

# CA ARCserve® Backup for Windows

**Enterprise Option for SAP R/3 for Oracle Guide**

r12.5



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## CA Product References

This documentation set references the following CA products:

- BrightStor® ARCserve® Backup for Laptops and Desktops
- BrightStor® CA-Dynam®/TLMS Tape Management
- BrightStor® CA-Vtape™ Virtual Tape System
- BrightStor® Enterprise Backup
- BrightStor® High Availability
- BrightStor® Storage Resource Manager
- CA Antivirus
- CA ARCserve® Backup Agent for Advantage™ Ingres®
- CA ARCserve® Backup Agent for Novell Open Enterprise Server for Linux
- CA ARCserve® Backup Agent for Open Files on NetWare
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- CA ARCserve® Backup Client Agent for Windows
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- CA ARCserve® Backup for Windows Agent for Microsoft Exchange
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- CA ARCserve® Backup for Windows Agent for Oracle
- CA ARCserve® Backup for Windows Agent for Sybase
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- CA ARCserve® Backup for Windows Disaster Recovery Option
- CA ARCserve® Backup for Windows Disk to Disk to Tape Option
- CA ARCserve® Backup for Windows Enterprise Module
- CA ARCserve® Backup for Windows Enterprise Option for IBM 3494
- CA ARCserve® Backup for Windows Enterprise Option for SAP R/3 for Oracle
- CA ARCserve® Backup for Windows Enterprise Option for StorageTek ACSLS
- CA ARCserve® Backup for Windows Image Option
- CA ARCserve® Backup for Windows Microsoft Volume Shadow Copy Service
- CA ARCserve® Backup for Windows NDMP NAS Option
- CA ARCserve® Backup for Windows Serverless Backup Option
- CA ARCserve® Backup for Windows Storage Area Network (SAN) Option
- CA ARCserve® Backup for Windows Tape Library Option
- CA Dynam®/B Backup for z/VM
- CA VM: Tape for z/VM
- CA XOsoft™ Assured Recovery™
- CA XOsoft™
- CA 1® Tape Management
- Common Services™
- eTrust® Firewall
- Unicenter® Network and Systems Management
- Unicenter® Software Delivery
- Unicenter® VM: Operator®

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# Chapter 1: Introducing the Option

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Among the options CA ARCserve Backup offers is the CA ARCserve Backup Enterprise Option for SAP R/3 for Oracle (the option). This option helps you manage Oracle databases in your SAP R/3 for Oracle environment by letting you remotely manage backups, schedule your backups, and back up to a wide array of media storage devices.

The option supports backup and restore operations launched from the CA ARCserve Backup user interface or from the following user interfaces:

- BR\*Tools for Oracle
- Oracle Recovery Manager

Using the option, you can back up and restore the following Oracle database objects:

- Databases
- Tablespaces
- Archived log files
- Control files

The option handles all communications between CA ARCserve Backup, SAP R/3 for Oracle, and the Oracle server application while data is being backed up and restored. This includes preparing, retrieving, and processing the data sent back and forth across the network.

This section contains the following topics:

[Architectural Overview](#) (see page 12)

[Option Integration with SAP R/3 for Oracle](#) (see page 13)

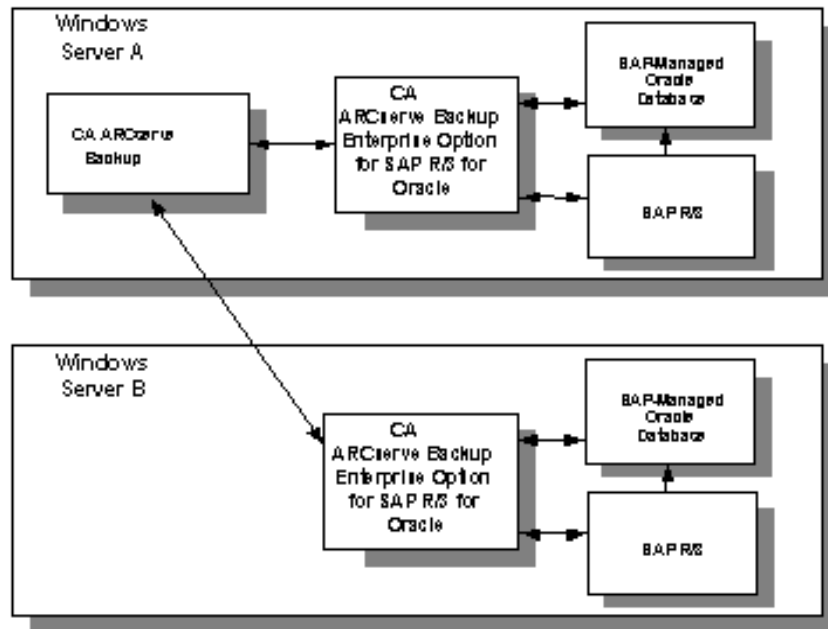
[Option Integration with CA ARCserve Backup](#) (see page 15)

[Option Integration with the Oracle Recovery Manager](#) (see page 17)

## Architectural Overview

You can install CA ARCserve Backup on the same computer as the option and the Oracle database, or on a separate computer. If you install CA ARCserve Backup on the same computer, then communication with the option is local. If you install it on a separate computer, CA ARCserve Backup communicates with the option remotely over a LAN or WAN.

An Oracle *instance* is a logical database server environment. You can create an Oracle database within an Oracle instance on your database server. The option provides services that allow CA ARCserve Backup to back up and restore a SAP-managed Oracle database associated with the option. The networking capabilities of CA ARCserve Backup enable the option to be located on any Windows server on which an Oracle database is located. You must install one option on each database server that you want CA ARCserve Backup to manage. The following diagram illustrates the basic architecture of CA ARCserve Backup and the Enterprise Option for SAP R/3 for Oracle:



**Note:** Staging is not supported when you back up the database using SAPDBA or BR\*Tools.

## Option Integration with SAP R/3 for Oracle

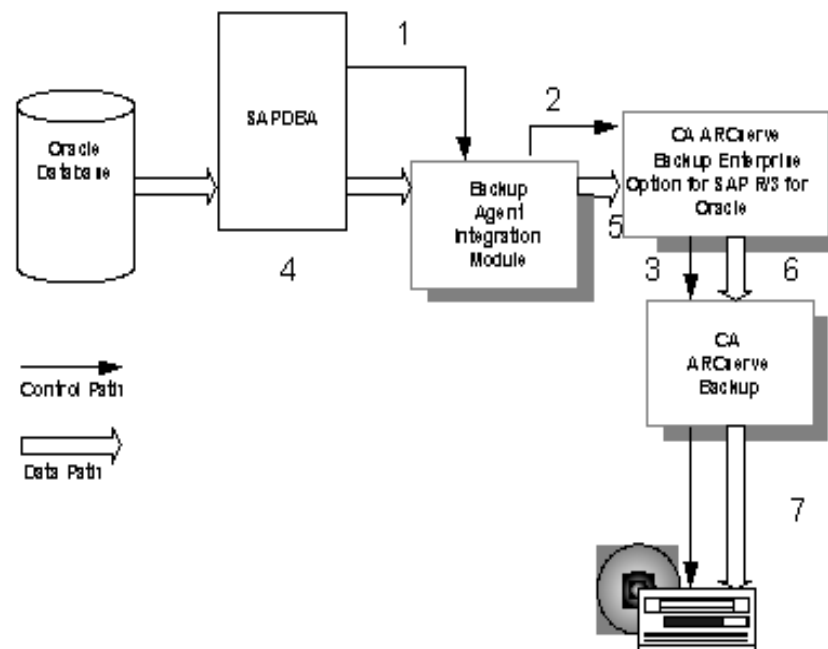
The Enterprise Option for SAP R/3 for Oracle lets you to back up and restore SAP-managed Oracle databases by integrating with BR\*Tools for Oracle, the database administration tool developed by SAP for managing Oracle databases. The option's backup option integration module implements this integration provided by CA. This module is installed when the option is installed.

The backup option integration module links CA ARCserve Backup to SAPDBA for Oracle. The SAPDBA module manages the activity within the Oracle database and the backup option integration module manages the backup, restore, and inquiry requests in conjunction with CA ARCserve Backup. The backup option integration module is referred to as both BACKINT and as BC-BRI in SAP documentation.

For the option to be able to use SAPDBA, the SAP R/3 for Oracle application must be running. When SAPDBA starts a backup or restore job, the backup option integration module is automatically invoked.

### How SAPDBA Backs Up Data

The following diagram illustrates how the option performs backups using SAPDBA:

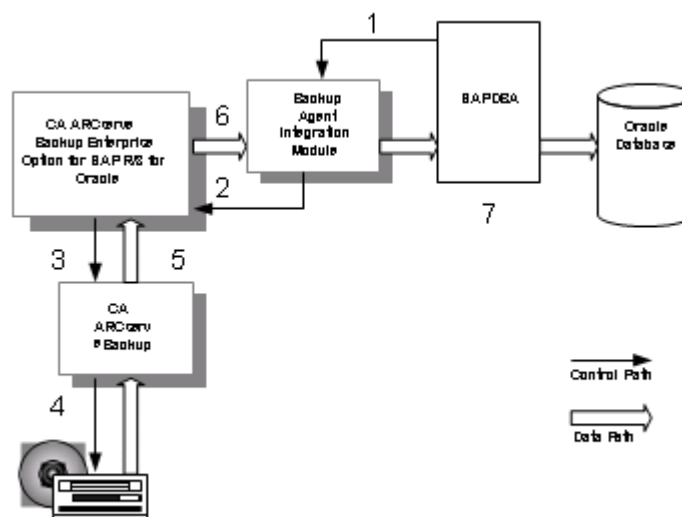


The following describes each step in the process, as shown in the diagram:

1. A user issues a backup command from the SAPDBA user interface.  
SAPDBA directs the request to the backup option integration module.
2. The backup option integration module receives the backup request and passes it to the option.
3. The option passes the backup request to CA ARCserve Backup.
4. SAPDBA begins copying backup data from the database and passes it to the backup option integration module.
5. The backup option integration module passes the backup data to the option.
6. The option passes the backup data to CA ARCserve Backup.
7. CA ARCserve Backup saves the data to a storage medium.

## How SAPDBA Restores Data

The following diagram illustrates how the option restores Oracle objects with SAPDBA:



The following describes each step in the process, as shown in the diagram:

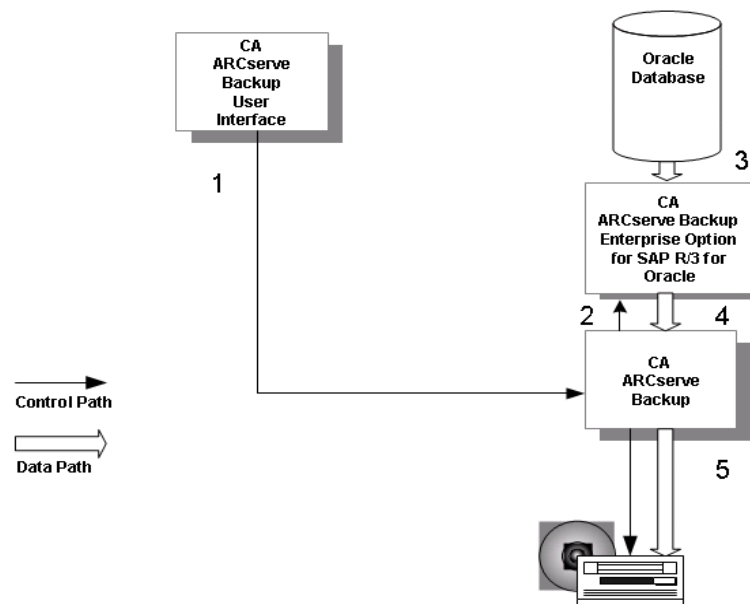
1. A user issues a restore command from the SAPDBA user interface.  
SAPDBA directs the request to the backup option integration module.
2. The backup option integration module receives the restore request and passes it to the option.
3. The option passes the restore request to CA ARCserve Backup.
4. CA ARCserve Backup retrieves the data from a storage medium.
5. CA ARCserve Backup passes the restore data to the option.
6. The option passes the restore data to the backup option integration module.
7. SAPDBA restores the data to the database.

## Option Integration with CA ARCserve Backup

You can use the option to perform backups and restores submitted from the CA ARCserve Backup user interface. The diagrams in the following sections outline the general interaction between the option and CA ARCserve Backup.

### How CA ARCserve Backup Backs Up Data

The following diagram illustrates how the option performs backups using CA ARCserve Backup:

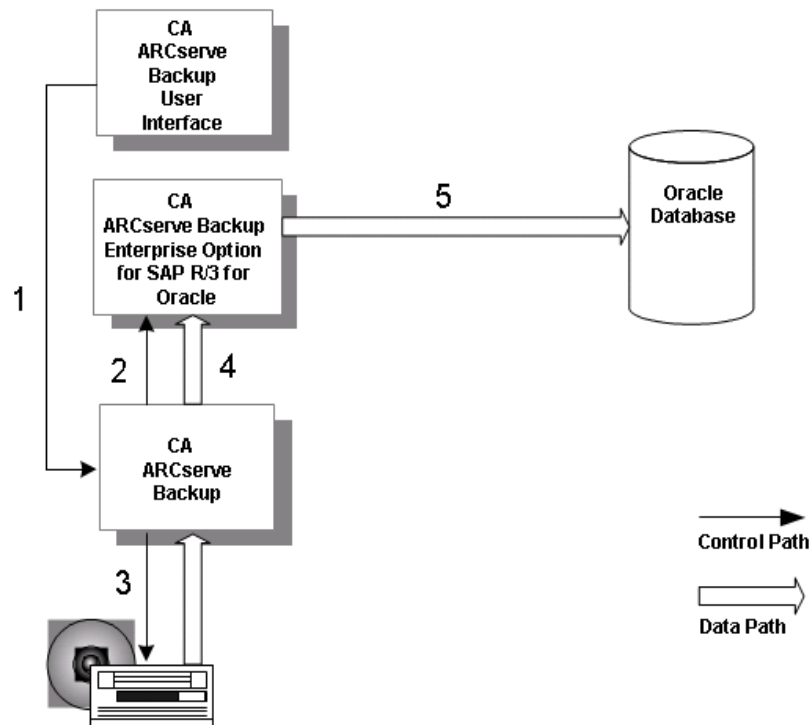


The following describes each step in the process, as shown in the diagram:

1. The user issues a backup command from the CA ARCserve Backup user interface.
2. CA ARCserve Backup receives the backup request and passes it to the option.
3. The option begins copying backup data from the database.
4. The option passes the backup data to CA ARCserve Backup.
5. CA ARCserve Backup saves the data to a storage medium.

## How CA ARCserve Backup Restores Data

The following diagram illustrates how the option restores Oracle objects with CA ARCserve Backup.





**Note:** When you restore with CA ARCserve Backup, you can only restore data that was backed up with CA ARCserve Backup.

The following describes each step in the process illustrated the diagram:

1. The user issues a restore command from the CA ARCserve Backup user interface.
2. CA ARCserve Backup informs the option of the restore request.
3. CA ARCserve Backup begins retrieving the data from storage.
4. CA ARCserve Backup passes the data to the option.
5. The option restores the data to the database.

## Option Integration with the Oracle Recovery Manager

During installation, you have the option of installing support for Oracle Recovery Manager (RMAN), an Oracle utility for backing up, restoring, and recovering Oracle databases. With support for Recovery Manager, you can submit backup and restore jobs to CA ARCserve Backup by connecting to RMAN at the command line, or through the Oracle Backup Manager user interface. In addition, you can write and execute your own Recovery Manager scripts.

If you choose to install CA ARCserve Backup support for Recovery Manager, you must run the Oracle Backup Agent Configuration for Recovery Manager utility before you use Recovery Manager.

**Note:** For information on how to run this utility, see the section [Configure the Agent for Oracle](#) (see page 23) in the chapter "Installing the Option".

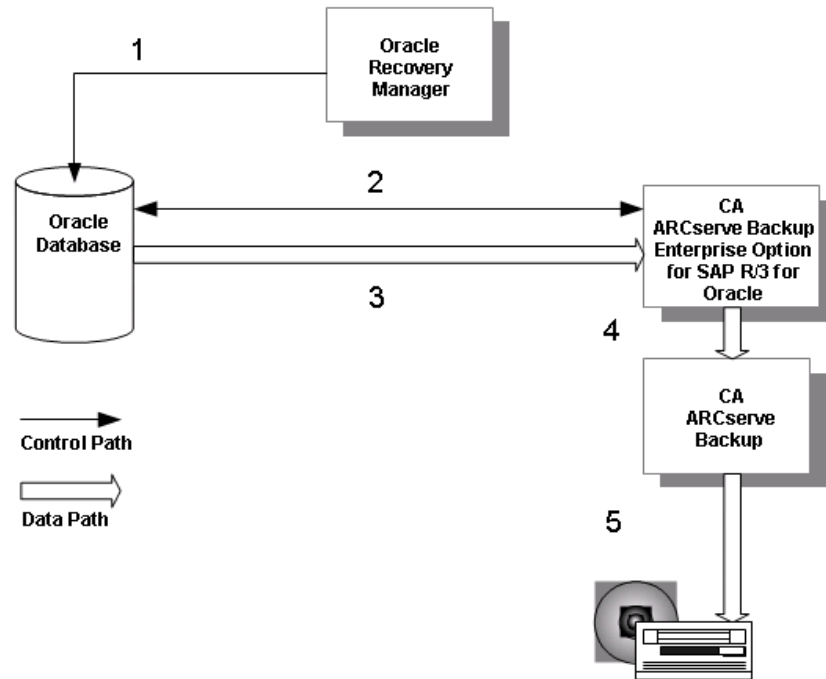
After you install the CA ARCserve Backup Enterprise Option for SAP R/3 for Oracle, each time you initiate a backup or restore with Recovery Manager, the option transfers data between CA ARCserve Backup, the Oracle database, and the storage media.

If you back up data using the Recovery Manager interface, you can only restore that data using the Recovery Manager interface. For information on how the Option works with the Agent for Oracle in RMAN mode, see *Agent for Oracle* guide.

Similarly, if you back up data using CA ARCserve Backup, you can only restore that data using CA ARCserve Backup. For information on how the Option works with the Agent for Oracle in File-based mode, see *Agent for Oracle* guide.

## How Recovery Manager Backs Up Data

The following diagram illustrates how you can process backup jobs initiated from Oracle Recovery Manager:

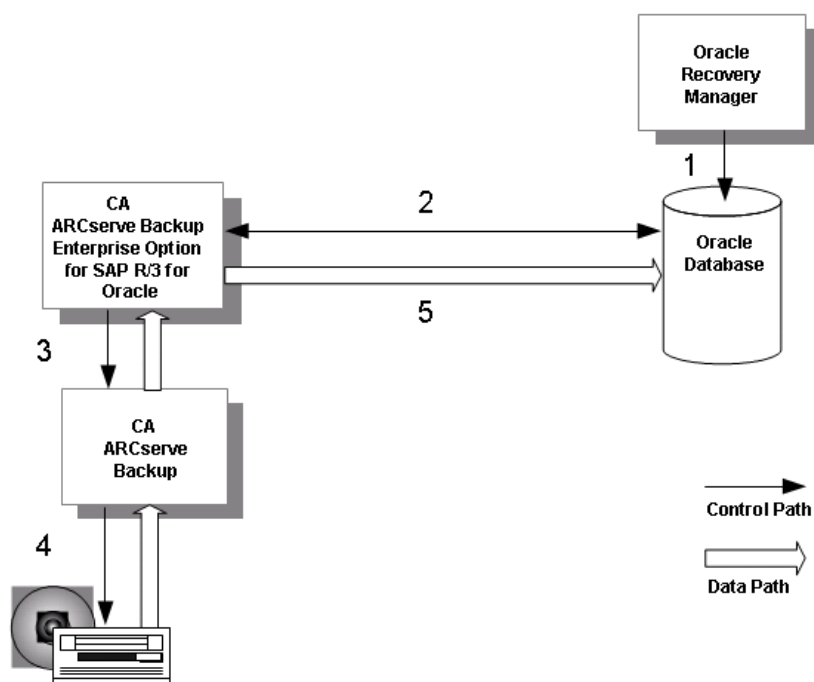


The following describes each step in the process, as shown in the diagram:

1. The user issues a backup request to the Oracle database from the Recovery Manager command line interface.
2. The database notifies the option of the backup request; the option requests transfer of backup data.
3. The database transfers the backup data to the option.
4. The option passes the backup data to CA ARCserve Backup.
5. CA ARCserve Backup saves the data to a storage medium.

## How Recovery Manager Restores Data

The following diagram illustrates how you can process restore jobs initiated from Oracle Recovery Manager:



**Note:** When you restore with Recovery Manager, you can only restore with data that was backed up with Recovery Manager.

The following describes each step in the process, as shown in the diagram:

1. The user issues a restore request to the Oracle database from the Recovery Manager command line interface.
2. The database notifies the option of the restore request.
3. The option notifies CA ARCserve Backup of the restore request.
4. CA ARCserve Backup retrieves the data from a storage medium.
5. The option restores the Oracle database.

**Note:** For information on how the Option works with the Agent for Oracle in RMAN mode, see *Agent for Oracle* guide.



# Chapter 2: Installing the Option

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This chapter provides the information you need to install and configure the Enterprise Option for SAP R/3 for Oracle. The information in this chapter assumes you are familiar with the characteristics and requirements of the specified Windows operating systems in general, and with administrator responsibilities on those operating systems in particular.

This section contains the following topics:

[Installation Prerequisites](#) (see page 21)

[Hardware and Software Requirements](#) (see page 21)

[Option Installation](#) (see page 22)

[Configure the Agent for Oracle](#) (see page 23)

[Configure BACKINT Interface of Enterprise Option for SAP R/3](#) (see page 25)

[Backup and Restore Limitations](#) (see page 30)

## Installation Prerequisites

Before installing the Enterprise Option for SAP R/3 for Oracle, verify the following prerequisites:

1. Your system meets the software requirements needed to install the option.

For a list of these requirements, see the *CA Readme*.

2. You have the following applications installed and running on the computer on which you want to install the option:

- Oracle (9i and 10g)

**Note:** For more information on the supported Oracle versions, see the *Agent for Oracle* guide.

- SAPDBA for Oracle or BR\*Tools for Oracle

- Oracle Recovery Manager

3. You have administrative privileges or the proper authority to install software on the computers where you will be installing the option.

**Note:** You can uninstall the Enterprise Option for SAP R/3 for Oracle using the Add/Remove programs option in Windows.

## Hardware and Software Requirements

You can find hardware and software requirements for the Enterprise Option for SAP R/3 for Oracle in the *Readme* for this release.

## Option Installation

Install the Enterprise Option for SAP R/3 for Oracle on each database server you want CA ARCserve Backup to manage.

For information about how to install the option, see the *Implementation Guide*.

**Important!** If you install the option on the same server as an existing installation of CA ARCserve Backup, and you subsequently uninstall CA ARCserve Backup, then you must reinstall the option so that it can work with remote CA ARCserve Backup.

## Configure the Agent for Oracle

After you install the Agent for Oracle, the Oracle Agent Configuration dialog appears. You must configure the agent to perform the backup and restore process.

### To configure the Agent for Oracle

1. From the Windows Start menu, click Start, All Programs, CA, ARCserve Backup, and click Oracle Agent Configuration.

The Oracle Agent Configuration dialog appears.

**Note:** You can run the Oracle Agent Configuration tool as new Oracle instances are created.

2. Specify the necessary details to configure the agent. Some of the options include:

#### **Allow jobs to be submitted directly from the RMAN Console**

Lets you submit jobs from the RMAN console. For more information, see the topic [Enable Submit Job From RMAN Console](#). (see page 24)

#### **Instance Name**

Auto detected. Ensure all instances are enabled that will be backed up.

#### **Username**

Enter user name.

#### **Password**

Enter user password.

#### **Log File**

Lets you specify the location of the log files. By default, the log files reside in the Log subfolder under the Oracle Agent Installation directory.

#### **Debugging Level**

Provides four debugging levels (Level 1 to Level 4).

**Important!** If you are unable to set the debugging level option to the appropriate level, contact Technical Support.

## Enable Submit Job from RMAN Console

CA ARCserve Backup Agent for Oracle provides File Based Mode backup and restore and RMAN Mode backup and restore. The RMAN Mode backup and restore provides the most common functionalities for RMAN. If you want to use advanced RMAN features, you can submit jobs using the RMAN Console.

### To enable submit job from the RMAN console

1. Start the Oracle Agent Configuration tool.
2. Check the Allow jobs to be submitted directly from the RMAN Console option.

The Agent Host and the Server Information fields appear.

The screenshot shows the 'Oracle Agent Configuration' window. The title bar reads 'Oracle Agent Configuration'. Inside, there's a 'Welcome to Oracle Agent Configuration!' message. Below it, a note states: 'Please configure Oracle version and instance(s) that you want to protect. Note: You must run Oracle Agent Configuration when you create new Oracle instances. ARCserve will NOT back up unconfigured Oracle instances until you configure them.' A checkbox labeled 'Allow jobs to be submitted directly from the RMAN Console' is checked. Below this is a table with three columns: 'Instance Name', 'Username', and 'Password'. The first row is checked and contains 'ORCL', 'sys', and '\*\*\*\*\*'. At the bottom left, there's a 'Log File' field with the path 'C:\Program Files\CA\ARCserve Backup Agent for Oracle\Log' and a 'Level 1' dropdown. At the bottom are 'OK', 'Cancel', 'Apply', and 'Help' buttons. On the right side, there are two sections: 'Agent Host Information' with 'User Name' (MTEST01-W35-15\Administr...) and 'Password' (\*\*\*\*\*); and 'CA ARCserve Server Information' with 'ServerName' (MTEST01-W35-3), 'Account' (caroot), 'Password' (\*\*\*\*\*), 'Tape Name' (\*), and 'Group Name' (\*).

Instance Name	Username	Password
<input checked="" type="checkbox"/> ORCL	sys	*****
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		



3. Enter details for the following parameters:

**Agent Host Information**

User name—Enter user details.

Password—Enter password details.

**CA ARCserve Server Information**

Server Name—Enter the ARCserve server details to ensure the backups and restores are submitted on the server.

Account—Enter CAROOT account details.

Password—Enter the CAROOT password.

Tape Name—Enter the tape name that you want to use for backup. If you want to use any tape then enter \*.

Group Name—Enter the group name that you want to use for backup. If you want to use any group then enter \*.

4. Click OK.

You can now submit RMAN scripts from the RMAN Console to be processed by the CA ARCserve server.

**Note:** For more information about how to use the Agent for Oracle, see the *Agent for Oracle* guide.

## Configure BACKINT Interface of Enterprise Option for SAP R/3

Before you can execute backup and restore operations using the option and SAPDBA, you must complete several configuration tasks. SAPDBA must be installed on the same computer as the option.

### Configure Parameter File Settings

The util\_par\_file parameter file contains parameters for controlling the backup agent configuration module (also known as BACKINT) and CA ARCserve Backup.

For a file sample, and definitions of file parameters, see the "Sample util\_par\_file and Parameter Definitions" appendix in this guide.

The parameter file name must be known to SAPDBA utilities for the proper operation of SAPDBA when it is working with CA ARCserve Backup; the file is located under the \$ORACLE\_HOME\database directory.

**To modify the settings in the parameter file**

1. Start the Oracle Configuration Utility from CA, CA ARCserve Backup Agents, SAP R/3 Oracle Option BACKINT Configuration.

The Backup Agent for R/3 Oracle Configuration window appears.

2. On the Security Information tab, select Local Server to use the local backup server.

**Note:** To use a remote backup server, select Remote/Cluster Server and enter Windows security information.

The screenshot shows a Windows-style dialog box titled "Enterprise Option for SAP R/3 for Oracle Configuration". It has three tabs: "Security Information", "Volume Backup", and "Volume Archive". The "Security Information" tab is active. Inside the dialog, there are two main sections. The first section, "Backup Server Type", has two radio buttons: "Local Server" (which is selected) and "Remote/Cluster Server". Below this is a "Backup Server" section with four text fields: "Name" (containing "testwin01"), "User" (containing "administrator"), "Password" (masked with "x"), and "Confirm Password" (masked with "x"). The second section, "Local Server", also has four text fields: "Name" (containing "testwin02"), "User" (containing "administrator"), "Password" (masked with "x"), and "Confirm Password" (masked with "x"). Below these sections is a "Backup Option" section with a checkbox labeled "Multi-Streaming" which is unchecked. At the bottom of the dialog is a "Cluster Support" section with two lines of text: "If your SAP database is running on a Cluster server, please use virtual server name as your Local Server Name." and "If your Backup Server is running on a Cluster server, please use virtual server name as your Backup Server Name." At the very bottom of the dialog are "OK" and "Cancel" buttons.

3. Click on the Volume Backup tab.

The Volume Backup tab appears.

The screenshot shows a dialog box titled "Enterprise Option for SAP R/3 for Oracle Configuration" with three tabs: "Security Information", "Volume Backup", and "Volume Archive". The "Volume Backup" tab is selected. The dialog contains several sections:

- Use Media Pool:** A checkbox that is currently unchecked. Below it are text boxes for "Media Pool Name:" and "Tape Name Prefix:" followed by a date format field showing "YYMMDD".
- Input Group Name/Tape Name for backup:** Two text boxes labeled "Group Name:" and "Tape Name:", each with an asterisk (\*) indicating a required field.
- First Backup Option:** Two radio buttons, "Append" (which is selected) and "Overwrite".
- Automatic Tape Management:** A section containing a list box (currently empty), three buttons ("Add", "Delete", "Scratch"), and an "Expire period:" field with the value "0" and the unit "Day(s)".

At the bottom of the dialog are "OK" and "Cancel" buttons.

4. On the Volume Backup tab, modify media management information for BRBACKUP.

If you want to use media pool support, first create a media pool on your CA ARCserve Backup server, and then check the Use Media Pool check box and enter the media pool information.

5. Click on the Volume Archive tab.

The Volume Archive tab appears.

6. On the Volume Archive tab, modify media management information for BRARCHIVE.

To use media pool support, create a media pool on CA ARCserve Backup server, check the Use Media Pool check box, and enter the media pool information.

## Configure the init<SID>.sap File

The init<SID>.sap configuration file for SAPDBA is part of the SAP environment. It contains all backup and archive parameters. To configure this file for use with CA ARCserve Backup, set these parameters as follows:

### To configure the init<SID>.sap file

1. Open the file with Notepad or a similar text editor.
2. Edit the file as required:
  - For an offline backup, set backup\_dev\_type = util\_file
  - For an online backup, set backup\_dev\_type = util\_file\_online
  - Set util\_par\_file= *parameter\_file\_name*
3. Save the file.

With these changes, SAPDBA now calls the BACKINT interface instead of CPIO and assumes that BACKINT is located in the directory:

c:\usr\sap\<SID>\sys\exe\run

You can also change the settings for the above parameters on the SAPDBA or BR\* Tools Backup menu.

## Create ACLs (Access Control Lists)

Access Control Lists allow you to identify the specific remote CA ARCserve Backup servers permitted to back up the Oracle database. If the CA ARCserve Backup Client Agent for Windows is installed, ACLs can be created and edited from the Agent Admin interface.

See the CA ARCserve Backup Client Agent for Windows online help for more information.

If the CA ARCserve Backup Client Agent for Windows is not installed, ACLs can be created manually by adding new registry values.

### To create an ACL manually

1. On the Windows Start menu, click Run.  
The Run dialog appears.
2. In the Open field, enter:  
regedit  
The Registry Editor window appears.

3. In the tree view pane, expand the following folders to view this registry path:

Software\ComputerAssociates\CA ARCserve Backup\Universal ClientAgent\ACL

4. Double-click the appropriate registry entry and make the following entries in the Edit String dialog:

- **ServerList** (REG\_MULTI\_SZ): CA ARCserve Backup server names.  
Enter one server name per line.
- **type** (REG\_DWORD): Enter **one** of the following values:
  - 0**: (default) All CA ARCserve Backup servers are permitted to back up the database.
  - 1**: only CA ARCserve Backup servers on the list are permitted to back up the database.
  - 2**: only CA ARCserve Backup servers NOT on the list are permitted to back up the database.

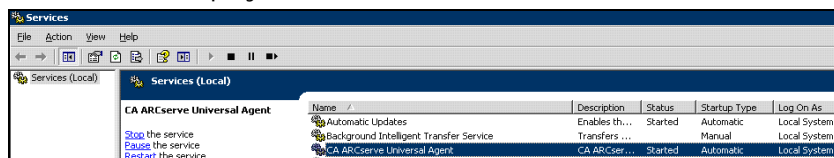
5. Click OK on the Edit String dialog after you complete each entry.
6. Close the Registry Editor.

## Check the CA ARCserve Universal Agent Service Status

The CA ARCserve Universal Agent service lets the agent support remote backups and restores of the Oracle database. It also operates as a Windows service. You can configure the server to start automatically during setup or after setup using the Control Panel Services.

### To check the CA ARCserve Universal Agent Service Status

1. Open Control Panel and then open Services.
2. Locate the CA ARCserve Universal Agent service icon. The current mode of the service is displayed.



3. To start or stop the service, highlight the CA ARCserve Universal Agent service icon and click Start or Stop, respectively.

## Backup and Restore Limitations

The following are limitations for backups and restores initiated with the option:

- The online redo logs are exclusively locked by Oracle while the Oracle database is online. Perform an offline backup if necessary.
- To restore either the system tablespace or a tablespace containing rollback segments, you must first shut down the database and perform a full database restore. For more information, see the section [Restore the System Tablespace](#) (see page 46) in this chapter.
- If you back up the Oracle database using the CA ARCserve Backup interface, you must restore it using the CA ARCserve Backup interface. Similarly, if you back up the Oracle database using RMAN, you must restore it using RMAN.
- The Agent for Oracle in File-based mode does not support backup and restore processes on raw devices and Automatic Storage Management (ASM).
- The Agent for Oracle in RMAN mode does not support backing up parameter files on raw devices.
- While performing an RMAN backup job using the Agent for Oracle, if your agent machine is unable to resolve the backup server machine name (for instance, the Backup server is in a different domain using a separate DNS server), you can manually modify your mgmtsvc.conf and clishell.cfg files on both the ARCserve server machine and ARCserve Agent machine to ensure proper hostname resolution. For more information, see the *Agent for Oracle* guide.
- Do not back up individual data files using RMAN.

# Chapter 3: Using the Option with Agent for Oracle

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The Oracle server application is organized into databases. Each Oracle database contains the following types of objects:

- **Tablespaces**—These objects contain data and may consist of multiple data files.
- **Online redo log files**—These objects contain records of transactions applied to the tablespaces.
- **Control files**—These objects describe the structure of the database, including the tablespaces. There can be more than one control file for the database.

The CA ARCserve Backup Enterprise Option for SAP R/3 for Oracle lets you back up a complete database or individual objects within the database.

This section contains the following topics:

[Online Redo Log Files](#) (see page 31)

[Multiple Databases](#) (see page 32)

[Database Backup](#) (see page 33)

[Database Restore with the Option](#) (see page 42)

[Database Recovery](#) (see page 51)

## Online Redo Log Files

Oracle Server uses online redo log files to record all entries to the Oracle tablespaces. However, the Option for SAP R/3 for Oracle requires archived online redo log files to function properly. For Oracle to create archived redo log files, you must set Oracle to operate in ARCHIVELOG mode. Also, for the agent to back up and restore properly, you must set Oracle to automatically archive online redo log files.

**Note:** For information about setting Oracle so that it operates in ARCHIVELOG mode and automatically archives online redo log files, see Enable Automatic Archiving in the *Agent for Oracle guide*.

## Multiple Databases

If your Oracle configuration has more than one database you can:

- View and log in to the databases
- Back up multiple databases simultaneously
- Quickly find the database objects that you want to back up

### Configure a Backup Session for Multiple Databases

To configure a backup session so you can log in to and view the databases you specified during installation on an Oracle configuration containing multiple databases.

#### **To configure a backup session for multiple databases**

1. Ensure that all the CA ARCserve Backup and agent-related services are running.
2. Open the Backup Manager window.
3. In the Backup Manager window, expand the server on which the Oracle server is installed. All the databases you configured on the Oracle server appear.
4. Right-click the database you want to log in.  
A pop-up menu opens.
5. Select Security.
6. Enter the user name and password you specified during configuration. Depending on which version of Oracle you are using, this user name should be SYSTEM, or have SYSDBA equivalent privileges.
7. Click OK. Expand the selected database to view objects and to select the objects to back up.



## Database Backup

Using the option you can back up complete Oracle databases and individual Oracle database objects, such as tablespaces, archived redo log files, and control files (each tablespace in a database is backed up as a separate session), parameter files and the recovery area.

You should back up all of the objects in a database immediately after you create the database and maintain a regular backup schedule to ensure smooth recovery in case of database or media failure. CA ARCserve Backup allows you to set and maintain a schedule of automatic backups.

For each online tablespace marked for backup, the option instructs Oracle to begin backup mode operation for the tablespace. The option retrieves the tablespace and passes it directly to CA ARCserve Backup, which sends it to a backup media drive. When the backup is complete, the option instructs Oracle to end the backup mode operation.

## Back Up Online Databases with CA ARCserve Backup

If you back up an Oracle database using the CA ARCserve Backup interface, you must restore it using the CA ARCserve Backup interface. Similarly, if you back up an Oracle database using Recovery Manager, you must restore it using Recovery Manager.

### To back up an Oracle database

1. Ensure that the Oracle server application is running.
2. Start CA ARCserve Backup and the option.
3. In the Source tab on the Backup Manager, select the databases that you want to back up. You can select any number of databases in any combination, or all of them together.

**Important!** Make sure all of the tablespaces on the database are online before backing up the Oracle database.

When you back up multiple databases, you are prompted to enter the user name and password for each database. All options that apply to backing up a single online database can be applied to backing up multiple online databases.

Databases are backed up sequentially on the media.

CA ARCserve Backup saves each tablespace (or database object) as a session. Therefore, the total number of sessions equals the total number of tablespaces, plus two additional sessions: one for archive logs for each Oracle database, and the other for the control file.

**Note:** If you select ~ARCHIVE LOG, the option backs up all of the archived log files under the archive log directory. If you select the control file, you must select only the control file or select the control file and **all** other tablespaces; otherwise the backup job will fail.

4. Click the Destination tab to select a backup destination.
5. Click the Schedule tab. Choose Custom Schedule or Use Rotation Scheme, and select the scheduling options you want to apply to the job.
6. Click Start to submit the job.

The Security and Agent Information dialog appears.



7. Enter security information.

**Note:** In the Security and Agent Information dialog, the column and button labeled Agent refer to the Client Agent, not the Enterprise Option for SAP R/3 for Oracle. You can enter client agent information.

See the *CA ARCserve Backup Client Agents Guide* for more information about Client Agents.

8. Select the Oracle object and click Security.

You can enter or change the user name and password for the Oracle server application.

9. Click OK.

The Submit Job dialog opens.

10. Click OK.

The job is submitted to the queue and can be monitored from the Job Queue Manager.

For more information about customizing your backup, see the *Administration Guide*.

## Back Up Offline Databases with CA ARCserve Backup

You can back up an offline Oracle database. In this case, CA ARCserve Backup treats the Oracle database files the same way as it treats any other system files.

### To back up an offline Oracle database

1. Start CA ARCserve Backup and open the Backup Manager.
2. Expand the directories.
3. Select all of the individual data files that make up the Oracle database or select the directories that contain the targeted files.  
**Note:** Oracle database files can be located anywhere (on any hard disk or in any directory). If you are performing a full offline backup of all your Oracle databases, make sure you select all the Oracle database files located on different drives.
4. Click the Destination tab to select a backup destination.
5. Click the Schedule tab, and select the scheduling options you want to apply to the job.
6. Click Start to submit the job.

The Security and Agent Information dialog appears as shown in the following example:



You must provide security information. In this dialog, the column and button labeled “Agent” refer to the Client Agent, not the CA ARCserve Backup Enterprise Option for SAP R/3 for Oracle. You can enter client agent information at this time.

See the *Client Agents Guide* for more information about Client Agents.

7. To enter or change the user name and password for the Oracle server application, select the Oracle object and click Security.

8. Click OK.

The Submit Job dialog opens.

9. Click OK.

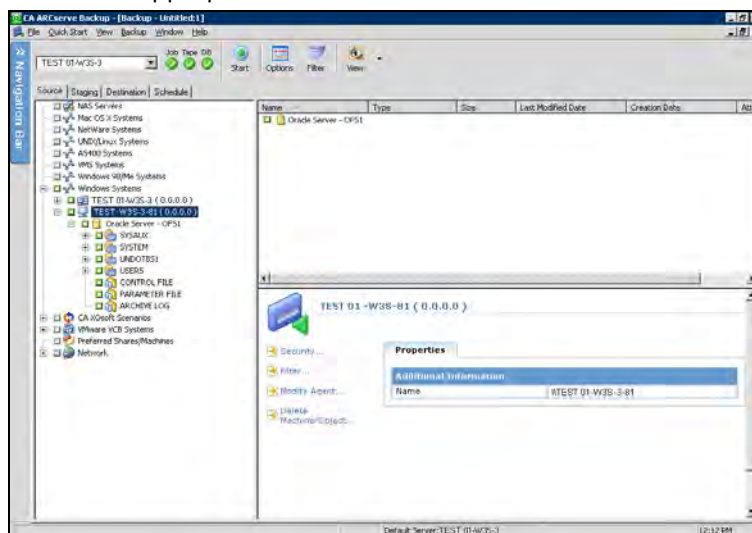
The job is submitted to the queue and can be monitored from the Job Queue Manager.

## Back Up in an Oracle Fail Safe Environment

You can back up data in an Oracle Fail Safe environment. To know more about OFS, see the Oracle documentation.

### To back up data in an Oracle Fail Safe environment

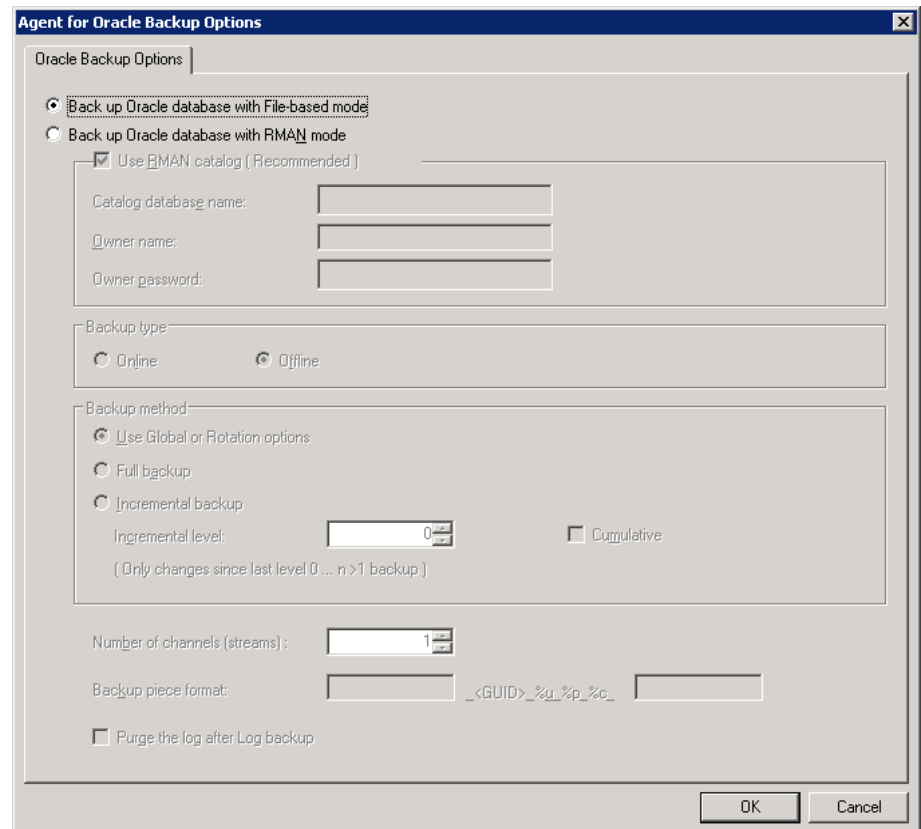
1. Make sure that the Oracle Fail Safe group is running in your Microsoft Cluster environment.
2. Start CA ARCserve Backup and start the Backup Manager.
3. On the Source tab, browse the Microsoft Network or the preferred shares to locate the Oracle Fail Safe groups.
4. Select the appropriate Oracle server from its Oracle Fail Safe group.



5. To set backup options, select the Source tab and then right-click to select Local Options.

The Oracle Backup Options dialog appears.

6. On the Agent for Oracle Options dialog, select Back up Oracle database with File-based mode.



The image shows the 'Agent for Oracle Backup Options' dialog box. It has a title bar with a close button. The main area is titled 'Oracle Backup Options'. There are two radio buttons: 'Back up Oracle database with File-based mode' (selected) and 'Back up Oracle database with RMAN mode'. Under the RMAN mode, there is a checked checkbox 'Use RMAN catalog (Recommended)' and three input fields for 'Catalog database name:', 'Owner name:', and 'Owner password:'. Below this is a 'Backup type' section with 'Online' and 'Offline' radio buttons, where 'Offline' is selected. The 'Backup method' section has three radio buttons: 'Use Global or Rotation options' (selected), 'Full backup', and 'Incremental backup'. Under 'Incremental backup', there is an 'Incremental level:' input field with '0' selected and a 'Cumulative' checkbox. A note below says '( Only changes since last level 0 ... n > 1 backup )'. At the bottom, there is a 'Number of channels (streams):' input field with '1' selected, a 'Backup piece format:' input field with a default value, and a 'Purge the log after Log backup' checkbox. 'OK' and 'Cancel' buttons are at the bottom right.

7. Double-click the Oracle server to display and select tablespaces for this instance.
8. Click the Destination tab and select a backup destination.
9. Click the Schedule tab and select the scheduling options you want to assign to this backup job.
10. Click Start.
11. Enter the user name and password of the Oracle Fail Safe group. To enter or change security information for the Oracle Fail Safe group, select the Oracle Fail Safe group and click Security.
12. Click OK to submit the job.

**Note:** Although you can browse all Oracle databases from any Oracle Fail Safe group, you can only achieve a successful backup by selecting the Oracle databases from its corresponding Oracle Fail Safe group. If the node on which the Oracle Fail Safe group is currently running enters failover mode during a backup job, the back up job is incomplete and must be resubmitted.

## Oracle Recovery Manager Backup

Before performing any backup or restore operations with RMAN, run the Oracle Backup Agent RMAN Configuration utility.

Before a Recovery Manager backup job is started, you must have CA ARCserve Backup running. If the CA ARCserve Backup server is on a remote computer, the CA ARCserve Backup Agent RPC Server also must be running on the agent computer. To check the status of the CA ARCserve Backup Agent RPC Server service, open the Windows Services utility. For example, on a Windows 2000 computer, follow these steps:

1. Click the Windows Start button.
2. Choose Settings.
3. Click Control Panel.
4. Double-click Administrative Tools.
5. Double-click Services.

The media that will contain the backup file must be ready in the media drive connected to the CA ARCserve Backup server. If not, CA ARCserve Backup displays a message asking you to mount the correct media.

**Note:** For more information about the agent for Oracle in File-based mode and RMAN mode, see *Agent for Oracle* guide.

## Connect to Recovery Manager and Back Up

You can use the following procedure to backup database objects.

### **To connect to Recovery Manager at the command line and back up database objects**

1. Log in on the computer on which the option is running. Use a user ID with administrator privileges.
2. From the Windows Start button menu, start a command prompt session.



- Enter the following command:

```
rman nocatalog
```

The Recovery Manager starts in the command prompt window.

- Enter the following commands to back up the database instance named test.

**Note:** In the following command, the *@instance\_name* parameter is required only if you have multiple database instances.

```
connect target system/manager@test
RMAN> run {
```

The program provides numbered prompts for each of the following entries:

```
2> allocate channel dev1 type 'sbt_tape';
3> backup database format 'as_%s_%t';
4> release channel dev1;
5> }
```

The backup begins. The progress of the backup is displayed in the command prompt session. When the backup is complete, you can continue to work with RMAN, or you can exit the command prompt session.

The following is a sample session for connecting to Recovery Manager:

```
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>rman nocatalog

Recovery Manager: Release 9.0.1.1.1 - Production
(c) Copyright 2001 Oracle Corporation. All rights reserved.

RMAN> connect target system/manager

connected to target database: TEST (DBID=1742829507)
using target database controlfile instead of recovery catalog

RMAN> run {
2> allocate channel dev1 type 'sbt_tape' ;
3> backup database format 'as_%s_%t' ;
4> release channel dev1 ;
5> }

allocated channel: dev1
channel dev1: sid=12 devtype=SBT_TAPE
channel dev1: MMS Version 0.0.0.0

Starting backup at 02-NOV-01
channel dev1: starting full datafile backupset
channel dev1: specifying datafile(s) in backupset
including current controlfile in backupset
input datafile fno=00001 name=G:\ORACLE\ORADATA\TEST\SYSTEM01.DBF
input datafile fno=00002 name=G:\ORACLE\ORADATA\TEST\UNDOTBS01.DBF
input datafile fno=00005 name=G:\ORACLE\ORADATA\TEST\EXAMPLE01.DBF
input datafile fno=00006 name=G:\ORACLE\ORADATA\TEST\INDEX01.DBF
input datafile fno=00008 name=G:\ORACLE\ORADATA\TEST\USERS01.DBF
input datafile fno=00003 name=G:\ORACLE\ORADATA\TEST\CWMLITE01.DBF
input datafile fno=00004 name=G:\ORACLE\ORADATA\TEST\DRSYS01.DBF
input datafile fno=00007 name=G:\ORACLE\ORADATA\TEST\TOOLS01.DBF
channel dev1: starting piece 1 at 02-NOV-01
channel dev1: finished piece 1 at 02-NOV-01
piece handle=as_1_444743078 comment=API Version 1.1.MMS Version 0.0.0.0
channel dev1: backup set complete, elapsed time: 00:05:48
Finished backup at 02-NOV-01

released channel: dev1
```

After a backup job is done, you can check the job status in the CA ARCserve Backup activity log, or by viewing the Database Manager.

## Database Restore with the Option

This section explains how to restore database objects such as tablespaces, archive log files, and control files. You can recover an individual tablespace or data file (a tablespace is composed of one or more data files).

**Note:** If the Oracle database is online, you can restore an individual tablespace or data file if the tablespace is offline. If the database is offline, you must recover the entire database in order to recover a tablespace or data file.

The option lets you restore the control files when you restore the database. However, CA ARCserve Backup backs up the control file only if you select it as a backup source on the Source tab of the Backup Manager. To back up the control file, either select all tablespaces (database objects) **and** the control file or select **only** the control file.

**Note:** If the current control files and the online redo log files are not damaged, it may not be necessary to overwrite the control files. Keeping the current control files makes the recovery a simpler task.

See the Oracle Server Administrator's Guide for more information about restoring a control file.

**Note:** The backup sessions you select to restore must have been successfully completed backup jobs. You should not attempt to restore a cancelled or failed backup job.

## Restore Suggestions

The following are some suggestions for completing a successful restore:

- To restore the control file, select the ~CONTROLFILE icon. The restore process saves the control file as CONTROL.SIDNAME in the option home directory. You can then use the MS-DOS copy command to copy the restored control file to the appropriate directory.

**Important!** You must overwrite all default database control files with the restored one. Use this format: `copy CONTROL.ORCL path\ctl1ORCL.ORA`

For example:

```
copy CONTROL.ORCL <path>\ctl1ORCL.ORA
```

For more information on restoring a control file, see the Oracle Server Administrator's Guide.

- To restore either the system tablespace or a tablespace containing rollback segments, you must shut down the database and perform a full database restore.
- To restore an older session of a tablespace, click Version History and select the session you want to restore. After you have selected, click OK and finish the rest of the restore procedure.
- If your current control files and the archived redo log files are not damaged, you may not want to recover the backed up control files and overwrite the current control files. Keeping the current control files allows you to restore your database to the latest usable version before a crash has occurred.

## Restore a Database with CA ARCserve Backup

You can restore a database using the following procedure.

### To restore a database, tablespaces, data files, or control files

1. Shut down the Oracle server application. If you prefer not to shut down the Oracle server application, and you are restoring only a tablespace or data file, take the tablespace offline.
2. Open the CA ARCserve Backup Restore Manager.
3. In the Restore Manager Restore by Tree view, expand the Oracle server application and select the database or the objects you want to restore.

**Note:** You do not need to select a destination—the Oracle database objects are automatically restored to their original locations.

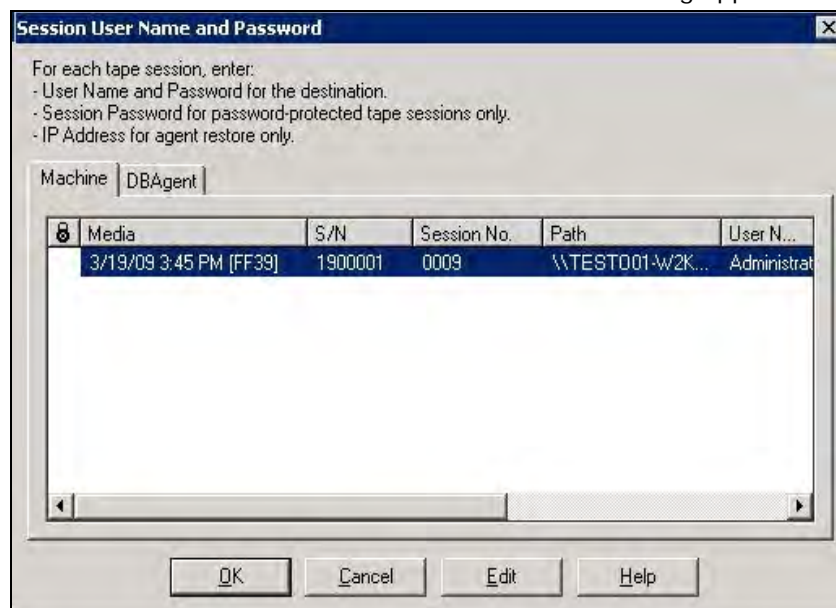
4. Click the Schedule tab and select the scheduling options you want to apply to this job.
5. Click Start to submit the job.

## Restore to an Alternate Server

You can restore to an alternate server using the following procedure.

### To restore to a server other than the server from which the backup was created

1. Select the server and the file directory you want to restore.  
**Note:** This server must be running one of the Windows operating systems required by the option. For a list of operating systems, see the Readme.
2. Click the Schedule tab and select the scheduling options you want to apply to this job.
3. Click Start. The Session User Name and Password dialog appears.



4. To enter or change the user name and password (and the session password) for the computer on which the source Oracle application server is running, select the session and click Edit.

5. Click the DBAgent tab.

The DBAgent tab appears as shown in the following example:



6. Enter the user name and password.

**Note:** For Oracle 9i and 10g, enter the user name SYSTEM.

7. For any version, the user name can also be any account with SYSDBA equivalent privileges.
8. Click OK.

The job is submitted to the queue and can be monitored from the Job Queue Manager.

When the job is completed, the database objects are restored to the selected server. It may be necessary to manually move the Oracle files into the proper locations after the restore is complete.

If the Oracle database has multiple archived log directories and archived log files that have been restored, to synchronize them, you must copy the restored files to the archived log directories.

See the following sections for information about recovering the Oracle database. For more information about submitting a restore job, see the *Administration Guide*.

## Restore the System Tablespace

You can use the following procedure to restore the system tablespace.

### To restore the system tablespace

1. Shut down the database.
2. Open the Restore Manager.
3. On the Source tab, select the Restore by Tree view and select the tablespace you want to restore.  
**Note:** The Oracle database objects are automatically restored to their original locations. You do not need to select a destination.
4. Click the Schedule tab and select the scheduling options you want to apply to this job.
5. Click Start.

The Session User Name and Password dialog opens.

6. To enter or change the user name and password (and the session password) for the machine on which the Oracle server is running, select the session and click Edit.
7. Enter the user name and password:
  - For Oracle 9i and 10g, enter the user name SYSTEM.
  - For any version, the user name can also be any account with SYSDBA equivalent privileges.
8. Click OK.

The job is submitted to the queue and can be monitored from the Job Queue Manager.

## Restore Databases Backed Up Offline

To restore an offline backup, shut down the Oracle server application, and restore the Oracle files using CA ARCserve Backup. You must select all of the files that make up the database; these files may be located on different physical drives or volumes.

**Note:** The backup you want to restore from must be a backup that was created with the CA ARCserve Backup Manager. You cannot use the CA ARCserve Backup interface to restore from a backup that was created with Recovery Manager.

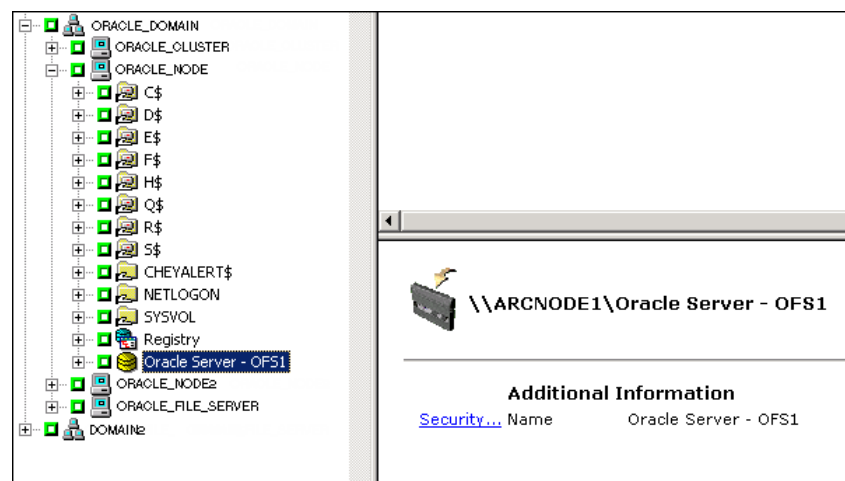
## Restore in an Oracle Fail Safe Environment

You can use the following procedure to restore in an Oracle fail safe environment.

### To restore in an Oracle Fail Safe environment with CA ARCserve Backup

1. Open the CA ARCserve Backup Restore Manager.
2. On the Source tab, select the Restore by Tree or Restore by Session option. Select the source you want to restore and a backup version or sessions for the tablespace.
3. Click the Destination tab and select a destination. You can restore to either the original location or server or an alternate location or server.
  - If you are restoring to the original location, ensure that the **Restore files to the original locations(s)** option is selected.
  - If you are restoring to a specific node in the Oracle Fail Safe group, clear the **Restore files to the original locations** option and select the Oracle database from the node to which you want to restore.

In the following example the domain is ORACLE\_DOMAIN, the node is ORACLE\_NODE, and the network name for the Oracle instance (SID) is OFS1:



4. Click Start.

The Session User Name and Password dialog appears.

5. Verify or change the user name and password for the Oracle Fail Safe group tablespace and the Microsoft Cluster Server. To change the user name and password for the Microsoft Cluster Server, select the session and click Edit. If a session password was assigned to this session, enter the session password. Click OK.

The Job Scheduler dialog opens.

6. Schedule the job to run now or at a later time, and then click OK.

The job is submitted to the queue and can be monitored from the Job Queue Manager.

## Oracle Recovery Manager Restore

Before performing any backup or restore operations with Oracle Recovery Manager (RMAN), run the Oracle Backup Option RMAN Configuration utility. For more information, see the section [Oracle Recovery Manager Backup](#) (see page 39) in this chapter.

Before you start a Recovery Manager restore job, you must have CA ARCserve Backup running. If the CA ARCserve Backup server is on a remote machine, the CA ARCserve Backup Agent RPC Server service also must be running on the option machine.

The media containing the backup file that you are restoring from must be ready in the media drive connected to the CA ARCserve Backup server. If not, CA ARCserve Backup displays a message asking you to mount the correct media.

**Note:** The backup you want to restore from must be a backup that was created with Recovery Manager. You cannot use Recovery Manager to restore from a backup that was created with the CA ARCserve Backup interface.



## Connect to Recovery Manager and Restore

You can use the following procedure to connect to recovery manager.

### To connect to Recovery Manager at the command line and restore database objects

1. Log in on the computer on which the option is running. Use a user ID with administrator privileges.
2. From the Windows Start button menu, start a command prompt session.
3. Enter the following command:

```
rman nocatal og
```

The Recovery Manager starts in the command prompt window, and the command line prompt becomes RMAN>.

4. Enter the following commands to back up the database instance named test.

**Note:** In the following command, the *@instance\_name* parameter is required only if you have multiple database instances.

```
connect target system/manager@test
```

```
RMAN> run {
```

The program provides numbered prompts for each of the following entries:

```
2> allocate channel dev1 type 'sbt_tape';
3> restore database;
4> release channel dev1;
5> }
```

The restore begins and the progress of the restore is displayed in the command prompt session. When the restore is complete, you can continue to work with RMAN, or you can exit the command prompt session.

The following is a sample session for connecting to Recovery Manager: The first portion of the session is a backup session, and the second portion of the session illustrates a restore session. In this case a tablespace is being restored.

```
Starting backup at 02-NOV-01
channel dev1: starting full datafile backupset
channel dev1: specifying datafile(s) in backupset
including current controlfile in backupset
input datafile fno=000001 name=G:\ORACLE\ORADATA\TEST\SYSTEM01.DBF
input datafile fno=000002 name=G:\ORACLE\ORADATA\TEST\UNDOTBS01.DBF
input datafile fno=000005 name=G:\ORACLE\ORADATA\TEST\EXAMPLE01.DBF
input datafile fno=000006 name=G:\ORACLE\ORADATA\TEST\INDEX01.DBF
input datafile fno=000008 name=G:\ORACLE\ORADATA\TEST\USERS01.DBF
input datafile fno=000003 name=G:\ORACLE\ORADATA\TEST\CWMULTI01.DBF
input datafile fno=000004 name=G:\ORACLE\ORADATA\TEST\DRSYS01.DBF
input datafile fno=000007 name=G:\ORACLE\ORADATA\TEST\TOOLS01.DBF
channel dev1: starting piece 1 at 02-NOV-01
piece handle=as_i_444743078 comment=API Version 1.1,MMS Version 0.0.0.0
channel dev1: backup set complete, elapsed time: 00:05:48
Finished backup at 02-NOV-01

released channel: dev1

RMAN> run {
2> allocate channel dev1 type 'sbt_tape' ;
3> restore tablespace users ;
4> release channel dev1 ;
5> }

allocated channel: dev1
channel dev1: sid=12 devtype=SBT_TAPE
channel dev1: MMS Version 0.0.0.0

Starting restore at 02-NOV-01

channel dev1: starting datafile backupset restore
channel dev1: specifying datafile(s) to restore from backup set
restoring datafile 000008 to G:\ORACLE\ORADATA\TEST\USERS01.DBF
channel dev1: restored backup piece 1
piece handle=as_i_444743078 tag=null parans=NULL
channel dev1: restore complete
Finished restore at 02-NOV-01

released channel: dev1

RMAN>
```

After a restore job is done, you can check the job status in the CA ARCserve Backup activity log, or from the Database Manager.

## Restore to a Particular Point in Time

To restore a database or tablespace to a particular point in time, follow the procedures to restore a database or a tablespace and the associated archive log files. For more information, see the section [Restore a Database with CA ARCserve Backup](#) (see page 43) in this chapter.

See your *System Administrator Guide* for more information about restoring or recovering the database or tablespace to a particular point in time.

## Archive Logs Restore

If both the control files and archive log files have been lost or corrupted, you must select both ~CONTROLFILE and ~ARCHIVE LOG icons as source sessions to be restored.

## Database Recovery

After you restore the database objects to the server, you must recover the database. You can recover the database or database objects using one of the following methods:

- Recover a complete database
- Recover a complete database with a backed up control file
- Recover a tablespace or data file
- Recover from an offline full backup

These methods are described in the following sections.

## Recover Old Databases

After you have completed a successful restore of a database, you must use the Oracle Server Manager Console to recover the database of the earlier versions.

### To recover a database with current control files

1. Start the database instance, and mount the database without opening it.

Now at the SQL\*Plus prompt enter

```
CONNECT SYS/SYS_PASSWORD AS SYSDBA;  
STARTUP MOUNT
```

**Note:** You may use a different Oracle SYSDBA instead of SYSTEM if the SYSDBA has the proper backup and restore privileges.

2. Begin the database recovery process by entering the following command at the SQL\*Plus prompt:

```
RECOVER DATABASE
```

3. Oracle checks for the archive redo log files it needs to apply and prompts for the names of these archive redo log files in chronological order.

For example, if Oracle needs the name of the archive redo log file with a sequence number of 49, the following message displays:

```
ORA-00279: Change 10727 generated at 09/15/95 16:33:17 needed for thread 1  
ORA-00289: Suggestion : D:\ORANT\saparch\ARC00049.001  
ORA-00200: Change 10727 for thread 1 is in sequence #49  
Specify log<<RET>>suggested : filename : AUTO : FROM logsource : CANCEL
```

4. If you have all of the necessary archived log files, enter AUTO to apply the files. Oracle applies the log data to restore the datafiles. After Oracle finishes applying the redo log file, the following message is displayed:

```
Applying suggested logfile...  
Log applied.
```

After each log is applied, Oracle continues to apply the next redo log file until the recovery is complete.

**Note:** If Oracle returns an error indicating that the log file cannot be opened, the log file may not be available. At the prompt, enter CANCEL. This command stops the complete media recovery.

For more information about recovery and archive redo log files, see the Oracle Documentation.

5. Open the database by entering the following command:

```
ALTER DATABASE OPEN;
```

The database is now recovered to the last log file available.

**Note:** For the most reliable database objects recovery, you should back up archived log files using the `~ARCHIVELOG` object. For more information on database recovery, see Oracle Documentation.

## Recover Complete Databases with Backed Up Control Files

You must also use the Oracle Server Manager or Oracle SQL\*Plus to perform the recovery procedure.

### To recover the complete database

1. Start and mount the database and recover the database. At the SQL\*Plus prompt, enter the following commands:

```
CONNECT SYS/SYS_PASSWORD AS SYSDBA;  
STARTUP MOUNT;  
RECOVER DATABASE USING BACKUP CONTROLFILE UNTIL CANCEL;
```

2. You are prompted to enter the log file names.

Oracle first looks for the archive log files, and automatically supplies the correct names for the files that exist. If it cannot find the necessary archive log files, you must manually apply the online redo logs.

3. Enter the complete path and file name for the online redo logs. If you enter an incorrect log, re-enter the command:

```
RECOVER DATABASE USING BACKUP CONTROLFILE UNTIL CANCEL;
```

Now enter the correct online redo log file name at the prompt. Continue this procedure until all logs have been successfully applied.

4. To bring the database back online and reset the logs, enter the following command at the SQL\*Plus prompt:

```
ALTER DATABASE OPEN RESETLOGS;
```

5. In the directories where the archived redo logs are stored, delete all of the log files.

6. To bring any tablespaces that are still offline back online, enter the following command at the SQL\*Plus prompt:

```
ALTER TABLESPACE TABLESPACE_NAME ONLINE;
```

## Recover Old Tablespaces or Data Files

If the Oracle database is open, you can restore and recover a tablespace by first placing the tablespace offline.

### To recover a tablespace or data file

1. Take the tablespace offline by entering the following command at the SQL\*Plus prompt:

```
ALTER TABLESPACE "tablespace_name" OFFLINE;
```

**Note:** The Oracle server may take the damaged tablespace offline automatically. If that is the case, go to Step 2.

2. Restore the tablespace or data file using CA ARCserve Backup and the CA ARCserve Backup Agent for Oracle if you have not done so.
3. Begin the database recovery process:

- If you are recovering a **tablespace**, enter the following command at the SQL\*Plus prompt:

```
RECOVER TABLESPACE "tablespace_name";
```

- If you are recovering a **data file**, enter the following command at the SQL\*Plus prompt:

```
RECOVER DATAFILE 'path';
```

For example,

```
RECOVER DATAFILE 'T:\Oracle\Oradata\Orcl\Backup.Ora';
```

4. Oracle checks for the archive redo log files it needs to apply and prompts for the names of these archive redo log files in chronological order.

For example, when Oracle needs the name of the archive redo log file with a sequence number of 49, it displays the following message:

```
ORA-00279: Change 10727 generated at 09/15/95 16:33:17 needed for thread 1
ORA-00289: Suggestion : D:\ORANT\saparch\ARC00049.001
ORA-00200: Change 10727 for thread 1 is in sequence #49
Specify log<<RET>>suggested : filename : AUTO : FROM logsource : CANCEL
```

5. If you have all the necessary archived log files, enter AUTO to apply the files. Oracle applies the log data to restore the datafiles. After Oracle finishes applying the redo log file, it displays the following message:

```
Applying suggested logfile...
Log applied.
```

After each log is applied, Oracle continues to apply the next redo log file until the recovery is complete.

Note: If Oracle returns an error indicating that the log file cannot be opened, the log file may not be available. At the prompt, enter CANCEL. This command stops the complete media recovery. In this case, perform the incomplete media recovery to restore the tablespace again. After all the log files are applied, database recovery is complete. For more information about incomplete media recovery, see the Oracle Server Administrator's Guide.

6. Open the database by entering the following command:

```
ALTER TABLESPACE "tablespace_name" ONLINE;
```

The tablespace is now recovered to the last available log file.

**Note:** For the most reliable database objects recovery, you should back up archived log files using the ~ARCHIVELOG object. For more information on database recovery, see the *Oracle Documentation*.

## Recover From Offline Full Backups

You can recover an Oracle database from an offline full backup. To recover from an offline backup, shut down the Oracle server application and restore the Oracle files using the CA ARCserve Backup Restore Manager. You must select all of the files that make up the database.

**Note:** The backup you want to restore from must be a backup that was created with Backup Manager. You cannot use Restore Manager to restore from a backup that was created with the Recovery Manager interface.





# Chapter 4: Using the Option with SAPDBA for Oracle

---

You can perform operations such as backups, restores, or inquiries by using the SAPDBA menu or by entering SAPDBA commands at the command line. This chapter provides information about using the SAPDBA menu to back up and restore data.

For information about using the command line, see the SAP R/3 for Oracle documentation.

This section contains the following topics:

[SAPDBA](#) (see page 58)

[SAPDBA Functions](#) (see page 59)

[Database Backup Using SAPDBA](#) (see page 59)

[Restore and Recover Using SAPDBA](#) (see page 64)

[The BACKINT Job Status](#) (see page 65)

## SAPDBA

By using the SAPDBA menu, you can perform various database administration functions, including the following:

- Backing up, restoring, and recovering data
- Starting up and shutting down databases
- Extending tablespaces
- Monitoring and analyzing space on the database
- Reorganizing databases
- Recovering databases

SAPDBA uses BRBACKUP, BRARCHIVE, and BRRESTORE modules (which are embedded in the menu structure of SAPDBA) to integrate with the database backup, restore, and inquiry functions.

SAPDBA evaluates logs to decide if data can be recovered using the selected backups. SAPDBA evaluates the selected backup method and determines if it will prevent recovery between the time of the backup and the selected recovery end time (point in time). If SAPDBA cannot perform a recovery, it rejects the selected backup or recovery procedure.

**Note:** Although SAPDBA 6.20 is no more developed by SAP, it is still available for Oracle 9i. For more information, see SAP documentation.

Since SAPDBA is not supported by BR\*Tools 6.4 or higher versions, you can use the BR\*Tools to perform backup and restore jobs. For more information about the BR\*Tools, see chapter Using the Option with BR\*Tools for Oracle.

## SAPDBA Functions

SAPDBA can restore and back up an entire database or reset the database to a previous state. When you start a job, SAPDBA is automatically started. SAPDBA functions are determined by the properties that are set in `util_par_file`.

For more information on setting `util_par_file` properties, see the section [Configure Parameter File Settings](#) (see page 25) in the chapter "Installing the Option."

The following modules are available for Oracle database administration:

### **BRBACKUP**

Brings database servers online or offline, checks the file status, and places database tablespaces into backup mode to maintain consistency.

### **BRARCHIVE**

Provides online and offline backup of control files, data files, and online redo log files as well as profiles and logs for backups.

### **BRRESTORE**

Recovers database data files, control files, and online redo log files. Checks for available space prior to a restore while removing files that may be overwritten during the recovery.

When these modules are used, events are logged in the file system and corresponding database tables. When BRBACKUP or BRARCHIVE runs, backup logs and profiles are saved, enabling sophisticated volume management.

## Database Backup Using SAPDBA

SAPDBA lets you back up complete databases or individual database objects such as tablespaces, control files, or archive logs. It works with CA ARCserve Backup to back up data while the database is online or offline. When performing an online backup, the database is running and still accessible to users; when performing an offline backup, the database shuts down and is inaccessible to users.

## Back Up Online Databases with SAPDBA

You can backup online databases using this procedure.

### To back up online databases with SAPDBA

1. Log onto SAPDBA.

The SAPDBA main screen appears as shown in the following example:

```
SAPDBA V6.20 - SAP Database Administration - on WIN NT 5.2

ORACLE version: 9.2.0.1.0
ORACLE_SID    : CER
ORACLE_HOME   : d:\oracle9i
DATABASE      : db status unknown

a - Startup/shutdown instance      h - Backup database
b - Instance information           i - Backup offline redo logs
c - Tablespace administration      j - Restore/recovery
d - Reorganization                k - DB check/verification
e - Export/import                  l - Show/cleanup
f - Archive mode                   m - User and security
g - Additional functions

q - Quit
Please select ==> _
```

2. Enter **h**—Backup database.

The Backup Database screen appears as shown in the following example:

```
Backup Database <DB status is db status unknown>

a - Backup function                Current value
b - Parameter file                 Normal backup
c - Backup device type             initCER.sap
d - Objects for backup             external backup tool <backint>
e - Backup type                    all
g - Query only                     offline
h - Special options ...            no

i - Standard backup                yes
j - Backup from disk backup
l - Restart backup
n - Make part. backups compl.

S - Start BRBACKUP <V6.20 >
q - Return

Please select ==> _
```

3. Enter **c**—Backup device type.  
The Select backup device type screen appears.
4. Enter **g**—external backup tool (BACKINT). This is the only device type you can select when using SAPDBA for online database backup.
5. Enter **q** to return to the previous screen.
6. At the Backup Database screen, select **e** - Backup type.
7. At the Backup type screen, select **a** - online.
8. Enter **q** to return to the previous screen.
9. Enter **d**—Objects for back up.  
The text appears.
10. Enter **q** to return to the Backup database screen.
11. Enter **s**—Start BRBACKUP to begin the back up.

## Back Up Offline Databases with SAPDBA

You can back up offline databases using this procedure.

### To back up offline databases with SAPDBA

1. Log onto SAPDBA.

The SAPDBA main screen appears.

2. Enter **h**—Backup database.

The Backup database screen appears.

3. Enter **c**—Backup device type.

The Backup device type screen appears.

4. Enter **f**—util\_file. This is the only device type you can select when using SAPDBA for offline database backup.

5. Enter **q** to return to the previous screen.

6. Enter **e**—backup type at the Backup Database screen.

7. Ensure that **b**—offline is selected at the Backup type screen.

8. Enter **q**—to return to the previous screen.

9. Enter **d**—Objects for backup.

The Backup Mode/Backup Objects screen appears as shown in the following example:

```
Backup Mode/Backup Objects

Current selection: "all"

a - "all"           - whole database backup
b - "all_data"     - whole database without index tablespaces
c - "full"         - full backup <level 0>
d - "incr"        - incremental backup <level 1>
e - "sap_dir"      - SAP directories backup
f - "ora_dir"      - ORACLE directories backup
g -               - a tablespace name
h -               - an ORACLE file id <number>
i -               - or a range of file ids <number>--<number>
j -               - an absolute file or directory name
k -               - a combination: <item> or <item>.<item>,...

q - Return

Please select ==> _
```

10. After you select an object for backup, enter **q** to return to the Back up database screen.

11. Enter **s**—Start BRBACKUP to begin the backup.

## Back Up Offline Redo Logs

You can use the following procedures to back up offline redo files.

### To back up offline redo logs

1. Log onto SAPDBA.

The SAPDBA main screen appears.

2. Ensure that SAPDBA is in archive log mode and that automatic archive is enabled.
3. Enter **i**—Backup offline redo logs.

The Backup Offline Redo logs screen appears as shown in the following example:

```

Backup Offline Redo Logs

a - Archive function          Current value
b - Parameter file           Save offline redo logs
c - Archive device type      initCER.sap
d - Number of redo logs      external backup tool <backint>
f - Query only               10000
g - Fill tape(s) permanently no
h - Special options ...      no

i - Standard backup of offline redo logs yes
j - Backup from disk backup  no

q - Return

s - Start BRARCHIVE <U6.20 >
Please select ==> _

```

4. Enter **e**—Archive device type, at the Backup archive logs screen.

The Select archive device type screen appears.

5. Enter **g**—util\_file\_online, at the Archive device type screen. This is the only archive device type you can select when using SAPDBA for archive redo log backup.
6. Enter **q**—to return to the previous menu.
7. Enter **g**—Number of redo logs. When prompted, enter the number of redo logs.
8. Enter **q**— to return to the previous menu.
9. Enter **s**—Start BRARCHIVE.

## Restore and Recover Using SAPDBA

You can use the following procedure to restore and recover using SAPDBA.

### To restore or recover databases with SAPDBA

1. Log onto SAPDBA.

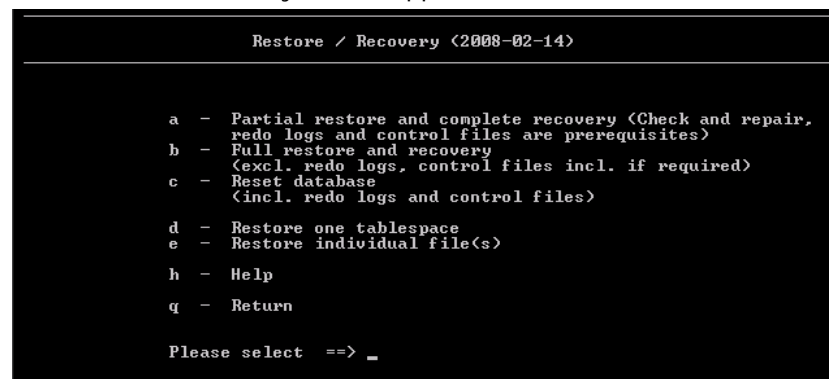
The SAPDBA main screen appears.

2. Ensure that Expert mode is ON.

**Note:** Before restoring data through SAPDBA, you must be in Expert mode. See your SAP manual for instructions.

3. From the main screen, enter k—Restore/recovery.

The Restore / Recovery screen appears.



```
Restore / Recovery <2008-02-14>

a - Partial restore and complete recovery <Check and repair,
    redo logs and control files are prerequisites>
b - Full restore and recovery
    <excl. redo logs, control files incl. if required>
c - Reset database
    <incl. redo logs and control files>

d - Restore one tablespace
e - Restore individual file(s)

h - Help
q - Return

Please select ==> _
```

Full Restore lets you restore the database and startup open (no recovery possible), or restore the database and startup mount (for manual recovery using the backup control file).

Full Restore and Recovery allows you to select a full online or offline backup, restore and recover database objects, recover until (allows you to choose among proper timestamps), or show the status of the job.

4. Choose the type of restore from the Restore/Recovery menu options.

See your SAP manual for more information about completing the remaining restore or recovery steps.



## The BACKINT Job Status

When you use BACKINT to back up or restore a database, you can view the status of the job using CA ARCserve Backup or SAPDBA.

For more information on checking the status of a job initiated with CA ARCserve Backup, BACKINT, and SAPDBA, see the section [Job Status Information](#) (see page 81) in the Troubleshooting.



# Chapter 5: Using the Option with BR\*Tools for Oracle

---

You can use the Enterprise Option for SAP R/3 for Oracle with BR\*Tools to perform backups, restores, or inquiries.

This section contains the following topics:

[BR\\*Tools](#) (see page 67)

[Configure BR\\*Tools](#) (see page 68)

[Profile file](#) (see page 68)

[Environment Variables](#) (see page 68)

[Database Backup Using the BR\\*Tools command](#) (see page 69)

[Using BACKINT Command Line for Querying Backup Information](#) (see page 74)

## BR\*Tools

BR\*Tools is the program package containing BRBACKUP, BRARCHIVE, and BRRESTORE and other options. BR\*Tools 6.40, can be used for all SAP releases based on Oracle 9i. You can use the BR\*Tools with the CA ARCserve Enterprise Option for SAP R/3 for Oracle and perform the backup and restore jobs. For more information about BR\*Tools, see [http://help.sap.com/saphelp\\_nw04/helpdata/en/da/eea6a71c958b4798102ce174d061ac/frameset.htm](http://help.sap.com/saphelp_nw04/helpdata/en/da/eea6a71c958b4798102ce174d061ac/frameset.htm)

## Configure BR\*Tools

You must configure the BR\*Tools by using the following procedure.

### To configure BACKINT interface

1. Configure the BACKINT interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set environment variables. For example:

```
set ORACLE_SID=CER
set ORACLE_HOME=e:\oracle\ora92
set SAPDATA_HOME=e:\oracle\cer
set Path=%PATH%; e:\usr\sap\CER\sys\exe\run
```

**Note:** For more information about environment variables, see the section [Environment Variables](#) (see page 68).

3. Run the necessary BR\*Tools command to perform backup and restore jobs.

## Profile file

The initialization profile init <ORACLE\_SID>.sap contains parameters that decide how the SAP tools perform various functions. You can specify the required settings in the initialization profile. The default initialization profile init<ORACLE\_SID>.sap is as follows:

```
%<ORACLE_HOME>%\database\init< ORACLE_SID >. sap
```

## Environment Variables

Environment variables define parameter values used by the Oracle database and BR\*Tools. This section describes the variables used in the Windows operating system.

### ORACLE\_SID

This variable is the System ID of the database instance.

### ORACLE\_HOME

This variable is the home directory of the Oracle software. This variable no longer needs to be set. If not set, the SAP tools determine its value from the registry.

### SAPDATA\_HOME

This variable is the directory of the database files.

## Database Backup Using the BR\*Tools command

You can perform the backup, restore and archive jobs using the BR\*Tools commands. Some of the command options include the BRBACKUP, BRRESTORE and BRARCHIVE.

**Note:** Ensure you have a copy of the original files as the BRRestore command can delete original files when database is shutdown or when the tablespaces are offline.

### Online Backup of a Complete Database

CA ARCserve Backup lets you back up a complete database.

#### To back up complete database

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Execute the following command:

```
brbackup -d util_file -t online -m all [-u <username>/<password>]
```

```
C:\Documents and Settings\Administrator>BRBackup -d util_file -t online -m PSAPBTAB
BR0051I BRBACKUP 6.40 (26)
BR0169W Value 'ibs=' of parameter/option 'dd_in_flags' ignored for 'Windows' - '
bs=' assumed
BR0055I Start of database backup: bdyhduw.pnf 2008-07-04 17.32.26
BR0280I BRBACKUP time stamp: 2008-07-04 17.32.43
BR0319I Control file copy created: e:\oracle\cer\sapbackup\cntrlCER.dbf 3629056
BR0280I BRBACKUP time stamp: 2008-07-04 17.32.45
BR0057I Backup of database: CER
BR0058I BRBACKUP action ID: bdyhduw
BR0059I BRBACKUP function ID: pnf
BR0140I Backup mode: PARTIAL
BR0060I Tablespace for backup: PSAPBTAB
BR0077I Database file for backup: e:\oracle\cer\sapbackup\cntrlCER.dbf
BR0061I 2 files found for backup, total size 8.469 MB
BR0143I Backup type: online
BR0130I Backup device type: util_file
BR0109I Files will be saved by backup utility
BR0280I BRBACKUP time stamp: 2008-07-04 17.32.45
BR0256I Enter 'c[ont]' to continue, 's[top]' to cancel BRBACKUP:
```

## Online Backup of Control File

You can use the following procedure to back up control file.

### To backup online control file

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set environment variable.
3. Run the command

```
brbackup -d util_file -t online -m 0 [-u <username>/<password>]
```

## Offline Backup of Tablespace

You can perform offline back up of a tablespace using the following procedure.

### To perform an offline backup of a tablespace

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Execute the following command:

```
brbackup -d util_file -t offline -m <TABLESPACENAME> [-u  
<username>/<password>]
```

## Save Offline Redo Log Files

You can save and archive the redo log files using the following procedure.

### To save offline redo log files

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Execute the following command to save the log files:

```
brarchive -d util_file -s [-u <username>/<password>]

C:\Documents and Settings\Administrator>BRArchive -d util_file -s -u system/nana
ger
BR0002I BRARCHIVE 6.40 <26>
BR0169W Value 'ibs=' of parameter/option 'dd_in_flags' ignored for 'Windows' - '
bs=' assumed
BR0006I Start of offline redo log processing: adyhdugz.sve 2008-07-04 18.00.13
BR0280I BRARCHIVE time stamp: 2008-07-04 18.00.18
BR0008I Offline redo log processing for database instance: CER
BR0009I BRARCHIVE action ID: adyhdugz
BR0010I BRARCHIVE function ID: sve
BR0048I Archive function: save
BR0011I 63 offline redo log files found for processing, total size 124.935 MB
BR0130I Backup device type: util_file
BR0109I Files will be saved by backup utility
BR0280I BRARCHIVE time stamp: 2008-07-04 18.00.18
BR0256I Enter 'c[ontl]' to continue, 's[top]' to cancel BRARCHIVE:
```

## Copy and Delete Saved Offline Redo Log Files and Save New Redo Log Files

You can copy and delete saved offline redo log files and save new redo log files using the following procedure.

### To copy and delete saved offline redo log files and save new redo log files

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Copy and delete saved offline redo log files and save new redo logs files using the following command.

```
brarchive -d util_file -cds [ -u <username>/<password>]
```

## Restore Complete Database

You can restore all tablespaces without the control file and online redo log files, starting from the last successful backup.

**Note:** Ensure you have a copy of the original files as the BRRestore command can delete original files when database is shutdown or when the tablespaces are offline.

### To restore complete database

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set environment variable.
3. Run the command.

```
brrestore -d util_file -b last -m all [-u <username>/<password>]
C:\Documents and Settings\Administrator>BRRestore -d util_file -b last -m PSAPBTAB
ABI -u system/manager
BR0401I BRRESTORE 6.40 (26)
BR0169W Value 'ibs=' of parameter/option 'dd_in_flags' ignored for 'Windows' - '
bs=' assumed
BR0405I Start of file restore: rdyhdsgv.rsb 2008-07-04 17.37.37
BR0428W File E:\ORACLE\CER\SAPDATA2\BTAB1_1\BTAB1.DAT1 will be overwritten
BR0280I BRRESTORE time stamp: 2008-07-04 17.37.37
BR0256I Enter 'c[ont]' to continue, 's[top]' to cancel BRRESTORE:
c
BR0280I BRRESTORE time stamp: 2008-07-04 17.37.44
BR0257I Your reply: 'c'
BR0259I Program execution will be continued...
BR0457I Probably the database must be recovered due to partial restore
BR0280I BRRESTORE time stamp: 2008-07-04 17.37.44
BR0407I Restore of database: CER
BR0408I BRRESTORE action ID: rdyhdsgv
BR0409I BRRESTORE function ID: rsb
BR0441I Restore mode: partial
BR0410I Tablespace for restore: PSAPBTAB1
```

## Restore Control Files

CA ARCserve Backup lets you restore a control files using the following procedure.

**Note:** Ensure you have a copy of the original files as the BRRestore command can delete original files when database is shutdown or when the tablespaces are offline.

### To restore control files

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Execute the following command.

```
brresotre -d util_file -m 0 [-u <username>/<password>]
```



## Restore Offline Redo Log Files

You can restore offline redo log files for the log sequence numbers from `<log_nr1>` to `<log_nr2>`.

**Note:** Ensure you have a copy of the original files as the BRRestore command can delete original files when database is shutdown or when the tablespaces are offline.

### To restore offline redo log files

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Execute the following command:

```
brrestore -d util_file -a <log_nr1>-<log_nr2> [-u <username>/<password>]
```

For example, the following syntax restores offline redo log files contained within log sequence numbers 200 to 220:

```
brrestore -d util_file -a 200-220 [-u <username>/<password>]
```

## Partial Restore to a Different Directory

You can perform a partial restore to a different directory from the last backup.

### To perform a partial restore to different directory

1. Configure the backint interface using SAP R3 Oracle Option BACKINT Configuration.
2. Set the environment variable.
3. Run the command.

```
brrestore -d util_file -b last -m <TABLESPACENAME>=<The whole path of directory> [-u <username>/<password>]
```

For example,

To restore tablespace PSAPDDICD from the last backup to the directory "E:\temp":

```
brrestore -d util_file -b last -m PSAPDDICD=E:\temp [-u <username>/<password>]
```

## Using BACKINT Command Line for Querying Backup Information

You can use the BACKINT command line to query backup information.

### To query backup information using BACKINT command line

1. Query all backed up information through BACKINT call with no further specification, in which, input file must contain an entry '#NULL', and '-o' switch is optional.

```
backint -u <SID> -f inquire -t file -p <util_profile> -i <input_file> [-o  
<output_file>]
```

SID: Oracle SID

util\_profile: util file init<SID>.utl path

input file: the input file which context must contain an entry '#NULL'

For example:

```
backint -u CER -f inquire -t file -p  
"F:\oracle\product\10.2.0\db_1\database\initcer.utl" -i "c:\input.txt" [-o  
"c:\output.txt" ]
```

2. Query all backed up information through BACKINT call with backup\_id specified, in which, input file must contain an entry '<backup\_id>', and '-o' switch is optional.

```
backint -u <SID> -f inquire -t file -p <util_profile> -i <input_file> [-o  
<output_file> ]
```

3. Query all backed up information through BACKINT call with file\_name specified, in which input file must contain entry '#NULL <file\_name>', and '-o' switch is optional.

```
backint -u <SID> -f inquire -t file -p <util_profile> -i <input_file> [-o  
<output_file>]
```

4. Query all backed up information through BACKINT call with backup\_id and file\_name specified, in which, input file must contain entries like '<backup\_id\_1><file\_name\_1>' and/or '<backup\_id\_2><file\_name\_2>', and '-o' switch is optional.

```
backint -u <SID> -f inquire -t file -p <util_profile> -i <input_file> [-o  
<output_file>]
```

# Appendix A: Best Practices

---

This chapter presents best practices for using the Enterprise Option for SAP R/3 for Oracle to backup and restore Oracle databases managed by SAP R/3 for Oracle.

This section contains the following topics:

[Recommended Backup Procedures](#) (see page 75)

[Effective Backup and Recovery Strategies](#) (see page 76)

[Test Environment](#) (see page 76)

[Log File Protection](#) (see page 76)

[Backups After Organizational Changes](#) (see page 77)

[Current Option Information](#) (see page 77)

## Recommended Backup Procedures

We recommend following these backup procedures:

- When a database is initially created, perform a full offline backup of the entire database using CA ARCserve Backup without the option. This provides copies of all data files, redo log files, and control files of your database.
- Perform an online backup of your Oracle databases.
- Extensively used tablespaces should be backed up frequently to reduce database recovery time.

For more information about Oracle backup and recovery procedures, see the Oracle Server Administrator's Guide.

## Effective Backup and Recovery Strategies

Plan your backup and recovery strategies for a database before you create the database, and maintain a regular backup schedule to ensure smooth recovery in case of database or media failure. If such planning is not considered before database creation, database recovery may not be possible in certain cases.

For more information about disaster recovery planning, see the "Disaster Recovery" appendix.

When you develop your backup and recovery strategy, consider the following:

- **Full backups**—Full database backups should be performed regularly; it is easier to recover a database from a full backup.
- **Tablespace-level backups**—Recoverable databases allow tablespace-level backups, which can be done online or offline. For an isolated application error, it is easier to restore from a tablespace-level backup image.
- **Online or offline backups**—Offline backups are usually faster, but require exclusive access to the database. Online backups reduce the database downtime; however, they allow other connections to the database while the backup is taking place.

## Test Environment

Test your backup and recovery strategy in a test environment before you move to a production system. By thoroughly testing your proposed backup and recovery strategy, you can identify and correct unexpected problems before they occur in a production situation.

## Log File Protection

Do not overwrite log files if you archive and retrieve files on the same directory. To protect your archived log files, restore them to a separate retrieval directory.

## Backups After Organizational Changes

Initiate a backup each time you take the following actions:

- Rename a tablespace.
- Restore a tablespace that has been renamed, using the new tablespace name.
- Reorganize a table.
- Back up a corresponding tablespace after you reorganize a table.
- Change the tablespace or database configuration.
- Change anything in the configuration or organization of a database or tablespace.

## Current Option Information

To ensure that you are current with the latest information about the option, visit CA Technical Support at <http://ca.com/support>.



# Appendix B: Troubleshooting

---

The following sections provide helpful information about:

- Debug Methods
- Option Activity Log File
- Job Status Information
- Database Manager
- BACKINT Job Status

This section contains the following topics:

[Debug Methods](#) (see page 79)

[Job Status Information](#) (see page 81)

[Database Manager](#) (see page 82)

[BACKINT Job Status](#) (see page 83)

[Using RMAN command to Backup, Restore, and Recover Archived Logs](#) (see page 84)

[Unable to Access Archived Logs in Oracle Cluster Environment](#) (see page 85)

[ORA-12546: TNS: permission denied](#) (see page 86)

## Debug Methods

When troubleshooting the Enterprise Option for SAP R/3 for Oracle, we recommend that you generate and view a debugging trace file. The following sections describe how to enable debugging for the option, the backup agent integration module (BACKINT), and the Oracle Recovery Manager.

## Enable Debugging for the Backup Option Integration Module

The option supports the creation of a debugging log for troubleshooting the backup option integration module (BACKINT). Debugging is disabled by default.

**Important!** Be very careful when making changes to the Windows Registry. Improper entries can affect the functionality of the product and the operation of your computer.

### To enable debugging for the backup option integration module

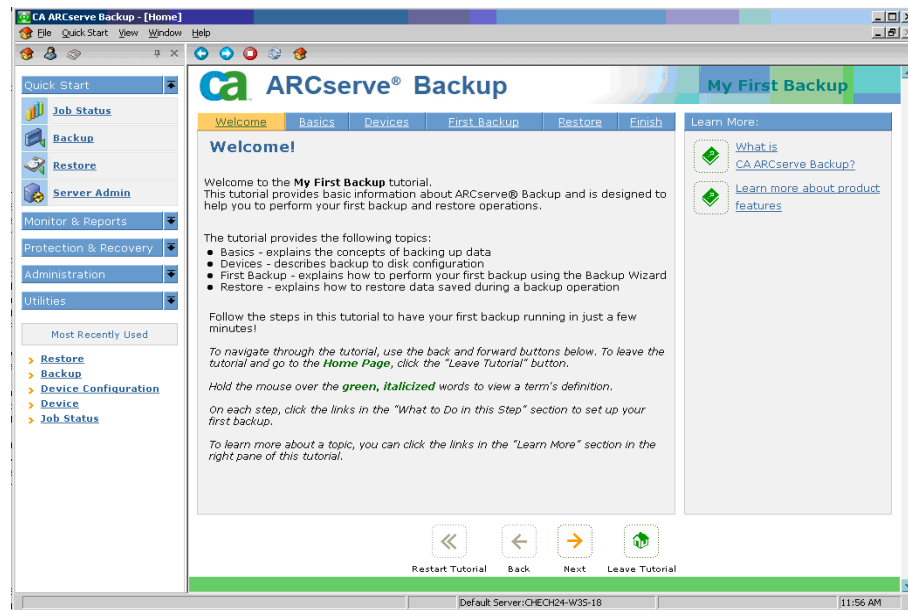
1. On the Windows Start menu, click Run.  
The Run dialog opens.
2. In the Open field, enter:  
`regedit`
3. Click OK.  
The Registry Editor window opens.
4. In the tree view pane, expand the following folders to view this registry path:  
`SOFTWARE\ComputerAssociates\CA ARCserve Backup  
 \DSAgent\CurrentVersion\BACKINT`
5. Double-click the debug entry in the Name list.  
The Edit String dialog opens.
6. In the Open field, change the debug value from 0 (debugging disabled) to 1 (debugging enabled). By default, the debugging trace file is created in the installed option home directory.
7. Click OK.
8. If you want the debugging trace file to be created in a different directory, follow these steps, otherwise, continue with Step 9.
  - Double-click the traceDir entry in the Name list. The Edit String dialog opens.
  - In the Open field, enter the complete path name for the directory where you want the BACKINT trace file to be created.
  - Click OK.
9. Close the Registry Editor.

**Important!** Be sure to set the key entry back to 0 (disabled) when you have finished troubleshooting to prevent the needless consumption of disk space and CPU time by the creation and maintenance of a debugging file.

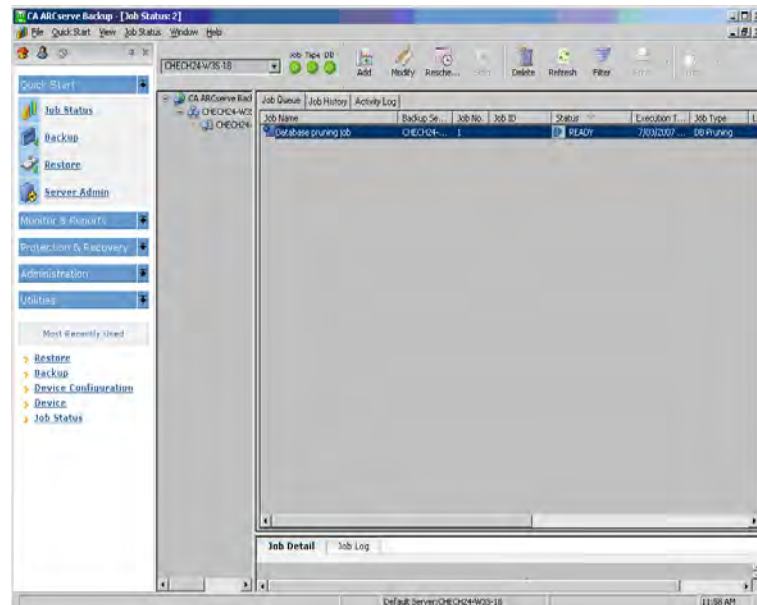


## Job Status Information

When you use the option to back up or restore a database, you can view the status of the job. To monitor the job activity, click the Job Status icon in the CA ARCserve Backup Quick Start window:



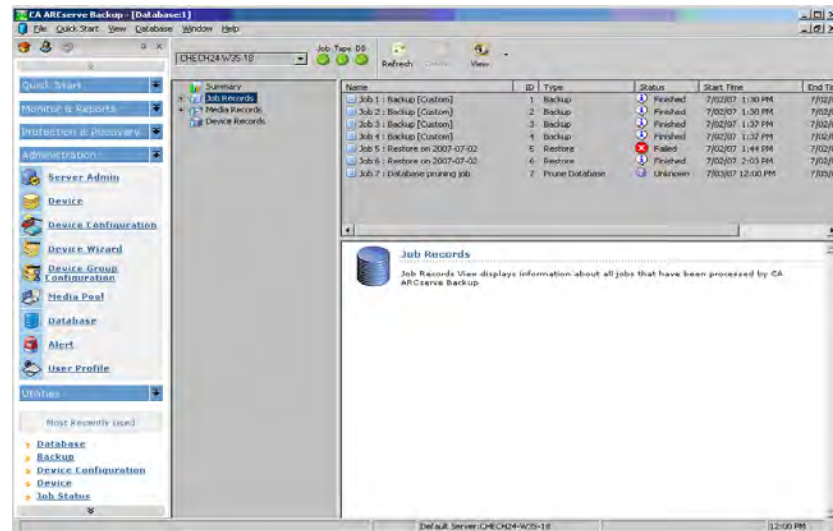
After you submit a backup or restore job to CA ARCserve Backup by the option, you can monitor the status of the job using the Job Status Manager:



For more information about the Job Status Manager, see the *Administration Guide* and the *Implementation Guide*.

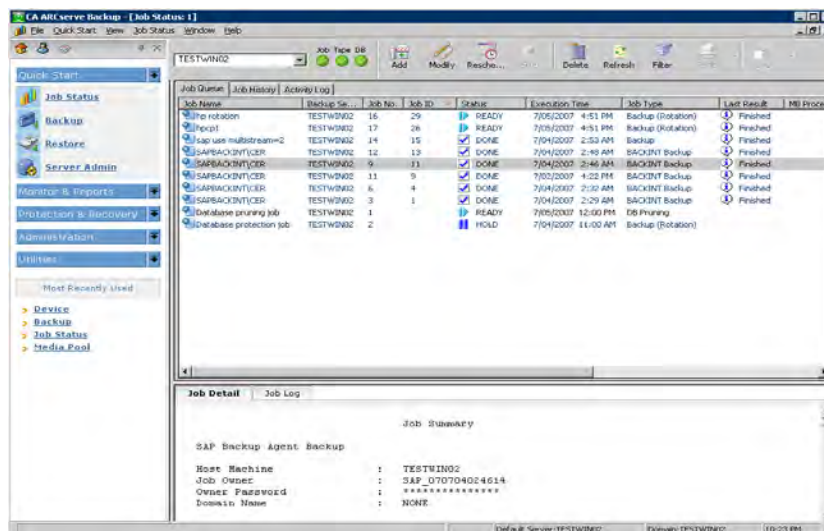
## Database Manager

You can use the CA ARCserve Backup Database Manager to view detailed information about your backup job. You can view backed up file names, media name, and session information.



## BACKINT Job Status

After a backup or restore job is submitted to CA ARCserve Backup by BACKINT, you can monitor the status of the job from the CA ARCserve Backup Job Queue window. The option backup ID is used to identify the backup job in the Job Queue window, and is displayed in the owner field.



## Using RMAN command to Backup, Restore, and Recover Archived Logs

You can perform the backup, restore and recovery operations for the archived logs using the advanced RMAN command, if you do not want to change the database settings in the RAC environment or unable to map to a computer the network.

However, ensure that you put the archived logs on a shared disk or use multiple archived logs destination or map each computer to the network so that they can access the archived logs on all other computers.

**Note:** For more information on network mapping, see [Unable to Access Archived Logs in Oracle Cluster Environment](#) (see page 85) in this chapter.

Assuming that there are three computers ORA-RAC1, ORA-RAC2 and ORA-RAC3 in the RAC environment, perform the backup and recovery operations using the advanced RMAN scripts.

### To perform backup, restore and recovery processes in RAC environment

1. Open command prompt on ORA-RAC1.
2. Execute the command

```
RMAN target sys/oracle@RAC1 catalog <catalog owner name>/<password of owner>@<catalog database>
```

3. Run RMAN scripts to perform the backup and restore processes.

- Run the following RMAN script to backup the archived logs.

```
RUN
{
  ALLOCATE CHANNEL C1 DEVICE TYPE SBT;
  ALLOCATE CHANNEL C2 DEVICE TYPE SBT CONNECT sys/oracle@RAC2;
  ALLOCATE CHANNEL C3 DEVICE TYPE SBT CONNECT sys/oracle@RAC3;
  SQL 'ALTER SYSTEM ARCHIVE LOG CURRENT';
  BACKUP ARCHIVELOG ALL;
}
```

- Run the following RMAN script to restore the archived logs.

```
RUN
{
  ALLOCATE CHANNEL C1 DEVICE TYPE SBT;
  ALLOCATE CHANNEL C2 DEVICE TYPE SBT CONNECT sys/oracle@RAC2;
  ALLOCATE CHANNEL C3 DEVICE TYPE SBT CONNECT sys/oracle@RAC3;
  RESTORE ARCHIVELOG ALL;
}

OR
```

```
RUN
{
  ALLOCATE CHANNEL C1 DEVICE TYPE SBT;
  ALLOCATE CHANNEL C2 DEVICE TYPE SBT CONNECT sys/oracle@RAC2;
  ALLOCATE CHANNEL C3 DEVICE TYPE SBT CONNECT sys/oracle@RAC3;
  RESTORE ARCHIVELOG FROM LOGSEQ 1 UNTIL LOGSEQ 10 THREAD 1;
  RESTORE ARCHIVELOG FROM LOGSEQ 1 UNTIL LOGSEQ 15 THREAD 2;
  RESTORE ARCHIVELOG FROM LOGSEQ 1 UNTIL LOGSEQ 20 THREAD 3;
}
```

**Important!** Before running the RMAN command for recovery, you must copy all the Archive Logs from ORA-RAC2 and ORA-RAC3 to the Archive Logs destination of RAC1 on ORA-RAC1.

## Unable to Access Archived Logs in Oracle Cluster Environment

### Symptom:

In Oracle cluster environment, after configuring the archive logs on a local disk, the CA ARCserve Backup Agent for Oracle is not accessing the archived logs on other computers in the cluster.

### Solution:

If you want to access the archived logs on a computer in the network, ensure that you put the logs on a shared disk or map to the network as the Oracle service is running on a local disk.

### To map a machine to the network to access archived logs

1. Go to <http://technet.microsoft.com/en-us/sysinternals/bb897553.aspx> and download psexec.exe utility.

The utility is downloaded.

2. Open command prompt and go to the directory which contains the psexec.exe utility.
3. Run command

```
psexec.exe -s cmd
```

4. Execute this command to connect to the network.

```
net use X: \\ORA-RAC1\C$ /PERSISTENT: YES
```

You can now map Y: and Z: drives to the network.

**Note:** If you are unable to map to the network, then you can perform the backup, restore and recovery operations using the advanced RMAN commands. For more information, see [Using RMAN command to Backup, Restore, and Recover Archived Logs](#) (see page 84) in this chapter.

## ORA-12546: TNS: permission denied

**Symptom:**

I get the error ORA-12546: TNS:permission denied, when I try logging into Oracle from the CA ARCserve Backup Manager.

**Solution:**

This is a Oracle code defect. This may occur when Oracle version is 9.2.0.1. Apply the most recently Oracle patch set 9.2.0.8.

# Appendix C: Disaster Recovery Scenarios

---

This section contains the following topics:

[Scenarios for Restoring to the Original Windows Server](#) (see page 87)

[Scenarios for Restoring to an Alternate Server](#) (see page 91)

## Scenarios for Restoring to the Original Windows Server

Assume you have a Windows server running Oracle, and that there are two Oracle database instances on the server: ORCL and ORA. A disaster occurs and it is necessary to rebuild the entire server.

Recovery of your Oracle databases proceeds in two phases, each of which is explained in detail in the following sections:

- Phase 1 - Recover the ORCL database
- Phase 2 - Recover the ORA database

## Recover the ORCL Database

You must create an Oracle instance before you start the recovery procedure. Because you had the starter database (ORCL) when reinstalling Oracle, we recommend that you create the instance for ORA.

### To recover the ORCL database

1. Reinstall Windows.
2. Install CA ARCserve Backup if it was on the same server as your Oracle databases.
3. Do **one** of the following:
  - Reinstall Oracle
  - Restore all necessary sessions (files) from media (for example, sessions for Oracle executables, configuration files and registry information)
4. Reinstall the option, and create an Oracle database instance entry for **each** of the instances you intend to restore.
5. Restore the last full backup of ORCL.

**Note:** If it is an offline backup, then no further recovery is needed. Proceed to the section Recover the ORA Database in this appendix. If it is an online backup, continue with the next step.
6. Check the initorcl.ora file to see if it contains all the necessary settings for the following entries:  
  
LOG\_ARCHIVE\_START  
LOG\_ARCHIVE\_DEST  
LOG\_ARCHIVE\_FORMAT
7. Copy the restored control file (CONTROL.ORCL) from the option home directory to all necessary directories and rename this file with the appropriate name.
8. Connect to ORCL as user SYSTEM.
9. Mount the database.
10. Enter the following command at the SQL\*Plus prompt:



```
recover database using backup control file until cancel ;
```

11. When the recovery has been completed, enter the following command:

```
alter database open resetlogs
```

**Note:** If the database does not open and a message reports on the status of the redo logs, enter the following query at the SQL\*Plus prompt:

```
select * from v$logfile
```

This query returns, among other information, the directory structure in which Oracle looks for the redo logs. If the directory structure does not exist, create it. When you have done so, enter the following command again:

```
alter database open resetlogs
```

Oracle should open the database and recreate the redo logs.

**Important!** The following step is very important. DO NOT OMIT IT.

12. Delete all archive logs for ORCL.

The ORCL database is now fully recovered. You can now proceed to the second phase, recovering the ORA database.

## Recover the ORA Database

Use the following procedure to recover the ORA database.

### To recover the ORA database

1. Create an instance for the ORA database and start the ORA instance.
2. Make sure the INITORA.ORA file contains all the necessary configuration information, as described in Step 6 of the previous phase. Do one of the following:
  - Restore the latest backup copy of the INITORA.ORA file from media.
  - Recreate this file by using INITORCL.ORA as your template and making all the necessary changes to it.
3. Restore the last full backup of ORA.

**Note:** If it is an offline backup, then no further recovery is needed. You have now completed recovery of your Oracle server.
4. Copy the restored control file (CONTROL.ORA) from the option home directory to all necessary directories and rename it with the appropriate name.
5. Connect to the instance you started in Step 1 of this procedure.
6. To mount the ORA database, enter the following command:  
`startup mount pfile=DRI VE: \PATH\i ni tORA. ora`
7. Enter the following command at the SQL\*Plus prompt:  
`recover database usi ng backup control fi le unti l cancel ;`

8. When the recovery has been completed, enter the following command:

```
alter database open resetlogs
```

If the database does not open and a message reports on the status of the redo logs, enter the following query at the SQL\*Plus prompt:

```
select * from v$logfile
```

This query returns, among other information, the directory structure in which Oracle looks for the redo logs. If the directory structure does not exist, create it. When you have done so, enter the following command again:

```
alter database open resetlogs
```

Oracle should open the database and recreate the redo logs.

9. Delete all archive logs for ORA. The ORA database is now fully recovered.
10. (Optional) You can recreate an instance for ORA using the oradim utility (for example, oradim.exe). The syntax is:
- ```
oradim -new -sid SID -srvctl ServiceName -intpwd Password -startmode auto | manual -pfile FullPathToOracle\initSIDFile
```
11. (Optional) Create the password file if necessary, using the orapwd.exe utility.

## Scenarios for Restoring to an Alternate Server

For faster disaster recovery, you may prefer restoring the Oracle database to a different server than the original server. In this section, we present two typical scenarios as examples for restoring to alternate servers:

- Scenario 1 - The alternate server can support the exact directory structures of the original Oracle server.
- Scenario 2 - The alternate server cannot support the exact directory structures of the original Oracle Server. For example, the destination server does not have a volume (such as drive f:) that the original server had.

## Restore to a Server that Supports Exact Directory Structures

You can restore to an alternate server that can support the exact directory structure, follow these steps:

### **To restore to a server that supports the exact directory structures**

1. Install the option on the target server, and add an additional database instance for the new database that you want to recover.
2. Create an ORACLE instance or PWFIL if necessary.
3. In the CA ARCserve Backup Restore Manager, clear the Restore to Original Location option.
4. Restore all necessary recovery files (for example, configuration files) to the original location on the target server.
5. Restore the database to the target's temporary directory (the temporary directory is where you would like to keep the files—database files, archive logs, and control files).
6. Move database files and archive logs to their original location on the target server.
7. Copy the restored control file (CONTROL%SID%) to all necessary directories and rename it with the appropriate name.
8. After the database files are restored, you can follow the same steps for recovering the Oracle database as described in the section Recover the ORCL Database in this appendix.

## Restore to a Server with Different Directory Structures

You can restore to an alternate server that cannot support the exact directory structure, follow these steps:

### To restore to a server with different directory structure

1. Install the option on the target server, and add an additional Oracle database instance for the new database that you want to recover.
2. Create an ORACLE instance or PWFIL if necessary, as described in the section Recover the ORCL Database in this appendix.
3. In the CA ARCserve Backup Restore Manager, clear the Restore to original location option.
4. Restore all necessary recovery files (for example, configuration files) to a new location on the target server.
5. Restore the database to the target's temporary directory (the temporary directory is where you would like to keep the files—database files, archive logs, and control files).
6. Move database files and archive logs to their new location on the target server.
7. Edit the INITSID.ORA to reflect your new directory structure. Because the directory structures are different from the original, the control files must be recreated.
8. Start up the instance but **do not mount or open** the database.
9. Connect to the instance.

10. Execute the following command:

```
Startup nomount
```

11. Issue the create control file command.

For the exact syntax, see the Oracle Administrators Guide.  
An example might be:

```
create control file
set database TEST
logfile group 1('e:\oracl e\test\redlog1a.ora') size 200K,
group 2('e:\oracl e\test\redlog1b.ora') size 50K
RESETLOGS
datafile 'e:\oracl e\test\sys test.ora' size 10M,
'e:\oracl e\test\testrol lback. dbs' size 2M
maxlogfiles 50
maxlogmembers 3
maxdatafiles 200
maxinstances 6
archive log;
```

**Note:** The user has specified the RESETLOGS and ARCHIVELOG options.

12. Ensure that the control file is copied to all necessary locations and renamed with the appropriate name.

13. Enter the following command:

```
Recover database using backup control file until cancel ;
```

14. When the recovery is complete, enter the following command:

```
Alter database open resetlogs
```

This action recreates the redo logs and opens the database. If you get an error, check the previous section.

15. Delete the archive logs.

# Appendix D: Sample util\_par\_file and Parameter Definitions

---

This appendix provides descriptions for a sample backup option integration module (BACKINT) parameter file util\_par\_file. You can find the file in the \$ORACLE\_HOME\database directory.

This section contains the following topics:

[Sample File](#) (see page 95)

[Parameter Definitions](#) (see page 96)

## Sample File

```
-- par_file ( init0R2.utl )---
#####
# This is the parameter file of BACKINT for CA ARCserve Backup containing
# parameters that determine the backup procedure. #
# BACKINT reads this file and submits a job to the CA ARCserve Backup queue for
# execution.
#
# Instructions for filling out each line start with a pound sign (#) and precede
# the actual information line that the user needs to fill in. #
#####
# Tape Name that CA ARCserve Backup should use for the backup (eg. tape0,
# tape1, ..., or '*')
# DESTTAPE=*
# Group Name that CA ARCserve Backup should use for the backup (eg. GROUP0,
# GROUP1, ..., or '*')
# DESTGROUP=*
# First Tape Option that CA ARCserve Backup should use for the backup (eg. APPEND
# or OVERWRITE)
# APPEND: Append job sessions to the selected tape
# OVERWRITE: Overwrite any tape found in the drive only for the first BACKINT
# call
# TAPEMETHOD=APPEND
# volumes for brarchive/brbackup
# [volume_name | volume_name_list | SCRATCH]
# no default
# volume_archive_line = 2
# volume_archive1 = XXLA01, XXLA02, XXLA03, XXLA04, XXLA05
# volume_archive2 = XXLA06, XXLA07, XXLA08, XXLA09, XXLA10
```

```
# volume_backup_line = 2
# volume_backup1 = XMLB01, XMLB02, XMLB03, XMLB04, XMLB05
# volume_backup2 = XMLB06, XMLB07, XMLB08, XMLB09, XMLB10
# expiration period for backup volumes in days
# default: 0
# expir_period = 30
#####
Login information for communication with CA ARCserve Backup on remote server
#####
[Remote]
REMOTE_FLAG = 0
LOCAL_COMPUTER_NAME=Local_Server
LOCAL_USER_NAME=Local_User
LOCAL_PASSWORD=t
REMOTE_COMPUTER_NAME=Remote_CA_ARCserve_Backup_Server
REMOTE_USER_NAME=Remote_CA_ARCserve_Backup_User
REMOTE_PASSWORD=t
#####
Automatic Volume Management for brbackup
#####
[Volume Brbackup]
DESTGROUP=*
DESTTAPE=*
TAPEMETHOD=APPEND
VOLUME_BACKUP_LINE=0
EXPIR_PERIOD=0
#####
Automatic Volume Management for brarchive
#####
[Volume Brarchive]
DESTGROUP=*
DESTTAPE=*
TAPEMETHOD=APPEND
VOLUME_ARCHIVE_LINE=0
EXPIR_PERIOD=0
[Internal]
first_call_tape_name=none
first_call_group_name=none
```

## Parameter Definitions

The util\_par\_file configuration file is divided into several sections. The parameters for each section are described in the following sections of this guide.



## Remote Section

This section stores the Windows security information for the local server so it can communicate with CA ARCserve Backup on a remote server.

```
[Remote]
REMOTE_FLAG=CA ARCserve Backup type
LOCAL_COMPUTER_NAME=Local server name
LOCAL_USER_NAME=Local user name
LOCAL_PASSWORD=Local user password
REMOTE_COMPUTER_NAME=Remote CA ARCserve Backup server name
REMOTE_USER_NAME=Remote CA ARCserve Backup server user name
REMOTE_PASSWORD=Remote CA ARCserve Backup server user password
```

For example, if BACKINT integrates with CA ARCserve Backup running on a remote server, you must set the REMOTE\_FLAG=1, in addition to specifying the other Windows security information. If BACKINT uses local CA ARCserve Backup, set REMOTE\_FLAG=0, and do not set the other Windows security information.

## Volume Brbackup Section

This section stores automatic volume management settings for BRBACKUP.

```
[Volume Brbackup]
DESTGROUP=CA ARCserve Backup device group name
DETTAPE=tape name
```

For example, if you use TAPE1 in GROUP0 for backup, set:

```
DESTGROUP=GROUP0
DETTAPE=TAPE1
```

If you use any available group or tape for backup, set:

```
DESTGROUP=*
DETTAPE=*
TAPEMETHOD=APPEND | OVERWRITE
```

The TAPEMETHOD can specify either APPEND or OVERWRITE. APPEND specifies that CA ARCserve Backup appends job sessions to the selected tape; OVERWRITE specifies that CA ARCserve Backup overwrites the selected tape for the first BACKINT call.

VOLUME\_BACKUP\_LINE=*number of lines*  
VOLUME\_BACKUPN=*tape names*

For example, if BRBACKUP uses TAPE1, TAPE2, TAPE3, TAPE4, TAPE5, TAPE6, TAPE7, TAPE8, TAPE9, and TAPE10 for backup sequentially, these lines should be:

VOLUME\_BACKUP\_LINE=2  
VOLUME\_BACKUP1=TAPE1, TAPE2, TAPE3, TAPE4, TAPE5  
VOLUME\_BACKUP2=TAPE6, TAPE7, TAPE8, TAPE9, TAPE10  
EXPIR\_PERIOD=*retention period in days*

Use the EXPIR\_PERIOD parameter to define the number of days you want to prevent a tape from being overwritten.

For example, if you specify 10 days, BACKINT protects the tape from being overwritten for 10 days. This line should be:

EXPIR\_PERIOD=10

For more information about the automatic volume management, see BCSAP Database Administrator: ORACLE.

## Volume Brachive Section

This section stores automatic volume management settings for BRARCHIVE.

[Volume Brarchive]  
DESTGROUP=CA ARCserve Backup device group name  
DESTTAPE=*tape name*  
TAPEMETHOD=*first tape option*  
VOLUME\_ARCHIVE\_LINE=*number of lines*  
VOLUME\_ARCHIVE\_N=*tape names*  
EXPIR\_PERIOD=*retention period in days*

The definitions in this section are the same as those in the previous section.

## Internal Section

This section contains no user-configurable settings. Do not delete or modify this section.

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---

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