



ADSTAR Distributed Storage Manager

SH26-4063-00

**ADSMConnect Agent for Oracle Backup  
on Sun Solaris  
Installation and User's Guide**

Version 2





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**Note**

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

**First Edition (August 1997)**

This edition applies to Version 2 of the ADSMConnect Agent for Oracle Backup on Sun Solaris, 5639-C69, and to any subsequent releases until otherwise indicated in new editions or technical newsletters. Make sure you are using the correct edition for the level of the product.

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## About This Book

This book describes the installation and operation instructions for the system administrator and user. You should be familiar with your Sun\*\* workstation, your operating system, and your file backup systems.

The following publications provide additional information.

<b>Title</b>	<b>Order Number</b>
ADSTAR* Distributed Storage Manager General Information	GH35-0131
ADSTAR Distributed Storage Manager: Using the Application Programming Interface	SH26-4002
ADSTAR Distributed Storage Manager: Installing the Clients	SH26-4049
ADSTAR Distributed Storage Manager: Using the UNIX** Backup-Archive Clients	SH26-4053
ADSTAR Distributed Storage Manager Using the UNIX Hierarchical Storage Management Clients	SH26-4030
Getting Started: Managing IBM RISC System/6000	GC23-2378
IBM Using ADSM to Back Up Databases	SG24-4335
Enterprise Backup Utility Installation Guide for AIX*, Release 2.0.10	A43148-1
Oracle7** Server Administrator's Guide	6694-70-1292
Oracle7 Enterprise Backup Utility** Administrator's Guide, Release 2	A42580-2
Oracle** SQL Net Administrator's Guide	—



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## Chapter 1. Introducing the ADSMConnect Agent for Oracle Backup

This section provides a brief overview of ADSM and the ADSMConnect Agent.

---

### Understanding ADSM

ADSTAR Distributed Storage Manager (ADSM) is a client/server program that provides storage management services in a multivendor, multiplatform computer environment.

ADSM:

- Reduces network complexity.

ADSM reduces network complexity with interfaces and functions that span the network providing a consistent approach to implementing ADSM across different operating systems and hardware.

- Increases administrator productivity.

ADSM can reduce the cost of network administration by allowing administrators to automate repetitive processes, schedule unmanned processes, and administer ADSM from anywhere in the network.

- Reduces the risk of data loss.

While many users do not back up their data at all, others use stand-alone backup techniques with diskettes and tapes as the only protection for business data. Even when backups are performed regularly, the success of these backup systems is often evaluated only at recovery time, often with disappointing results. ADSM lets administrators schedule routine backups and lets users recover from accidental data deletion without administrator involvement.

- Optimizes existing storage resources.

ADSM allows users to move infrequently used or large files from client file systems to ADSM storage. This saves space on client file systems and often eliminates the expense of upgrading client storage hardware.

ADSM also provides services to ensure that clients do not run out of storage space. ADSM monitors client storage and moves files from client file systems to ADSM storage if an "out-of-space" condition threatens. This can also eliminate the expense of client hardware upgrades.

ADSM provides these services:

- Backup and restore services.

Backup and restore services allow backup-archive clients to make backup copies of data at specified intervals and restore the data from those copies when required. These services provide protection from workstation or file server media failure, accidental file deletion, data corruption, data vandalism, and site-wide disasters.

- Archive and retrieve services.

Archive and retrieve services provide backup-archive clients with point-in-time copies of data for long-term storage.

- Server hierarchical storage management services.

Server storage is composed of storage pools. A storage pool is a named set of storage volumes that is used as the destination for client files. Server hierarchical storage management services optimize server storage by migrating client files from storage pools of more expensive media (disk, for example) to storage pools of less expensive media (tape, for example). Migration is started and stopped based on high and low thresholds that the administrator sets for each storage pool. Migration applies to all client files (backup and archive).

- Automation services.

ADSM administrators can increase productivity by automating many day-to-day storage administration tasks by defining policies and scheduling services for backup.

- Administration services.

Administration services provide ADSM administrators with support for day-to-day monitoring, administration, and accounting of ADSM. Administrators can manage the server from another system or the same system. The ADSM utilities allow the administrator set client and server options, define devices, format storage volumes, add additional clients, label tape volumes, and other tasks. ADSM monitors scheduled operations and maintains information about their status in the database. An administrator can export information to removable media. This data can be imported by another server, making the export and import features a handy utility for moving server information. The administrator can specify the accounting option, which is generated at the end of each client session.

- Security services.

Security services prevent unauthorized access to ADSM-managed data, storage, policy definitions, and administrative commands. These security options allow the security administrator to control the limit or extent of a person's access to these resources.

- Disaster recovery services.

Disaster recovery services assist the administrator with the implementation of a comprehensive backup and recovery procedure for important business applications, data, and records.

For more information about ADSM, see *ADSTAR Distributed Storage Manager General Information*.

---

## The ADSMConnect Agent

The Oracle7 database has a utility called the Oracle7 Enterprise Backup Utility (EBU). This utility can perform backup and restore operations for the Oracle7 database while it is online or offline. Oracle provides the configuration function and database interface function.

The ADSMConnect Agent for Oracle7 is an application interface that contains the library you will need to link with the Oracle7 EBU, Version 2. Once the Enterprise Backup Utility is linked with this library, database objects can be sent to the configured ADSM server.

The ADSMConnect Agent can work with any Version 2 ADSM server. The ADSMConnect Agent translates the Oracle7 Enterprise Backup Utility commands into ADSM API calls for the ADSM server.

The ADSMConnect Agent runs on a Sun workstation with the Solaris operating system.

See Figure 1 for an understanding of how the Oracle7 Enterprise Backup Utility works in conjunction with the ADSMConnect Agent and the ADSM server.

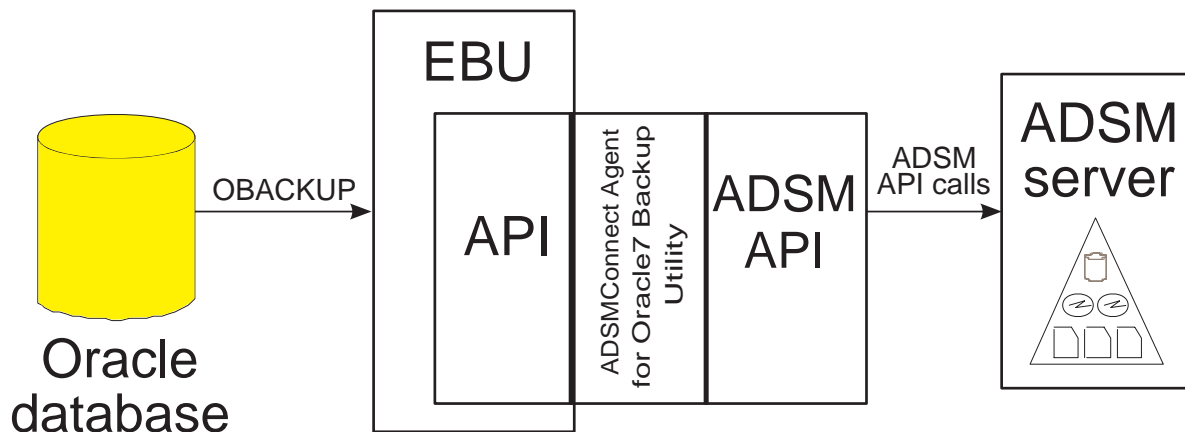


Figure 1. How the Oracle7 EBU Interfaces with the ADSMConnect Agent



---

## Chapter 2. Installing the ADSMConnect Agent for Oracle Backup

This section provides instructions to install and set up the ADSMConnect Agent for Oracle Backup on Sun Solaris on your workstation.

Before you can install the ADSMConnect Agent for Oracle Backup, make sure the ADSM Version 2 server is installed.

A root user must install the ADSMConnect Agent on a Sun workstation.

**Note:** Do not install the Oracle7 Enterprise Backup Utility until **after** you install the ADSMConnect Agent for Oracle Backup.

The ADSMConnect Agent for Oracle Backup is ordered separately on a CD-ROM and has its own installation program. The CD-ROM provides you with a permanent license to use the product.

You must go through installation steps 1 through 6.

The installation steps are:

- Step 1—Install the ADSMConnect Agent for Oracle Backup
- Step 2—Define the environment variables
- Step 3—Edit the client options files
- Step 4—Register your workstation with the server
- Step 5—Initialize the password
- Step 6—Install the Oracle7 Enterprise Backup Utility

Check the current **README.ORACLE** file for any changes to the installation procedures.

---

### ADSMConnect Agent for Oracle Backup Environment

This section contains client environment information and hardware and software requirements for installing the ADSMConnect Agent for Oracle Backup.

#### Hardware Requirements

The hardware requirements are:

- A Sun workstation
- Disk space for Sun Solaris: 3 MB
- Memory: 32 MB

## Operating System

The operating system requirement is Solaris 2.5.1 or later.

## Software Requirements

The ADSMConnect Agent for Oracle Backup supports:

- Oracle7 Enterprise Backup Utility Version 2.1 or later
- Oracle7 Version 7.3.2 or later

## Communications Methods

The ADSMConnect Agent uses the following communications methods:

- TCP/IP
- SNA LU6.2 (APPC)

---

## Step 1: Installing the ADSMConnect Agent for Oracle Backup

The ADSMConnect Agent uses the **pkgadd** program to install.

To install:

1. Login as root:

```
$ su
Password:
```

Enter your password.

2. Create a directory for mounting the CD-ROM. Set the appropriate permission to the directory:

```
# mkdir /cdrom
# chmod 755 /cdrom
```

3. Insert the CD-ROM into the CD-ROM reader and mount the CD-ROM:

```
# mount -r -F hsfs <device_name> /cdrom
```

4. Issue the following command to install the ADSMConnect Agent:

```
pkgadd -d /cdrom
```

You will see this message:

```
The following packages are available:
```

1. IBMDSMoba ADSTAR Distributed Storage Manager Oracle Backup Agent for Sun (sparc) Version 2 Release 1 Level 0.6  
Select package(s) you wish to process (or 'all' to process all packages). (default: all) [1 or q]:

Select 1.

5. You will see this message:

```
This package contains scripts which will be executed with super-user permission during the process of installing this package. Do you want to continue with the installation of <IBMDSMoba> [y, n?]
```



Select **y**.

6. You will see this message along with the message from Step 4:

Installation of <IBMDSMoba> was successful.

Select **q**. This completes the installation.

## ADSM Files

The following files are included with the ADSMConnect Agent for Oracle Backup and are installed in the **/opt/IBMDSMora** path.

File Name	Description
README	Last minute updates and other special information
C/dsmclient.cat <symbolic link>	
dsm.opt <symbolic link>	
dsm.opt.smp	Sample client user options file
dsm.sys <symbolic link>	
dsm.sys.smp	Sample client system options file
en_US/dsmclient.cat	Messages file
libobk.so	ADSMConnect Agent library file
aobpswd	Password management program
options.doc	Documentation for client options
agent.lic	Permanent license

**Note:** A symbolic link is made to associate **libobk.so** with **/usr/lib/libobk.so**.

---

## Step 2: Defining the Environment Variables

The API uses unique environment variables to locate files. This allows you to use different files for API applications from those used by the interactive client, if necessary.

Specify the following files that you want to use for the ADSMConnect Agent for Oracle Backup:

- Client system options file (**dsm.sys**)
- Client user options file (**dsm.opt**)
- API error log file (**dsierror.log**)

using the **DSMI\_DIR**, **DSMI\_CONFIG**, and **DSMI\_LOG** environment variables. See below for examples of how to specify these environment variables.

### **DSMI\_CONFIG (required)**

Points to the user options file (**dsm.opt**).

If the **dsm.opt** file is in your home directory, use:

```
export DSMI_CONFIG=/home/yourlogin/dsm.opt
```

**DSMI\_DIR (required)**

Points to the directory that contains the client system options file (**dsm.sys**), the license file, and the message file.

If these files are in the **/opt/IBMDSMora** directory, use:

```
export DSMI_DIR=/opt/IBMDSMora
```

**DSMI\_LOG**

Points to the directory that contains the API error log file (**dsierror.log**).

For error log files, create a directory where you want the error logs to be created, and let the DSMI\_LOG environment variable point to that directory.

If the error log directory is **/home/yourlogin/logdir**, use:

```
export DSMI_LOG=/home/yourlogin/logdir
```

**DSMO\_AVG\_SIZE**

The average size of objects in megabytes. This is passed to the ADSM server where it is used to determine storage pool and device usage. The default is 50 MB.

**Important:** Set this environment variable to a value in the approximate range of your database sizes so the ADSM server can determine device usage.

**DSMO\_FS** The file space name on the ADSM server with a string of one to 1024 characters. When setting up this option, do not use / in front of the file system name. For example, if the file system name is **oracle**, then enter this:

```
export DSMO_FS=oracle
```

The default is **adsmorc**.

**DSMO\_NODE**

The node name containing a string of one to 64 characters. This environment variable is used to specify a unique node name for the ADSMConnect Agent. This prevents any confusion with an existing ADSM backup-archive client.

The default is the value returned by *gethostname*.

**DSMO\_OWNER**

A session and object owner name containing a string of from one to 64 characters. The default is a value returned by **getuid**.

**Note:** We recommend that you do not use this environment variable. If necessary, however, it can be used to override the login user ID to restore an object backed up by another owner.

**DSMO\_PSWDPATH**

This environment variable should point to the directory where your password file, **ADSMO.yourhostname** resides. The default is the current working directory.

If the password file is in `/opt/IBMDSMora`, use:

```
export DSMO_PSWDPATH=/opt/IBMDSMora
```

---

### Step 3: Editing the Client Options Files

ADSM uses the following options in the client system options file (**dsm.sys**):

- SERVERNAME option (to identify the ADSM server)
- COMMETHOD option (to identify the communication method)
- TCPSPORT option (to identify connection port)
- TCPSERVERADDRESS option (to identify the address of the machine that the ADSM server resides on)

ADSM uses a client options file called **dsm.opt** to specify the ADSM server.

These options are in effect for the entire ADSM session.

During the initial installation and set up of ADSM on your workstation, you are provided with a sample client system options file called **dsm.sys.smp**. The **dsm.sys.smp** file contains just the communication options and a sample *include-exclude* list. These basic options are the ones you need to get started quickly.

ADSM also provides a sample client user options file (**dsm.opt.smp**) to help you get started quickly.

The client options file resides in your ADSM API installation directory. The sample options files distributed with the ADSM API can be used for the ADSMConnect Agent.

### Editing the Client System Options File

The root user should edit the **dsm.sys** file. It must refer to the correct ADSM server and communication option methods. Set the PASSWORDACCESS option to **prompt** in the client system options (**dsm.sys**) file. **Prompt** is the default if a parameter is not specified.

### Specifying the ADSM Management Class

When you back up a database, the default management class for your node is used unless you override this with a different value specified in the Include option. This option is placed in the **Include-Exclude** options file. The file name of the **Include-Exclude** options file is placed in the client system's option file. See *ADSTAR Distributed Storage Manager Installing the Clients*

For the management class you use, define the backup copy group parameters **VERDELETED=0** and **RETONLY=0**. This aids in the clean up of files that the **obkcatutl** command deletes.

---

## Step 4: Registering Your Workstation with the Server

Before you can begin requesting services from an ADSM server, the server must recognize your workstation. ADSM uses a node name and a password (if one is required) to identify each workstation. ADSM maintains a password for each node name. The process of setting up a node name and password is called *registration*.

Your ADSM administrator must register your workstation as a client with the server. You can then back up and restore documents from the server.

You need to provide the following information to your administrator:

- Your node name
- The initial password you want to use, if a password is required
- Contact information, such as your name, user ID, and phone number

Your administrator defines the following for you:

- The policy domain to which your client node belongs.  
A policy domain contains policy sets and management classes (defined by your ADSM administrator), that control how ADSM manages the objects you back up.
- Whether your application allows you to choose to compress objects before sending them to the server.
- Whether your application allows you to delete backup data from ADSM storage.

**Note:** If an ADSM client already exists on your workstation, you must assign a separate and unique node name for the ADSMConnect Agent on the same workstation.

Instruct the ADSM administrator to register your node with the server and to inform you of the password. The administrator should specify **BACKDELETE=yes** so that you can later delete old backups.

---

## Step 5: Initializing the Password

**Important:** The root user **must** run the **aobpswd** program before using the ADSMConnect Agent for Oracle Backup.

Follow the steps below to initialize the password.

- 1** Set **DSMO\_PSWDPATH** to the path where the password file resides.
- 2** Start the **aobpswd** program. This sets up a connection with the server that you specified in the **dsm.opt** file. The following screen displays:

```
ADSMConnect Agent for Oracle Backup
Password file authorization/update program
>> this must be run by the ROOT user if updating the value <<
```

- 3 Enter your current ADSM node password to start the file.
- 4 When the Enter your new password prompt displays, press Enter without entering a value. The following messages are displayed:

```
Your password has been written to the file.
Verify that the DBA has read access to the ADSMO.pigeon file.
```

The **aobpswd** program creates a file called **ADSMO.yourhostname** in the directory specified by **DSMO\_PSWDPATH**. Make sure the user who runs the ADSMConnect Agent for Oracle Backup has read permission to **ADSMO.yourhostname**.

You can use the **aobpswd** program later to update the password. Update the password before it expires on the ADSM server.

---

## Step 6: Installing the Oracle7 Enterprise Backup Utility

Once the ADSMConnect Agent for Oracle Backup is installed, you can install the Oracle7 Enterprise Backup Utility (EBU). See the *Enterprise Backup Utility Installation Guide for Sun* for installation procedures.

To install the EBU executables so they work with ADSM, follow these steps:

- 1 Select the EBU executable option on the Oracle7 Enterprise Backup Utility Install Options screen. The **OBK\_HOME** for Oracle7 Enterprise Backup Utility menu displays.
- 2 Enter the path name for **OBK\_HOME**, the name of the directory where the EBU code will reside. For example, **/home/oracle/obackup**.  
**Note:** You can install it anywhere, but the directory name must be **OBACKUP**. The 3rd Party Media Management Software Vendor screen displays.
- 3 Select **Others** to specify ADSM. The Vendor Software Installation Directory displays.
- 4 Enter **/usr/lib**. This directory path links to this file: **/opt/IBMDSMora**.



---

## Chapter 3. Before Using the ADSCMConnect Agent for Oracle Backup

The Oracle7 Enterprise Backup Utility (EBU) provides backup and restore functions for Oracle7 databases. You can perform full or partial, offline or online backups. Once you identify which database you want to back up, EBU locates all of the necessary files and sends them to ADSCM. The ADSCMConnect Agent for Oracle Backup provides an interface between the EBU API calls and the ADSCM API routines. The ADSCMConnect Agent for Oracle Backup translates the EBU commands into ADSCM API calls.

This section describes things to consider before using the ADSCMConnect Agent:

- Using command scripts
- Removing old backups
- Using Hierarchical Storage Management
- Reporting problems
- ADSCM service

---

### Using Command Scripts

Use EBU command scripts to define and start backup and restore operations, or to register information in the Backup Catalog. To start the operations, enter the **OBACKUP** command followed by the appropriate script name. For example, to register databases in the Backup Catalog, use an **OBACKUP** register script.

To back up a database, use the **OBACKUP** scripts customized to execute the following tasks:

- Full online backup (backup online database)
- Full offline backup (backup offline database)
- Partial online backup (backup online)
- Backup of archived redo logs.

To restore a database, use **OBACKUP** scripts customized to execute the following tasks:

- Full consistent restore (restore database consistent)
- Partial restore of tablespaces and control files (restore)
- Full restore to a specific point-in-time (restore database)
- Partial restore of tablespaces to another directory (restore remap).

If a backup is interrupted, the operation starts from the beginning.

---

### Removing Old Backups

The ADSCMConnect Agent for Oracle7 Backup Utility uses the ADSCM backup repository. Each database backup creates a new object with a new unique name. Since these have unique names, they always remain active and never expire. This happens so the

Database Administrator (DBA) can control when copies are removed from the AD SM server and can coordinate this with the Enterprise Backup Utility.

Oracle ships a utility called **obkcatutl** that should be used to delete old database backups no longer needed from the Backup Catalog. When backups are deleted from the Backup Catalog, the EBU sends *delete object* API calls to AD SM. AD SM then marks the objects inactive to ensure they expire with the next AD SM file expiration process. For example, to delete backups that are older than 30 days, enter this command:

```
obkcatutl -db_name=xxxx -deljob=30
```

You can define **obkcatutl** commands as part of a script that is started from the AD SM central scheduler to automate the deletion process.

Use parameters in the Management Class definition to control when the inactive object expires on the AD SM server.

For the backup copy group, use:

```
VERDELETED=0  
REONLY=0
```

This erases the inactive objects from the server after the next inventory expiration.

In order to delete backup objects, the AD SM administrator must register your node by specifying **BACKDELETE=yes**.

---

## Reporting Problems

Follow the instructions below if you have a problem with the AD SMConnect Agent for Oracle Backup.

### If You Cannot Start the AD SMConnect Agent

If you encounter a problem while using AD SMConnect Agent for Oracle Backup or if you cannot start the AD SMConnect Agent, collect this information:

- The **dsm.sys** file
- The **dsm.opt** file
- The **dsmo.env** file that demonstrates your use of environment variables.

To create this file, enter:

```
set | grep DSMI > dsmo.env  
set | grep DSMO >> dsmo.env
```

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

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



## If the ADSMConnect Agent Starts and a Problem is Encountered

If you start ADSMConnect Agent for Oracle Backup successfully and then encounter a problem, collect this information:

- A problem description file that includes the command you used and the session output you received when the problem occurred.
- The EBU log file records text if it detects an error. A return code of 12 means it noticed some problems with the Media layer.  
**Note:** Future releases of EBU might show the actual return code from the Media layer rather than the number 12.
- The ADSM API error log file (**dsierror.log**). The DSMI\_LOG environment variable determines the location of this file.
- The EBU trace file. The trace option in the OBackup script file determines the creation and location of this file. If possible, recreate the backup problem with the trace flag turned on.
- The ADSM server activity log. To obtain this information, enter this ADSM **admin** command:

```
query actlog
```

See the *IBM ADSTAR Distributed Storage Manager Using the Application Program Interface* manual for application client return codes.

---

## ADSM Service

If you need ADSM customer assistance, call this number: 1-800-237-5511. Inform the customer service representative the following information to determine the problem:

- You are using the ADSMConnect Agent for Oracle Backup.
- Your ADSM server operating system platform, version, and release.
- Your ADSM server version and release. To determine this, enter the **q status** command.
- Your agent operating system platform, version, and release.
- Your agent version and release. You can locate this in the README.AOB file, or you can enter the **what libobk.a** command. A string is displayed with the ADSM API library version.



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