personal computers that are attached to the IBM Token-Ring Network.

**NetWare Directory Services (NDS).** A database used by Novell NetWare to organize resources for an entire network of NetWare servers. The database itself can be distributed across the network and accessed by all servers. The NDS is available in NetWare Version 4.0 and higher.

**NetWare Loadable Module (NLM).** Novell NetWare software that provides extended server capability. Support for various ADSM and NetWare platforms are examples of NLMs.

**Networking Services/DOS (NS/DOS).** A software product that supports advanced program-to-program communications (APPC) in the DOS and Microsoft Windows 3.1 environments. With NS/DOS, communications applications on your workstation can 'talk to' partner applications on other systems that support APPC.

**NLM.** NetWare Loadable Module.

**node.** See *client node*.

**node name.** A unique name used to identify a workstation, file server, or PC to the server.

**NS/DOS.** Networking Services/DOS.

**NTFS.** The NT file system on Windows NT.

## O

**open registration.** A registration process in which users can register their own workstations or PCs as client nodes with the server. Contrast with *closed registration*.

**owner.** The owner of backup-archive files sent from a multi-user client node, such as AIX.

## P

**pattern-matching character.** See *wildcard character*.

**PC Support/400.** A software product that supports advanced program-to-program communications (APPC) in the DOS, OS/2, and Microsoft Windows environments and provides a set of end user services.

**policy domain.** A policy object that contains one or more policy sets. Client nodes are associated with a policy domain. See *policy set*, *management class*, and *copy group*.

**policy set.** A policy object that contains a group of management class definitions that exist for a policy domain. At any one time, there can be many policy sets within a policy domain, but only one policy set can be active. See *active policy set* and *management class*.

**Programmable Workstation Communication Services (PWSCS).** A product that provides transparent high performance communications between programs running on workstations or on host systems.

**PWSCS.** Programmable Workstation Communication Services.

## R

**registration.** The process of identifying a client node or administrator to the server by specifying a user ID, password, and contact information. For client nodes, a policy domain, compression status, and deletion privileges are also specified.

**registry.** On Windows NT, a central database that contains information about hardware, applications, and operating system settings for each machine on the network. Provides security and control over system, security, and account settings.

**restore.** A function that allows users to copy a version of a backup file from the storage pool to a workstation or file server. The backup copy in the storage pool is not affected. Contrast with *backup*.

**retention.** The amount of time, in days, that inactive backed up or archived files are retained in the storage pool before they are deleted. The following copy group attributes define retention: *retain extra versions*, *retain only version*, *retain version*.

**retrieve.** A function that allows users to copy an archive file from the storage pool to the workstation or file server. The archive copy in the storage pool is not affected. Contrast with *archive*.

## S

**scheduling mode.** The type of scheduling operation for the server and client node. ADSM supports two scheduling modes: client-polling and server-prompted.

**selective backup.** A function that allows users to back up files from a client domain that are not excluded in the include-exclude list and that meet the requirement for serialization in the backup copy group of the management class assigned to each file. Contrast with *incremental backup*.

**serialization.** A copy group attribute that specifies whether a file can be modified during a backup or archive operation and what to do if it is. See *static*, *dynamic*, *shared static*, and *shared dynamic*.

**server.** A program running on a mainframe, workstation, or file server that provides shared services such as back up and archive to other various (often remote) programs called clients.

**server-prompted scheduling.** A client/server communication technique where the server contacts the client node when work needs to be done.

**session.** A period of time in which a user can communicate with a server to perform backup, archive, restore, or retrieve requests.

**shared dynamic.** An ADSM copy group serialization mode. This mode specifies that if a file changes during backup or archive and continues to be changed after a number of retries, the last retry commits the file to the ADSM server whether or not it changed during backup or archive.

**shared static.** A copy group serialization value that specifies that a file must not be modified during a backup or archive operation. ADSM attempts to retry the operation a number of times. If the file is in use during each attempt, the file is not backed up or archived. See *serialization*. Contrast with *dynamic*, *shared static*, and *static*.

**SNA LU6.2.** Systems Network Architecture Logical Unit 6.2.

**space management attributes.** Attributes contained in a management class that specify whether automatic migration is allowed for a file, whether selective migration is allowed for a file, how many days must elapse since a file was last accessed before it is eligible for automatic migration, whether a backup version of a file must exist before the file can be migrated, and the ADSM storage pool to which files are migrated.

**static.** A copy group serialization value that specifies that a file must not be modified during a backup or archive operation. If the file is in use during the first attempt, ADSM will not back up or archive the file. See *serialization*. Contrast with *dynamic*, *shared static*, and *static*.

**storage pool.** A named set of storage volumes that is used as the destination of backup or archive copies.

**system drive or partition.** On Windows NT, the drive or partition on which Windows NT is installed. The Windows NT directory is usually called WINNT or WINNT35.

**Systems Network Architecture Logical Unit 6.2 (SNA LU6.2).** A set of rules for data to be transmitted in a network. Application programs communicate with each other using a layer of SNA called Advanced Program-to-Program Communication (APPC).

## T

**TCP/IP.** Transmission Control Protocol/Internet Protocol

**timeout.** (1) An event that occurs at the end of a predetermined period of time that began at the occurrence of another specified event. (2) A time interval allotted for certain operations to occur; for example, response to polling or addressing before system operation is interrupted and must be restarted. (3) A terminal feature that logs off a user if an entry is not made within a specified period of time.

**Transmission Control Protocol/Internet Protocol (TCP/IP).** A standard set of communication protocols that supports peer-to-peer connectivity of functions for both local and wide-area networks.

## V

**version.** The maximum number of different backup copies of files retained for files. The following backup copy group attributes define version criteria: versions data exists and versions data deleted.

## W

**wildcard character.** An asterisk (\*) or question mark (?) character that is used to search for various or certain combinations of alphanumeric and symbolic names. These names can reflect file names or character strings within a file, for example.

**windowed interface.** A type of user interface that is either a graphical user interface or a text-based interface. The text-based interface maintains a close affinity to the graphical user interface, including action bars and their associated pull-down menus and windows. See *graphical user interface*.

**workstation.** A programmable high level workstation (usually on a network) with its own processing hardware such as a high-performance personal computer. In a local area network, a personal computer that acts as a single user or client. A workstation can also be used as a server.



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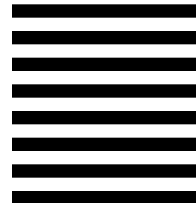
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on recycled paper containing 10%  
recovered post-consumer fiber.

SH26-4048-00



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## Runtime values:

Document fileid .....	AB0CBMAS SCRIPT
Document type .....	USERDOC
Document style .....	IBMXGGD
Profile .....	EDFPRF40
Service Level .....	0030
SCRIPT/VS Release .....	4.0.0
Date .....	96.12.12
Time .....	05:34:55
Device .....	PSA
Number of Passes .....	4
Index .....	YES
SYSVAR G .....	INLINE
SYSVAR R .....	AB0CBMAS
SYSVAR V .....	M86RCF
SYSVAR W .....	AB0CBMAS
SYSVAR X .....	YES

## Formatting values used:

Annotation .....	NO
Cross reference listing .....	YES
Cross reference head prefix only .....	NO
Dialog .....	LABEL
Duplex .....	YES
DVCF conditions file .....	(none)
DVCF value 1 .....	(none)
DVCF value 2 .....	(none)
DVCF value 3 .....	(none)
DVCF value 4 .....	(none)
DVCF value 5 .....	(none)
DVCF value 6 .....	(none)
DVCF value 7 .....	(none)
DVCF value 8 .....	(none)
DVCF value 9 .....	(none)
Explode .....	NO
Figure list on new page .....	YES
Figure/table number separation .....	YES
Folio-by-chapter .....	NO
Head 0 body text .....	Part
Head 1 body text .....	Chapter
Head 1 appendix text .....	Appendix
Hyphenation .....	YES
Justification .....	NO
Language .....	ENGL
Keyboard .....	395
Layout .....	OFF
Leader dots .....	YES
Master index .....	(none)
Partial TOC (maximum level) .....	3
Partial TOC (new page after) .....	LHPAGE
Print example id's .....	NO
Print cross reference page numbers .....	YES
Process value .....	(none)
Punctuation move characters .....	,
Read cross-reference file .....	AB0CBMAS
Running heading/footing rule .....	NONE
Show index entries .....	NO
Table of Contents (maximum level) .....	3
Table list on new page .....	YES
Title page (draft) alignment .....	RIGHT
Write cross-reference file .....	AB0CBMAS

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