

Prinergy 2.2 Backup Guide

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Revision	Date	Author	Comments
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3.0.1	19 July 2002	Philip Samaniego, Jill Thompson	Minor edits to sections 8.1, 8.1.1, 8.1.2, 8.2, 8.2.2, and 8.2.3.
3.0.2	24 Sept 2003	Philip Samaniego, Ken DeCarle	Edit to Section 8.1.5 Step 8, as per Daniel Ortegon
3.0.3	08 Dec 2003	Philip Samaniego, Ken DeCarle	Edit Section 2.2.1 correct registry setting typo.

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Prinergy 2.1 Backup Guide

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1. INTRODUCTION

1.1 Scope of This Document

The purpose of this document is to provide information for Creo service personnel so that a Prinergy system can be reliably backed up and, if needed, recovered from a system crash. This document applies to Prinergy 2.1. Customers using an earlier version of Prinergy should refer to versions A or B of this document.

Note: The Prinergy 2.1 Backup Guide is an internal document. Customers should refer to "Backing Up the Prinergy System" in the *Prinergy 2.1 System Administration Guide* for backup information, including which files they should be backing up themselves if they choose not to purchase the Prinergy 2.1 Online Backup option.

1.2 Requirements

The following components are necessary to install and run Prinergy Backup:

- Operating system: Windows 2000
- Prinergy system: Prinergy 2.0.4 bld69 with Prinergy major update 2.1.0.0
- Tape device: Any tape device qualified by Creo. Refer to the *Prinergy Tape Device Connectivity Specification* (72-3289). A tape library is needed for larger systems requiring spanned tapes i.e. when backup data spans to additional tape(s).
- Type of tape: 8mm AIT[1] and DLT IV are recommended. (A lower type may be used but will increase the backup time.)

1.3 Overview of Prinergy Backup

Prinergy 2.1 Online Backup (Prinergy Backup) is an optional software package that integrates a system backup process with Prinergy 2.1. Prinergy Backup saves essential files to tape to enable recovery of these files in case of a disaster such as a system crash. Prinergy Backup does a daily backup of each server in the Prinergy system.

The following steps give an overview of the Prinergy backup process and reference other sections of this document that provide detailed information about each step:

1. By default, an Oracle database backup is set to run daily at 3:00 a.m.

   See *3.2 Configuring Oracle Backup* and *3.3 Configuring Oracle Backup Manager Scheduler*.

2. Upon completion of the Oracle backup, one of two Prinergy Backup command files is launched (SuccessfulBackup.cmd or UnSuccessfulBackup.cmd), which in turn launches

[1] Special manual registry edits must be made to support AIT. See section 3.1, item 14, for more information on the special registry edits that must be made. AIT tapes became supported as of Prinergy 2.0.6.

Prinergy System Backup to tape. (%AraxiHome%\lib\python\com\creo\Araxi\NTBackup\StartAraxiBackup.cmd).

See *3.4 Configuring the Backup Command Files*.

3. StartAraxiBackup.cmd stops and starts the AraxiBackupManager service and schedules the Prinergy backup check (AraxiBackupCheck.cmd) to run after a pre-configured amount of time.

   See *2.2 Installation of System Backup* and *5.4 Prinergy Backup Check*.

4. The AraxiBackupManager service is configured to run a script called AraxiBackup.py, which in turn calls other scripts, to carry out the following steps.

5. Gets the list of remote servers from the registry. Checks if the remote servers are available.

   See *5.3 What Happens During Prinergy Backup?* and *6.1 Skipping Backup of Secondaries or Render* stations.

6. Launches the backup of the System State of the remote servers by stopping and restarting the AraxiSysStateBackup service in each of the remote servers.

   See *5 Launching Prinergy Backup*

7. Each remote server backs up its own System State to a file on its temp drive (E:\AraxiBackup\SysStateBackup.bkf).

8. Checks the tapes in the Backup\Prinergy Pool and synchronizes this with the Prinergy Backup tape list in the registry. Adds any new tape in the media rotation. Any tape in the media rotation that is not in the Backup\Prinergy Pool is taken out of the media rotation.

   See *3.5 Preparing and Allocating Tapes for Prinergy Backup* and *5.2 Media Rotation*.

9. Checks if the scheduled tape is online.

   See *5.2 Media Rotation*.

10. If the scheduled tape is not found or is offline, the scripts will rotate the tape list until it finds an online tape. Failing to use any of the tapes included in the media rotation, the scripts will try to allocate one from the free media pool. Allocation from the free media pool may be disabled by changing the AllocateFreeTape regkey value to 0. If no tape is available, the backup will fail.

    See *5.2 Media Rotation*.

11. Checks the Oracle Backup_Destination from the Oracle configuration and adds it to the primary server backup target, which also includes the System drive (typically the D:\ drive), the System State, and the Prinergy Updates folder.

    See *3.2 Configuring Oracle Backup*.

12. Backs up to tape the primary server system drive, System State, the Oracle database backup files, and the PrinergyUpdates folder.

See step 4 of *5.3 What Happens During Prinergy Backup?*

13. Synchronizes the Backup\Prinergy Pool with the Prinergy Backup tape lists in the registry.

    See *5.2 Media Rotation*.

14. Backs up to tape the remote server system drive, the PrinergyUpdates folder, and SysStateBackup.bkf.

15. Synchronizes the Backup\Prinergy Pool with the Prinergy Backup tape lists in the registry.

    See *5.2 Media Rotation*.

16. Checks each backup and updates the primary registry key HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\.

    See step 3 of *5.3 What Happens During Prinergy Backup?*

17. Generates log files in the %AraxiHome%\CreoAraxi\System\log\Backup folder. The latest logs are also copied in the Remote servers and the DataDrive.

    See steps 6 and 7 of *5.3 What Happens During Prinergy Backup?*

The following diagram provides an overview of the backup process:

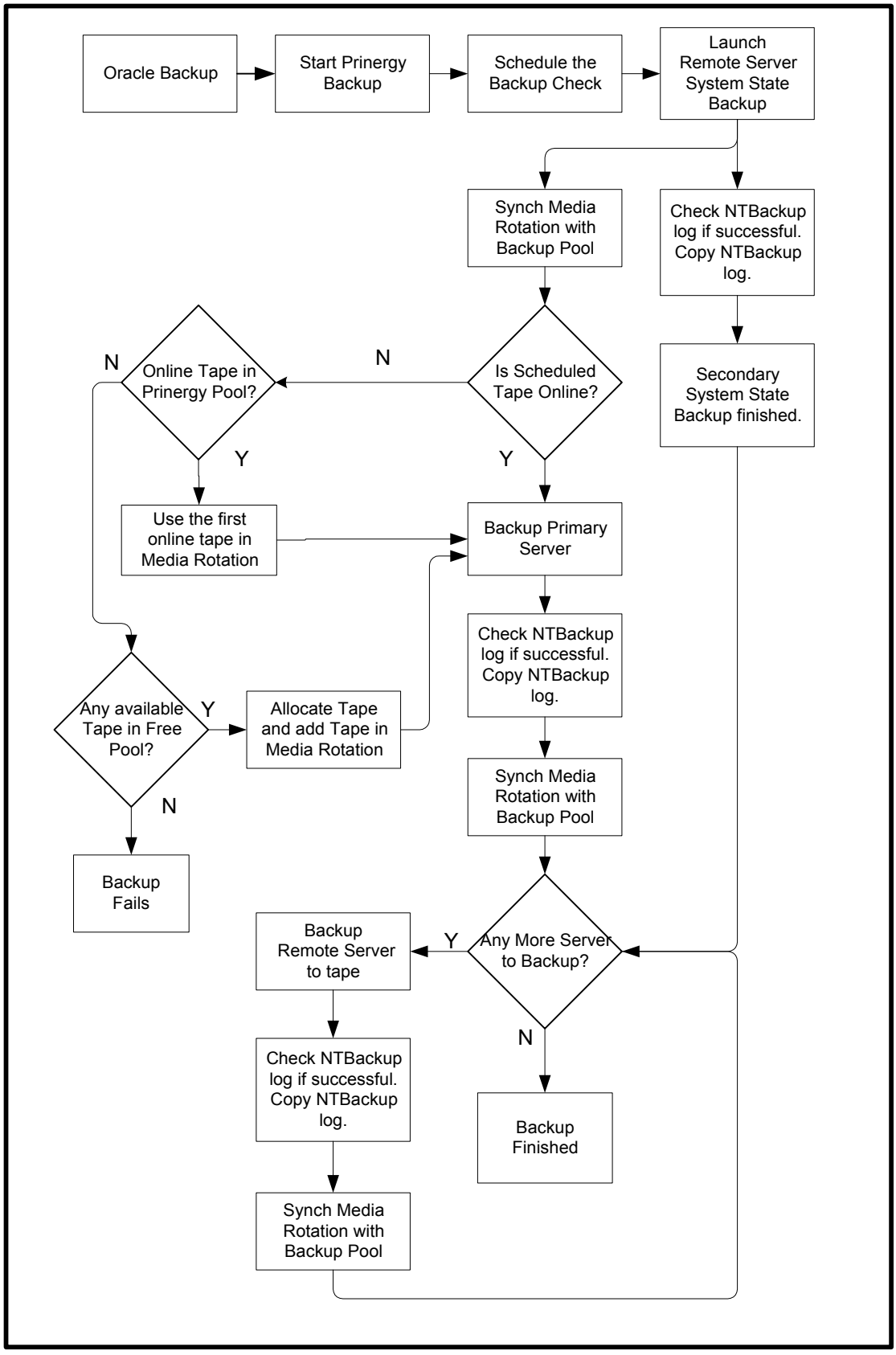


Figure 1-1: Backup process block diagram

2. INSTALLATION OF PRINERGY BACKUP

For Prinergy 2.1, the Prinergy major updater installs any upgrades made to Prinergy backup since Prinergy version 2.0.4.Bld69. There are two parts to backup: oracle backup and system backup.

2.1 Installation of Oracle Backup

The components that are installed for Oracle backup are:

1) Database backup script files. These files are located in: %ARAXIHOME%\lib\python\com\creo\araxi\backup\database.

2) A scheduled task that initiates the backup process each day. See figure 3.2 for a screenshot of the scheduled task.

2.2 Installation of System Backup

The components that are installed for system backup are:

1) System backup script files. These files are located in: %ARAXIHOME%\lib\python\com\creo\araxi\backup\ntbackup.

2) AraxiBackupManager service on the primary server.

3) AraxiSysStateBackup service on remote servers.

4) The service exectuable files: AraxiBackupManagerSvc.exe and AraxiSysStateBackupSvc.exe. These files are located in %ARAXIHOME%\CreoAraxi\bin.

2.2.1 The AraxiBackupManager Service

The AraxiBackupManager service is installed on the primary server.

1) General Information:

To view general information about the service right-click the computer icon on the desktop and select **Manage**.

In the Computer Management dialog box, select **Services** and **Applications > Services > AraxiBackupManager**. Right-click **AraxiBackupManager**, and select **Properties** to view the dialog shown in Figure 2.1.

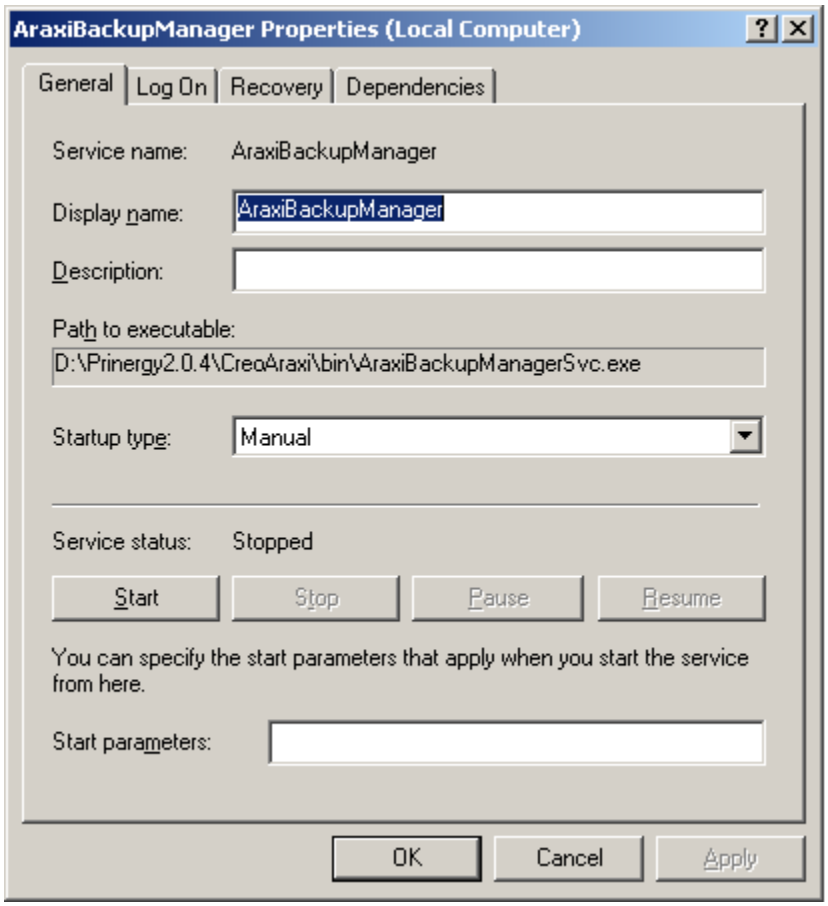


Figure 2.1: AraxiBackupManager Properties Tab

2) Registry Settings for the installation of AraxiBackupManager:

The following registry settings should be installed as follows for this service.

- HKLM\SYSTEM\CurrentControlSet\Services\AraxiBackupManager\ImagePath= D:\Prinergy2.0.4\CreoAraxi\bin\AraxiBackupManagerSvc.exe

This is the path to the service's executable file.

- HKLM\SYSTEM\CurrentControlSet\Services\AraxiBackupManager\PythonClass= D:\Prinergy2.0.4\lib\python\com\creo\araxi\NTBackup\ AraxiBackupManager.AraxiBackupManagerService

This value refers to the python class that initiates the service's execution.

2.2.2 The AraxiSysStateBackup Service

1) General Information:

To view general information about the service right-click the computer icon on the desktop and select **Manage**.

In the Computer Management dialog box, select **Services** and **Applications > Services > AraxiSysStateBackup**. Right-click **AraxiSysStateBackup**, and select **Properties**.

A dialog box similar to the one in Figure 2.1 is displayed on the screen.

2) Registry Settings for the installation of AraxiSysStateBackup:

The following registry settings should be installed as follows for this service.

- HKLM\SYSTEM\CurrentControlSet\Services\AraxiSysStateBackup\ImagePath= D:\Prinergy2.0.4\CreoAraxi\bin\AraxiSysStateBackupSvc.exe

This is the path to the service's executable file.

- HKLM\CurrentControlSet\Services\ AraxiSysStateBackup\PythonClass= D:\Prinergy2.0.4\lib\python\com\creo\araxi\NTBackup\ AraxiSysStateBackupService.AraxiSysStateBackupService

This value refers to the python class that initiates the service's execution.

3. CONFIGURATION OF PRINERGY BACKUP FOR OPERATION

This section describes the steps that must be completed before Prinergy Backup can be used. Section 3.1 is a quick setup procedure. The other sub-sections describe the preparation in more detail.

3.1 Quick Setup Procedure

Those who are familiar with W2K RSM and Oracle Backup Manager may use this procedure. If additional information is required, refer to Sections 3.2 to 3.5.

1. Change **BACKUP_DESTINATION** and **ZIP_FILES_DESTINATION** to **E:\OracleBackup** using Oracle Backup Manager.
2. Discuss with the customer what time the backup should start (least busy hour) and change the **Backup_Start_Hour** using the Oracle Backup Manager if required.
3. Verify that the Oracle Backup Manager Scheduler (SubmitOracleBackupJob.cmd) is in the AT scheduler. If not, run `Backup Start` using Oracle Backup Manager.
4. Edit **D:\Ora816\Creo\Util\SuccessfulBackup.cmd** by uncommenting the line.

   ```
   %AraxiHome%\lib\python\com\creo\Araxi\NTBackup\StartAraxiBackup.cmd
   ```

5. Copy **D:\Prinergy2.0.X\CreoAraxi\setup\Oracle\BackupConfigurationFiles\UnSuccessfulBackup.cmd** into the **D:\Ora816\Creo\Util** folder. Edit **D:\Ora816\Creo\Util\UnSuccessfulBackup.cmd** by uncommenting the line.

   ```
   %AraxiHome%\lib\python\com\creo\Araxi\NTBackup\StartAraxiBackup.cmd
   ```

6. Run NTBackup. This creates the Backup media pool. Do not close NTBackup.
7. Open **Computer Management** and browse to **Removable Storage\Media Pools\Backup**.
8. Create a Prinergy sub-pool under Backup with the following configuration:

   Name: Prinergy

   Contains media of type: DLT or 8mm AIT1

   Allocation/Deallocation policy: Check both **Draw media from Free media pool** and **Return media to Free media pool**.

9. Prepare tapes to be included in Backup media rotation.
10. Verify that NTBackup is still running. Drag and drop the prepared tapes into the **Backup\Prinergy** pool.

11. If the tape device to be used does not have a barcode reader, physically label each tape[2]. Rename the tapes in RSM to reflect the physical label. From each tape's properties window, the **Side Name** and the **Media Name** may be changed. Note that the **Media Name** should not be changed when using a bar code reader.

12. Verify that the tapes are shown as **Idle\Allocated**. If not, exit and rerun NTBackup.

13. Close NTBackup.

14. If the media type is 8mm AIT, manually create the registry key
    HKLM\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup
    Under the Backup registry key, create the following value:
    Value: `mediaType` **DataType:** `REG_SZ` **String:** `8mm AIT1`

After this procedure, Prinergy Backup should be tested. See section *4.0 Testing Prinergy Backup and Recovery*).

[2] Prior to version 2.0.6.0 of Prinergy, each time a tape was used, backup would automatically rename it in the following format:. "Prinergy Backup mm-dd-yyyy hh:mm". As of version 2.0.6.0, this automatic renaming behaviour changed. Customers became permitted to choose their own tape-naming convention, and the tape would not get renamed. If a customer upgrades to Prinergy 2.1 from a version of Prinergy prior to 2.0.6.0, they might have tapes named in the old format. Once the upgrade to 2.1 is made, the tapes will no longer automatically get renamed. To prevent confusion, the customer should rename any tapes with the automatic naming format. For example, a customer may have a tape named "Prinergy Backup 04-30-2001 3:01". Once they upgrade to 2.1, this name will not change. The tape should then be renamed so the customer does not think that the tape is from an old backup.

3.2 Configuring Oracle Backup

The Oracle Backup configuration can be viewed using Oracle Backup Manager. To open the Oracle Backup Manager, in a DOS window in the primary server, enter the following commands:

```
D:\ OracleBackupManager

Araxi_OracleMgr> Show
```

```
Araxi_OracleMgr>show
BACKUPTIMES

    LAST_INCR_BACKUP_FINISH_TIME      None recorded              Time at which the last incremental backup completed
    LAST_FULL_BACKUP_START_TIME       Thu Jul 04 03:00:02 2002   Time at which the last full backup started
    LAST_INCR_BACKUP_START_TIME       None recorded              Time at which the last incremental backup started
    LAST_FULL_BACKUP_FINISH_TIME      Thu Jul 04 03:01:25 2002   Time at which the last full backup completed


BACKUPCONFIG

(*)BACKUP_START_HOUR                  3                  Time at which backups should start.(0-22)
    BACKUP_CONFIG_VERSION             4                  Version of Backup Configuration File.
(*)BACKUP_SUCCESS_COMMAND_WARNING     3600               Second to wait for BACKUP_SUCCESS_COMMAND_FILE before generating a
                                                         warning.
    BACKUP_FAILURE_COMMAND_FILE       D:\Ora816\Creo\Util\UnSuccessfulBackup.cmd   Command file to execute when backups do not complete
                                                                                   successfully.
    BACKUP_LOG_FILE                   D:\Ora816\Creo\Logs\OracleBackupLogFile.log  Location of the backup log files.
(*)ZIP_FILES_DESTINATION              E:\OracleBackup                              Location where zipped backups will be stored.
(*)SHUTDOWN_TO_BACKUP                 NO                                           Shutdown prinergy when doing backups? (YES or NO)
(*)BACKUP_DESTINATION                 E:\OracleBackup                              Location where backups will be stored.
    BACKUP_SUCCESS_COMMAND_FILE       D:\Ora816\Creo\Util\SuccessfulBackup.cmd     Command file to execute when backups complete
                                                                                   successfully.
(*)FULL_BACKUP_INTERVAL               0                  Number of days between full backups.
    ORACLE_ARCHIVEMODE                ARCHIVELOG         Database log mode. (ARCHIVELOG or NOARCHIVELOG)
(*)INCR_BACKUP_INTERVAL               0                  Number of days between incremental backups.
    ORACLE_SID                        CREO               Oracle SID to backup.


        (*) indicates the parameter can be modified by the ALTER command
Araxi_OracleMgr>
```

Figure 3-1: Oracle Backup Manager configuration parameters

The parameters with a "*" can be modified using the `ALTER` command.

To modify a parameter, type the following command at the `Araxi_OracleMgr` prompt:
`ALTER <BackupConfig Parameter> = <New Value>`

For example, `ALTER BACKUP_DESTINATION = E:\ORACLEBACKUP`

Oracle Backup must be configured according to the following table:

Oracle Backup parameter	Identifies…	Recommended setting
BACKUP_START_HOUR	Time that Oracle Backup should start. Allowable values are 0 to 22 (12:00 a.m. to 10:00 p.m.).	Select the start of the least busy period. Default is 3 (3:00 a.m.).
BACKUP_SUCCESS_ COMMAND_WARNING	Number of seconds to wait for BACKUP_SUCCESS_COMMAND FILE before generating a warning.	3600 (1 hour)
BACKUP_FAILURE_ COMMAND_FILE	Command file executed when Oracle backups do not complete successfully.	D:\Ora816\Creo\Util\ UnSuccessfulBackup.cmd
BACKUP_LOG_FILE	Location of the Oracle backup log file (tracks all backup activity).	D:\Ora816\Creo\Logs\ OracleBackupLogFile.log
ZIP_FILES_DESTINATION	This field is new in 2.1. It holds the location of the folder where the compressed backup files will be stored (*.zip files created from the Oracle backup files). The initial default location for ZIP_FILES_DESTINATION will be set to the value of BACKUP_DESTINATION when the InitializeOracleBackupManager is run.	E:\ORACLEBACKUP
SHUTDOWN_TO BACKUP	Whether Prinergy will be shut down before Oracle database backup.	NO
BACKUP_DESTINATION	Folder where the Oracle backup files will be stored. Its role is to define the path to the folder where Oracle RMAN will write its backup files and from which it will restore the database.	E:\ORACLEBACKUP *Note: If you run out of disk space on the E: drive, set this parameter to the RAID (example J:\OracleBackup) There may be more disk space on the RAID for the backup. The files will then get zipped to the ZIP_FILES_DESTINATION which will be the final resting spot for the backups. The ZIP_FILES_DESTINATION parameter should be left as is.
BACKUP_SUCCESS_ COMMAND_FILE	Command file executed when Oracle backups complete successfully.	D:\Ora816\Creo\Util SuccessfulBackup.cmd
FULL_BACKUP_INTERVAL	Number of days between full backups of the Oracle database.	0 – This means that the database is backed up daily.

INCR_BACKUP_INTERVAL	Number of days between incremental database backups.	0
ORACLE_SID	Oracle SID to backup. (Identifies the Oracle instance being backed up – there is only one instance in Prinergy.)	CREO
ORACLE_ARCHIVEMODE	Oracle database log mode (Archivelog or NoArchivelog).	ARCHIVELOG

3.3 Configuring Oracle Backup Manager Scheduler

By default, the Oracle Backup Manager Scheduler runs each night at 11:00 p.m. (23:00 hours) to determine the Oracle database backup parameters. The Oracle Backup Manager Scheduler is launched by the Windows Task Scheduler. To verify whether the task is in the Windows Task Scheduler, enter AT in a DOS prompt.

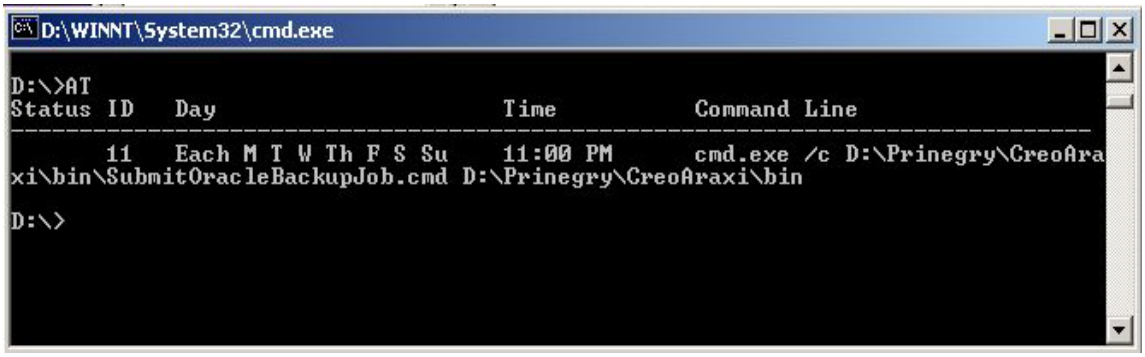


Figure 3-2: Oracle Backup Manager Scheduler task in Windows Task Scheduler

If the task is not shown in the Windows Task Scheduler, start the Oracle Backup Manager Scheduler by completing the following procedure:

1. Open the Oracle Backup Manager by typing the following command in a DOS window:
   `D:\ OracleBackupManager`
2. At the `Araxi_OracleMgr` prompt, type the command
   `Araxi_OracleMgr> BACKUP START`
3. Verify that the Oracle Backup Manager Scheduler task is added to the Windows Task Scheduler using the AT command in a DOS prompt.

3.4 Configuring the Backup Command Files

When the Oracle database backup is completed, it will launch either of the following two files:

- D:\Ora816\Creo\Util\SuccessfulBackup.cmd (if the backup succeeded)
- D:\Ora816\Creo\Util\UnSuccessfulBackup.cmd (if the backup failed)

The SuccessfulBackup.cmd command file should be configured to start Prinergy Backup. To enable this, open the SuccessfulBackup.cmd file with a text editor and make sure that the following line is uncommented:

```
%AraxiHome%\lib\python\com\creo\Araxi\NTBackup\StartAraxiBackup.cmd
```

The UnSuccessfulBackup.cmd command file should also be configured to start Prinergy Backup. In addition, the file should be configured so that a warning message appears on all Prinergy servers designated for backup, warning operators that the Oracle backup failed. To enable this, open the UnSuccessfulBackup.cmd file with a text editor. If the UnSuccessfulBackup.cmd file is empty, replace it with the one in D:\Prinergy2.0.X\CreoAraxi\setup\Oracle\BackupConfigurationFiles. Make sure that the following lines are uncommented:

```
%AraxiHome%\lib\python\com\creo\Araxi\NTBackup\StartAraxiBackup.cmd

msgbox "Prinergy database backup failed; Please contact your
Heidelberg/Creo Service Representative!" "Backup Error!"
```

3.5 Preparing and Allocating Tapes for Prinergy Backup

A DLT or an 8mm AIT2 tape device must be installed in the primary server. It is recommended that there are at least two tapes in the media rotation (see *5.2 Media Rotation*). If a stand-alone tape device is being used, the backup tapes will have to be switched daily before the backup is scheduled to run. If a tape library is being used, it is recommended that the backup tapes included in the media rotation be left in the tape library.

The following table estimates the number of servers that can be backed up in one DLT Type IV tape or 50GB AIT2 tape:

Drive Type	Capacity	Number of Servers (Primary, Remote Servers)
DLT 4000	20 GB	8
DLT 7000	35 GB	15
DLT 8000	40 GB	17
AIT2	50 GB	21

Note: The figures in the preceding table are estimates only. Actual numbers may vary depending on Oracle database size. The figures are based on backup data of 2.5 GB (primary) and 2.3 GB (remote servers).

Using the table above, estimate if backup data might span tapes. If the backup is expected to span more than one tape, a tape library should be used. Another option is to skip the backup of some of the render stations and secondary servers. (See *6 Customizing Prinergy Backup*.) Enough tapes should be prepared to allow for tape spanning. Prinergy Backup will use a free tape from the free media pool for the spanned data. When the spanned set is overwritten, spanned tapes 2 and higher are all returned to the free media pool, ready for the next spanning.

Prinergy Backup uses tapes in the Backup\Prinergy pool. Before running Prinergy Backup for the first time, the Backup\Prinergy pool must be created. This pool, if not present, will be created automatically when the Backup runs. However, it is recommended that the pool be manually created prior to using Prinergy Backup, so that tapes to be used in the media rotation are properly allocated.

Tapes included in the media rotation have to be prepared and moved into the Backup Prinergy pool. This can be done ahead of time using the RSM GUI. (For additional information on using the RSM GUI, refer to the Windows 2000 documentation). If the tape device does not have a barcode reader, each tape should be physically labeled.

To prepare and allocate tapes for Prinergy Backup using the RSM GUI, complete the following steps:

1. Use the System Backup status window from the UADM Toolbar (**Tools → System Backup**) to verify that Prinergy Backup is not running. Allocation should be done while Prinergy Backup is idle.
2. Run NTBackup (**Start → Run** and then type NTBackup and select **OK**). Verify that the NTBackup program starts.
3. In Computer Management, browse into **Storage → Removable Storage → Media Pools** and verify that there is a Backup pool.
4. Check if there is a **Backup\Prinergy** pool already. If not, create a **Backup\Prinergy** sub-pool with the following settings. (If the tape device to be used is 8mm AIT, configure the **Backup\Prinergy** pool to contain 8mm AIT1 instead of DLT):

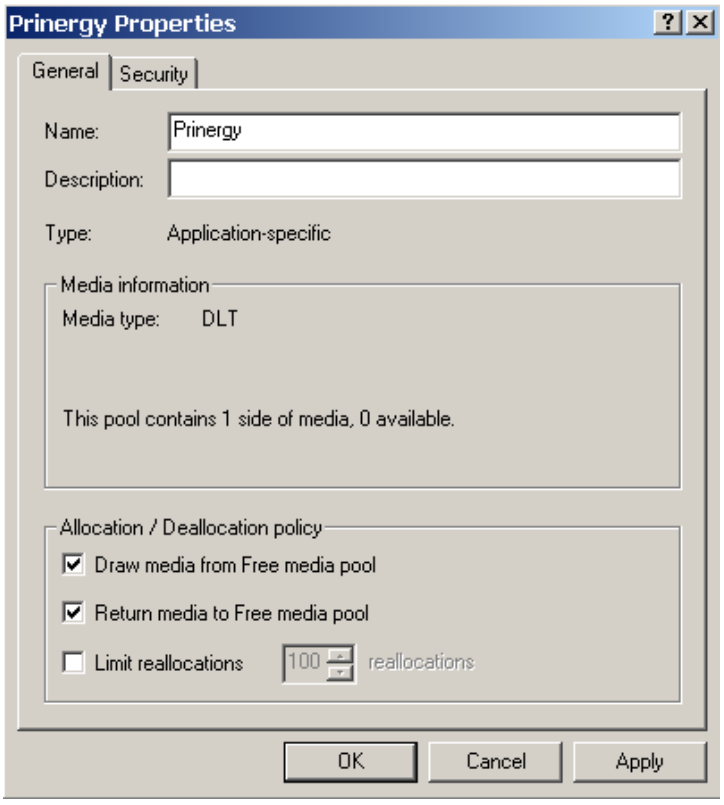


Figure 3-3: Backup\Prinergy pool properties

5. Inject the tapes to be included in the media rotation into the tape library. (If you are using a standalone tape device, the remaining procedure has to be done for each tape separately.)
6. Let the RSM inventory the library. If the inventory is not done automatically, right-click the tape device under **Removable Storage → Physical Location** and select **Inventory** from the drop-down menu (see Figure 8-1, Initiating an Inventory of a Tape Drive). You can view the status of the inventory by selecting **Work Queue** under **Removable Storage**.
7. In the RSM GUI, go to **Removable Storage\Physical Location\<*Tape Device*>\Media**.
8. Verify that the tapes are properly identified. (If you are using a standalone tape device, only 1 tape will be shown.)
9. If the tapes are not in the **Free** pool, right-click on each tape and select **Prepare** (you may need to deallocate the tape first before preparing). You can view the status by selecting **Work Queue** under **Removable Storage**.
10. When the task is completed, verify the tapes are in **Removable Storage\Media Pools\Free\DLT** (or 8mm AIT1).
11. Move the prepared tapes into the **Backup\Prinergy** pool (by using drag and drop). Verify that the tapes are in **Backup\Prinergy** pool as shown in Figure 3-4.

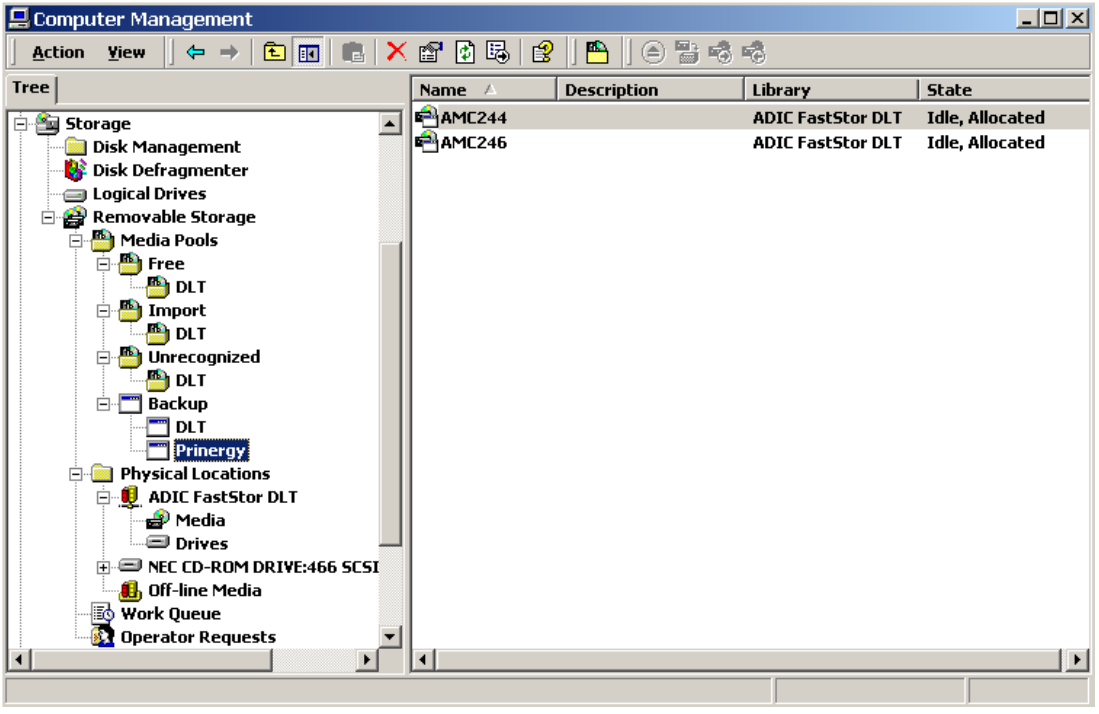


Figure 3-4: Prepared tapes in the Backup\Prinergy media pool

12. Verify that the tapes are shown as **Idle\Allocated**. If not, exit and rerun NTBackup.
13. Close the NTBackup GUI.
14. If a barcode reader is not used, change the **Media Name** of each Prinergy Backup tape in RSM. This is done using the Properties Window of each tape.

15. If media type is 8mm AIT, manually create the registry key **HKLM\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup**.
    Under the Backup reg key, create the following value:
    Value: `mediaType` **DataType:** `REG_SZ` **String:** `8mm AIT1`

Prinergy backup will use these prepared tapes in the media rotation. For more information on media rotation, see *5.2 Media Rotation*.

4. TESTING PRINERGY BACKUP AND RECOVERY

Before relying on backup data for disaster recovery, a backup and recovery test should be carried out. This should also be performed regularly to verify the integrity of the tape device and the media.

4.1 Testing Prinergy Backup

To perform a backup test, complete the following steps in the Primary server:

1. Verify that you are logged in using the same account used by the Araxi service. If not, log out and log in using the account used by the Araxi service.
2. Create the test folder below if it does not exist:

   `%AraxiHome%\lib\python\com\creo\araxi\NTBackup\AraxiBackupTestFolder`
3. Copy some text files or bitmap files into the **AraxiBackupTestFolder**.
4. Launch Prinergy Backup test by running the following command in a DOS window:

   `%AraxiHome%\lib\python\com\creo\araxi\NTBackup\AraxiBackup.cmd TEST`

   This will backup the AraxiBackupTestFolder to tape. This will take approximately 5 minutes per server.
5. Check the status of the backup in the DOS window used in the previous step. The status can also be checked using the UADM toolbar (Tools\System Backup). Note that this window does not get refreshed.

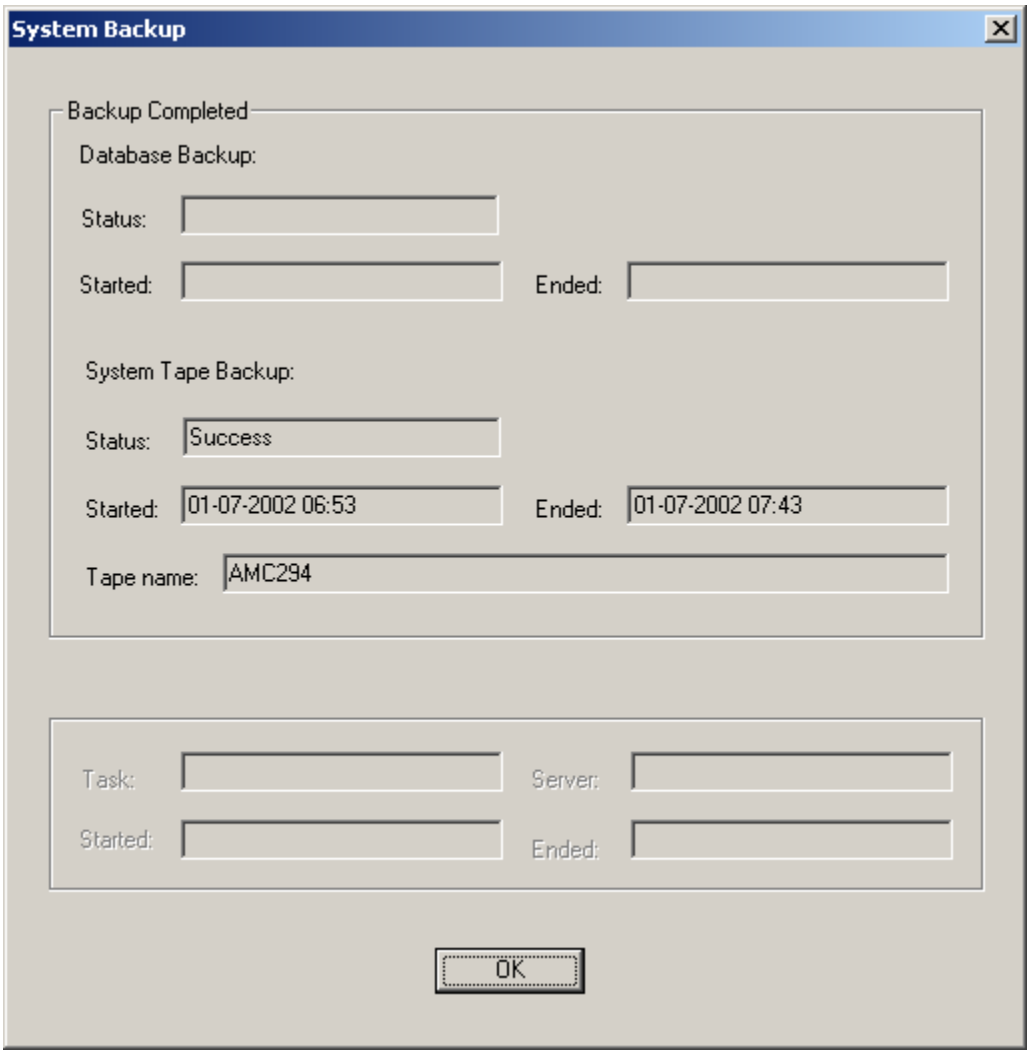


Figure 4-1: Backup Status window

Note that if there had been a previous oracle backup, then this would get displayed in the Database Backup fields.

6. After the backup is finished (including the remote servers), run the following command in a DOS window:

   `%AraxiHome%\lib\python\com\creo\araxi\NTBackup\AraxiBackupCheck.cmd`

   This will run the Prinergy backup check.

7. Verify from the UADM System Backup status window that the backup was successful. Otherwise, see *7 Diagnostics and Troubleshooting*.

4.2 Testing Recovery

To test that a Prinergy backup can be successfully used to recover lost data, complete the following steps:

1. Verify that you are logged in using the same account used by the Araxi service. If not, log out and log in using the account used by the Araxi service.

2. Start NTBackup in the primary server by selecting **Run** from the **Start** menu. In the **Open:** field, type ntbackup and select **OK**.

3. Select the **Restore** tab. Double-click on **Prinergy** to expand the tree in the left window, and then double-click on the Prinergy backup tape used for the backup test. This will load the backup set list.

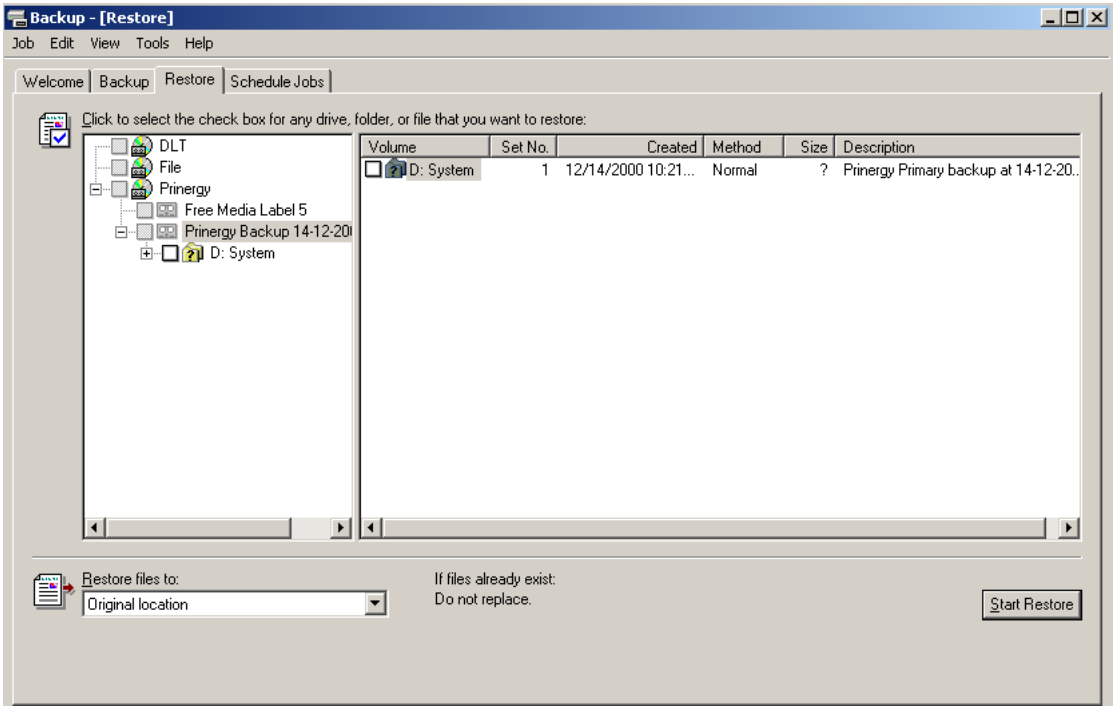


Figure 4-2: NTBackup Restore backup set list

4. Double-click on **D: System**. This should load the on-media catalog to the disk. If this fails, as shown by not being able to browse the contents of the backup set and with the backup set still showing the ? symbol, open the Options window by selecting **Options** from the **Tools** menu. Go to the **General** tab and uncheck **Use the catalogs on the media to speed up building restore catalogs on disk**. Re-catalog the backup set by double-clicking on it and wait for the catalog to be loaded from the tape.

   Note: There are instances when the update of the on-disk catalog from the on-media catalog fails. Tests were done on different systems with the same tape device, same operating system, and same backup sets. On one system, the update went fine while on the other, the catalog couldn't be updated. A workaround is to select **NTBackup Tools → Options → General** and uncheck **Use the catalogs on the media to speed up building restore catalogs on disk**.

5. Browse **D: System**. Verify that the **AraxiBackupTestFolder** and its contents were backed up.

6. Delete the folder **AraxiBackupTestFolder** from the system drive.

7. Restore the **AraxiBackupTest** folder including its contents using NTBackup. Select the **AraxiBackupTestFolder** from the **Recovery** window by clicking on the checkbox beside it. This will also select the files within the folder.

8. From the **NTBackup** menu, select **Tools**, then select **Options** to open the Options window. Select the **Restore** tab and then select **Do not replace the file on my computer**. Select **Apply**. Select **OK** to close the Options window.

9. Select **Start Restore**. In the Confirm Restore dialog box, select **OK** to start the restore process.

10. After the restore is finished, in the Restore Progress dialog box, select **Report** to review the restore log. Verify that there are no errors.

11. Using Windows Explorer, verify that the AraxiBackupTest folder and its files were restored successfully. Open the files and verify that they are intact.

5. LAUNCHING PRINERGY BACKUP

Typically, Prinergy Backup is launched automatically after the Oracle database backup. However, for testing purposes, there are several ways to start Prinergy Backup.

WARNING: The AraxiBackupManager and AraxiSysStateBackup services should have the same logon as the Araxi service. In cases where the Araxi logon is changed, the AraxiBackupManager and AraxiSysStateBackup logons should also be changed. Service logon failure may result if this is not done.

5.1.1 Automatic Startup of Prinergy Backup

The Oracle database backup, using the Windows Task Scheduler, is set by default to run at 3:00 a.m. Once the Oracle backup is finished, Prinergy Backup is automatically launched. Prinergy Backup checks the availability of a backup tape from the Backup\Prinergy pool. If a tape is not available and the AllocateFreeTape reg key is set to `1`, Prinergy Backup will try to allocate one from the free media pool.

The primary server system disk, System State, PrinergyUpdate folder, and Oracle database backup files are backed up to tape. At the same time, the System State of each remote server is backed up to a local disk. When the primary backup is complete, the system disk, PrinergyUpdate folder, and System State backup files of each remote server are backed up to tape.

A backup check runs 8 hours (wait time is configurable) after the backup launch. See *5.4 Prinergy Backup Check* for details.

5.1.2 Manual Startup of Prinergy Backup

You may wish to start the Prinergy backup process manually, for instance, when testing and verifying backup operation or after a system recovery. To manually run Prinergy Backup, complete the following steps:

Run Oracle Backup using Oracle Backup Manager. To do so:

1. Open a DOS command prompt and enter `OracleBackupManager`.
2. At the `Araxi_OracleMgr` prompt, enter `Backup Database`, as shown in Figure 5-5. This will start Oracle Backup and will subsequently launch Prinergy Backup.

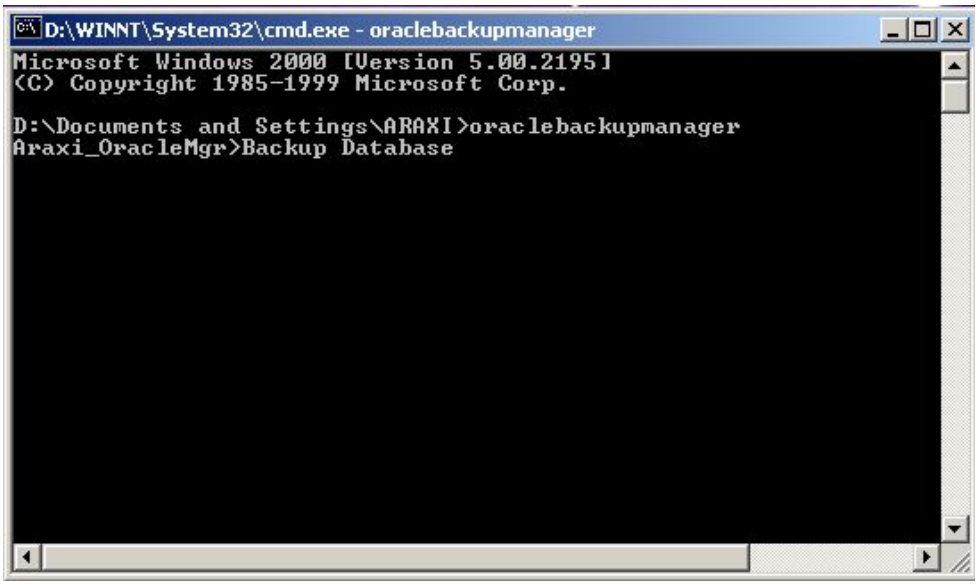


Figure 5-5: Backup Database command in Oracle Backup Manager

This method will back up the same data as a normal startup. (See *5.1.1 Automatic Startup of Prinergy Backup*.)

Other ways to manually start Prinergy Backup:

- By manually starting the AraxiBackupManager service in the Computer Management GUI. This will run the Prinergy backup in the background. Task Manager should show ntbackup.exe or cmd.exe in the Processes tab whose PID corresponds with the PID in the backup registry. The progress can also be checked using the UADM toolbar (Tools\System Backup), which is updated as the backup runs. Note that because the Oracle backup is not carried out in this case, the Oracle data copied to tape will not be current. This startup method will not schedule the backup check.
- By running %AraxiHome%\lib\python\com\creo\Araxi\NTBackup\AraxiBackup.cmd from a DOS command prompt. This can be used for troubleshooting since it runs Prinergy Backup interactively. As in the previous method, the Oracle backup is not run, so the Oracle data copied to tape will not be current, and the backup check will not be scheduled. See *7.4 AraxiBackup Command Parameters*.
- By running StartAraxiBackup.cmd from a DOS command prompt. This will schedule the backup check to run 8 hours later (wait time is configurable). Backups will run in the background. Task Manager should show ntbackup.exe or cmd.exe in the Processes tab. The progress can be checked using the UADM toolbar (Tools\System Backup).
- By running/scheduling the command `%AraxiHome%\CreoAraxi\bin\BackupOracleDatabase FULL`. This will run Oracle Backup and Prinergy Backup. Prinergy Backup will run in the background.

5.2 Media Rotation

The Prinergy Backup scripts maintain a tape list in the primary registry HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\TapeGUIDList. Every time Prinergy Backup runs, it synchronizes the

TapeGUIDList with the tapes in the RSM Backup\Prinergy pool. Whenever a tape is added into the pool, that tape is added into the TapeGUIDList in the registry. When a tape is taken out (deallocated) from the pool, that tape is taken out of the TapeGUIDList.

When backup starts, the TapeGUIDList is rotated and the first tape in the list is used for that backup. Before running Prinergy Backup, make sure that the scheduled backup tape is online (this is normally the tape with the oldest backup data). If the expected tape is not found, Prinergy Backup will try to use the first online tape in the media rotation. Failing this and if the AllocateFreeMedia reg key has a value of `1`, Backup will try to allocate a free tape. Prinergy Backup will fail if no tape is available. If using a standalone tape device, the scheduled tape should be injected and online before the backup runs.

Tapes with spanned data (media 2 and up of a spanned set) are not included in the TapeGUIDList, but are rather kept in the SpannedGUIDList. When the spanned media set is overwritten, media 2 and up are deallocated automatically and returned to the Free\DLT (or Free\8mm AIT1) pool. These tapes will be reused when the data for that backup spans.

Media Rotation examples are as follows:

5.2.1 Every Other Day Media Rotation

This scheme is the simplest to maintain, but provides the least protection. There are only two day's worth of backup in this scheme. Only two tapes are used, with the backup alternating between them. The two tapes to be used in the media rotation have to be prepared and allocated prior to using Prinergy Backup. See *3.5 Preparing and Allocating Tapes for Prinergy Backup*.

5.2.2 Weekly Media Rotation

This scheme requires a different tape (or media set if data does not fit on one tape) for each day of the week the backup runs (seven tapes if backup runs everyday). There is a week's worth of backup in this scheme. The tapes to be used in the media rotation have to be prepared and allocated prior to using Prinergy Backup. See *3.5 Preparing and Allocating Tapes for Prinergy Backup*.

The media rotation diagram is as follows:

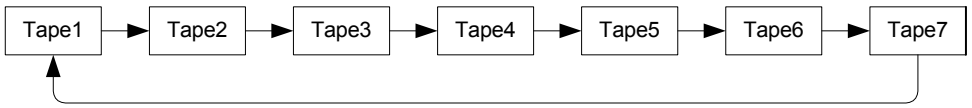


Figure 5-6: Weekly media rotation

5.2.3 Bi-weekly Media Rotation

This scheme uses fourteen tapes\media sets (or double the number of the weekly scheme if backup is not done daily). There are two week's worth of backup in this scheme. The previous week's tapes can be taken offsite if desired. The tapes to be used in the media rotation have to be prepared and allocated prior to using Prinergy Backup. See *3.5 Preparing and Allocating Tapes for Prinergy Backup*.

The rotation diagram is as follows:

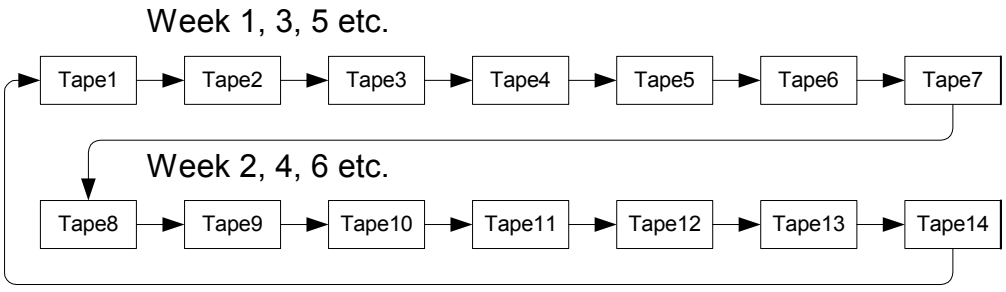


Figure 5-7: Weekly media rotation

WARNING: Prinergy Backup will fail if there is no online Prinergy Backup tape and there is no available tape in the free media pool. If using a standalone tape device, make sure the scheduled tape is inserted before the scheduled backup runs.

5.3 What Happens During Prinergy Backup?

This section describes in detail what happens during Prinergy Backup.

1. Oracle Backup launches the Prinergy Backup scripts. AraxiBackupCheck.cmd, which runs the backup check, is added to the Windows Task Scheduler to run 8 hours (wait time can be changed, see *5.4 Prinergy Backup Check*) after the Prinergy backup.

2. The Backup\Prinergy media pool is synchronized with the TapeGUIDList in the registry. (If the media pool does not exist, it is created, and Prinergy Backup tries to allocate a free tape.) The TapeGUIDList is rotated and the scheduled tape is checked if online. If the tape is offline, the tape list is rotated until an online tape is found. If there is no online tape in the Backup\Prinergy pool, and the AllocateFreeMedia regkey value is 1, Prinergy Backup tries to allocate a free tape. See Figure 3-4 for the Backup\Prinergy pool window in RSM.

3. The Backup Key in the registry, which contains information on the backup status and TapeGUIDList etc., is created when the backup is first run. Prinergy Backup keeps track of the NTBackup PID to isolate other NTBackup processes. The following describes each key and value in the backup registry hive located in:

   HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup.

   - `AllocateFreeTape:` When set to 0, Prinergy Backup will not automatically allocate media from the free pool when no tape in the media rotation is available, Backup will fail instead. Default value is 1.
   - `ConfirmationDelay:` Wait time in hours before running the backup check. Default value is `8` hours.
   - `DatabaseBackupEnded`: Date and time the backup of the oracle database finished.
   - `DatabaseBackupStarted:` Date and time the backup of the oracle database started.
   - `DatabaseBackupStatus:` The status of the backup of the oracle database.

- `FatalError`: Flag used by Prinergy Backup. When a fatal error is detected during backup, an error message box gets displayed and the FatalError reg key is set to `1`. The backup check that runs 8 hours after (by default) will only display the error message box if the FatalError reg key is `0`. This reg key gets reset to `0` at the beginning of each backup.
- `Hardware Compression`: 0 or 1. This value will be present if the option to override the compression setting of the hardware device has been selected in the UADM Configuration Options dialog. If the option to override has not been selected this value will not be present. If this value is set to 0, then the data being backed up will not be compressed. If this value is set to 1, then the data being backup up will be compressed.
- `mediaType`: DLT (default) or 8mm AIT1.
- `NotifyNodeList`: List of servers that will receive a pop-up error message when backup fails. Format is server1; server2;…;serverX. Default value is a list of all servers.
- `PID`: Process identifier of the NTBackup process used by Prinergy Backup
- `RemoteServerList`: List of remote servers included in the backup[3].
- `SpannedTapes`: Logical GUIDs of tapes with spanned backup data. This registry key gets created when backup spans to another tape.
- `Started`: Date and time Oracle backup started.
- `Status`: Running or Completed. Shows status of the Prinergy Backup.
- `SystemBackupEnded`: Date and time the system backup ended.
- `SystemBackupStarted`: Date and time the system backup started. This is after the Oracle backup finished.
- `SystemBackupStatus`: The status of the system backup.
- `SystemBackupTapeName`: The name of the tape used in the backup. If more than one tape is used for the backup, it will be the name of the first tape used.
- `TapeGUIDList`: Logical GUIDs of the tapes in the Prinergy Backup media rotation. The first tape is the one used in the latest backup (or is the one being used if Backup is running). This list is rotated to the right every time Backup starts.

Following are the registry entries for the Oracle backup. They are located in:

HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\ System\Backup\Oracle.

- `Confirmed`: Date confirmed or `Failed`. StartAraxiBackup.cmd schedules a backup check to run 8 hours (default) after the Prinergy Backup. This check verifies whether each of the backups (Oracle backup, primary and remote servers) was successful. If

[3] This may include Prinergy Insite 3.0.1 servers.

the Oracle backup is successful, the date and time will be displayed. Otherwise, it will show `Failed`.

- `Ended`: Date and time the Oracle backup finished.
- `Started`: Date and time the Oracle backup started.
- `Status`: Running, Success or Failed.

Below are the registry entries for the Prinergy primary server. The Primary registry key is deleted at the beginning of Oracle backup, and is recreated when system backup starts:

HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\Primary

- `Confirmed`: Date confirmed or `Failed`.. If the primary backup is successful, the date and time will be displayed. Otherwise, it will show `Failed`. This reg key gets refreshed at the beginning of backup.
- `Ended`: Date and time the primary backup finished.
- `LogLabel`: Backup description in the log generated by NTBackup.
- `Media`: Media to which the backup is written. The logical GUID is recorded.
- `Started`: Date and time the primary backup started.
- `Status`: Running, Success or Failed.
- `TapeGUID`: Logical GUID of the tape to which the backup is written.
- `TapeName`: RSM physical media name of the tape to which the backup is written.
- `Target`: Lists the backup targets. For the primary server, the default targets are the system drive, System State, Prinergy Updates folder, and the Oracle Backup _Destination.

The registry entries described above also appear in the registry for each remote server. The entries for the local backup of the remote server are located in:

HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\RemoteServers\<Remote_Server_Name>\Local

The registry entries for the remote backup of the remote server are located in:

HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\RemoteServers\<Remote_Server_Name>\Remote

4. The primary server system files, the System State, the Oracle database backup files, and the Prinergy Updates folder, are backed up to tape. At the same time, the System State of each remote server is backed up to a file on that remote server (E:\AraxiBackup\SysStateBackup.bkf). After the primary backup, the system files, the System State backup file, and the Prinergy Updates folder of each remote server included in the backup (see *6.1 Skipping Backup of Secondaries or Render* stations) are backed up to tape.

5. Windows Task Manager shows the NTBackup process (sometimes appears as cmd.exe) that is launched by Prinergy Backup. This is identified by the PID, which matches the PID value in the registry.

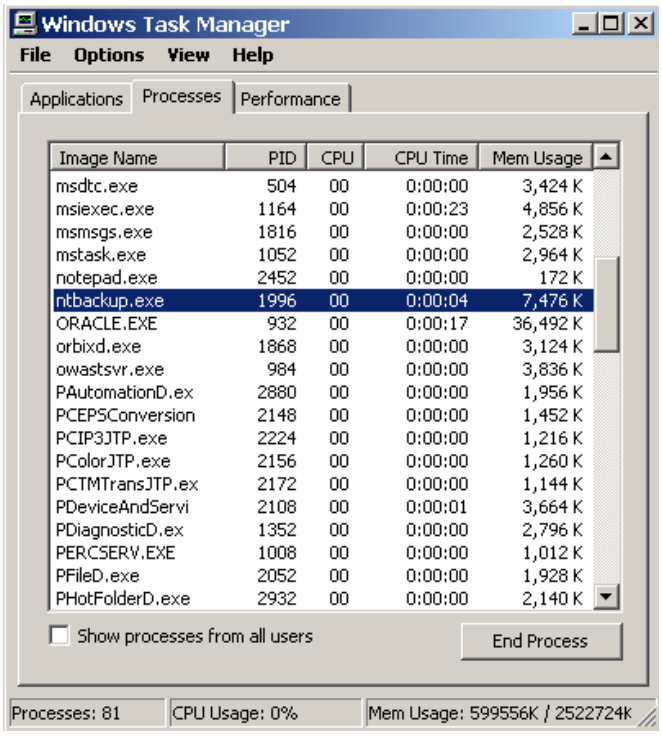


Figure 5-12: NTBackup PID in Windows Task Manager

6. The Prinergy Backup logs are kept in the %AraxiHome%\CreoAraxi\system\log\backup folder. In the primary server, the following logs are generated:

   - AraxiSystemBackup.log: Generated by the Prinergy Backup scripts. Copied into <DataDrive>\AraxiBackup folder and also in the secondaries as AraxiBackupPrimary.log.

   The last 10 log files are kept in the backup folder and previous log files are suffixed with numbers `01` to `09` (i.e. AraxiSystemBackup01.log). In this folder, there is also a counter file that helps the log files roll properly if one gets accidentally deleted. The counter file will have a name like AraxiSystemBackupCounter.1 . The counter file does not contain any information itself.

```
Wed May 09 03:01:29 2001
Wed May 09 03:01:29 2001 -------- REMOTE SECONDARY BACKUP --------
Wed May 09 03:01:29 2001 Secondary Nodes: ['COLT']
Wed May 09 03:01:29 2001 Start remote system state backup on: COLT
Wed May 09 03:01:52 2001 ----------------------------------------
Wed May 09 03:01:52 2001
Wed May 09 03:01:52 2001 ------------ PRIMARY BACKUP -------------
Wed May 09 03:01:52 2001 Primary Node: IDE6400
Wed May 09 03:01:53 2001 Starting backup of: IDE6400
Wed May 09 03:01:53 2001     NTBackup started
Wed May 09 03:01:53 2001         Media: B22992DA-C1B0-4C5E-B2B2-55F23A02FEAA
Wed May 09 03:01:53 2001         TapeName: Prinergy Backup Tape 1
Wed May 09 03:01:53 2001         Target: SystemState D: E:\ORACLEBACKUP
E:\PrinergyUpdates
Wed May 09 03:01:53 2001         Label in NTBackup log file: Backup of IDE6400
at 09-05-2001 03:01
Wed May 09 03:01:53 2001         Start time: 09-05-2001 03:01
Wed May 09 03:27:46 2001     NTBackup ended
Wed May 09 03:27:46 2001         End time: 09-05-2001 03:27
Wed May 09 03:27:52 2001     Confirming NTBackup
Wed May 09 03:27:54 2001         Backup status: Success
Wed May 09 03:27:54 2001 ----------------------------------------
Wed May 09 03:27:54 2001
Wed May 09 03:27:54 2001 ----------- SECONDARY BACKUP ------------
Wed May 09 03:27:54 2001 Secondary Nodes: ['COLT']
Wed May 09 03:27:54 2001
Wed May 09 03:27:58 2001 Start backup of: COLT
Wed May 09 03:27:58 2001     NTBackup started
Wed May 09 03:27:58 2001         Media: B22992DA-C1B0-4C5E-B2B2-55F23A02FEAA
Wed May 09 03:27:58 2001         TapeName: Prinergy Backup Tape 1
Wed May 09 03:27:58 2001         Target: \\COLT\PrinergyBackup$
\\COLT\AraxiTemp_COLT_E\PrinergyUpdates \\COLT\AraxiTemp_COLT_E\AraxiBackup
Wed May 09 03:27:58 2001         Label in NTBackup log file: Backup of COLT at
09-05-2001 03:27
Wed May 09 03:27:58 2001         Start time: 09-05-2001 03:27
Wed May 09 04:30:32 2001     NTBackup ended
Wed May 09 04:30:32 2001         End time: 09-05-2001 04:30
Wed May 09 04:30:36 2001     Confirming NTBackup
Wed May 09 04:30:39 2001         Backup status: Success
Wed May 09 04:30:39 2001 ----------------------------------------
```

Figure 5-13: Screen dump of AraxiBackup.log

- < *ServerName*>_NTBackup.log: These log files are kept in the …backup\NTBackup subfolder. These logs are copied from the NTBackup generated log file, when each server was backed up. Lists the files that are backed up and skipped. The last 10 log files are kept in the backup folder and previous log files are suffixed with numbers `01` to `09`.

```
Backup Status
Operation: Backup
Active backup destination: Prinergy
Media name: "Prinergy Backup Tape 1"

Backup of "D: System"
Backup set #1 on media #1
Backup description: "Backup of IDE6400 at 09-05-2001 03:01"
Backup Type: Normal

Backup started on 5/9/2001 at 3:02 AM.
Folder D:\
error when no DLT.txt                          1084    5/2/2001     2:21 PM
Generic.msc                                   24576    5/5/2000     9:38 AM
```

Figure 5-14: Screen dump of NTBackupPrimary.log

- AraxiBackupManagerService.log. This file is located in the %AraxiHome%\CreoAraxi\system\log\backup\AraxiBackupManagerService[4] folder.

  This file contains information associated with running the service. It is useful to software developers and helps track down errors when they occur.

7. In the remote server, the following logs are generated:

   - AraxiSystemBackup.log: Generated by the Prinergy Backup scripts when the remote server System State was backed up to a file. The last 10 log files are kept in the backup folder and previous log files are suffixed with numbers `01` to `09`.

```
Wed May 09 03:01:44 2001 -------- REMOTE SECONDARY BACKUP --------
Wed May 09 03:01:44 2001 Start SystemState backup of: COLT
Wed May 09 03:01:44 2001     NTBackup started
Wed May 09 03:01:44 2001         Media: E:\AraxiBackup\SysStateBackup.bkf
Wed May 09 03:01:44 2001         Target: SystemState
Wed May 09 03:01:44 2001         Label in NTBackup log file: SystemState Backup
at 09-05-2001 03:01
Wed May 09 03:01:44 2001         Start time: 09-05-2001 03:01
Wed May 09 03:02:40 2001     NTBackup ended
Wed May 09 03:02:40 2001         End time: 09-05-2001 03:02
Wed May 09 03:02:41 2001     Confirming NTBackup
Wed May 09 03:02:41 2001         Backup status: Success
Wed May 09 03:02:41 2001 ----------------------------------------
```

Figure 5-15: Screen dump of AraxiSystemBackup.log in a remote server

[4] This log file was introduced in version 2.0.7.14 of Prinergy. Prior to Prinergy 2.1, this log file was located in %Araxihome%\CreoAraxi\bin.

- <*ServerName*>_NTBackup.log: These log files are kept in the …backup\NTBackup subfolder. These logs are copied from the NTBackup generated log file, when the remote System State was backed up to file. Lists the files that are backed up and skipped. The last 10 log files are kept in the backup folder and previous log files are suffixed with numbers `01` to `09`.

```
Backup Status
Operation: Backup
Active backup destination: File
Media name: "Media created 5/9/2001 at 3:01 AM"

Backup of "System State"
Backup set #1 on media #1
Backup description: "SystemState Backup at 09-05-2001 03:01"
Backup Type: Copy

Backup started on 5/9/2001 at 3:01 AM.
Folder System State\Boot Files
ntldr                    <RHSA>              214416   12/6/1999     9:00 PM
NTDETECT.COM             <RHSA>               34468    2/8/2001     3:25 PM
Folder System State\Boot Files\D:\WINNT\SYSTEM32\CATROOT\{F750E6C3-38EE-11D1-
85E5-00C04FC295EE}
CATMAST.cbd              <A>                  17854   3/20/2001     5:37 PM
```

Figure 5-16: Screen dump of NTBackup.log in a remote server

- AraxiBackupPrimary.log: A copy of the primary server AraxiSystemBackup.log.
- AraxiSysStateBackupService.log. This file is located in the %AraxiHome%\CreoAraxi\system\log\backup\AraxiSysStateBackupService[5] folder.

  This file contains information associated with running the service. It is useful to software developers and helps track down errors when they occur.

8. The status of the backups can be verified by checking the System Backup status window in the UADM toolbar (Tools\System Backup).

[5] See footnote 4.

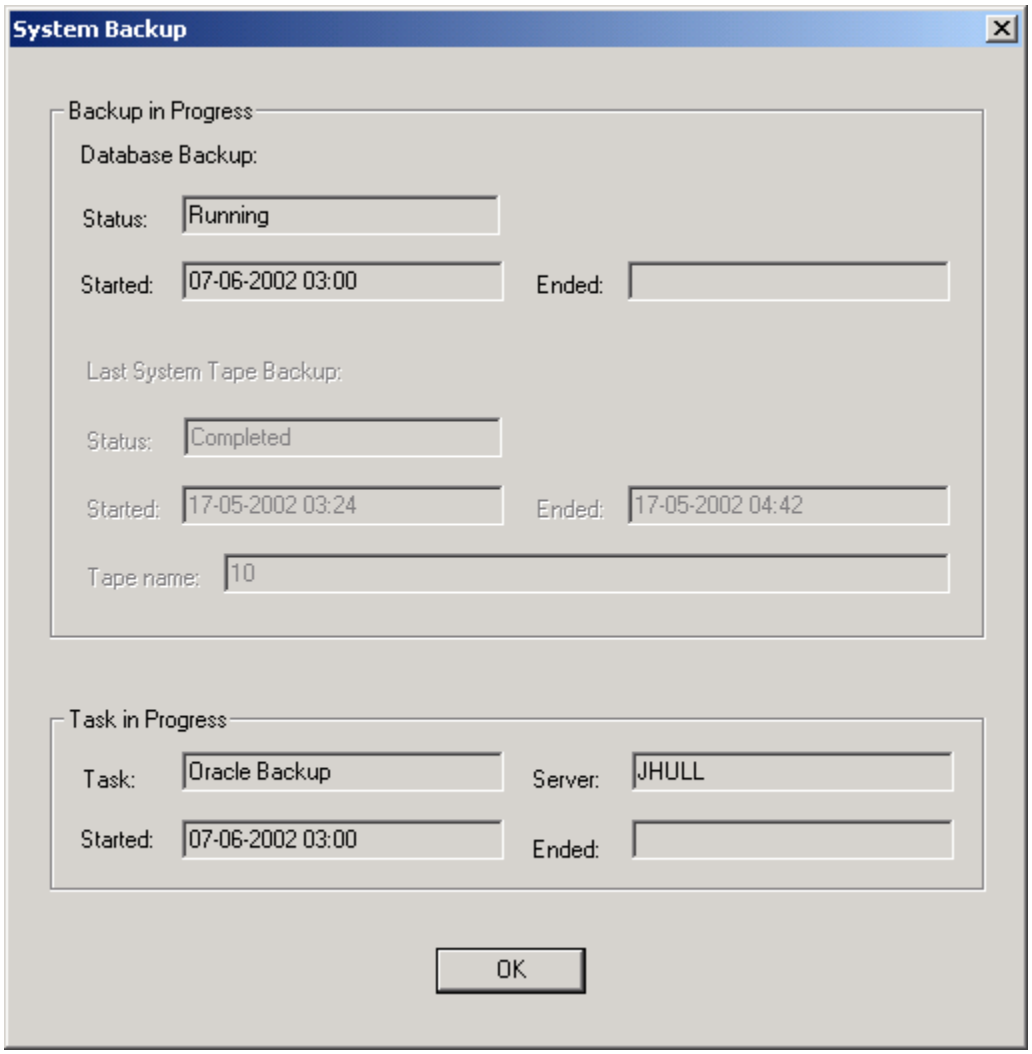


Figure 5-17: System Backup status window

Figure 5-17 shows an example of the status window when Oracle backup is in progress. Note the previous system backup is displayed, but is greyed out. When the current day's system backup begins it will get displayed.

9. Windows Task Scheduler runs the backup check (AraxiBackupCheck.cmd) after the pre-configured wait time (default setting is 8 hours). The check should run only once after Prinergy Backup.

10. If a backup fails, a pop-up message appears on all primary and remote servers. The servers where the failure notification window appear is configurable by changing the value of NotifyNodeList regkey (see *6.6 Disabling Error Message Notification*). The logs and backup registries should be reviewed.

5.4 Prinergy Backup Check

The AraxiBackupCheck.cmd runs a check of the Prinergy backup 8 hours (default setting) after Prinergy Backup is launched. The wait time can be changed (see *6.3 Changing Wait Time for Prinergy Backup Check*). The check, scheduled by Windows Task Scheduler,

verifies the success of the backup of each server in the Prinergy system by checking the registry keys for the status of each backup step. The results of the check are written to a log file and to the registry. If an error is detected, whether a backup step failed, is still running, or never started, the error is reported and a warning message appears on all servers (unless notification is disabled, see *6.6 Disabling Error Message Notification*).

When an error is detected, the system should be diagnosed as soon as possible. (See *7 Diagnostics and Troubleshooting*.)

Note: If Prinergy Backup is launched using some manual methods, the backup check does not get scheduled. (See 5.1.2 Manual Startup of Prinergy Backup.)

6. CUSTOMIZING PRINERGY BACKUP

Prinergy Backup can be customized depending on the customer's requirements.

6.1 Skipping Backup of Secondaries or Render stations

Prinergy Backup can be configured to skip certain secondary servers or render stations. This may be an option in the following scenarios:

- The secondary server/render station configuration is very seldom changed.
- There are too many servers in the Prinergy system and it takes too much time to backup. Backup may hold up archiving and vice versa.
- The backup data does not fit in one tape, and only a standalone tape device is being used. Prinergy Backup requires a tape library to support tape spanning.
- Render station is often powered down or is a dual boot machine and sometimes being used as an Allegro workstation

It is highly advised that the servers and render stations to be skipped have up-to-date ghost images. This will enable recovery of the server in case there is a disaster.

Secondary servers that run the Archive JTP should not be skipped. Prinergy Backup will check if Archive JTP is running in the secondary server, and if so, will make sure that that server is backed up.

Remote servers (secondaries, render stations or InSite servers) can be added or removed from the backup by going into the UADM toolbar **Tools\ConfigureSystem** and selecting the **Backup** tab (see Figure 6-1).

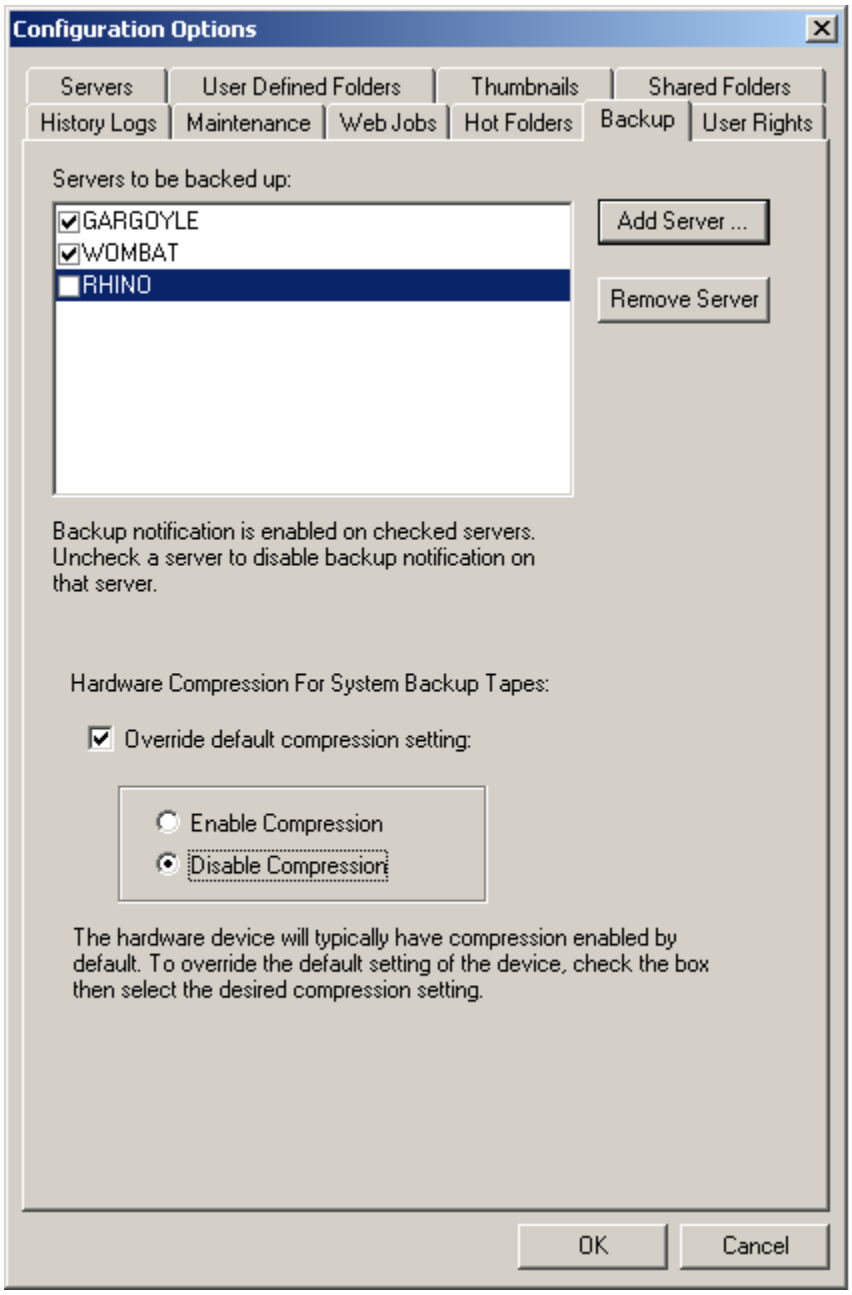


Figure 6-1: Backup Configuration window

6.2 Changing Backup Start Time

Prinergy Backup is launched by the Oracle Backup. The default Oracle Backup_Start_Hour is 3 (for 3:00 a.m.). To change the Backup_Start_Hour, see *3.2 Configuring Oracle Backup*.

6.3 Changing Wait Time for Prinergy Backup Check

The wait time for the backup check can be changed. The wait time should be longer than the time it takes to backup the Prinergy system. The default wait time is 8 hours. With the default settings, the backup check will run a few minutes after 11:00 a.m.

To change the Backup check wait time, enter the wait time in hours in the registry key HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\ConfirmatonDelay (see Figure 5-8).

6.4 Changing the Media Type Used by Prinergy Backup

Prinergy 2.0.6.0 and later supports DLT and AIT. To change the media type, enter either `DLT` or `8mm AIT1` in the registry key HKEY_LOCAL_MACHINE\SOFTWARE\Creo\Araxi\Settings\Default\System\Backup\mediaType (see Figure 5-8).

The default media type is DLT. If running backup for the first time, and the media type is AIT, the mediaType reg key has to be created with the value `8mm AIT1`. See *3.5, Preparing and Allocating Tapes for Prinergy Backup*.

6.5 Disabling Automatic Free Media Allocation

Prinegy backup allows disabling automatic free media allocation. By default, if there are no available tapes in the media rotation, Prinergy Backup will try to allocate a free tape. To disable automatic free media allocation, change the value of the registry key AllocateFreeTape to `0` (see Figure 5-8).

6.6 Disabling Error Message Notification

When a backup error is detected, an error message appears on the screens of the servers in the Prinergy system. The user can specify which servers will receive this notification.

Disabling or re-enabling error message notification can be configured from the UADM toolbar Tools\ConfigureSystem (see Figure 6-1).

In Figure 6.1, error message notification has been disabled on RHINO.

6.7 Hardware Compression

The tape device has a hardware compression setting that can be enabled or disabled. It is typically enabled.

In backup prior to Prinergy 2.1, the hardware compression setting of the hardware device was ignored by the backup scripts. The scripts backed up the data with compression off.

In Prinergy 2.1, the compression setting of the hardware device is used by default. If the user wants to override this default, they can do so in the UADM\Configure System tab.

Figure 6.1 shows a situation where the user is overriding the hardware compression setting. The user is setting the compression to be disabled. It is presumed that a user would do this in a scenario where the compression setting of the hardware device is set to be enabled.

Note that the UADM does not actually detect what the compression setting of the hardware device is. So, if in the scenario of Figure 6.1, the compression setting of the hardware device was disabled, then "overriding" it in the UADM and explicitly setting it to disabled would have essentially no effect.

7. DIAGNOSTICS AND TROUBLESHOOTING

This section describes where to locate information about a backup that can be used in diagnosing backup errors, and troubleshooting tips for backup problems being experienced. You can also refer to the Prinergy Technical Library site's Knowledge Base (part of the Creo intranet: *http://intranet.creo.com*), which contains up-to-date problem descriptions and workarounds.

7.1 System Backup Status Window

The System Backup status window shows the backup start date/time, end date/time, and status (Running, Success or Failed) of the Oracle backup and the tape backup. If the backup is running, the window also shows the current task (for example, System Disk Backup), the task start date/time, and the server being backed up. See Figure 5-17, System Backup Status Window.

7.2 Backup Registry

Information about each backup step is contained in the backup registry on the primary under HKEY_LOCAL_MACHINE\Software\Creo\Araxi\Settings\Default\System\Backup. There is a primary registry key, a remote and local key for each remote server, and an Oracle key. The remote key contains information about the System State backup that runs on the remote server, and the local key contains information about the system disk and System State file backup that runs on the primary. Most of these keys hold general information about the backup step, such as start time, end time, and target, including the following:

- `Confirmed`: The purpose of this key is to prevent problems such as: Backup works on day 1, but fails at the very start on day 2. If the backup didn't get far enough to change the registry, the Status registry key will still show `Success` from day 1. When the backup check runs 12 hours later, it will report that everything is okay. To prevent this, the Confirmed key is set at the end of the backup check and cleared when NTBackup starts. If this key isn't clear when the backup check starts, it means the particular backup step was never run and the current 'status' is from a previous backup.

- `Status`: `Running`, `Success` or `Failed`.

For more information about the backup registry keys, see step 3 of *5.3 What Happens During Prinergy Backup?*

7.3 Errors Appearing in the Backup Log

Immediately after each NTBackup step finishes, the NTBackup log file is parsed to confirm the backup step was successful. This is done by searching for a start/end message pair for each target in the backup step. For example, the normal primary backup has three targets (System State, system disk, Oracle database backup folder). After a primary backup, the NT log is parsed for three start and three end messages. If these are found, the backup is considered successful, otherwise it is considered to have failed. All errors are shown in the backup log and also written to the DIAG viewer if Prinergy is running.

7.4 AraxiBackup Command Parameters

For testing purposes, the AraxiBackup.cmd can be run with the following parameters:

- Primary (that is, AraxiBackup Primary): Skip backing up the secondaries.
- Test (that is, AraxiBackup Test): Backup the primary and secondary test folder %AraxiHome%\lib\python\com\creo\araxi\NTBackup\AraxiBackupTestFolder and the secondary System State to tape. The test folder will be created if it does not exist.

7.5 Tape Identifiers

Tape identifiers in the RSM and NTBackup are different, so some explanation as to how the backup scripts handle this is required. This information may be useful when querying the RSM database.

To back up to a specific tape, Prinergy Backup uses the tapes' Logical Media GUID. Prinergy Backup maintains a list in the registry of the Logical Media GUID of the tapes in the media rotation (TapeGUIDList). When a backup is started, the TapeGUIDList is rotated and the first tape in the list is used in the NTBackup command.

Tape Identifier Equivalents

RSM GUI	RSM Cmdline	NTBackup Cmdline
media name	physical_media	-
side name	partition	-
	logical_media	tape GUID
info	-	tape name
description	-	-

7.6 Problems and Solutions

The following table lists backup problems, their possible causes, and solutions:

Problem	Possible cause	Solution
Oracle Backup did not run.	Oracle Backup is not in the Windows Task Scheduler.	Run Backup Start in the Oracle Backup Manager and verify that the Oracle Backup script is scheduled to occur daily. (See *3.3 Configuring Oracle Backup Manager Scheduler*.)
	Oracle Backup Manager instance is still open and locking the configuration file.	Close any open Oracle Backup Manager window before the scheduled backup.

Problem	Possible cause	Solution
	Wrong Oracle Backup configuration	Check the configuration. (See *3.2 Configuring Oracle Backup*.)
	Prinergy System is in Maintenance Mode	Turn the Maintenance Mode off. This can be done from the UADM Tools\Configure System menu.
Prinergy Backup did not run.	The SuccessfulBackup.cmd was not configured.	Check the configuration. (See *3.4 Configuring the Backup Command Files*.)
	There are no online Prinergy Backup tapes and there is no available tape in the free media pool.	Check the media pools or physical locations under Removable Storage in Computer Management. Verify that the scheduled Prinergy Backup tape is online. The scheduled tape is the tape with the oldest backup data.
	The AraxiBackupManager service logon account is not correct.	In the Service Properties dialog box, verify that that the service has the same logon (username and password) as the Araxi service.
Remote Server System State was not backed up.	The AraxiSysStateBackup service logon account is not correct.	In the Service Properties dialog box, verify that that the backup service has the same logon (username and password) as the Araxi service.
	The secondary server was down, or not in the network when the backup was launched.	Check network connectivity between the primary and secondary server. Check the logs in the primary server for the error message.
Remote server was not backed up to tape.	The remote server was down or not in the network during the backup.	Check network connectivity between the primary and remote server. Check the logs in the primary server for any error message.
	Not enough space in the media and there is no available tape in the free media pool.	Verify whether a message appeared on the primary server, requesting a free media. If so, prepare a tape and make sure it is in the free media pool. Do this again for the other media sets. (See *3.5 Preparing and Allocating Tapes for Prinergy Backup*.) An alternative is to use a

Problem	Possible cause	Solution
		higher capacity tape.
Mount gets queued in Work Queue indefinitely.	An application failed to dismount the drive.	Check if there is a tape in the drive, and what the drive status is. If no application is using the tape, it should be shown as dismountable in the RSM snap-in. If the state is loaded, manually dismount the tape in the drive.
RSM cycles in mounting, cataloging, and dismounting a tape.	The on-media label does not match the RSM label in the RSM database.	Change the Inventory method of the library to FULL and initiate a full inventory of the library. This will force RSM to update its database with the on-media label. If this fails, do the ff: 1. If this does not clear the problem, eject the tape. 2. Deallocate the tape, then delete it from RSM. 3. Inject the tape and let the tape device inventory. 4. RSM will place the tape in the Import Media. 5. Drag it to the pool it originally belongs to. 6. Check if the problem is fixed. 7. Revert back to the original inventory method used.
Cannot catalog the backup sets.	Sometimes the on-media catalog is damaged and cannot be loaded to the on-disk catalog.	In NTBackup Options (**Tools → Options → General**), un-check **Use the catalogs on the media to speed up building restore catalogs on disk**. Catalog will be created from the content of the media.
Cannot restore from a multi-tape media set.	A tape in the media set may be damaged.	Rebuild the on-disk catalog without using the on-media catalog. In NTBackup Options (**Tools → Options → General**), un-check **Use the catalogs on the media to speed up building restore catalogs on disk**. Catalog will be created from the content of the media. Only data from the good tape can be restored.

Problem	Possible cause	Solution
Remote server system backup takes a long time.	Backup of a remote server to tape should take less than an hour on a busy system. There may be a problem in the network.	Check the network connection. Run netperf between the primary and the secondary/render station. Results on an idle system should be about 90 Mbps for a 100 Base T network.

8. RECOVERING A PRINERGY SYSTEM USING BACKUP TAPES

This section outlines the procedures for recovering a Prinergy system by using the data backed up to tape during Prinergy Backup. All hardware problems should be fixed before recovery is carried out. Restoration from tape should be the last recourse in trying to get the servers back on line.

The following documents may be needed during the recovery procedure (latest version can be downloaded from the intranet or \\Sapphire\Doc):

- 72-3476 – Windows 2000 Installation Using Ghost Image
- 72-3650 – Upgrading Dell Server Agent

8.1 Recovering the Primary Server

When a primary server fails, data recovery from tape may be needed. However, recovery using the mirrored drive should be tried first. Refer to *Windows 2000 Installation Using Ghost Image* (72-3476).

WARNING: Before reghosting the systems drive, shut down and power down the server and remove the connection to any external RAID physically connected to the server to be ghosted. This will prevent erroneously selecting the RAID as the Ghost target drive.

If using a tape library, eject all tapes other than the Prinergy Backup tapes. This will save time by eliminating the need for RSM to inventory all the tapes during system boot up. It will also prevent any accidental erasures of the tapes.

8.1.1 Restoring the Operating System of the Primary Server

A DOS or Win98 boot diskette is needed to boot up the server. If one is not available, see *Creating the DOS/Win98 Boot Disk* to create one. Refer to *Windows 2000 Installation Using Ghost Image* (72-3476).

Creating the DOS/Win98 Boot Disk

A floppy boot diskette is needed to boot the system. If one is not available, the disk duplication utility DiskDupe can be used to create the floppy boot diskette. The utility must be installed and running from a Windows95/98/NT/W2K system. Follow the steps below to create the bootable floppy disk:

1. Insert the Prinergy W2K Resources CD into the CD-ROM drive of a working Windows system.
2. Double-click on **<CDROM_Drive>:\BOOTDISK\DISKDUPE\SETUP.EXE** to start installing the DiskDupe utility. Accept the default of all installation prompts to complete the utility installation.
3. Insert a blank floppy disk into the floppy drive, and then start the DiskDupe utility from the **Start** menu.
4. Select **Source = *.IMG file** (see below) and **Target = A:drive** (floppy drive).
   - CDROM:\BOOTDISK\DOSMLTSC\XX0212AC.IMG: Bootable floppy image, DOS system.
   - CDROM:\BOOTDISK\NETBOOT\XX0214AA.IMG: Bootable floppy image, DOS, with network support.
   - CDROM:\BOOTDISK\W98MLTSC\XX0213AC.IMG: Bootable floppy image, Win98, multi-platform selection prompted SCSI CD-ROM support.
5. Select **Action** from the menu and then select **Start Duplication** to begin disk duplication. Once completed, select **Cancel** when prompted to insert another floppy.
6. Remove the floppy disk from the drive and label it accordingly.

Ghosting the Whole Disk

Follow the procedure below to ghost the system disk. Refer also to *Windows 2000 Installation Using Ghost Image* (72-3476).

Note: This procedure will overwrite the whole disk. All data on the disk will be lost.

1. Shut down and power down the server.
2. Disconnect all external RAIDs connected to the server.
3. Mark each hard drive with its slot position. Remove all drives except for the recovery drive and the system drive(s) (note that most DELL servers have system drives that are hardware mirrored).
4. Boot the primary server using the floppy boot diskette. For servers with RAID controller alarms, this may be silenced by going to the RAID controller configuration. The DELL PE 6400 RAID controller will mark removed drives as failed.
5. Once the system is booted into DOS, change the current drive to the Recovery drive (either C: or D:).
6. Run **Ghost6.5.exe**. Press ENTER once to close the opening window.
7. Using the arrow keys, navigate to **Local\Disk\From Image**, and press ENTER.
8. Using the tab and arrow keys, move the cursor to the appropriate W2K ghost image (for example **blw2k64.gho**) and press ENTER.

9. Select the system drive (usually **Drive 1**) as the destination drive.

   WARNING: In some configurations, Ghost shows the RAID as Drive 1. Verify that the drive selected is the system drive. Verify that the RAID is disconnected before reghosting to prevent accidental overwriting of the RAID.

10. If a Note dialog box appears warning that one of the partitions is larger than 7.875 GB, press ENTER to close the window.

11. In the Destination Drive Details window, change the **New Size** to exactly match **Old Size** for each partition shown.

12. In the Question dialog box, select **Yes** to proceed with the loading of the image.

13. Loading will take about 10 minutes. When the loading is finished, power down the server.

14. Verify that the recovery drive is marked with its slot position. Remove the recovery drive, such that only the system drive(s) (note that most DELL servers have system drives that are hardware mirrored) is/are installed in the server.

15. Remove the floppy from the drive and restart the server. For servers with RAID controller alarm, this may be silenced by going to the RAID controller configuration. The DELL PE6400 RAID controller will mark removed drives as failed.

16. Upon boot up, AUTOCHK may run to check partition corruption. Allow AUTOCHK to finish. Proceed to *8.1.2 Finishing Windows 2000 Installation.*

8.1.2 Finishing Windows 2000 Installation

1. Follow the W2K mini-setup wizard. Enter the W2K product ID that is in the W2K certificate that came with your server. Enter the computer name (an arbitrary computer name may be used since recovery will restore the original computer name) and the administrator password.

2. Select **not part of a network**. Enter a workgroup name. If the server is a member of a domain, this configuration will be restored when the recovery is done.

3. Power down the server.

4. Replace all the hard drives and RAID connections and restart the server. For the DELL PE 6400, the replaced internal disks have to be forced online by doing the following:

   a. When the BIOS scans the PERC Controller, press CTRL-M.

   b. Browse to **Object\Physical Drive**, then use the arrow keys to navigate the cursor to the **Failed Drive**.

   c. Press ENTER to go to the **Physical Drive Object** menu.

   d. Press the ↓ arrow key to select **Force Online**. Press ENTER.

   e. In the warning dialog box, select **Yes** then press ENTER.

   f. Repeat steps b to e until all the “failed” drives are online.

g. Press ESC until you get to the top menu. Reboot the server.

5. Log in as administrator.
6. Check that the tape devices are installed using the Device Manager in Computer Management. If not, install them manually. Refer to *Windows 2000 Installation Using Ghost Image* (72-3476).
7. Verify that the DataLog (or Temp) drive is assigned the drive letter E:. If not, change the temp drive letter to E:. Note that you may need to change the temp variable first in order to open Computer Management.

8.1.3 Recovering the Backup Sets

To copy the latest backup sets from tape to the primary server:

1. Verify that you are logged in as administrator in the primary server.
2. Open the primary **%AraxiHome%\CreoAraxi\system\log\backup\AraxiSystemBackup.log**, copies of which are also kept in <Data Drive>\AraxiBackup and in the secondary servers as **%AraxiHome%\CreoAraxi\system\log\backup\AraxiBackupPrimary.log**. Verify which was the last tape used for the Prinergy backup and if the primary backup was successful. If the last backup was not successful, verify where the backup failed. If the backup is not useable, use the backup set from the next latest backup tape.
3. Make sure that the backup tapes are in the tape device. If inventory is not automatically carried out, manually inventory the tape device using the RSM GUI.

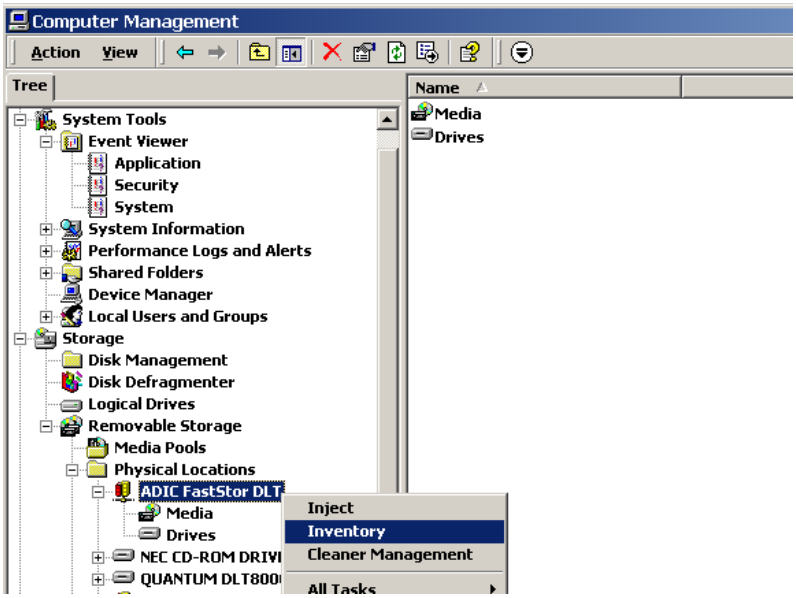


Figure 8-1: Initiating an inventory of a tape drive

4. Verify that the backup tapes are in the media pool Import\DLT. If the inventory has completed (verify from the Work Queue), and the tapes do not appear in the Import\DLT pool, try refreshing the Import pool (right-click on **Import** pool and select **Refresh**).

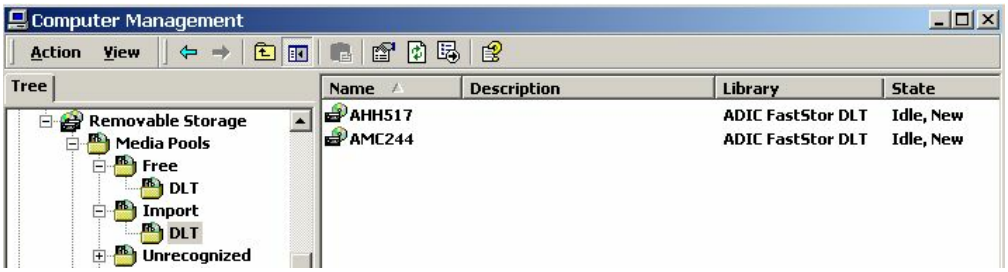


Figure 8-2: Import\DLT media pool

5. Start the NTBackup GUI. An Import Media Present dialog box appears. Select **Allocate all compatible import media to Backup**. Select **OK**. The NTBackup GUI opens.

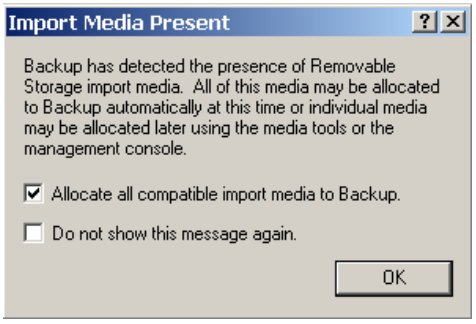


Figure 8-3: Import Media Present dialog box

6. Browse the media pools in Computer Management. The Backup\DLT pool is created the first time NTBackup is launched. Verify that the backup tapes are in the Backup\DLT pool. If the tapes are not in the Backup\DLT pool, they can be dragged manually from the Import\DLT pool.

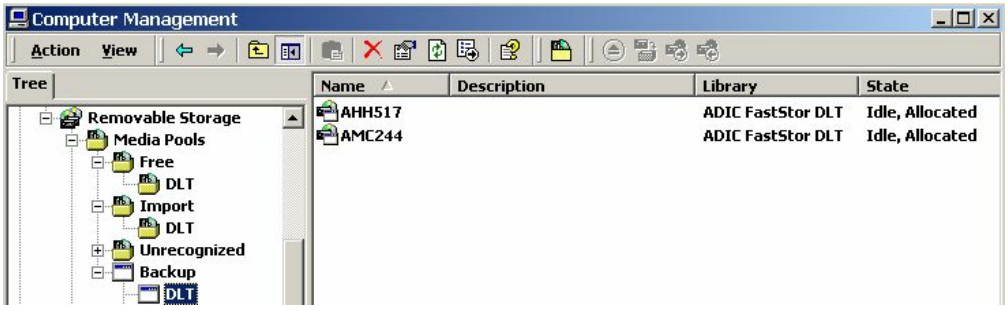


Figure 8-4: Backup\DLT media pool

7. In the NTBackup GUI, select **Restore** and double-click on **DLT**. Verify that the Prinergy tapes are listed under the DLT tree.

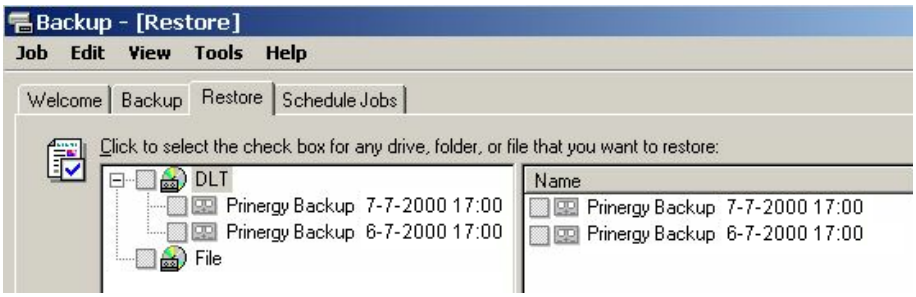


Figure 8-5: Restore tab in NTBackup GUI

8. In the left pane, double-click on the backup tape with the latest successful backup, as verified in step 2, to retrieve the backup set list from the media. Wait until the load operation is finished.

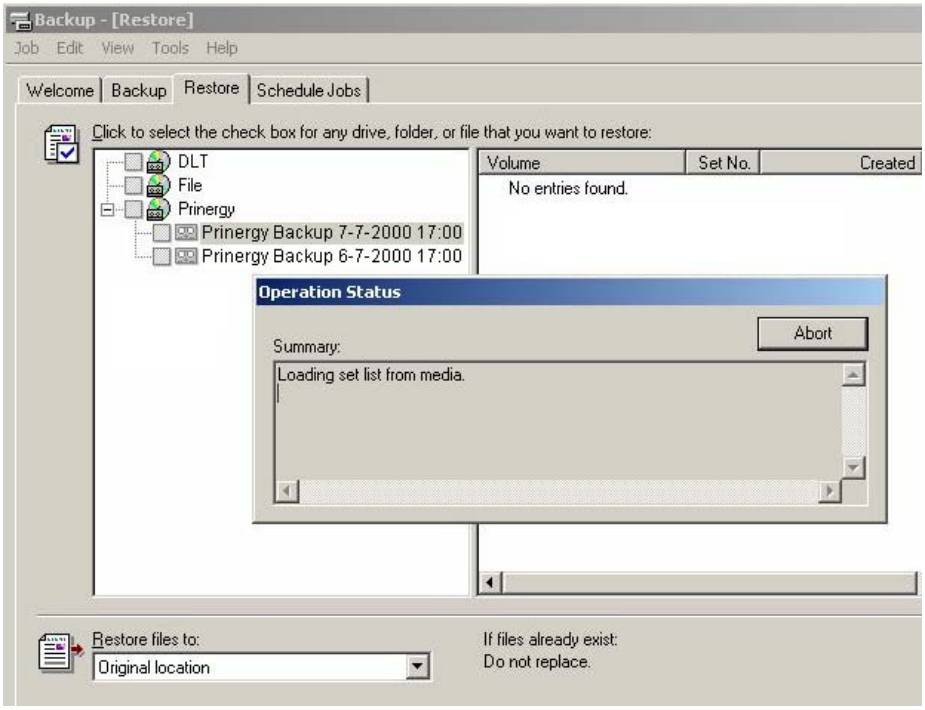


Figure 8-6: Loading the backup set list

9. The backup set list in the tape is displayed. Verify that the dates shown in the Created field match the information in the Prinergy Backup logs.

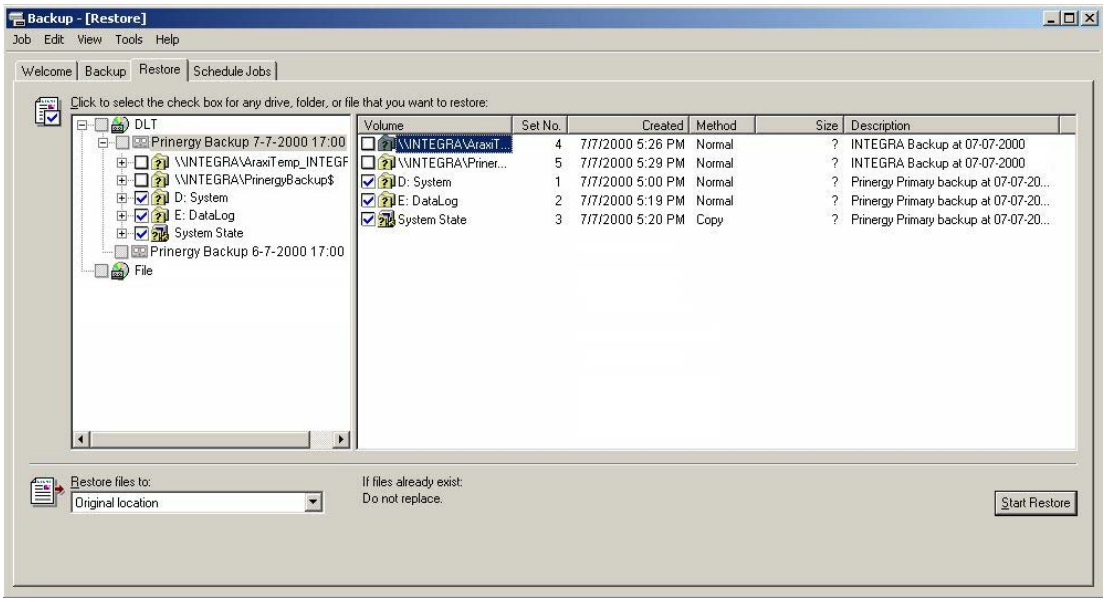


Figure 8-7: Backup set list

10. The contents of the backup sets can be viewed (though this is not needed to restore the whole backup set) by double-clicking on them. This should load the on-media catalog to the disk. If this fails, as shown by not being able to browse the contents of the backup set and with the backup set still showing the ? symbol, open the Options window by selecting, **Tools**, then **Options**. Go to the **General** tab and uncheck **Use the catalogs on the media to speed up building restore catalogs on disk**. Re-catalog the backup set by double-clicking on it.

    Note: There are instances when the update of the on-disk catalog from the on-media catalog fails. Tests were done on different systems with the same tape device, same OS and same backup sets. On one system, the update went fine while on the other, the catalog couldn't be updated. A workaround is select **NTBackup Tools**, then **Options**, then **General** and uncheck **Use the catalogs on the media to speed up building restore catalogs on disk**.

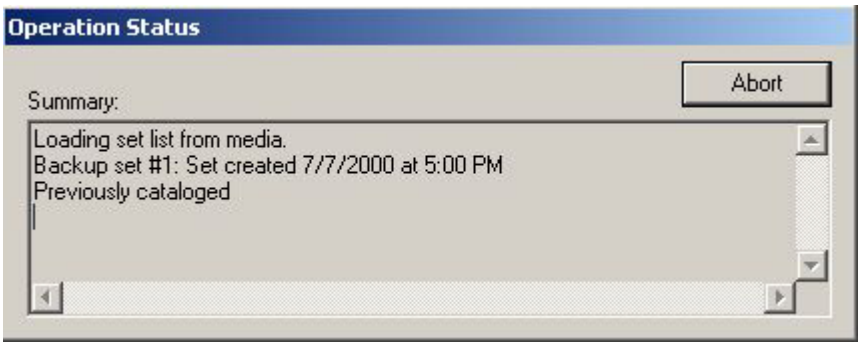


Figure 8-8: Cataloging failure – Operation Status dialog box shows the backup set was previously cataloged.

8.1.4 Recovering Data from Tape

Once the backup sets have been copied from tape to the primary server, the data in these backup sets can be used to restore the primary server.

1. As shown in Figure 8-7, click on the checkboxes to select the backup sets you wish to restore. Normally, these are **D: System**, **System State** and **E: DataLog**.

2. On the NTBackup menu, select **Tools**, then **Options** to open the Options window. Select **Restore** and then select **Always replace the file on my computer**. Select **Apply**. Select **Backup Log**, then select **Detailed**, then **OK** to close the Options window.

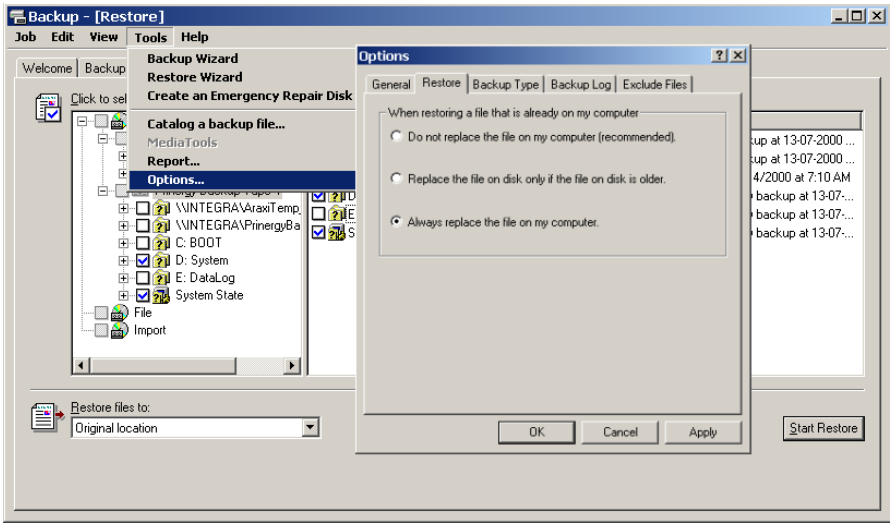


Figure 8-9: Restore Options dialog box

3. Select **Start Restore**. Select **OK** in the Restoring System State Warning dialog box.

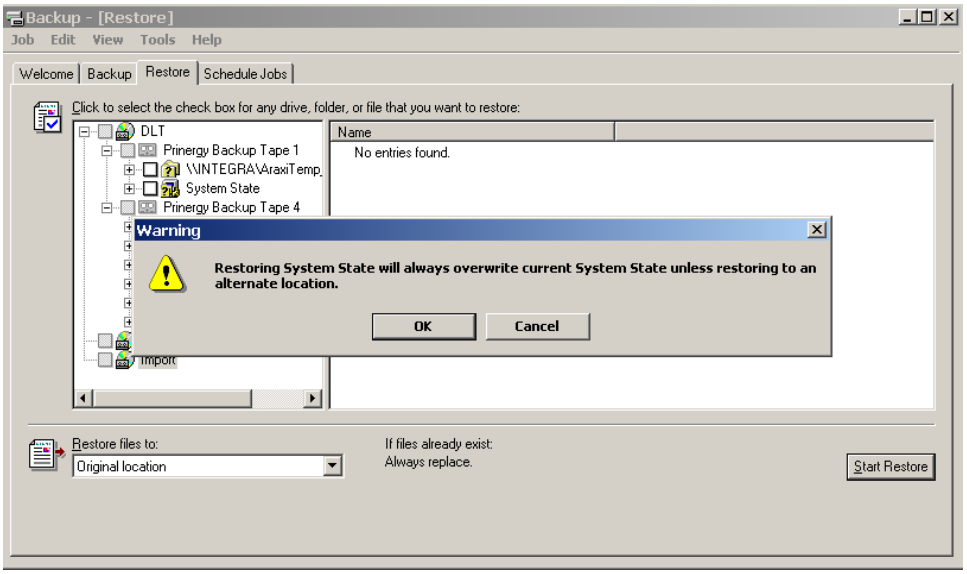


Figure 8-10: Warning dialog box when restoring System State

4. On the Confirm Restore dialog box, select **Advanced**. On the Advanced Restore Options dialog box, select the checkboxes for **Restore security**, **Restore Removable Storage database**, **Restore junction points** and **Preserve existing volume mount points**. Select **OK**.

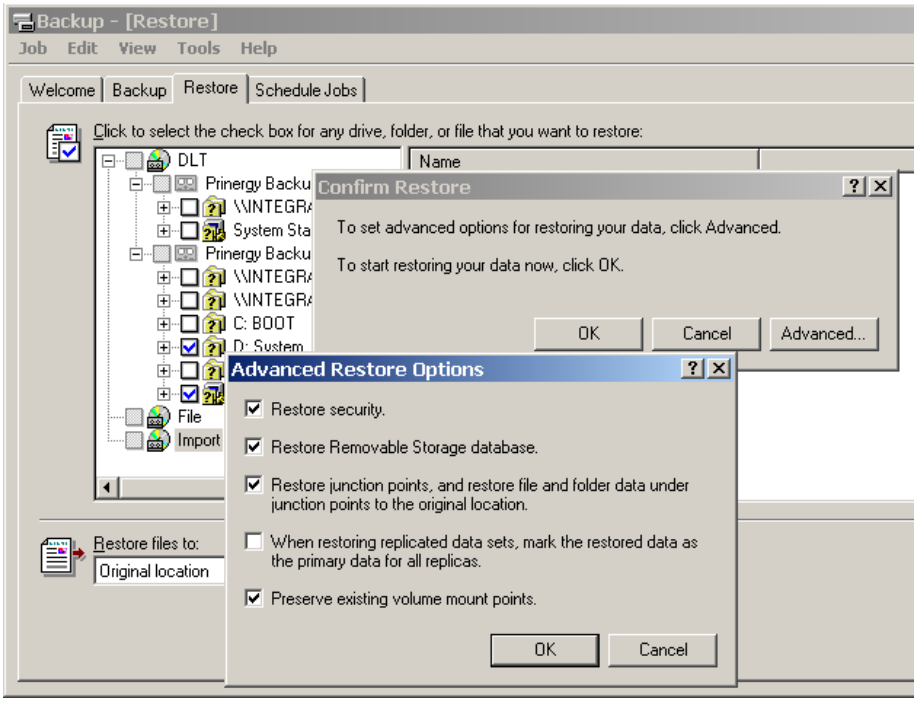


Figure 8-11: Advanced Restore dialog box

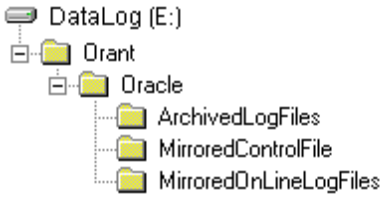
5. In the Confirm Restore dialog box, select **OK** to start the restore process. This may take between 10 to 30 minutes depending on the restore set, tape, and tape drive used.

6. When the restore is finished, a dialog box appears announcing that the Removable Storage database files have been set up to be restored. Select **OK**.

7. If a File Replace Warning dialog box appears, and asks for the Windows 2000 CD, click **Cancel**.

8. In the Restore Progress dialog box, select **Report** to review the restore log. Search for the words "error" and "failed". Verify that there are no errors. Do not close the NTBackup Restore Progress dialog box.

9. Perform this step ONLY if the DataLog drive (also known as E: or the TEMP Drive) was restored. This may only be needed for systems with the system drive (D:) and the DataLog drive (E:) in the same physical disk (for example, Dell PE6400). Create the following folder structure in the DataLog drive E:



10. Check the drive letter assignments under Disk Management. Open **D:\Ora816\database\initcreo.ora** using notepad.exe. Look for the line `control_files = (E:\Orant\…\ctl1creo.ora, J:\Orant\…\ctl2creo.ora`, to verify the RAID (Data Drive) letter (usually J: or G:). Change the RAID letter using Disk Management if required. Note that if the drive letter is wrong, share for the RAID will not get created on next reboot and it has to be created manually (for example, AraxiVolume_<Server>_J).

11. Perform this step ONLY if the DataLog drive (also known as E: or the TEMP Drive) was restored. This may only be needed for systems with the system drive (D:) and the DataLog drive (E:) in the same physical disk (for example, Dell PE6400). Open Windows Explorer. Copy the Oracle Control File (rename to `CTL1CREO.ORA`) and Online Log Files from the Jobs drive (usually J:) to the Data Log drive (usually E:).

    - Copy J:\Orant\Oracle\ControlFile\CTL2CREO.ORA to E:\Orant\Oracle\MirroredControlFile\CTL1CREO.ORA.
    - Copy J:\Orant\Oracle\OnLineLogFiles*.* to E:\Orant\Oracle\MirroredOnLineLogFiles*.*

    Close Windows Explorer.

12. In the NTBackup Restore Progress dialog box, select **Close**.

13. Restart the computer.

8.1.5 Restoring the Removable Storage Database

This section explains how to check the Remote Storage Database and how to restore the database if the restore in *8.1.4 Recovering Data from Tape* failed.

Note: The restore of RSM database always fails when carried out together with system and System State restore. The procedure below should be performed until this issue is resolved.

1. Verify that you are logged in as administrator, or an account with administrator privilege.
2. Open Computer Management by right-clicking **My Computer** and selecting **Manage**.
3. Verify whether the Removable Storage database was restored properly when the data was restored as described in *8.1.4 Recovering Data from Tape*. Verify that the Prinergy pool is listed under Media Pools (Computer Management\Storage\Removable Storage\Media Pools\Backup\Prinergy).

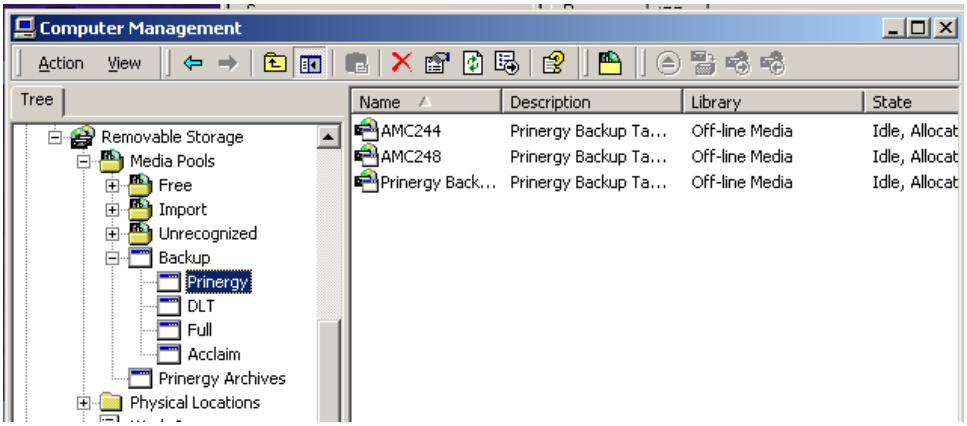


Figure 8-12: Prinergy Backup media pool

Note: If the previous procedure successfully restored the Removable Storage database, skip the remaining part of this section.

4. If the Removable Storage was not restored, start the NTBackup GUI.
5. Browse the media pools in Computer Management. Verify that the backup tape with the last good backup (as verified in *8.1.3 Recovering the Backup Sets*) is in the Backup\DLT pool.

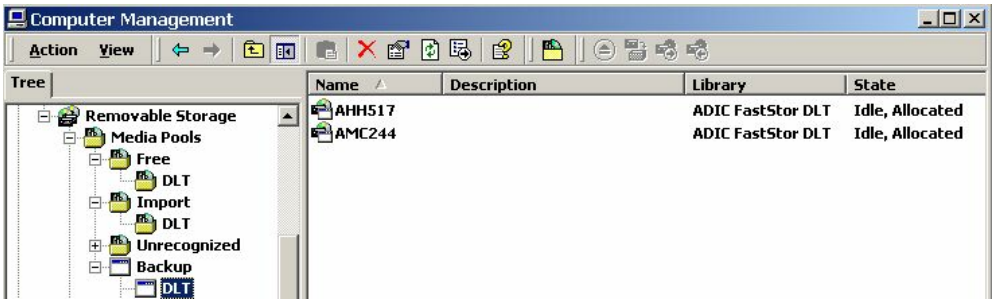


Figure 8-13: Browsing the media pool

6. In the NTBackup GUI, select **Restore** and double-click on **DLT**. Verify that the Prinergy tapes are listed under DLT.

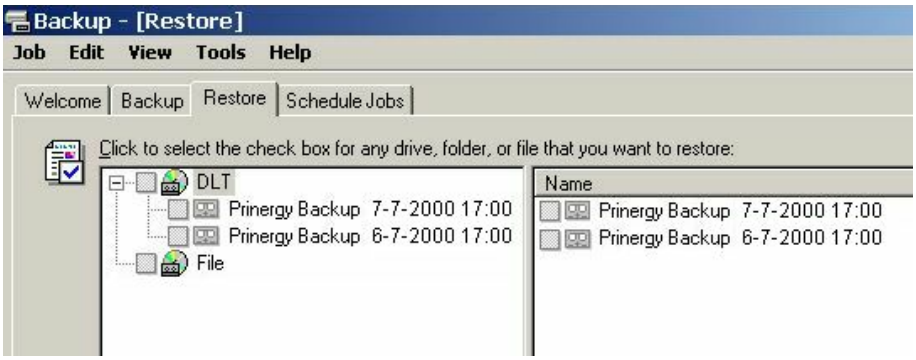


Figure 8-14: Restore Window in NTBackup GUI

7. Double-click on the backup tape with the latest successful backup to retrieve the backup set list from the media. Wait until the load operation is finished. The backup set list on the tape is displayed.

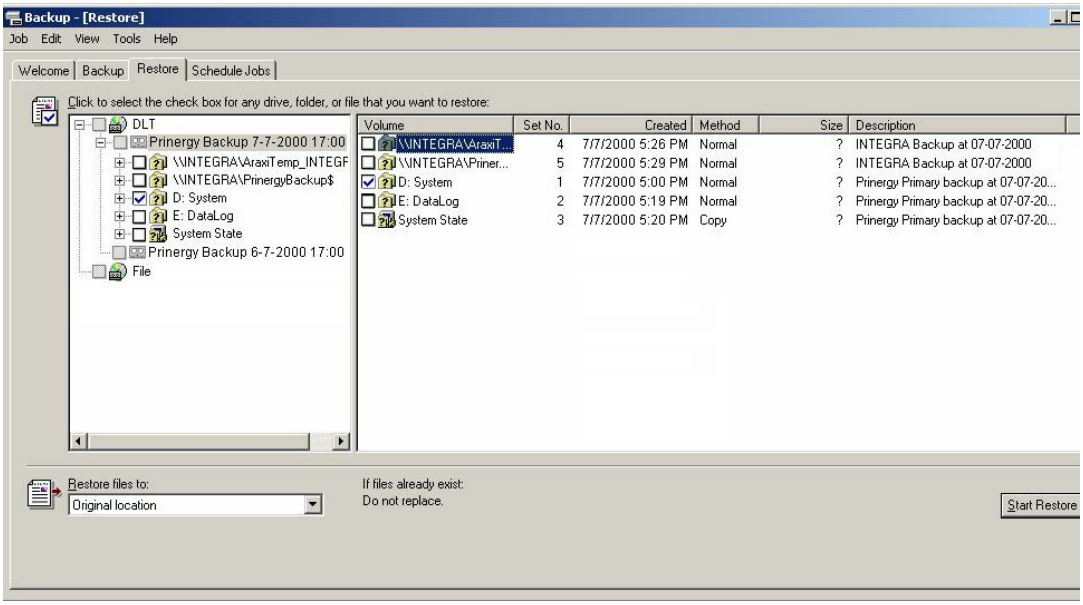


Figure 8-15: Backup set list in the Restore window

8. Double-click on **D: System** to load the catalog of this backup set. If the RSM to be restored is on a secondary server, the correct backup set is <\\secondaryname\PrinergyBackup$> . Browse to D:System\WINNT\system32\ntmsdata. Select the **ntmsdata** folder.

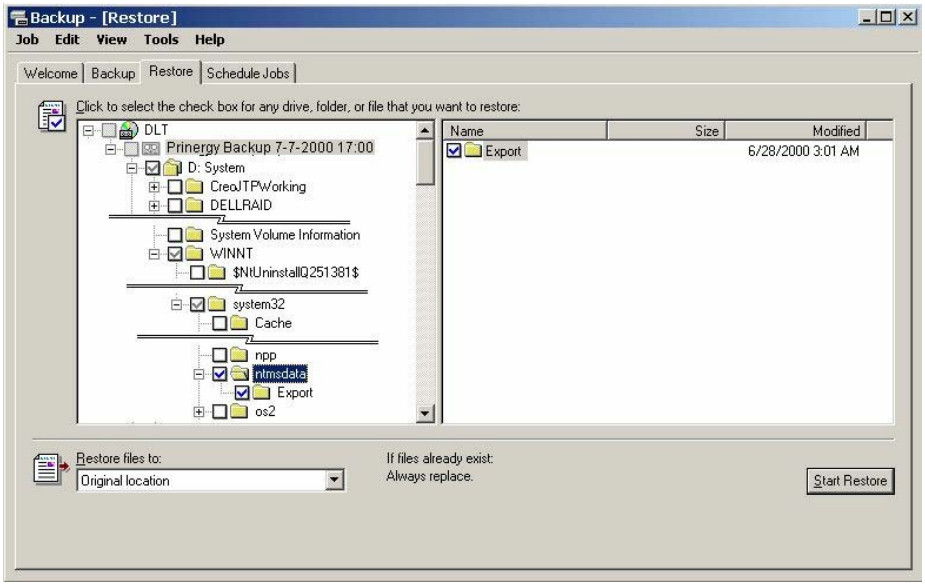


Figure 8-16: Browsing through backup set folders

9. On the **NTBackup** menu, select **Tools**, then select **Options** to open the Options window. Select **Restore** and then select **Always replace the file on my computer**. Select **Apply**. Select **Backup Log**. Select **Detailed** then select **OK** to accept and close the Options window. Select **Start Restore**.

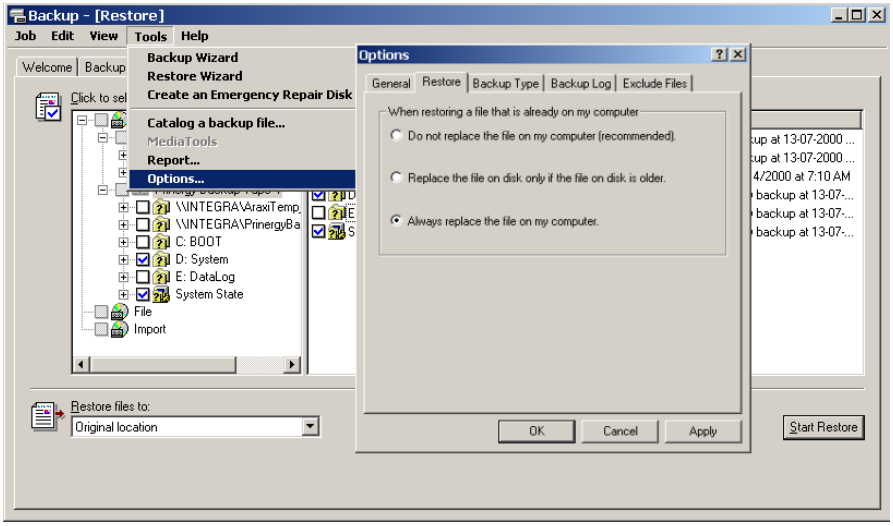


Figure 8-17: Restore Options dialog box

10. In the Confirm Restore dialog box, select **Advanced**. In the Advanced Restore Options dialog box, select **Restore security**, **Restore Removable Storage database**, **Restore junction points** and **Preserve existing volume mount points**. Select **OK**.

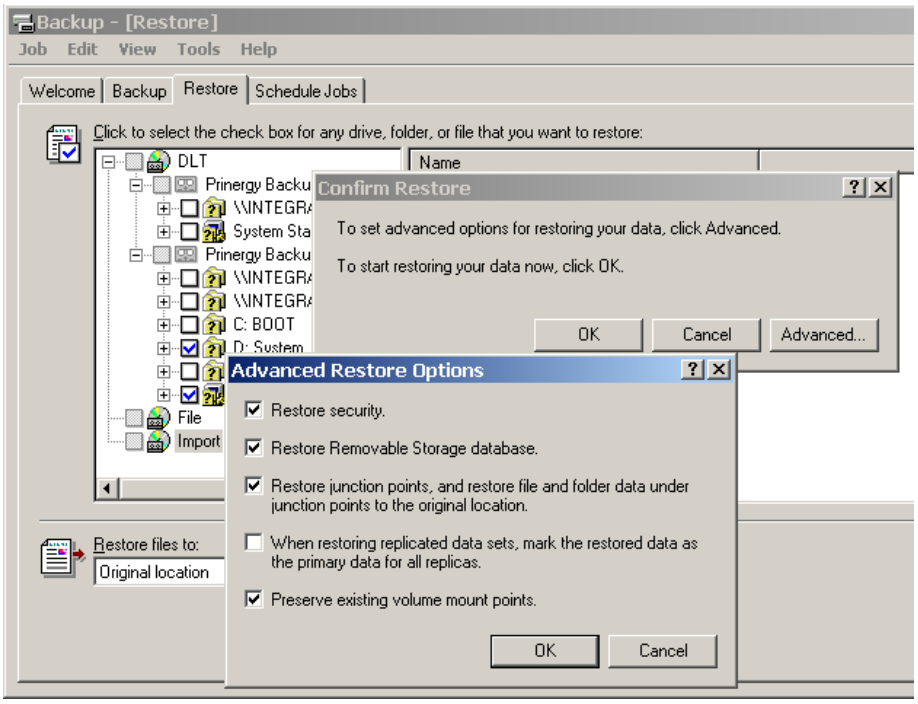


Figure 8-18: Advanced Restore Options dialog box

11. In the Confirm Restore dialog box, select **OK** to start the restore process.
12. After the restore is finished, a Removable Storage dialog box will appear. Select **OK**.
13. In the Restore Progress dialog box, select **Report** to review the restore log. Verify that there are no errors.
14. In the NTBackup Restore Progress dialog box, select **Close**.
15. Restart the computer.
16. When the computer boots up, log in as administrator.

8.1.6 Checking Dell Open Manage Server Agent

Note: This section only applies to Dell servers.

1. Check the Events Viewer system log.
2. If there is an error with the mr2kserv service with the message:
   `The mr2kserv service failed to start due to the following error: The service did not respond to the start or control request in a timely fashion`
   proceed with the procedure. If there is none, skip to the next section.
3. Uninstall the Dell Server Agent. Refer to *Upgrading Dell Server Agent* (72-3650).
4. Install the latest Dell Server Agent. Refer to *Upgrading Dell Server Agent* (72-3650).

5. Reboot the server and login as administrator. Verify that there is no error starting the mr2kserv service in the Events Viewer system log.

8.1.7 Placing the Primary Server Back On-Line

To place the primary server back on-line:

1. Verify that you are logged in as administrator, or as a user with administrator privileges.
2. Verify whether Prinergy is running. If not, start Prinergy in the primary server by right clicking on the server icon in the Prinergy GUI, and selecting **Start Prinergy**.
3. Launch Prinergy DiagView by selecting **Start → Programs → Prinergy → Diagnostics**. Note any errors in the DiagView.
4. Verify that Prinergy starts up and that all the JTPs in the primary server are running. When the primary server is running, start Prinergy in the secondary servers.
5. Test the Prinergy system by processing some jobs.
6. Eject the backup tape used for the recovery (this is the tape containing the last good backup) to preserve it until the server is confirmed to be running properly. Note that this tape has been assigned a different identifier by RSM and thus will not be identified properly by Prinergy Backup. The old instance of the tape should be deallocated from Backup\Prinergy pool and then deleted from the RSM.
7. Verify that the required number of tapes for the media rotation scheme used is allocated to Backup\Prinergy pool. Prepare and allocate tapes as needed (see *3.5 Preparing and Allocating Tapes for Prinergy Backup*) and initiate a backup using the Oracle Backup Manager `Backup Database` command (see *5.1.2 Manual Startup of Prinergy Backup*). After the backup, perform a manual check by running AraxiBackupCheck.cmd from a DOS command prompt (see step 6 in *4.1 Testing Prinergy Backup*). Delete the scheduled backup check from the Windows Task Scheduler.
8. Make sure that there is a scheduled SubmitOracleBackupJob.cmd in the Windows Task Scheduler. If not, run the command `Backup Start` in the Oracle Backup Manager (see *3.3 Configuring Oracle Backup Manager Scheduler.*)

The system is now ready for regular production work.

8.2 Recovering a Secondary Server

When a Prinergy secondary server fails, data recovery from tape may be needed. However, restoration from tape should be the last recourse in trying to get the server back on-line. All hardware problems should be diagnosed and fixed before restoring data from the tape.

WARNING: Before reghosting the systems drive, shut down and power down the server and remove the connection to any external RAID physically connected to the server to be ghosted. This will prevent erroneously selecting the RAID as the Ghost target drive.

8.2.1 Verifying the Secondary Server Backup Status

1. In the Primary server, open the System Backup status window from the UADM toolbar or the Registry Editor and verify whether the last backup was successful. If the last backup was not successful, open the log files in the primary server %AraxiHome%\CreoAraxi\system\log\backup\ folder to find out where the backup failed. If the backup is not useable, check from the other log files which is the latest successful backup.

2. From the registry **HKEY_LOCAL_MACHINE\Software\Creo\Settings\Default\System\Backup\Secondaries\<secondary_server>\Remote**, check the destination folder of the System State backup of the secondary server to be restored (this is usually <AraxiTemp>\AraxiBackup). Verify whether the System State backup was successful. If it was not successful, use the System State backup from the previous day's tape.

8.2.2 Restoring the Operating System of the Secondary Server

Reload the W2K operating system into the secondary server to be recovered by using the ghost image in the recovery drive as described in *Ghosting the Secondary Server System Disk*.

Boot the server using a DOS or Win98 boot diskette. If one is not available, follow the instructions in *Creating the DOS/Win98 Boot Disk* (under *Section 8.1.1*) to create one.

Ghosting the Secondary Server System Disk

Follow the procedure below to ghost the system disk. Refer also to *Windows 2000 Installation Using Ghost Image* (72-3476).

Note: This procedure will overwrite the whole disk. All data on the disk will be lost.

1. Shut down and power down the server.

2. Disconnect all external RAIDs connected to the server.

3. Mark each hard drive with its slot position. Remove all drives except for the recovery drive and the system drive(s) (note that most DELL servers have system drives that are hardware mirrored).

4. Boot the secondary server using the floppy boot diskette. For servers with RAID controller alarms, this may be silenced by going to the RAID controller configuration. The DELL PE 6400 RAID controller will mark removed drives as failed.

5. Once the system is booted into DOS, change the current drive to the Recovery drive (either C: or D:).

6. Run **Ghost6.5.exe**. Press ENTER once to close the opening window.

7. Using the arrow keys, navigate to **Local\Disk\From Image**, and press ENTER.

8. Using the tab and arrow keys, move the cursor to the appropriate W2K ghost image (for example, **blw2k64.gho**) and press ENTER.

9. Select the system drive (usually **Drive 1**) as the destination drive.

   WARNING: In some configurations, Ghost shows the RAID as Drive 1. Verify that the drive selected is the system drive. Verify that the RAID is disconnected before reghosting to prevent accidental overwriting of the RAID.

10. If a Note dialog box appears warning that one of the partitions is larger than 7.875 GB, press ENTER to close the window.

11. In the Destination Drive Details window, change the **New Size** to exactly match the **Old Size** for each partition shown.

12. In the Question dialog box, select **Yes** to proceed with the loading of the image.

13. Loading will take about 10 minutes. When the loading is finished, power down the server.

14. Verify that the recovery drive is marked with its slot position. Remove the recovery drive, such that only the system drive(s) (note that most DELL servers have system drives that are hardware mirrored) is/are installed in the server.

15. Remove the floppy from the drive and restart the server. For servers with RAID controller alarms, this may be silenced by going to the RAID controller configuration. The DELL PE 6400 RAID controller will mark removed drives as failed.

16. Upon boot up, AUTOCHK may run to check partition corruption. Allow AUTOCHK to finish. Proceed to *8.2.3 Finishing Windows 2000 Installation.*

8.2.3 Finishing Windows 2000 Installation

1. Follow the W2K mini-setup wizard. Enter the W2K product ID that is in the W2K certificate that came with your server. Enter the original computer name and the administrator password.

2. Select **not part of a network**. Enter the workgroup name. If server is a member of a domain, this configuration will be restored when the recovery is done.

3. Power down the server.

4. Replace all the hard drives and RAID connections and restart the server. For the DELL PE 6400, the replaced internal disks have to be forced online by doing the following:

   a. When the BIOS scans the PERC Controller, press CTRL-M.

   b. Browse to **Object\Physical Drive**, then use the arrow keys to navigate the cursor to the **Failed Drive**.

   c. Press ENTER to go to the **Physical Drive Object** menu.

   d. Press the ↓ arrow key to select **Force Online**. Press ENTER.

   e. In the warning dialog box, choose **Yes** then press ENTER.

   f. Repeat steps b to e until all the “failed” drives are online.

g. Press ESC until you get to the top menu. Reboot the server.

5. Log in as administrator.

6. Check the drive letter assignments under Disk Management. If they are not the same as before the crash, change them to match the original configuration. This can be done through the Disk Administrator in Computer Management.

8.2.4 Recovering the Secondary Backup Sets

To copy the latest backup sets from tape to the secondary server:

1. In both the primary and the secondary server, log in as administrator.

2. Open NTBackup in the primary server. Select **Restore**. In the left pane, double-click on **Prinergy** and then double-click on the backup tape where the last good backup is (as verified in *8.2.1 Verifying the Secondary Server Backup Status*). Wait for the backup set list to be loaded from the tape.

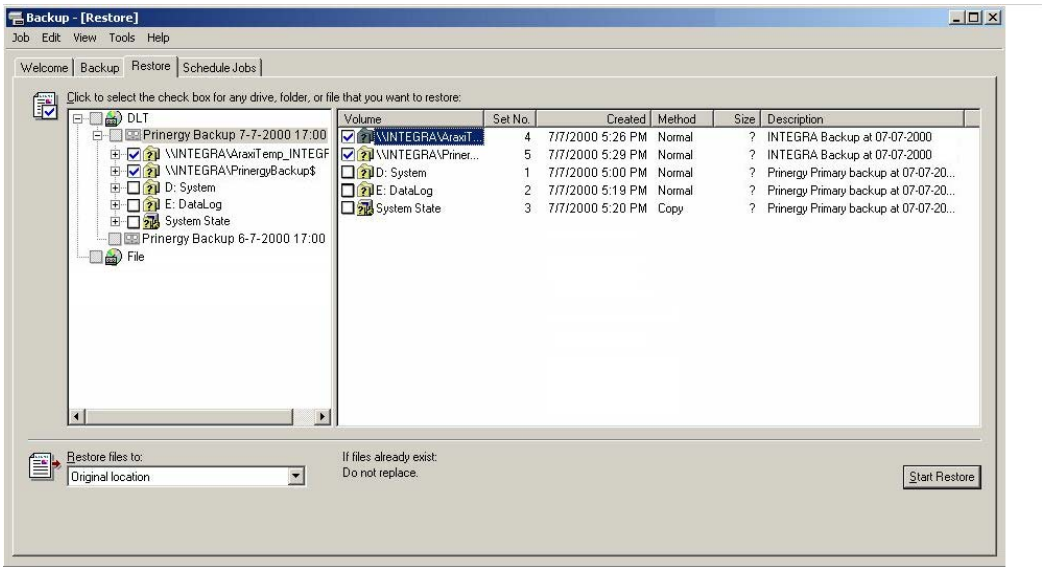


Figure 8-21: Backup sets in the Restore window

3. The dates in the Created column on the right pane of the window should match the date in the System Backup status window or the registry as verified in *8.2.1 Verifying the Secondary Server Backup Status*.

8.2.5 Recovering the System State Backup File

1. Verify whether the System State backup file of the target secondary server is still intact in its local drive (usually <AraxiTemp>\AraxiBackup\SysStateBackup.bkf). If it is, do not restore the backup set of the System State (\\<*ServerName*>\AraxiTemp_<*ServerName*>_E) and skip to *8.2.6 Recovering the System Drive.* If the System State backup file is no longer available, select **\\<*ServerName*>\AraxiTemp_<*ServerName*>_E** to select the System State backup set of the target drive. See Figure 8-21, Backup Sets in the Restore Window.

2. In the **Restore files to** field, choose **Alternate location**. In the **Alternate location** field, type `\\<ServerName>\E$,` or use the Browse button to navigate to the target share.

3. Open the Options window by selecting **Tools** and then **Options.** Select **Restore** and then select **Always replace the file on my computer**. Select **OK**.

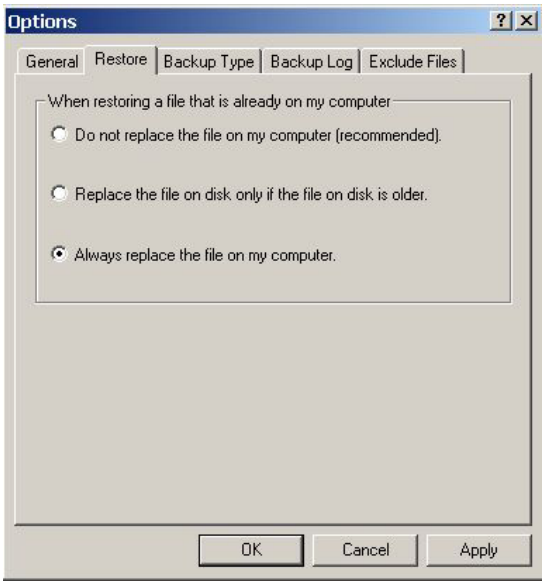


Figure 8-22: Restore options

4. Select **Start Restore**. In the Confirm Restore window, select **OK** to start the restore process. Wait for the restore to complete (a couple of minutes depending on the type of tape and drive used).

5. In the Restore Progress window, select **Report**. This will open the restore log file. Search for the words “error” and “failed”. Verify that there are no errors in the restore process. In the Restore Progress window, select **Close**.

8.2.6 Recovering the System Drive

1. Select **\\<*ServerName*>\PrinergyBackup$** to select the system drive backup set of the target server. See *Figure 8-21, Backup Sets in the Restore Window*.

2. The contents of the backup sets of the target server can be viewed by double-clicking on them (\\<*ServerName*>\AraxiTemp_INTEGRA_E and \\<*ServerName*>\PrinergyBackup$). This should load the on-media catalog to the disk. If this fails, as shown by not being able to browse the contents of the backup set and with

the backup set still showing the ? symbol, open the Options window by selecting **Tools** and then **Options**. Select **General** and uncheck **Use the catalogs on the media to speed up building restore catalogs on disk**. Re-catalog the backup set by double-clicking on it.

Note: There are instances when the update of the on-disk catalog from the on-media catalog fails. Tests were done on different systems with the same tape device, same OS and same backup sets. On one system, the update went fine while on the other, the catalog couldn't be updated. A workaround is to select **NTBackup Tools**, then **Options**, then **General**, and uncheck **Use the catalogs on the media to speed up building restore catalogs on disk**.

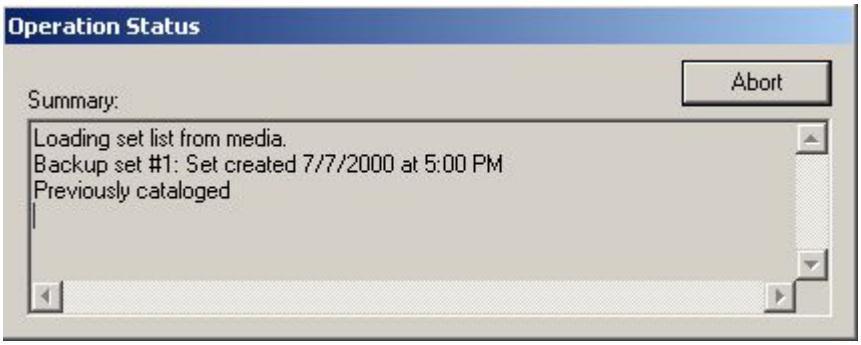


Figure 8-23: Cataloging failure – Operation Status dialog box shows the backup set was previously cataloged.

3. In the **Restore files to** field, choose **Alternate location**. In the **Alternate location** field, enter `\\<ServerName>\D$`, or use the Browse button to navigate to the target share.

4. Open the Options window by selecting **Tools** and then **Options**. Select **Restore** and then **Always replace the file on my computer**. Select **OK**.

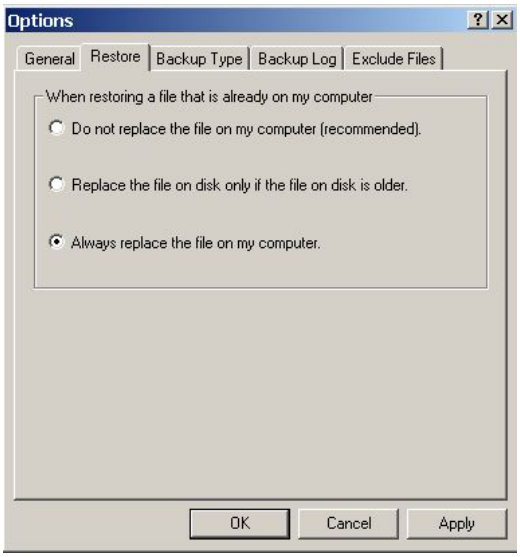


Figure 8-24: Restore options

5. Select **Start Restore**. In the **Confirm Restore** window, select **OK** to start the restore process. Wait for the restore to complete (about half an hour depending on the type of tape and drive used).

6. In the Restore Progress window, select **Report**. This will open the restore log file. Search for the words “error” and “failed”. Verify that there are no errors in the restore process. Ignore the warning “Unable to restore File Attributes Security for file….”. (It has been tested that Prinergy was restored properly even though the File Attributes Security for some files were not restored.) In the Restore Progress window, select **Close**.

7. A window will come up warning that a restart is needed for the target computer. Select **No** to continue working without rebooting.

8. In the target server, open NTBackup. Select **Restore**. Right-click **File** and from the drop down menu and select **Catalog file**. This will open the Backup File Name window.

9. In the **Catalog backup file** field, enter the path to the System State backup file (usually `E:\AraxiBackup\SysStateBackup.bkf`), or use the Browse button to navigate to the backup file.

10. Double-click **File**. Select + beside “Media created….”. Select **System State** to select the System State backup set.

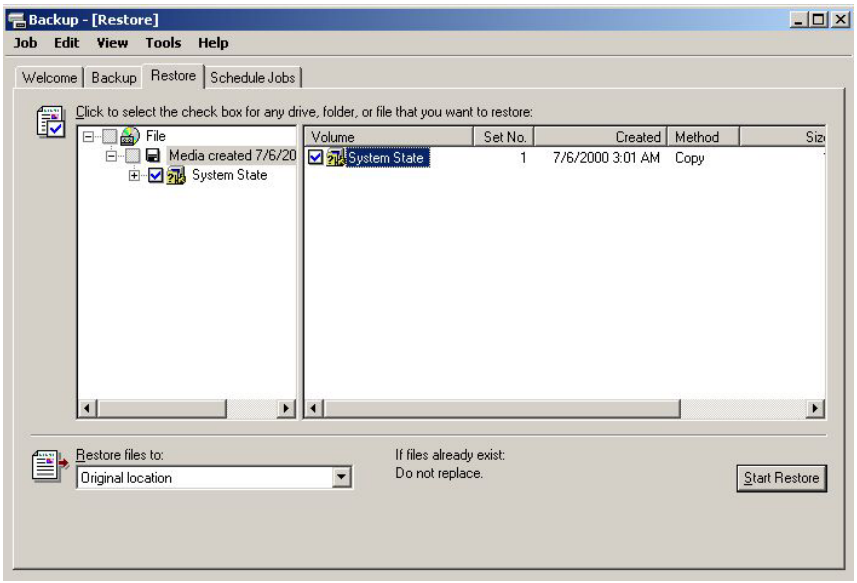


Figure 8-25: Cataloging a backup file

11. In the **Restore files to** field, select **Original location**.

12. Open the Options window by selecting **Tools** and then **Options**. Select **Restore** and then **Always replace the file on my computer**. Select **OK**.

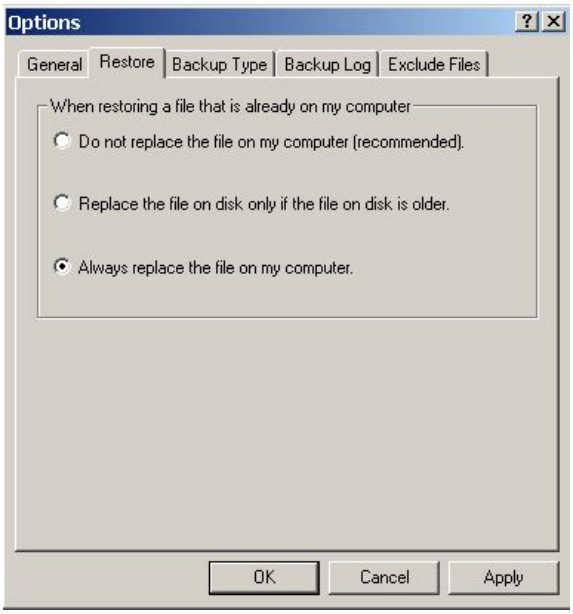


Figure 8-26: Restore options

13. Select **Start Restore**. In the Warning window select **OK** to confirm overwriting of the current System State. In the **Confirm Restore** window, select **Advanced**. Select **Restore Removable Storage database** and clear the checkbox for the other option(s). Select **OK**. In the **Confirm Restore** window, select **OK**. The Enter Backup File Name dialog box opens. Verify that the file shown in the Restore from backup file field is correct. Select **OK** to start the restore process.

14. Wait for the restore to complete (approximately 3 minutes).

15. In the Restore Progress window, select **Report**. This will open the restore log file. Search for the words “error” and “failed”. Verify that there are no errors in the restore process. In the Restore Progress window, select **Close**.

16. A dialog box appears, warning that a restart is needed for the target computer. Select **Yes** to initiate a reboot.

8.2.7 Placing the Secondary Server Back On-Line

To place the secondary server back on-line:

1. After the reboot, log in as administrator.

2. Verify that Prinergy starts and that all Prinergy processes and JTPs in the secondary are running.

3. Start Prinergy DiagView and verify that there are no errors.

4. Run some jobs in the secondary JTPs and verify that they are successful.

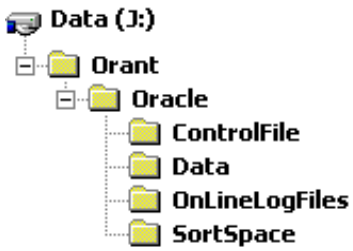
The secondary server is now ready for regular production work.

8.3 Recovering Database from a RAID (DataDrive) Failure

When the RAID or Data Drive with the Oracle Database fails, recovery can be done using the OracleBackupManager utility. All hardware problems should be diagnosed and fixed before attempting to recover the Oracle database.

The Oracle backup files are in the AraxiTemp drive (usually E:\OracleBackup). To recover the database, complete the following steps:

1. Recreate the partitions in the RAID if needed. Refer to *Windows 2000 Installation Using Ghost Image* (72-3476).
2. Open **D:\Ora816\database\initcreo.ora** using notepad.exe. Look for the line `control_files = (E:\Orant\…\ctl1creo.ora, J:\Orant\…\ctl2creo.ora`, to verify the RAID letter (usually J: or G:). Assign the correct drive letter to the RAID.
3. Restore the RAID data using the customer backup, if the RAID backup exists.
4. Stop the following services: OracleServiceCreo and OracleStarter.
5. Verify that the following folder structure is in the RAID. Create them if they are not. Delete the contents of the subfolders if not empty.



6. Open Windows Explorer. Copy the Oracle Control File (rename to `CTL2CREO.ORA`) and Online Log Files from the Data Log drive (usually E:) to the RAID (usually J:).
   - Copy **E:\Orant\Oracle\MirroredControlFile\CTL1CREO.ORA** to **J:\Orant\Oracle\ControlFile\CTL2CREO.ORA**.
   - Copy **E:\Orant\Oracle\MirroredOnLineLogFiles*.*** to **J:\Orant\Oracle\OnLineLogFiles*.***

   Close Windows Explorer.
7. Using Regedit, look in the reg key: **HKLM\System\CurrentControlSet\Services\lanmanserver\Shares** to find the share name for the RAID (usually AraxiVolume_<ServerName>_J).
8. Right-click the key with the share name of the DataDrive and select `Rename`
9. Copy the name (press `Ctrl-C`).
10. In **Computer Management → Shared Folders → Shares**, create a new NT share and select the **DataDrive** volume as the folder to be shared.

11. Paste **DataDrive** share name (press `Ctrl-V`) into the **Share name** field.

12. Start the service OracleStarter. This will also start the OracleCREOTNSListener and OracleServiceCreo.

13. At a DOS prompt, start OracleBackupManager.

14. At the `OracleBackupManager` prompt, run `Restore`.

15. If the recovery is successful, the message `Recovery completed successfully` is displayed.Refer to the following screen capture.

```
Araxi_OracleMgr>restore
Checking        for zipped backup files in E:\BACKUP
Restoring from  E:\BACKUP
Shutting down oracle
Shut down complete
Attempting recovery of database.
Shutting down oracle
Oracle Not Running
Starting oracle
Shutting down oracle
Oracle Not Running
Startup complete
recovery command
run
{
                    allocate channel recovery_channel type DISK;
                    restore database;  recover database;

                    }
exit

Recovery completed Successfully.
Shutting down oracle
Shut down complete
Starting oracle
Shutting down oracle
Oracle Not Running
Startup complete
Shutting down oracle
Shut down complete
Starting database after recovery
Starting oracle
Shutting down oracle
Oracle Not Running
Startup complete
Araxi_OracleMgr>
```

Figure 8-27 Restore command in OracleBackupManager

16. Create a share for Mac Job Volume. The share name is not critical in Prinergy. Prinergy uses the format Jobs on <computer> <drive> (for example, Jobs on galant J drive).

17. Verify that Prinergy starts and that all Prinergy processes and JTPs are running.

18. Start Prinergy DiagView and verify that there are no errors.

19. Test the Prinergy system by opening existing jobs and processing new ones.

20. The Prinergy system is now ready for regular production work.