An OnDemand multi-platform Migration Guide

A complete, step by step guide to migrate OnDemand to its latest release

Upgrade DB2 and TSM in realistic OnDemand scenarios

Migrate OnDemand from one server to another

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An OnDemand multi-platform Migration Guide

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Preface

This redbook provides a step by step guide on how to migrate an existing OnDemand version 2.2.1 implementation to the most current version available at the time of this redbook, which is version 7.1.

We focus on OnDemand implementations that exist on Windows NT, Windows 2000 and AIX operating system platforms, paying particular attention to not only the OnDemand software but also to DB2 and ADSM/TSM which constitute the popular database and storage manager of choice for OnDemand.

Each Part of this redbook is catered towards a particular scenario where each chapter within each part then discusses issues and steps for specific operating system platforms. The three parts that form our base scenarios for this migration guide are:

- Migrating a single OnDemand library/object server
- Migrating an OnDemand object server
- Migrating an OnDemand library/object server from one machine to another

The chapters are designed to discuss chronological steps in performing the migration. This includes backups, upgrades and necessary configuration updates needed for DB2, ADSM/TSM and OnDemand.

It is our intention to provide this redbook as a guide to an audience of OnDemand Administrators, IBM Business Partners and IBM employees who support and implement OnDemand but are unfamiliar with the concepts and steps in migrating and upgrading OnDemand and its related software.

The team that wrote this redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization, San Jose Center.

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Thanks to the following people for their contributions to this project:

Will Carney

International Technical Support Organization, San Jose Center

Special notice

This publication is intended to help customers, business partners and IBMers to migrate an OnDemand Version 2.2.1 implementation to Version 7.1. The information in this publication is not intended as the specification of any programming interfaces that are provided by OnDemand, DB2 or Tivoli Storage Manager. See the PUBLICATIONS section of the IBM Programming Announcement for OnDemand, DB2 and Tivoli Storage Manager for more information about what publications are considered to be product documentation.
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An OnDemand multi-platform Migration Guide
Migrating OnDemand 2.2 to OnDemand 7.1 on a single server

In this part, we provide complete step-by-step instructions on migrating a single OnDemand server, also known as a Library/Object Server, from version 2.2 to version 7.1. As a real-world OnDemand installation is also normally incorporated with DB2 and ADSM/TSM, instructions on how to migrate these components are provided as well.

These instructions are divided by operating system, thus providing specific instructions that can be followed in almost any installation. The single OnDemand server migration will be explained for:

- Microsoft Windows NT, see Chapter 1, “Windows NT” on page 3.
- AIX, see Chapter 3, “AIX” on page 83.
Chapter 1. Windows NT

This chapter discusses the steps necessary in migrating OnDemand installations on Windows NT. This includes:

- Migrating and upgrading OnDemand software to its most current level
- Migrating and upgrading pre-requisite software, namely DB2 and ADSM/TSM for Win N,T including necessary details involving database migrations for both DB2 and ADSM/TSM for Win NT
1.1 Overview

When one thinks of doing a migration, version issues are always central to the topic. There are obviously many scenarios possible within the OnDemand installation environment itself and hence it was necessary that we choose some sort of base installation to work with. As such, this section and the next discusses configuration information and the migration pre-requisites and migration paths to be addressed.

References:

IBM Content Manager OnDemand for Multiplatforms Version 7.1 Release Notes
IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for Windows Servers Version 7.1, GC27-0835-00
IBM DB2 Universal Database for Windows Quick Beginnings Version 7, GC09-2971-00
Tivoli Storage Manager for Windows Quick Start Version 4 Release 1, GC35-0409-00

1.1.1 Introduction

This chapter discusses the following:

▶ Upgrading and migrating DB2 Version 5.2.0.55 to Version 7.1 (Fixpack 2a)
▶ Upgrading and migrating ADSM Server Version 3.1.2.90 to TSM Version 4.1.4.0
▶ Upgrading ADSM Client Version 3.1.0.8 to TSM Client Version 4.1.3.0
▶ Upgrading OnDemand Server and Client Version 2.2.1.10 to Version 7.1.0.4

1.1.2 Environment Configuration Information

The following details the specific server information used in this migration exercise. Note that the installed software should be at the levels indicated in this section to achieve success in following the steps to be discussed.

Server Details

▶ Server name : itsoodnt
▶ Server memory : 589 MB RAM
▶ Server processors : 1

Software installed

▶ Windows NT with Service Pack 6
1.1.3 Pre-requisite Information

We recommend that the following steps have been completed before performing the upgrade process:

1. The hardware and software pre-requisites for OnDemand 7.1, TSM 4.1 and DB2 7.1 have been met
2. The OnDemand installation to be upgraded, including all components involved like TSM and DB2 are functioning properly
3. Have a backup of the Windows NT registry
4. Ensure that OnDemand, ADSM and DB2 are at service levels as indicated in the previous section
5. Change the ADSM Server and OnDemand Library server startup from the Windows NT services from Automatic to Manual. They can be returned to Automatic once all upgrade has been completed

1.1.4 Scenario Information

Having established the environment of the OnDemand implementation to be upgraded, it is essential to discuss the strategy or scenario for performing this upgrade. The chronology is as follows:

1. Prepare, upgrade, and migrate DB2
2. Prepare, upgrade, and migrate ADSM
3. Prepare, upgrade, and migrate OnDemand

1.2 Migrating DB2 Version 5.2 to DB2 Version 7.1

The following details the pre-requisite steps needed before migrating and upgrading DB2.

1.2.1 Preparing DB2 for migration and upgrade

Perform the following steps to do a full offline backup of DB2.

**Backing up DB2**

1. Stop the OnDemand Library Server from the OnDemand Configurator
2. Open an OnDemand command prompt
3. Run the command `arsdb -y pathname` where `pathname` is the path where you would like to store the database backup
4. For additional precautionary measures, you can then backup the resulting file to tape.

*Note: The above can also be performed by using the OnDemand Configurator. Choose ‘Scheduled Tasks’ and configure the ‘OnDemand Database Backup (ARCHIVE)’ task to do a full offline backup in the near future to a target location.*

For further information on doing DB2 backups, refer to the Administration Guide for your DB2 product for information on making a backup copy of a database and to the Command Reference for the syntax of the backup command.
Preparing DB2

This section describes how to prepare existing DB2 Version 5.x databases and instances for migration to a format usable by DB2 Version 7. This has to be repeated for every instance you migrate. Note that all commands discussed in this section are entered from the DB2 Command Window.

To prepare your databases for migration:

1. Ensure that there are no applications using any databases owned by the DB2 instance you are preparing to migrate. To get a list of all applications owned by the instance, enter the `db2 list applications` command. If all applications are disconnected, this command will return the following message:

   SQL1611W No data was returned by the Database System Monitor.
   SQLSTATE=00000

   You can end a session by entering the `db2 terminate` command.

2. Ensure that all databases are cataloged. To view a list of all the cataloged databases in the current instance, enter the following command:

   `db2 list database directory`

3. When all applications are complete and you have backed up your databases, stop all database server processes owned by the DB2 instance by entering the `db2stop` command.

4. Stop the DB2 license daemon by entering the `db2licd -end` command.

5. Stop all command line processor sessions by entering the `db2 terminate` command in each session that was running the command line processor.

6. Stop the DB2 Admin Server by running the `db2admin stop` command

7. Open up ‘Services’ from the Control Panel and ensure that all DB2 associated processes have been stopped. Stop them if they are not.

Next, you should verify that all cataloged databases are ready for migration before installing DB2 Version 7.

Verifying Databases are Ready for Migration

To ensure that you can migrate your databases to the DB2 Version 7 format, you should run the `db2ckmig` command before installing DB2 Version 7.
To run the `db2ckmig` command:

1. Insert your DB2 Version 7 product CD-ROM into the drive
2. Change to the `x:\db2\common` directory where `x:` represents your CD-ROM drive letter
3. Enter the `db2ckmig` command to verify that the databases on your system can be correctly migrated. Use the following syntax:
   
   ```
   x:\db2\common\db2ckmig -e -L logpath -U userid -P password
   ```

4. `logpath` is the path for a logfile for the `db2ckmig` command, `userid` and `password` are the userid and password for DB2
5. Success would mean no log file is created and the following message shown:
   ```
   db2ckmig was successful. Database(s) can be migrated
   ```

6. If any errors are found, the `db2ckmig` command generates a log file and places it in the path and file specified by the `-L` option. If there are errors, refer to the information that follows for suggested corrective actions

### Verifying User Rights

The user ID for installing DB2 (typically odadmin) should already have these rights specified to it from the previous OnDemand installation. Verify that the following advanced rights have been given:

1. Act as part of the operating system
2. Create token object
3. Increase quotas
4. Replace a process level token

### 1.2.2 Installing DB2 Version 7.1

To install your DB2 product, perform the following steps:

Step 1. Log on to Win NT with the OnDemand System Administrator account to perform the installation.

Step 2. Shut down any other programs so that the setup program can update files as required.

Step 3. Insert the CD-ROM into the drive. The auto-run feature automatically starts the setup program. The setup program will determine the system language, and launch the setup program for that language.

Step 4. The DB2 Launchpad opens. Click on the ‘install’ button to start installing.(Figure 1-1)
Step 5. Under the “Select Products’ window that follows, choose the **DB2 Enterprise Edition** and click on ‘Next’. (Figure 1-2)
Step 6. The next screen provides three choices of DB2 installation namely ‘typical’, ‘compact’ and ‘custom’. If you are comfortable with a ‘typical’ installation, go ahead and choose that. We recommend choosing ‘Custom’ and selecting the components we want installed from the list. This can help to save installing unneeded data as well as to save some space on the hard disk drive. Go ahead and choose ‘custom’ and click on ‘Next’. (Figure 1-3)

![Figure 1-3 DB2 - Select Installation Type](image)

Step 7. Refer to Figure 1-4 as to the minimal choice of components for DB2 installation. Click on ‘Next’ to continue. (The summary of components installed is provided at the end of this section.) We recommend using the default path for installing DB2.
Figure 1-4  DB2 - Selecting components

Step 8. If an 'information' window pops up, click on ‘OK’ to continue.(Figure 1-5)

Figure 1-5  DB2 - Information Window

Step 9. In the following window (see Figure 1-6), choose the **defaults** for protocols and start-up. Click on ‘Next’ to continue.
Step 10. The next window (see Figure 1-7), will prompt you for a username and password. Remove the defaulted values and enter the **DB2 install user id and password**. We use the odadmin userid. Click on ‘**Next**’ to continue.
Step 11. The next window provides a summary of chosen components. Click on ‘Next’ to begin the installation. (See Figure 1-8) Click on ‘Finish’ once it is complete.

![Figure 1-8 DB2 - Start Copying files](image)

Step 12. Reboot the machine when prompted. Login to windows as the OnDemand System Administrator and register DB2 Version 7.1.

### 1.2.3 Summary of settings:

**Products to Install:**
- DB2 Enterprise Edition

**Setup Type:**
- CUSTOM

**Components to Install:**
The required DB2 components are:
- Application Development Interfaces
- JDBC Support
- SQLJ Support
- IBM enhanced Java Runtime Environment
- ODBC Support
- OLE DB Support
- Base DB2 UDB Support
Administration and Configuration Tools:
- Client Configuration Assistant
- Client Tools
- Command Center
- Control Center
- Database Tools
- Event Analyzer
- LDAP Directory Exploitation
- Web Administration
- Control Server

Getting Started:
- First Steps
- Sample Databases
- Business Intelligence Tutorial

Control Server:
Log On Username: odadmin
NetBIOS
- Workstation Name: N00DCC81
- Adapter Number: 1
TCP/IP
- Service Name: db2cDB2CTLSV
- Port Number: 50002
IPX/SPX
- Socket number: 879E
Named Pipes

Target Directory:
C:\SQLLIB

Program Folder:
IBM DB2

1.2.4 Patching DB2

Proceed to patch DB2 Version 7.1. At the time of this redbook, we used Fixpack 2a to patch DB2. Refer to the READMEs included in the fixpack in patching DB2.
1.2.5 Migrating databases

Once DB2 is installed and patched, the database needs to be migrated to the Version 7.1 database. Use the following steps:

1. If not already logged on, log on to Win NT using the OnDemand System Administrator ID.

2. Ensure that the databases you want to migrate are cataloged. To retrieve a list of all catalogued databases on your system, enter the `db2 list database directory` command from the DB2 command window.

3. Migrate the database using the `db2 migrate database` command from the DB2 command window. The syntax we used is as follows:
   
   ```
   db2 migrate database ARCHIVE user odadmin using odadmin
   
   where ARCHIVE is the database name, odadmin is the DB2 instance owner user id and its subsequent password after ‘using’.
   ```

   Success should produce the message
   
   `DB20000I The MIGRATE DATABASE command completed successfully`

Update Statistics

When database migration is completed, the old statistics that are used to optimize query performance are retained in the catalogs. However, DB2 Version 7 has statistics that are modified or do not exist in Version 5.x. To take advantage of these statistics, you may want to execute the runstats command on tables, particularly those tables that are critical to the performance of your SQL queries. To update statistics, do the following:

1. Open an OnDemand Command window.

2. Issue the command `arsdb -mv`

   **Note:** The above can also be achieved by running the Scheduled Task ‘System Table Maintenance’ with all options chosen and run in the near future.

Rebind Packages

During database migration, all existing packages are invalidated. After the migration process, each package is rebuilt when it is used for the first time by the Version 7 database manager. For better performance, we recommend that you run the `db2rbind` command to rebuild all packages stored in the database. To rebind do the following:

1. Open a DB2 command window

2. issue the command
   
   ```
   db2rbind archive -l logpath -u odadmin -p odadmin
   ```
where logpath is the path and filename of a log file to contain log information for the rebinding. odadmin and odadmin are the userid and passwords respectively.

Success should produce the output:
rebind done successfully for database 'ARCHIVE'

3. Reboot the system.
4. Do a full offline backup of the database upon reboot.

This concludes DB2 migration and upgrade. You can verify by trying to access the OnDemand system logs. Let us move on to ADSM.

1.3 Migrating ADSM Version 3.1 to TSM version 4.1

Before the ADSM migration and upgrade is performed, it is a good practice to backup the ADSM database.

1.3.1 Backing up the ADSM database

To backup the ADSM database, perform the following:

*Create a File Device Class for ADSM Backup*

1. Launch the ADSM web administration window at http://loopback:1580
2. Enter as the ADSM administrator.
3. Go to Object View>Server Storage>Device Classes>File Device Class.
4. From the pull down menu choose ‘Define Device Class’.
5. Enter the Device Class Name ‘adsmdbbkp’ (or the name of your liking).
6. Leave the Mount Limit and Maximum Capacity as the default.
7. Enter ‘g:\adsmdbbkp’ or a directory of your choosing to associate this file device class. (This directory has to be created beforehand from Windows.)
8. Click on ‘Finish’ to create the device class.

**Tip: In the event that backup does not occur, change the ‘Mount Limit’ to 256.**

*The ADSM database backup command*

Once the File Device Class has been created, the ADSM database can now be backed up:

1. Launch an ADSM Admin Command Line window.
2. Enter as the administrator ID.
3. Issue the command q dev to confirm that the file device class was created.
4. Issue the command `backup db type=full devclass=adsmdbbkp` where devclass is the device class name you chose from the previous section.
5. Issue the command `q process` to determine if the backup command has completed (no processes will show completion).
6. This concludes backup of the ADSM database.
7. The resultant backup files created in ‘g:\adsmdbbkp’ can be backed up to tape through normal tape backup procedures for further safe keeping.

**Backing up ADSM Configuration files**

Along with the ADSM database, there are critical configuration files that need to be backed up. The combination of these will assist in restoring the ADSM database if the need arises. The following are the files that need to be backed up:

1. `dsmserv.dsk`
2. `dsmserv.opt`
3. `volhist.out`
4. `devcnfg.out`
5. `dsm.opt` (if this has been customized)
6. any written scripts

The above files can be backed up to a temporary directory and/or to tape for safe keeping.

For additional precaution, it would be good to keep the device configuration setup:

1. Open an ADSM command line window.
2. Enter as the ADSM administrator.
3. issue the command `q dev f=d > c:\temp\devinfo.txt`
4. followed by `q libr f=d >> c:\temp\devinfo.txt`
5. and `q drive f=d >> c:\temp\devinfo.txt`

This will save the device configuration file information in the `devinfo.txt` file

### 1.3.2 Installing TSM Version 4.1

Before TSM Version 4.1 can be installed, it is essential that ADSM Version 3.1 is first uninstalled. If this is not carried out, there will be unwanted complications in using TSM later.

**Uninstalling ADSM Version 3.1**
The steps for uninstalling are as follows:

1. If not already done, stop the OnDemand Library Server from the OnDemand Configurator.
2. Open up an ADSM Admin Command Line and enter as the administrator. Type the command *Halt* to halt the ADSM Server.

3. Verify from Windows NT that all other ADSM related services have also been stopped. Stop them if they are not.

4. Open up Windows Explorer and write down the path where the current ADSM installation resides. It should be defaulted to C:\Program Files\IBM\ADSM. Keep a note of this as it will be needed for the TSM installation.

5. Uninstall ADSM from the Windows Add/Remove Programs provided with Windows NT. ADSM may not be registered here. If it is not registered, then uninstall ADSM from the Start menu. Remove ALL components.

6. Reboot the system.

7. After reboot, log in to Win NT as the OnDemand Administrator ID.

**Installing TSM Version 4.1**

Once the machine has been rebooted, we can begin TSM installation:

1. Place the TSM installation CDROM into the CDROM drive.

2. If no auto-launch is executed, browse and execute the *setup.exe*.

3. The *Tivoli Storage Manager Server - Install Shield Wizard* should be launched. Click on *Next* to continue. (Figure 1-9)

   ![Figure 1-9 TSM - Install Shield](image)

4. The next window questions you on the destination folder. This is defaulted to C:\Program Files\Tivoli\TSM. **Change this to the path noted down earlier.** This is an important step and is shown in the next image. (see Figure 1-10)
5. The next screen (Figure 1-11) presents an option of either a ‘Complete’ or ‘Custom’ install. Either will be fine here, choose ‘Custom’, ‘Next’ to continue.
6. Choosing ‘Custom’ will have the minimal choices picked for you so you can click on ‘Next’ to continue. (Figure 1-12)

![Figure 1-12 TSM - Custom Setup](image)

7. Click on ‘Install’ to begin the installation. (Figure 1-13)

![Figure 1-13 TSM - Ready to Install the Program](image)

8. Reboot the system upon completing the installation.
9. Log in to Win NT as the OnDemand Administrator
Re-initializing the ADSM/TSM Server
Upon entering Win NT, The TSM software is configured NOT to start up automatically as was the case for ADSM. TSM is now installed and needs to be re-initialized to use the definitions of ADSM. Conduct the following steps to achieve this purpose:

1. Open up an MS-DOS command prompt and change to the TSM server directory. This should be at C:\Program Files\IBM\ADSM\server.
2. Execute the command `dsmserv update`. This command will update registry to synchronize with the new TSM installation. A successful update will yield:
   
   registry key updated TSM Server1

3. The database now needs to be upgraded to be usable by TSM. Issue the command `dsmserv upgradedb`. This will upgrade the ADSM database for use by TSM and will immediately start the TSM Server.

4. There is a need to update the OnDemand Library server from the OnDemand Configurator to reflect that the dependency service is no longer ADSM Server but is now TSM Server1. This will be done in the OnDemand portion of this chapter.

1.3.3 Patching TSM 4.1.0.0 To TSM 4.1.4.0

After installation of TSM version 4.1.4.0, License files will no longer be available.

Licensing
Licenses must be reinstalled by doing one of the following:

- Do a custom install of the license feature using the original GA media.

or

- Save license files to a temporary location. The license files consist of:
  - files with a filetype of .lic
  - adsmlicn.dll

- Copy the license files as described above back to the server directory after installation of the server
Uninstalling TSM Version 4.1.0.0

Patching TSM server version 4.1.0.0 to TSM server version 4.1.4.0 requires that TSM version 4.1.0.0 is uninstalled first. This is to prevent unwanted registry changes that can adversely affect TSM operation.

1. Make note of the TSM installation directory. It should be C:\Program Files\IBM\ADSM.
2. After stopping the server use the Add/Remove programs. Select the Tivoli Storage Manager Server and then click on ‘Add/Remove...’.(Figure 1-14)

3. On the TSM Install Shield Welcome Screen, click on ‘Next’ to continue.(Figure 1-15)
4. Remove the complete product by selecting the ‘Remove’ radio button and clicking on ‘Next’.

5. Choose ‘Remove’ and allow for TSM to be uninstalled. (See Figure 1-17)

Reboot the server once completed.
Installing TSM Version 4.1.4.0

Upon reboot and entering Win NT with the OnDemand Administrator ID, we can begin the installation of TSM Server Version 4.1.4.0 (The TSM Client Version 4.1.3.0 will also be installed together). The steps are as follows:

1. Execute the patch .exe file, in this case it is the IP22350_Server.exe.
2. Choose a temporary directory for the installation files.
3. The install shield should now be launched. Click on ‘Next’ until you reach the ‘Destination Folder’ window as in the next image.
4. It is again important to ensure that the correct directory is chosen here. The directory, as shown (see Figure 1-18), should be C:\Program Files\IBM\ADSM.

Refer to the READMES provided with the patch for further information.
5. Choose the ‘Complete’ Setup Type in the next window and Click on ‘Next’. (Figure 1-19)

6. Click on ‘Install’ to begin the installation.(Figure 1-20)
7. Click on ‘Finish’ upon completion. (Figure 1-21)

8. Click on ‘Yes’ to reboot the system. Reboot anyways if not posed with a question. (Figure 1-22)
9. Enter Win NT using the OnDemand System Administrator ID.
10. The TSM Server should now start up automatically. Start it if it is not. Verify the TSM Server startup and installation by opening the TSM Admin Command Line and entering as administrator. A successful login indicates the server is up. Take note of the Server and Client versions that can be seen from this command line. They should be TSM Server 4.1.4.0 and TSM Client 4.1.3.0 respectively.

1.4 Migrating OnDemand version 2.2.1 to version 7.1

At this point, both DB2 and ADSM have been upgraded to the most current levels, namely DB2 Version 7.1 (Fixpack 2a) and TSM Version 4.1.4.0 (Version 4.1.3.0 for client) respectively. The environment is set to upgrade OnDemand to its latest level as well. In this section, we discuss preparing OnDemand for upgrade, installing OnDemand Version 7.1, applying OnDemand updates as well as upgrading OnDemand system tables to work with the new OnDemand version.

1.4.1 Preparing OnDemand for upgrade

To prepare OnDemand for the upgrade, you need to perform the following steps.

**Full Offline Backup of database**
Perform a full off-line backup of the database and store the files in a safe location. refer to, “Backing up DB2” on page 6 on the procedure for this.

If used, backup the arslog.bat and arsprt.bat files as well (to a different directory or to tape). They can be found in the \bin sub-directory of the OnDemand program directory, e.g., C:\Program Files\IBM\OnDemand for WinNT\bin.
Uninstalling OnDemand Version 2.2.1.10
Upgrading OnDemand to version 7.1 requires that previous versions be uninstalled first. Uninstall both the server and client code. The steps are as follows:

1. Open up the control panel and use the add/remove programs icon to uninstall both the OnDemand server and client codes.
2. Once completed, reboot the machine. (The message indicates there is no need to reboot but do so anyways)
3. Enter Win NT with the OnDemand System Administrator ID.

1.4.2 Installing OnDemand Server Version 7.1.0.0
To install the OnDemand software, follow these steps:

1. Log on with the OnDemand system administrator account if not already done so.
2. Insert the OnDemand for Windows Servers CD-ROM into the CD-ROM drive. The setup program should automatically start after you load the CD-ROM into the drive. If not, execute the ‘setup.exe’ in the windows server sub directory.
3. Read the Welcome screen and then click ‘Next’. (Figure 1-23)

4. The ‘Choose Destination Location’ window appears. We recommend that you accept the default directory name. Click ‘Next’ to continue. (Figure 1-24).
5. The Select Program Folder window appears. We recommend that you accept the default folder name. Click ‘Next’. (Figure 1-25)

6. The ‘Start Copying Files’ window appears. Click ‘Next’ to continue. (Figure 1-26)
7. The progress window appears. When the process completes, the Setup Complete window appears.
8. Click Finish to complete the installation.

1.4.3 Installing OnDemand Client Version 7.1.0.0

To install the OnDemand Client, perform the following steps.
1. Execute the `setup.exe` from the client sub directory of the OnDemand CD.
2. The ‘IBM OnDemand Windows Client’ install shield should appear. Click on ‘Next’ to continue. (Figure 1-27)
3. The ‘OnDemand32 Setup Type and Working Directory’ window is shown next. We recommend that you choose the default directory and choose ‘custom’ install. Click on ‘Next’ to continue. (Figure 1-28)

4. As in the subsequent figure (see Figure 1-29), the English ‘Client’ would have been chosen automatically. **Choose the English ‘Administrator’ as well.** The ‘Client Compact’, ‘Administrator Compact’ and ‘Outline Fonts’ can be left as unchosen. Click on ‘Next’ to continue.
5. Choose the default program folder in the 'Select Program Folder' screen. Click on 'Next' to continue. (Figure 1-30)

6. Acknowledge the choices made on the 'Start Copying Files' screen. Once satisfied click on 'Next' to begin installation. (Figure 1-31)
1.4.4  Patching OnDemand to Version 7.1.0.4

You can patch OnDemand straight away and fairly intuitively. Follow the READMEs provided with the OnDemand patches. Simply:

1. Execute the ODWinNT.exe file to upgrade OnDemand to Version 7.1.0.4. Accept defaults and allow for installation to occur. There is no need to reboot the machine after installation.

2. Execute the ODwin32.zip file and choose the winzip wizard to install the contents directly from winzip. Accept defaults and allow for installation to occur. There is no need to reboot the machine after installation.

1.4.5  Upgrading the OnDemand System Tables

Once OnDemand has been upgraded to Version 7.1, the OnDemand tables also need to be upgraded in order to allow for it to be used by OnDemand version 7.1. The process is as follows:

1. Open up an MS-DOS command prompt

2. Create a temporary directory. Create the directory on a drive that has at least 100 MB of free space. (The exact amount of temporary space required during the migration will depend on the number of user-defined application groups
and folders and the number of annotations that you have stored in the
system.)
3. Make the temporary directory the current directory.
4. Export the OnDemand system tables using the arsdb command from this
temporary directory. The syntax is as follows:

   “c:\program files\IBM\OnDemand for Windows NT\bin\arsdb” -lxv
5. Continue by dropping the old tables by issuing the command:

   “c:\program files\IBM\OnDemand for Windows NT\bin\arsdb” -dv

Type ‘y’ and enter when asked if you are sure tables are to be dropped.
6. Next, create the new tables and indexes with:

   “c:\program files\IBM\OnDemand for Windows NT\bin\arsdb” -rtv
7. Import the old table definitions back into the tables by executing:

   “c:\program files\IBM\OnDemand for Windows NT\bin\arsdb” -ilv
8. Run maintenance on the tables with:

   “c:\program files\IBM\OnDemand for Windows NT\bin\arsdb” -m -v
9. Reboot the machine

1.4.6 Setting up TSM Server1 for the OnDemand Library Server

The upgrade and migration process is almost complete. The last steps are to
correct some pointers within OnDemand due to the upgrade from ADSM to TSM
resulting in the ADSM Server to no longer exist and is instead replaced by TSM
Server1. The steps are as follows:
1. Logon to Win NT using the OnDemand System Administrator id.
2. Launch the OnDemand Configurator.
3. Ensure the OnDemand Library server is down. Confirm by checking under
   services. Shut it down if it is up.
4. Expand the server, choose instance and right click on ‘ARCHIVE’ in the right
   pane window. Choose the ‘Storage’ tab and click on ‘TSM options’ like so
   (Figure 1-32):
5. At this point, click on 'OK' for both pop-up windows.
6. The window as in the next image (see Figure 1-33) shall be shown. We want the DB2 Exit Program to be updated so go ahead and click on ‘OK’.

7. At this point there is a need to reset the ‘Required Services’ of the OnDemand Library Server. Click on services in the OnDemand Configurator.
8. Choose the OnDemand Library Server in the right window pane, right click and choose properties. The window as in the next image (see Figure 1-34) should be shown. Note that ‘TSM Server1’ should be in the list in the lower table and unselected. Hold down the ‘Shift’ key and select it as well. Click on ‘Apply’ and ‘OK’.

![OnDemand Library Server Properties](image)

*Figure 1-34  OnDemand - Library Server Properties*

This concludes the OnDemand migration and upgrade process. With all components successfully migrated and upgraded, the installation can now be verified. Start DB2, TSM and OnDemand in that order to verify that all components are functioning normally.
Chapter 2. Windows 2000

This chapter provides step by step instructions on how to perform a complete OnDemand migration from version 2.2 to version 7.1, running on the Windows 2000 platform.

The migration scenario in this chapter is based on OnDemand running in a single library/object server configuration and includes instructions on how to migrate DB2 and ADSM/TSM to their most recent releases.

This chapter will describe a two-stage migration, allowing for customers who are at different software levels to follow the steps that apply to their actual scenarios.

This chapter discusses the following procedures:
- DB2 version 5.2 to version 6.1 migration tasks
- DB2 version 6.1 to version 7.1 migration tasks
- ADSM v3.1 to TSM v3.7 migration tasks
- TSM v3.7 to TSM v4.1 migration tasks
- OnDemand version 2.2.1 to version 7.1 migration tasks
2.1 Migrating OnDemand on Windows 2000 Overview

Migrating OnDemand on Windows 2000 is very similar to the migration on Windows NT. Unless you are using some very specific operating system capabilities like Disk Quotas, the only differences might be graphic-interface design related.

A real-world OnDemand scenario includes not only the OnDemand software, but also the database manager (in our case, DB2), and the storage manager (ADSM/TSM). In order to successfully migrate a complete OnDemand server, the ability to correctly migrate both DB2 and ADSM/TSM is required. Because of that, in this chapter we will first concentrate on the DB2 and ADSM/TSM migration, and then, only after they have been correctly upgraded, will we proceed to the actual OnDemand migration.

In order to provide a set of instructions that applies to the broadest range of installations, the migration described in this chapter will be divided in two stages (see Figure 2-1). Starting from an old installation, which will be called the Initial Scenario, we will migrate both DB2 and ADSM up to a more updated configuration, the Intermediate Scenario. From this second stage, we will then migrate DB2 and TSM again, but this time, we will be migrating OnDemand as well, in order to arrive to the most updated Target Scenario.

![Figure 2-1 Migration Stages](image)

For those installations that are already at (or next to) the Intermediate Scenario, this chapter can then be followed from that point, avoiding the instructions related to the older configurations.
2.1.1 OnDemand on Windows 2000 Migration Roadmap

As the reader will see from the previous description, the migration described in this chapter will contain many steps. In order to avoid getting lost in the many sub-parts of this procedure, we developed a roadmap that schematically explains when and what is to be done.

The initial step for the migration is to define what is the initial configuration. For this migration, we are considering the Initial Scenario as composed by:

- DB2 UDB version 5.2 FixPack 15.
- Adstar Distributed Storage Manager (ADSM) Server version 3.1.2.90.
- ADSM Client version 3.1.0.8.
- Content Manager OnDemand version 2.2.1.10

The complete description of the Initial Scenario can be found in the next section, 2.2, "Initial Scenario" on page 43.

After the Initial Scenario has been defined, we will begin the actual migration. It is almost a standard that before attempting any migration a full backup must be taken. Thus, that will be the first step in 2.3, "Migrating to the Intermediate Scenario" on page 46. Full backup of both DB2 and TSM will be discussed, as well as an OnDemand backup.

As soon as our backup is done, we can now begin the migration. The first step will be to upgrade DB2 v5.2 to v6.1. Migration considerations will be exposed, as well as a step by step guide to perform the upgrade. After migrating, we will apply DB2 v6.1 FixPack 9.

The other major component of the OnDemand system, ADSM, must also be upgraded. In this case, however, upgrading does not only involve a Release Level change, but a product denomination change: ADSM will now become TSM. Besides nomenclature, this change carries other consequences, like a change in the directory structure. We will provide a fully detailed guide in order to make the transition from ADSM to TSM a lot easier. After upgrading to TSM 3.7, we will apply the TSM 3.7.4 FixPack.

In order to bring the whole system to a productive state in the intermediate stage, we will have to address certain changes in the OnDemand configuration, which are required in order to get everything to work smoothly.

We will now be at the Intermediate Scenario, which consists of:

- Tivoli Storage Manager (TSM) Server version 3.7.4.0
- TSM Client version 3.7.2.0
- Content Manager OnDemand version 2.2.1.10
From this point, we can now begin our final migration into the Target Scenario. As this chapter is designed in order to provide instructions for installations that are either at the Initial or the Intermediate Scenarios, the first step in 2.4, “Migrating to the Target Scenario” on page 67, will be a full backup.

Once the backup is done, we will describe the steps required to migrate DB2 6.1 up to 7.1. This migration will be simpler than the preceding one, because no database migration really occurs.

We will then proceed to the TSM migration, from version 3.7 to version 4.1. As it happens with DB2, this migration does not involve directory structure changes, so less steps are required.

Once DB2 and TSM are at their highest levels, we will proceed to the OnDemand migration, from version 2.2 up to version 7.1. We will then apply the 7.1.0.4 OnDemand FixPack.

The outcome of the steps described in this chapter will be, finally, our Target Scenario, which consists of:

- DB2 UDB version 7.1.
- TSM Server version 4.1
- TSM Client version 4.1
- Content Manager OnDemand version 7.1.0.4

The diagrams in Figure 2-2 on page 41, continued on Figure 2-3 on page 42, can be used as a graphical representation of this roadmap.
Figure 2-2  Migration Roadmap

Initial Scenario

- OnDemand 2.2.1.10
- DB2 5.2 FixPack 15
- ADSM 3.1.2.90

Full Backup

- Cache Structure
- Registry Keys
- Full Offline backup of ARCHIVE database
- Configuration files
- Full Database backup
- Pre-Migration checks
- DB2 6.1 Installation
- ARCHIVE database migration
- FixPack 9 upgrade
- Package rebind

Migration Steps

- Configuration backup
- ADSM Deinstallation
- ADSM registry information removal
- TSM 3.7 Installation
- Server restoration
- FixPack 3.7.4 upgrade
- OnDemand configuration updates

Intermediate Scenario

- OnDemand 2.2.1.10
- DB2 6.1 FixPack 9
- TSM 3.7.4
## Figure 2-3  Migration Roadmap (Continued)

<table>
<thead>
<tr>
<th>Intermediate Scenario</th>
<th>OnDemand 2.2.1.10</th>
<th>DB2 6.1 FixPack 9</th>
<th>TSM 3.7.4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full Backup</strong></td>
<td>Cache Structure</td>
<td>Full Offline backup of ARCHIVE database</td>
<td>Configuration files</td>
</tr>
<tr>
<td></td>
<td>Registry Keys</td>
<td></td>
<td>Full Database backup</td>
</tr>
<tr>
<td><strong>Migration Steps</strong></td>
<td></td>
<td></td>
<td>DB2 7.1 Installation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Package rebinding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TSM 4.1 Installation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Database upgrade</td>
</tr>
<tr>
<td><strong>Target Scenario</strong></td>
<td>OnDemand 7.1.0.4</td>
<td>DB2 7.1</td>
<td>TSM 4.1.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.2 Initial Scenario

In this section we will extensively describe the Initial Scenario, including hardware and software configurations.

2.2.1 Platform Description

The procedures described in this chapter were tested in the following platform:

- IBM PC300 GL Personal Computer, with a 450Mhz Pentium II Processor, 256MB of RAM and a 12GB Hard Disk Drive

2.2.2 OnDemand Environment Description

Our OnDemand environment consists of the following.

**Software installation**

The OnDemand related software was laid out as follows:

- DB2 UDB 5.2 FixPack 15 was installed on the c:\SQLLIB directory.
- ADSM 3.1.2.90 was installed on c:\Program Files\IBM\ADSM, with both Administrative and Backup clients on the same directory.
- OnDemand 2.2.1.10 was installed on c:\Program Files\IBM\OnDemand for WinNT

**Administrative User ID**

Prior to installing any software, an OnDemand administrator user ID was created on the system. Named odadmin, this Windows 2000 account belonged to the local Administrators group, and had the “act as part of the operating system” and “logon as a service” user rights. Instructions for correctly creating this user can be found on the IBM EDMSuite OnDemand for Windows NT Installation and Configuration Guide Version 2.2 manual

**ADSM Storage configuration**

The ADSM Storage was configured as follows:

**Database volumes**

The ADSM Database volumes were located in g:\tsmdb\db1.dsm Size: 220 MB

**Recovery Log volumes**

The ADSM Recovery Log volumes were located in
Storage configuration

Client Node: ODNODE
Policy Domain: Standard
  - Backup Retention: 0
  - Archive Retention: 0
Active Policy Set: Standard
Management Class: Standard
  - Space Management Technique: None
  - Auto Migrate on non-use: 0
  - Migration Requires Backup: Yes

Note: The above was set to Yes by default. In our Scenario, no migration was configured inside TSM.

Migration Destination: Archivepool
Archive Copy Group: Standard
  - Retain version: 5

Note: The value of Retain Version is normally set to 365 days or more. We used 5 days for test purposes only.

  - Copy Serialization: SHRSTATIC
  - Copy Destination: Archivepool

Storage Pool: Archive Pool (Disk Storage Pool)
  - Type: Primary
  - Device Class Name: Disk
  - Access: ReadWrite
  - Cache Migrated Files: No

Storage Pool Volumes:
The volumes for the Archive Pool
  - i:\tsmstorage\vol1.dsm (1 GB)

OnDemand configuration
Our OnDemand configuration was configured as follows:
Server Definition
- Server Name: od2k
- Host Name: 10.1.1.3
- Type: Local Windows NT Server

Instance Definition
- Name: ARCHIVE
- Type: Library and Object Server
- Number of DB Servers: 4
- Communications Protocol: TCP/IP
- Port: 0 (Defaults to 1445)
- Language: English
- Code Page: 1252
- Temporary File Path: c:\arsfiles\arstmp
- Print File Path: c:\arsfiles\arstmp
- Data Directories: c:\arsfiles\arsload

Database Options
- OD Database Name: ARCHIVE
- OD Instance Owner: odadmin
- DB Engine: DB2
- Use TSM for DB2 Files: No
- Database Location: d:
- Primary Log path: e:\arsdb\primarylog
- Archive Log path: e:\arsdb\archivelog
- Log File size: 1000 x 4kb pages
- Number of Primary Log files: 10
- Database File Systems: j:\arsdbfs (Type SMS)

Storage Configuration
- TSM Program Files: c:\progra~1\ibm\adsm\baclient
- TSM Options file: c:\progra~1\ibm\adsm\baclient\dsm.opt

Cache Filesystems
- k:\arscache1
- l:\arscache2
2.3 Migrating to the Intermediate Scenario

In this section we will cover all the necessary steps for migrating both DB2 and ADSM, to the Intermediate Scenario. OnDemand will not be migrated, although some configuration parameters must be changed. Our goal is to get a near-to-standard scenario, from which will perform the final migration up to our Target Scenario.

Important: If OnDemand is correctly set-up, an OnDemand administrative user account was created in Windows 2000. Through all the steps described in this chapter, we assume that we are logged into the system as this user account.

2.3.1 Initial procedures

Before beginning any migration, we strongly recommend making a full backup of the entire OnDemand system. This includes both DB2 and ADSM, as well as OnDemand’s configuration files and cache storage.

Stopping OnDemand

Before backing up our system, we want to make sure that there is no activity on the OnDemand software. In order to do so, we’ll stop all OnDemand services.

1. Log on to the server as odadmin
2. Make sure no users are accessing the OnDemand server
3. Open the Services Console, using Start Menu -> Programs -> Administrative Tools -> Services
4. Right click on OnDemand Load Data, then click on Stop. Use Figure 2-4 as a reference.
5. Right click on **OnDemand MVSD Server** (if it is running), then click **Stop**

6. Right click on **OnDemand Scheduler**, then click **Stop**

7. Finally, right click on **OnDemand LibSrvr**, and click **Stop**

Now, what we want to do is to set services to start manually, in order to have control on what services will be running during the migration. You can use Figure 2-5 as a reference.

8. Open the services console, right click on **OnDemand LibSrvr**.

9. Click on **Properties**. A dialog box will appear, containing the properties for the specified service.

10. Open the **Start-up Type** pull-down menu, then select **Manual**.

11. Click on **Ok** to close the window.
The above procedure must be repeated for all OnDemand related services. Those services are OnDemand services, DB2 services, and ADSM services.

Table 2-1 contains a list of all the OnDemand related services present in our scenario:

<table>
<thead>
<tr>
<th>OnDemand services</th>
<th>DB2 services</th>
<th>ADSM services</th>
</tr>
</thead>
<tbody>
<tr>
<td>OnDemand LibSrvr</td>
<td>DB2 - DB2</td>
<td>ADSM Server</td>
</tr>
<tr>
<td>OnDemand Scheduler</td>
<td>DB2 - DB2AS00</td>
<td>ADSM Scheduler</td>
</tr>
<tr>
<td>OnDemand Load Data</td>
<td>DB2 Governor</td>
<td>ADSM Remote Client Acceptor</td>
</tr>
<tr>
<td>OnDemand MVSD Server</td>
<td>DB2 JDBC Applet Server</td>
<td>ADSM Client Acceptor</td>
</tr>
<tr>
<td></td>
<td>DB2 Security Server</td>
<td></td>
</tr>
</tbody>
</table>

**Backing up DB2**

After all OnDemand services are stopped, there are no more changes in the database. We can now do a full off-line backup of the database.
12. Open an OnDemand Command Window, using Start Menu -> Programs -> IBM OnDemand for Windows -> Command Window

13. Create a temporary directory.

   mkdir c:\backups
   mkdir c:\backups\initial
   mkdir c:\backups\initial\db2

14. Use the arsdb command to backup your database off-line to the temporary directory.

   arsdb -y c:\backups\initial\db2

**Backing up ADSM**

In order to preserve the ADSM database information, we must create a full ADSM database backup.

1. Perform a full ADSM database backup. E.g.:

   adsm> backup db type=full devclass=dumpdev

   **Note:** We assume you have defined the dumpdev Device Class. Consult the ADSM documentation for instructions on how to prepare your system for database backup.

We must also save the server configuration files.

2. Copy the configuration files to a backup directory

   cp c:\Program Files\ibm\adsm\server\dsmserv.opt c:\backups\initial\adsm
   cp c:\Program Files\ibm\adsm\server\volhist.out c:\backups\initial\adsm
   cp c:\Program Files\ibm\adsm\server\devcnfg.out c:\backups\initial\adsm
   cp c:\Program Files\ibm\adsm\server\dsm.opt c:\backups\initial\adsm
   cp c:\Program Files\ibm\adsm\server\dsm.serv.dsk c:\backups\initial\adsm

**Backing up OnDemand**

A full OnDemand backup consists of backing up the database, the storage manager, the cache storage, custom files, and the OnDemand registry keys. We have already backed up the database and the storage manager, so what we need to backup now is the cache storage and the registry keys.

**Custom Files**

Custom files are any User-customized file that operates with OnDemand. An example of this could be a script, a custom User Exit, and the arslog.bat and arsprt.bat files in the \Program Files\IBM\OnDemand for WinNT\bin directory.

This files must be backed up in order to preserve them from any media failure.

1. Copy arslog.bat, arsprt.bat and any scripts or custom User Exits
Backing up the cache storage

The OnDemand cache storage is basically a directory tree structure that contains files which, in turn, contain the compressed objects. Because of that, backing up the cache storage is very similar to a regular file backup. In our environment, we used Winzip to backup this structure.

1. Open WinZip and create a new archive
2. Add the cache directory to the archive. Make sure that compression is set to **None** (Cache Storage files are already compressed), and that Save full path info is selected (see Figure 2-6).
3. Repeat the above steps for every cache filesystem defined for the instance.

![Figure 2-6  Backing up cache storage using WinZip](image)

**Important:** Saving the full path information is very important, because the OnDemand cache uses internal cross-references in order to determine where objects are located and when the must be migrated, among other functions. Because of this, we must be sure that we will be able to restore the exact directory structure in the case of a media failure.

Backing up the OnDemand registry keys

The OnDemand registry keys contain all the OnDemand instance configuration information, like database filesystem paths and Concurrent Licenses.

1. Start the regedit program, using **Start Menu -> Run... -> regedit.exe**
2. Locate the `HKEY_LOCAL_MACHINE\SOFTWARE\IBM\OnDemand for WinNT` key. Use Figure 2-7 as a reference.
7. Make sure **OnDemand for WinNT** is highlighted, as in Figure 2-8, and click **Registry -> Export Registry File**.

8. Select the folder where you want to backup the registry (In our case, `c:\backups\initial\ondemand`), then type a name for the file.

9. Make sure that **Selected branch** is selected, as in figure Figure 2-9, and click **Save**.
2.3.2 Migrating DB2 version 5.2 to version 6.1

After backing up the whole OnDemand system, we are now ready to begin the migration. The first step is to migrate DB2 to the level expected in the Intermediate Scenario, DB2 6.1 FixPack 9

**Note:** Migrating DB2 version 5.2 fixpack 15 to DB2 version 6.1 is covered in the DB2 v6.1 Quick Beginnings for Windows manual. The procedures described in this section are based on this publication, so you might want to use it as your primary reference for this migration.

Checking the migration ability of the database

The OnDemand database should have no problems for migrating into a new DB2 version. Nevertheless, DB2 provides a simple utility for testing if databases can be successfully migrated.

1. From a regular Command Window, run the following commands:
   
   ```
   cd x:\<db2_install_image_dir>\DB2v6\db2\common
   db2ckmig.exe archive -l x:\<temp_dir>\db2ckmig.log -u odadmin -p odadmin
   ```

   The -u and -p parameters refer to the OnDemand instance owner. You should replace odadmin with your particular installation’s user account.
Installing DB2 UDB version 6.1

After we verified that the OnDemand database can be migrated to version 6.1, we can proceed to the installation.

Run the installation program, located in

\x:\<db2_install_image_dir>\setup.exe

2. If you get a message indicating that some DB2 processes are still running (see Figure 2-10), click on Yes.

3. Click Next.
4. Select the DB2 Enterprise Edition and DB2 Administration Client products as in Figure 2-11. Click Next.
5. Click **Custom**.

6. Make sure that **ODBC Support**, **Control Center**, **Event Analyzer**, **Command Center**, **Documentation** and **Miscellaneous Tools** are selected (see Figure 2-12). The components that appear listed in grey color are required components. The Path and Drive cannot be changed, because we are upgrading a previous version of DB2. Click **Next**.

7. Click **Next** to begin copying files.

8. After the files are copied, click **Finish** to restart your computer as in Figure 2-13.
Post Migration Tasks

After the system restarts, logon as the OnDemand system administrator, in our case, odadmin.

1. Start a DB2 Command Window, using Start Menu > Programs > DB2 for Windows > Command Window. Run the following commands:
   - `db2start`
   - `db2 migrate database archive`

2. You should get a successful message. Run the following in order to rebind all packages:
   - `db2rbind archive -l <temp_dir>\db2rbind.log all`

3. When the command prompt returns, close the window.

Applying FixPack 9

We will now describe the steps that have to be accomplished in order to apply DB2 v6.1 FixPack 9.

1. Download the FixPack from the ftp site. The ftp address is:
2. Uncompress the FixPack to a temporary directory using WinZip or a similar program.
3. Stop all DB2 Services. Use Table 2-1 on page 48 as a reference.
4. If, during installation, some DB2 services got their Start-up configuration changed to Automatically Start, change them back to manual.
5. Run setup.exe from the directory where you uncompressed the FixPack.
6. Click Next, and Next again, and Next again.
7. Wait until files are copied, then click Finish to restart your computer.
Finishing the DB2 upgrade
To complete the DB2 upgrade, perform the following:

1. Logon as the OnDemand administrator user ID.
2. Open a DB2 Command Window, using Start Menu > Programs > IBM DB2 > Command Window.
3. Rebind all packages. From the Command Window, run:
   `db2rbind archive -l <temp_dir>\db2rbind.log all`
4. After the command prompt returns, run the following commands:
   - `db2start`
   - `db2 connect to archive`
   
   You should get no error messages.
5. Run statistics on the migrated archive database. From an OnDemand Command Prompt, run:
   `arsmaint -r`
6. Finally, use the arsdb command to stop the database manager
   `arsdb -hv`

2.3.3 Migrating ADSM 3.1 to TSM 3.7.4

This section covers the migration of ADSM 3.1.2.90 to TSM 3.7.4.0. We will first migrate ADSM to TSM 3.7.3, and then apply the 3.7.4 fix.

There are different ways to perform this migration. The path we chose was to completely uninstall ADSM, because it appears to be the cleanest migration path.

We will first make a copy of the database and recovery log volumes, along with the configuration files. We will then uninstall ADSM, and then we will completely remove ADSM registry keys and directory structures. After ADSM is completely removed from the system, we will install TSM 3.7.3 as if it were a brand new installation. After installing and defining the new TSM server, we will put back in place the configuration files and the database and recovery log volumes. When we restart the server, and after upgrading the database, TSM will access the original database and storage files by using the original configuration files, and we will be able to access our archived objects the same way as we did before the migration.

Preparing data for migration
Before un-installing ADSM, we must make sure that we save all the information we will need to restore our server after the migration. This information consists on two parts:

- ADSM configuration files
ADSM Configuration files

The configuration files are used by ADSM/TSM to identify the database, recovery log, and storage volumes. They also keep very important configuration information that is not stored in the database.

- `dsmserv.opt` Is the ADSM Server configuration file. It contains all user-defined options, like communications method.
- `volhist.out` Is the ADSM Backup Volume History file. It helps ADSM to keep an index of all the storage volumes used for database backup, thus making it easier to restore the database from a particular backup.
- `devcnfg.out` Is the ADSM Device Configuration File. It contains all device and device class definitions.
- `dsmserv.dsk` Contains the full path and filenames of ADSM database and recovery log volumes.
- `dsm.opt` Is the ADSM Client Options File. It contains user-defined configurations, like what server the client connects to, or what communications method to use.

**Note:** More information about this files can be found in ADSM/TSM manuals.

ADSM Database and Recovery Log Volumes

ADSM stores the database information in one or more files that are located in the hard disk drive of the ADSM server. These files are called database volumes.

Recovery Log volumes are the files in which ADSM stores the transactional log. This log helps rebuild the database in case a media failure should occur.

**Note:** More information about the ADSM Database can be found on the ADSM/TSM manuals.

Saving the necessary files

Make sure all ADSM services are stopped, and that they are configured to start manually. Use Table 2-1 on page 48 to determine what services you should look at.

1. Using a Windows command line, create a temporary directory using:
   ```
   mkdir c:\backups\migration1\adsm
   ```
2. Copy all ADSM configuration files:
   ```
   cp c:\ProgramFiles\ibm\adsm\server\dsmserv.opt c:\backups\migration1\adsm
   cp c:\ProgramFiles\ibm\adsm\server\volhist.out c:\backups\migration1\adsm
   ```
cp c:\Progra~1\ibm\adsm\server\devcnfg.out c:\backups\migration1\adsm
cp c:\Progra~1\ibm\adsm\server\dmserv.dsk c:\backups\migration1\adsm
3. Copy Database and Recovery Log volume files
   cp g:\tsmdb\db1.dsm c:\backups\migration1\adsm
   cp g:\tsmdblog\log1.dsm c:\backups\migration1\adsm

Un-installing ADSM 3.1
We will now remove all ADSM related information from our server.
1. Click on Start menu > Programs > IBM ADSM > Uninstall IBM ADSM Components, as in Figure 2-14.

   

Figure 2-14 Starting ADSM Un-install

2. Click Select All, and then click Remove. See Figure 2-15.
3. Answer Yes to the “Are you sure you want to remove the selected application and all of its components?” message.
4. If any Shared Library related warning appears, answer Yes to All.
5. After all components have been removed, click Done.
6. Reboot your computer.
7. After rebooting, use Windows Explorer to completely remove the c:\Program Files\IBM\ADSM directory, including all subdirectories.
8. Using regedit, remove the HKEY_LOCAL_MACHINE\SOFTWARE\IBM\ADSM registry key, as in Figure 2-16.
9. Reboot your computer.

**Installing TSM 3.7.3**

After we have successfully removed all ADSM related information from our computer, we can now install TSM 3.7.3.

1. Start the Installation Wizard.
2. Click **Next** until the Destination Folder Selection Screen appears. We will use the default, so click **Next**.
3. Choose **Custom**, then click **Next**
4. Make sure all the components are selected. Click **Next**.
5. Click **Next**, and **Next** again to begin copying files.
6. After the installation finishes copying files, click **Finish** to reboot your computer.

**Configuring the new server**

After your computer reboots, you are presented with the TSM Server Utilities initial configuration screen. We need to configure a new server, just to get it registered in the registry. We will not be using any of the configurations we make at this time.

1. On the TSM Server Initial configuration, click **Ok**, then **Next**, and **Next** again.
2. Select **Stand-alone**, then **Next**, and **Finish**.
3. Now we are presented with the Performance configuration wizard. Click **Next**, then **Next**.
4. After the disk performance measuring, click **Next**. We will ignore that information.

5. Click **Next**, and uncheck all check-boxes. Then click **Finish**.

6. Now we are presented with the TSM Server initialization wizard. Accept the default instance directory, click **Next**. Accept the initial volume paths. We are not actually going to use them at all. Click **Next**, then **Next** again, and click on **Finish**.

7. Now, when the Database volume wizard appears, click **Cancel**. Click **Yes**, then close the Server Utilities main window.

**Restoring the server**

After the server was registered, we need to discard its configuration and replace it with our previous server’s configuration and information. We will do so by copying the files that we have previously saved into their new locations.

1. Rename all the newly generated configuration files, in case something goes wrong:
   
   ```
   c:
   cd \Progra~1\tivoli\tsm\server1
   ren dsmserv.opt dsmserv.opt.backup
   ren dmserv.dsk dmserv.dsk.backup
   ren devcnfg.out devcnfg.out.backup
   ren volhist.out dsmserv.out.backup
   cd \Progra~1\tivoli\tsm\baclient
   ren dsm.opt dsm.opt.backup
   ```

2. Copy the original configuration files, using the following commands in a Windows Command Line:
   
   ```
   copy c:\backups\migration1\adsm\dsmserv.opt c:\Progra~1\tivoli\tsm\server1
   copy c:\backups\migration1\adsm\dmserv.dsk c:\Progra~1\tivoli\tsm\server1
   copy c:\backups\migration1\adsm\volhist.out c:\Progra~1\tivoli\tsm\server1
   copy c:\backups\migration1\adsm\devcnfg.out c:\Progra~1\tivoli\tsm\server1
   copy c:\backups\migration1\adsm\dsm.opt c:\Progra~1\tivoli\tsm\baclient
   ```

**Important:** As the reader might notice, we have not copied back in place the Database and Recovery Log files. This happens because we had initially put our Database and Log files *outside* the ADSM server directory, and so they remained intact after ADSM was un-installed. Although many installations place their Database and Log files in separate drives, it may be possible that a particular installation does not. In that case, as we removed the ADSM Server directory, after the TSM installation, the Database and Log files should be copied back to the TSM Server instance directory. Notice that this directory is now located (in our scenario) in `c:\progra~1\tivoli\tsm\server1`

3. Now we will upgrade our database files. From a Windows Command Line, type:
   
   ```
   c:
   ```
4. Using our previously saved configuration files, the TSM server locates the original database volumes and upgrades them to the current format. As we want to run TSM as a service, and not from the command line, type:

```bash
halt
```

5. Restart your computer

**Upgrading TSM to 3.7.4**

TSM 3.7.4 can be downloaded from the following address:

```bash
ftp://service.boulder.ibm.com/storage/tivoli-storage-management/maintenance/server/v3r7/NT/3.7.4.0/
```

1. After downloading, uncompressed it to a temporary directory by double-clicking on the archive file
2. Stop the TSM Server1 service.
3. Start the installation by running setup.exe from the installation images directory
4. Click **Next**, and **Next** again.
5. The installation will detect the previous TSM installation. Accept the default install directory by clicking **Next**
6. Select **Custom**, then click **Next**
7. Make sure your selection includes **Server**, **Client** and **On-line Help**. Click **Next**
8. Click **Next** again. This will start the file copying process.
9. After the files are copied, click **Finish** to restart the computer.
10. After the computer restarts, we are presented with the TSM Server configuration Utilities. As the server has already been initialized, we do not need to use this utilities at this time. Click **Cancel**, then close the main window.
11. We now have to upgrade the TSM database. Open a windows Command Line and type the following:

```bash
cd \Progra~1\tivoli\tsm\server
dsmserv upgradedb
halt
```

### 2.3.4 Updating the OnDemand configuration

After both DB2 and TSM have been successfully migrated, some changes have to be made to the OnDemand configuration in order for OnDemand to work properly. Making this configuration changes now will leave us with a stable and productive OnDemand system, which we will use in turn as the starting point for the final migration.
Updating the DB2 User Exit configuration

After applying DB2 v6.1 FixPack 9 the DB2 User Exit configuration gets incorrect parameters. If we started OnDemand at this time, we would receive a lot of error messages from DB2 in the Windows Event Viewer, indicating that an error occurred with the User Exit. You can see the error message on Figure 2-17.

![Figure 2-17 DB2 User Exit Error](image)

The solution for this problem is fairly “magical”:

1. Start the OnDemand Configurator
2. Double click on your server’s name on the left pane, the click on Instances.
3. Right click on ARCHIVE, on the right pane, and click Properties.
4. Click Ok

You will receive a message (see Figure 2-18) stating that the DB2 User Exit has been updated to work with the OnDemand ARCHIVE Instance. That update refreshes the User Exit configuration, thus eliminating the appearance of future error messages in the Event Viewer.
Figure 2-18  DB2 User Exit has been updated

Reconfiguring OnDemand Storage Manager parameters

When OnDemand is configured to work with TSM, it will look for TSM client files at the location specified in the OnDemand Configurator. Before the migration, OnDemand was accessing ADSM Client files. After the migration, OnDemand has to access TSM Client files, and, of course, the location of these files is different from the ADSM ones. If we attempted to start OnDemand without updating the configuration, we would get an error message indicating a problem with communications and Storage Management. That is because OnDemand is looking for the TSM files where the ADSM files used to be. In order to solve it, we must:

2. Double click on your server, then click on Instances
3. Double click on ARCHIVE, then click the Storage tab. Your screen should look like Figure 2-19 on page 65
4. Click on **TSM Options**, and change the paths to the actual TSM Backup-Archive Client installation paths. In our scenario, that is `c:\Program Files\Tivoli\tsm\baclient`. Use Figure 2-20 on page 66 as a reference.
5. Change the TSM options file path to `c:\Progra~1\tivoli\tsm\baclient\dsm.opt`

6. Click **Ok**, then **Ok** again to save the changes.

7. Close Configurator

**Verifying the migration**

We have successfully migrated DB2 v5.2 up to v6.1 FixPack 9. We have also migrated ADSM 3.1 up to TSM 3.7.4.0, and updated OnDemand configuration parameters for it to work with the new versions. We shall now verify that OnDemand is working properly, before proceeding to the final migration.

1. Start TSM. From the Services console, right click **TSM Server1**, and click **Start**

2. Start DB2. From the Services console, right click **DB2 - DB2** and click **Start**

3. Start the OnDemand server. From the Services console, right click **OnDemand LibSrvr** and click **Start**

4. Start an OnDemand Client by using **Start Menu > Programs > IBM OnDemand32 > OnDemand32 English**

5. Select a folder that contains reports that are stored in TSM, and perform a query. Retrieve one of the documents to verify that OnDemand can retrieve TSM Objects.

6. Optionally, try a report load, preferably using an Application Group that stores reports on TSM
2.4 Migrating to the Target Scenario

In the previous sections we have reviewed all the steps that are required to bring an old configuration up to our Intermediate Scenario. This scenario consists of:

- DB2 version 6.1 FixPack 9
- TSM Server version 3.7.4.0
- TSM Client version 3.7.2.0
- OnDemand version 2.2.1.10

Many customers might already have OnDemand installations at these release levels. If that is your case, you can follow the instructions from this point.

In this section, we will cover all the steps required to upgrade the described Intermediate Scenario up to the Target Scenario. Our Target Scenario consists of:

- DB2 version 7.1
- TSM Server version 4.1.3
- TSM Client version 4.1.3
- OnDemand version 7.1.0.4

**Important:** As many customers might be starting their OnDemand migration at the Intermediate Scenario, the first step in the migration will be a full backup. Those who made the backup in the previous sections might choose to skip this part, because a full backup has already been made.

After backing up our system, we will migrate DB2 up to version 7.1, and then TSM up to version 4.1.3.

When both TSM and DB2 are successfully migrated, we will finally migrate OnDemand up to version 7.1, which was the initial target of this book.

2.4.1 Initial Procedures

Before beginning the migration, we strongly recommend making a full backup of the entire OnDemand system. This includes both DB2 and TSM, as well as OnDemand's configuration files and cache storage.

**Stopping OnDemand**

Before backing up our system, we want to make sure that there is no activity on the OnDemand software. In order to do so, we'll stop all OnDemand services.

1. Log on to the server as odadmin
2. Open the Services Console, using **Start Menu -> Programs -> Administrative Tools -> Services**

3. Right click on **OnDemand Load Data**, then click on **Stop**, as in Figure 2-21.

![Figure 2-21 Stopping OnDemand Services](Image)

4. Right click on **OnDemand MVSD Server** (if it is running), then click **Stop**

5. Right click on **OnDemand Scheduler**, then click **Stop**

6. Finally, right click on **OnDemand LibSrvr**, and click **Stop**

Now, what we want to do is to set services to start manually, in order to have control on what services will be running during the migration.

7. Open the services console, right click on **OnDemand LibSrvr**.

8. Click on **Properties**. A dialog box will appear, containing the properties for the specified service.

9. Open the **Start-up Type** pull-down menu, then select **Manual**. See Figure 2-22.

10. Click on **Ok** to close the window.
Figure 2-22 Configuring services to start manually

The above procedure must be repeated for all OnDemand related services. Those services are OnDemand services, DB2 services, and TSM services.

Figure 2-2 shows a list of all the OnDemand related services present in our scenario:

<table>
<thead>
<tr>
<th>OnDemand services</th>
<th>DB2 services</th>
<th>TSM services</th>
</tr>
</thead>
<tbody>
<tr>
<td>OnDemand LibSrvr</td>
<td>DB2 - DB2</td>
<td>TSM Server1</td>
</tr>
<tr>
<td>OnDemand Scheduler</td>
<td>DB2 - DB2AS00</td>
<td></td>
</tr>
<tr>
<td>OnDemand Load Data</td>
<td>DB2 Governor</td>
<td></td>
</tr>
<tr>
<td>OnDemand MVSD Server</td>
<td>DB2 JDBC Applet Server</td>
<td></td>
</tr>
<tr>
<td>DB2 Security Server</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Backing up DB2**

After all OnDemand services are stopped, there are no more changes in the database. We can now do a full off-line backup of the database.

1. Open an OnDemand Command Window, using **Start Menu -> Programs -> IBM OnDemand for Windows -> Command Window**
2. Create a temporary directory.
   mkdir c:\backups
   mkdir c:\backups\middle
   mkdir c:\backups\middle\db2

3. Use the arsdb command to backup your database off-line to the temporary directory.
   arsdb -y c:\backups\middle\db2

## Backing up TSM

In order to preserve the TSM database information, we must create a full TSM database backup

1. Perform a full TSM backup. E.g:
   adsm> backup db type=full devclass=dumpdev

   **Note:** We assume that you have defined the dumpdev Device Class. Consult TSM Documentation on how to prepare your TSM system for database backup.

We must also save the server configuration files.

2. Copy the configuration files to a backup directory
   cp c:\Program Files\IBM\TSMAccess\server1\dsmserv.opt c:\backups\middle\tsm
   cp c:\Program Files\IBM\TSMAccess\server1\volhist.out c:\backups\middle\tsm
   cp c:\Program Files\IBM\TSMAccess\server1\devcnfg.out c:\backups\middle\tsm
   cp c:\Program Files\IBM\TSMAccess\server1\dsmserv.dsk c:\backups\middle\tsm
   cp c:\Program Files\IBM\TSMAccess\server1\dsm.opt c:\backups\middle\tsm

## Backing up OnDemand

A full OnDemand backup consists of backing up the database, the storage manager, the cache storage, custom files, and the OnDemand registry keys. We have already backed up the database and the storage manager, so what we need to backup now is the cache storage and the registry keys.

### Custom Files

Custom files are any User-customized file that operates with OnDemand. An example of this could be a script, a custom User Exit, and the arslog.bat and arsprt.bat files in the \Program Files\IBM\OnDemand for WinNT\bin directory.

This files must be backed up in order to preserve them from any media failure.

1. Copy arslog.bat, arsprt.bat and any scripts or custom User Exits
**Backing up the cache storage**

The OnDemand cache storage is basically a directory tree structure that contains files which, in turn, contain the compressed objects. Because of that, backing up the cache storage is very similar to a regular file backup. In our environment, we used Winzip to backup this structure.

1. Open WinZip and create a new archive
2. Add the cache directory to the archive. Make sure that compression is set to **None** (Cache Storage files are already compressed), and that **Save full path info** is selected. See Figure 2-23
3. Repeat the above steps for every cache filesystem defined for the instance.

![WinZip screenshot](Figure 2-23 Backing up cache storage using WinZip)

**Important**: Saving the full path information is very important, because the OnDemand cache uses internal cross-references in order to determine where objects are located and when the must be migrated, among other functions. Because of this, we must be sure that we will be able to restore the exact directory structure in the case of a media failure.

**Backing up the OnDemand registry keys**

The OnDemand registry keys contain all the OnDemand instance configuration information, like database filesystem paths and Concurrent Licenses.

1. Start the regedit program, using **Start Menu -> Run... -> regedit.exe**
2. Locate the **HKEY_LOCAL_MACHINE\SOFTWARE\IBM\OnDemand for WinNT key**. Use Figure 2-24 as a reference.
3. Make sure **OnDemand for WinNT** is highlighted, as in Figure 2-25, and click **Registry -> Export Registry File**.

4. Select the folder where you want to backup the registry (In our case, `c:\backups\middle\ondemand`), then type a name for the file.

5. Make sure that **Selected branch** is selected, as in figure Figure 2-26, and click **Save**.
2.4.2 Migrating DB2 version 6.1 to version 7.1

In order to migrate DB2, we first need to stop all OnDemand services and, of course, DB2 services. Also, make sure they are configured to start manually, not automatically.

Because we are migrating from version 6.1, the procedure will be very similar to a fresh DB2 installation, as opposite to migrating from version 5.2, where we had to make some pre-migration verification steps.

1. Start the DB2 installation, either by inserting the product CD or by running setup.exe from the distribution media.
2. Click on **Install**, as in Figure 2-27.
3. Answer Yes to the prompting question (See Figure 2-28). Pre migration procedures apply to DB2 version 5.2 databases.

4. Select the DB2 Enterprise Edition and DB2 Administration Client products (see Figure 2-29). Click Next.
5. Select **Custom**, click **Next**.
6. Select your components. Additional components are optional, the components required for OnDemand to work properly are selected by default. Click **Next**.
7. Click **Next**.
8. In the **Username** field (see Figure 2-30), type the OnDemand administrator user account name, in our case, odadmin. Then type in the **Password** for that user. Click **Next**.

Figure 2-30  Control Server user account

9. Click **Next**.
10. After the files have been copied, click Finish.

### 2.4.3 Migrating TSM version 3.7 to version 4.1

To migrate TSM version 3.7 to version 4.1, perform the following steps.

1. Start the installation from the CD, or by running setup.exe
2. Click Next. Accept the default installation directory by clicking Next.
3. Select Custom, as in Figure 2-31, and click Next.

![](image)

**Figure 2-31** TSM 4.1 Setup Type selection

4. All the necessary components are selected by default (see Figure 2-32 on page 77). Click Next.
5. Click **Install** to begin copying files.
6. After files have been copied, click **Finish**.
7. Click **Yes** to restart your computer.
8. After the computer reboots, open a Windows Command Line and run the following to upgrade the TSM database:
   ```
   c:\cd \Progra~1\tivoli\tsm\server
dsmserv upgradedb
halt
   ```

### 2.4.4 Migrating OnDemand version 2.2 to version 7.1

Finally, we have arrived at the point where we can migrate our OnDemand server to the latest version. The steps required for this migration are described in the OnDemand version 7.1 Release Notes, which can be downloaded from:

ftp://ftp.software.ibm.com/software/ondemand/fixtures/v71/7.1.0.4

#### Migration Overview

The OnDemand migration consists basically in a regeneration of the OnDemand System Tables, those named after arsxxx. These tables contain all Application, Application Group and Folder configuration information, plus additional information. In version 7.1, the System Tables structure is different from version 2.2.
Thus, the migration will consist of exporting the data in the v2.2 System Tables, dropping those tables, re-creating the System Tables with the v7.1 format, and then loading the new tables with the old information. Application Group tables, those named i.e. FAA1 and the like, which contain the indexes for the archived documents, remain untouched. The Cache Storage structure remains the same after the migration.

Removing OnDemand 2.2

The first step in the migration is to uninstall OnDemand version 2.2. All the effective database migration procedures occur at the 7.1 level.

Before un-installing, you might want to perform a Database and Registry backup. Also, you must save any custom User Exits, and the arslog and arsprt files, if you customized them.

1. For saving arslog and arsprt, enter the following commands at a Windows Command Line:
   - copy \progra~1\ibm\ondemand for winnt\bin\arslog.bat \backups\final\ondemand
   - copy \progra~1\ibm\ondemand for winnt\bin\arsprt.bat \backups\final\ondemand

Un-installing OnDemand version 2.2

To uninstall OnDemand version 2.2, perform the following steps.

1. Stop all OnDemand services.
2. Uninstall OnDemand using Start Menu > Settings > Control Panel > Add/Remove Programs
3. Click on IBM OnDemand32, then click on Change/Remove
4. Select Remove, then Next. Answer Ok.
5. Wait while the program removes the files.
6. If you get any warning regarding Shared Files, like in Figure 2-33 on page 79, check Don’t display this message again, then click Yes. We don’t need those shared files any more.
Figure 2-33 OnDemand 2.2.1.10 uninstall warning

7. Click Finish. We don't need to reboot the computer.
8. Back in the Change/Remove Programs screen, select IBM OnDemand for Windows NT, and click Change/Remove.
9. Click Ok.
10. Click Finish. You don't need to reboot the computer.
11. Click Close on the Add/Remove Programs window.

Installing OnDemand version 7.1
To then install OnDemand version 7.1, perform the following steps.
1. Run setup.exe from the installation media.
2. Click Next, then Next again (Accept the default directory)
3. Click Next, and the files will begin to be copied.
4. Click Finish. The computer does not need to be restarted.

Migrating the OnDemand System Tables
To migrate the OnDemand System Tables, perform the following steps.
1. From the Services console, start the DB2 - DB2 service
2. Open an OnDemand Command Window, using Start Menu > Programs > IBM OnDemand for Windows > Command Window.
3. Create a temporary directory. The amount of free space depends on the number of Applications, Application Groups and Folders created, and the number of annotations stored in the system. 100 MB is the minimum you should allocate.
c:
mkdir tempod
cd tempod

4. Export the OnDemand System Tables information, using:
arsdb -lxv

The information will be exported into the prompt's current directory, so make sure you cd to your temporary directory before running the previous command.

5. Drop the old tables
arsdb -dv
Are you sure you wish to drop the database tables and/or indexes:

Answer Yes to the prompting question

6. Create the new System Tables and their indexes using
arsdb -rtv

7. The tables are created but they are empty. In order to reload them with the exported data, use
arsdb -ilv

You might notice some "xxx not exists". This means that some fields were not present in the previous version's tables, and then there is no data for them.

8. Run maintenance on the new tables
arsdb -mv

**Upgrading the OnDemand Clients**

When in the previous steps we un-installed the OnDemand software, we removed the clients as well, both Administrator and the Client Application. The OnDemand clients should always be at the same level as the server code, so our next step will be to install the new 7.1.0.0 clients.

1. Start the installation by double clicking on setup.exe in the installation image directory. Follow the on-screen instructions. Make sure you install an Administrator client in addition to the OnDemand client (See Figure 2-34).
2. Restart your computer after installing the clients.

**Upgrading to OnDemand 7.1.0.4**

The final step in the migration will be to upgrade OnDemand to the current level, 7.1.0.4. This FixPack can be found at:

ftp://ftp.software.ibm.com/software/ondemand/fixes/v71/7.1.0.4

1. Make sure all OnDemand services are stopped
2. After your computer restarts, start the installation by clicking on setup.exe in the installation directory.
3. Follow the on-screen instructions. This is a very straight-forward installation.
4. After the server is upgraded, do not reboot.
5. Start the OnDemand Client installation by uncompressing the downloaded FixPack and running setup.exe.
6. Follow the on-screen instructions to install the clients. Make sure you select an Administrator client in addition to the OnDemand client.

**Testing the migration**

After all migration steps have been completed, we must now test our system to see if it is correctly set up.

1. If it is not already started, start TSM. Use the Services Console to start the TSM Server1 service.
2. If it is not already started, start DB2. Use the Services Console to start the DB2 - DB2 service.
3. Start OnDemand. Use the Services Console to start the OnDemand services.
Everything should start normally. Below are some check procedures you can use to test your system.

4. Open an OnDemand Client and retrieve a document that is stored on TSM.
5. Load a document that uses custom User Exits (if any) to cache storage.
6. Run arsmaint -v (Cache Filesystem verification/validation) from an OnDemand Command Prompt. Check that no errors appear in the System Log.
This chapter describes how to migrate OnDemand Version 2.2.1 to Version 7.1, including DB2 migration from Version 5.2 to 7.1 and ADSM migration from Version 3.1 to TSM Version 4.1, on the AIX Version 4.3.3 operating system platform. The migration scenario in this chapter is based on OnDemand running in a single library/object server configuration.

This chapter contains the following sections:

- “DB2 version 5.2 to version 7.1 migration tasks” (If you are migrating from DB2 Version 6.1 instead, see the section on “Migrating from DB2 version 6.1” for some comments.)
- “ADSM version 3.1 to TSM version 4.1 migration tasks” (If you are migrating from TSM Version 7.1 instead, see the section on “Migrating from TSM version 3.7” for some comments.)
- “OnDemand version 2.2.1 to version 7.1 migration tasks”
3.1 DB2 version 5.2 to version 7.1 migration tasks

When migrating from DB2 Version 5.2 to DB2 Version 7.1, you must prepare your OnDemand database and instance before installing DB2 Version 7.1. This section describes how to prepare the existing OnDemand database and instance for migration to a format usable by DB2 Version 7.1. If you want to migrate more than one OnDemand instance, you must repeat these steps for each instance.

In this section, we will use the default OnDemand instance and database for our migration scenario:

– Instance name: ARCHIVE
– Database name: ARCHIVE
– User Name: archive
– Group Name: sysadm1
– Home Directory: /home/archive

You may have to re-compile any customized user exit programs, e.g., security user exits (arsusec), if you have used DB2 embedded SQL in your programs.

References:

► *IBM DB2 Universal Database for UNIX Quick Beginnings Version 7*, GC09-2970-00
► *IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1*, GC27-0834-00

3.1.1 Backup the ARCHIVE database

Before performing any of the pre-installation tasks, do a DB2 full off-line backup of the ARCHIVE database:

1. Stop the arssockd processes:

```
# ps -ef | grep arssockd
root 13658 27794   3 08:44:54  pts/0  0:00 grep arssockd
root 15032 21762   0   Nov 24      -  1:19 arssockd: db (idle)
root 16028 21762   0   Nov 24      -  1:02 arssockd: db (idle)
root 18816 21762   0   Nov 24      -  0:12 arssockd: license (Cur(0), Max(100))
root 21436 21762   0   Nov 24      -  0:51 arssockd: db (idle)
root 21762   1   0   Nov 24      -  0:13 arssockd: (accepting)
root 22220 21762   0   Nov 24      -  1:30 arssockd: db (idle)
root 26610 21762   0   Nov 24      -  1:02 arssockd: db (idle)
```

Kill the "arssockd: (accepting)" process:
# kill 21762
# ps -ef |grep arssockd
  root 13660 27794  3 08:47:11 pts/0  0:00 grep arssockd

2. Stop DB2

Disconnect all applications from the OnDemand database:

# . /home/archive/sqlib/db2profile
# db2 "force application all"
DB20000I The FORCE APPLICATION command completed successfully.
DB21024I This command is asynchronous and may not be effective
immediately.

# db2 terminate
DB20000I The TERMINATE command completed successfully.

Stop the OnDemand database:

# /usr/lpp/ars/bin/arsdb -hv
Stopping the DB2 ARCHIVE instance
Deactivating database ARCHIVE

3. Backup ARCHIVE database offline

# /usr/lpp/ars/bin/arsdb -gv
Starting the DB2 ARCHIVE database instance

# /usr/lpp/ars/bin/arsdb -vy /db2dump
(archive user must be able to write to that filesystem.)
Backing up the DB2 ARCHIVE database off-line
Deactivating database ARCHIVE
The ARCHIVE database was not activated
Backing up the DB2 ARCHIVE database at 11/28/01 16:55:01
Timestamp for backup image: 20011128165501

3.1.2 Preparing OnDemand database and instance for migration

To prepare for the OnDemand database and instance migration, perform the
following steps.

1. Verify the current instance and database configuration, and save a copy of the
   configuration output:
   # db2 "get dbm cfg" > dbmcfg.out
   # db2 "get db cfg for archive" > dbcfg.out

   Make a check of the primary log path from the db cfg output, e.g.
   /arsdb_primarylog.

2. Ensure that there are no applications connected to the database. Use the
   following command to get a list of all applications:
   # db2 "list applications"
If no applications are connected, the above command will return the following message on the screen:

```
SQL1611W  No data was returned by Database System Monitor.
```

You can end a session by entering the following command:

```
# db2 "terminate"
```

3. Ensure that the OnDemand database is cataloged. To view a list of all the cataloged databases in the current instance, enter the following command:

```
# db2 "list database directory"
```

The following is a sample output of the above command:

```
System Database Directory

Number of entries in the directory = 1

Database 1 entry:

Database alias                  = ARCHIVE
Database name                   = ARCHIVE
Local database directory        = /arsdb
Database release level          = 8.00
Comment                         =
Directory entry type            = Indirect
Catalog node number             = 0
```

4. Stop all database server processes by entering the following command:

```
# db2stop
```

```
SQL1064N  DB2STOP processing was successful.
```

5. Stop the DB2 license daemon by entering the following command:

```
# db2licd -end
```

6. In each session that was running the DB2 command line processor, enter the following command to stop all sessions:

```
# db2 terminate
```

7. If DB2 Administration Server is running, stop it.

```
# su - db2as
$ db2admin stop
SQL4407W  The DB2 Administration Server was stopped successfully.

$ exit
```

### 3.1.3 Installing DB2 7.1

This section describes how to install DB2 7.1 using the `db2setup` utility. DB2 Version 7.1 for AIX can co-exist on the same machine with previous versions of DB2, for example, DB2 Version 5.2. DB2 Version 7.1 will be installed in the `/usr/lpp/db2_07_01` directory, while DB2 Version 5.2 is installed in the `/usr/lpp/db2_05_00` directory.
Make sure you have at least 300MB free in the /usr filesystem for the base code install. This free space requirement may vary depending on the components you install, for example, you might need more free space if you are planning to install the DB2 product documentation.

1. Login as root user. (In the OnDemand Installation and Configuration Guide for UNIX Servers Version 2.2 manual, the root user is added to the OnDemand instance owner's group.)
2. Insert and mount your DB2 Version 7.1 product CD-ROM. E.g.,
   `# mount /cdrom`
3. Change to the directory where the CD-ROM is mounted. E.g.,
   `# cd /cdrom`
4. Enter the `./db2setup` command. The Install DB2 V7 window opens.
5. Select the products you want and are licensed to install. Press Tab to move between available options and fields. Press Enter to select or deselect an option. Selected options are denoted by an asterisk.

   When you select to install a DB2 product, you can choose the product's Customize option to view and change the optional components that will be installed. For example:
   - Select DB2 UDB Enterprise Edition. Then, choose [Customize...] option and select Java Support, Replication, Control Center.
   - Select DB2 Application Development Client. Then, choose [Customize...] and select Java Support.

   DO NOT create a DB2 Instance.
   DO NOT create the Administration Server.

When installation is complete your DB2 software will be installed in the /usr/lpp/db2_07_01 directory.


3.1.4 Applying DB2 7.1 Fixpack

After installing DB2 Version 7.1 base code, apply the latest DB2 Fixpack for Version 7.1. At the time of writing, we used Fixpack 2a. You can download the Fixpack from the following URL:


1. After downloading the Fixpack file, uncompress the tar.Z file. E.g.,
   `# uncompress FP2a_U474808.tar.Z`
2. Extract the files from the tar file into an empty directory. E.g.:
   `# tar -xvf ./FP2a_U474808.tar`
3. Install the fixes by using the smitty update_all command:
   `# cd delta_install`
4. In the smitty menu screen, you can use the following options:
   INPUT device / directory for software
   COMMIT software updates? no
   SAVE replaced files? yes

5. There are additional fixes in the extras sub-directory. Install these fixes as well, if necessary:
   # cd extras
   # smitty update_all

6. Verify that the DB2 software and fixes have been installed correctly:
   # lppchk -v

3.1.5 Migrating ARCHIVE Instance

After installing DB2 Version 7.1 base code and available FixPacks, we will now migrate the OnDemand ARCHIVE instance. This will be done by running the `db2imigr` command. After migrating the instance, you can then migrate the OnDemand database using the `migrate database` command. We will come to that in the next section.

1. Verify that it is still a DB2 Version 5.2 instance by running the following command:
   # /usr/lpp/db2_05_00/instance/db2ilist
   archive

   Verify also that there are no instances yet using DB2 Version 7.1:
   # /usr/lpp/db2_07_01/instance/db2ilist

   You will not get any output from the above command.

2. The `db2imigr` command requires the fenced id as one of the parameters. According to the default OnDemand installation, the fenced id is the same as the instance owner id, that is, archive. Verify the fenced id by viewing the contents of the file `/home/archive/sqllib/ctrl/.fencedID`. E.g:
   # cat /home/archive/sqllib/ctrl/.fencedID
   archive

3. The `db2imigr` command checks that the ARCHIVE instance can be migrated. It also calls `db2ckmig` command which checks that the ARCHIVE database in the ARCHIVE instance can be migrated:
   # /usr/lpp/db2_07_01/instance/db2imigr -u archive archive

   `db2ckmig` was successful. Database(s) can be migrated.

4. Verify that your ARCHIVE instance has been migrated by running the following commands:
   # /usr/lpp/db2_05_00/instance/db2ilist
(You should not get any output from the above command if ARCHIVE is the only instance.)

```
# /usr/lpp/db2_07_01/instance/db2ilist
archive
```

If you encounter any error messages while trying to migrate the instance, see the “Possible Migration Error Messages and User Responses” section in the *IBM DB2 Universal Database for UNIX Quick Beginnings Version 7* manual for suggestions and corrective action.

Here is a sample of how the /home/archive directory would now look like:

```
# ls -l /home/archive
drwxrwsr-t 15 archive sysadm1 1024 Nov 29 11:42 sqllib
drwxrwsr-t 13 archive sysadm1 1024 Nov 26 11:42 sqllib_v5
```

where the previous DB2 Version 5 sqllib directory is renamed sqllib_v5, and a new sqllib directory is created with sub-directories linked to the DB2 Version 7.1 directories (/usr/lpp/db2_07_01/...).

### Updating the DB2 License Key

The next step is to update your DB2 product license key for the DB2 Version 7.1 that you have just installed. The DB2 product you have installed on your OnDemand system would probably be licensed for use with OnDemand only.

To update your DB2 product license key, do the following steps:

1. First, check the existing license configuration:

```
# /usr/lpp/db2_07_01/adm/db2licm -l
Product Name                  = "DB2 Enterprise Edition"
Product Password              = "DB2UDBEE"
Version Information           = "7.1"
Expiry Date                   = "Permanent"
Concurrent Connect User Policy = "Disabled"
Registered Connect User Policy = "Disabled"
Enforcement Policy            = "Soft Stop"
Number of processors          = "2"
Number of licensed processors = "1"
Annotation                    = ""
Other information             = ""
```

The above sample output shows the licence for DB2 Universal Database Enterprise Edition, and the number of processors in the system is 2, while the number of licensed processors is 1.

2. Depending on number of processors you have on your system, and as displayed by the previous step in the line “Number of processors”, update the number of processors. For example, our AIX test system has 2 processors:

```
# /usr/lpp/db2_07_01/adm/db2licm -n db2udbee 2
```
The number of licensed processors on this system has been updated successfully.

where db2udbee is the product password for DB2 UDB Enterprise Edition, and 2 signifies the number of processors.

3. Verify that the number of processors has been updated by running the following command and noting the line “Number of licensed processors”:

```
# /usr/lpp/db2_07_01/adm/db2licm -l
Product Name                  = "DB2 Enterprise Edition"
Product Password              = "DB2UDBEE"
Version Information           = "7.1"
Expiry Date                   = "Permanent"
Concurrent Connect User Policy = "Disabled"
Registered Connect User Policy = "Disabled"
Enforcement Policy            = "Soft Stop"
Number of processors          = "2"
Number of licensed processors = "2"
Annotation                    = ""
Other information             = ""
```

The DB2 product license key is added to the /var/ifor/nodelock file.

Remove/Create links to DB2 files

You can create links for the DB2 files to the /usr/lib directory, and for the include files to the /usr/include directory for a particular version and release level of the product. You can verify that links to DB2 files were created by listing the /usr/lib and /usr/include directories and grep for "db2", e.g.:

```
# ls -l /usr/lib | grep db2
```

If you had followed the steps in the chapter on Installing DB2 UDB in the OnDemand Installation and Configuration Guide for UNIX Servers Version 2.2 manual, you would have created links to DB2 Version 5.2 files. Since the OnDemand instance and database will be migrated to DB2 Version 7.1, these links must be removed, and links to DB2 Version 7.1 files be created.

1. Remove the existing links to DB2 Version 5.2 files by running the following command:

```
# /usr/lpp/db2_05_00/cfg/db2rmln
```

2. Create the new links to DB2 Version 7.1 files by running the following command:

```
# /usr/lpp/db2_07_01/cfg/db2ln
```

If you still have other instances using the DB2 Version 5.2 files, create the links to the DB2 Version 7.1 files after migrating all the instances and databases to Version 7.1.
OnDemand DB2 log user exit

The database user exit program provided by OnDemand is used by DB2 to manage archived log files. In the initial OnDemand database configuration, one of the configuration steps was to create a link to one of the database user exit programs. Now that the sqlib sub-directory in /home/archive is new, we have to manually create the link again to the same database user exit program that your OnDemand system has been using.

To create the link to the database user exit program, follow these steps:

1. Verify that there is no db2uext2 program in DB2 Version 7.1 bin sub-directory:
   
   ```
   # cd /usr/lpp/db2_07_01/bin
   # ls db2uext2
   ```
   
   The above command should not list any files.

2. Create the link to the database user exit program:
   
   ```
   # cd /home/archive/sqllib/adm
   ```
   
   If you maintain archived log files on disk, run the following command:
   
   ```
   # ln -s /usr/lpp/ars/config/db2uext2.disk db2uext2
   ```
   
   If ADSM/TSM maintains archived log files, run the following command:
   
   ```
   # ln -s /usr/lpp/ars/config/db2uext2.adsm db2uext2
   ```

3.1.6 Migrating ARCHIVE database

We will now migrate the OnDemand database from Version 5.2 to the Version 7.1 format. Ensure you have enough free space in the OnDemand database directory, e.g. /arsdb.

1. Verify that the OnDemand database is cataloged by running the `db2 list database directory` command:

   ```
   # . /home/archive/sql/lib/db2profile
   # db2 "list database directory"
   ```

   System Database Directory

   Number of entries in the directory = 1

   Database 1 entry:

   Database alias = ARCHIVE
   Database name = ARCHIVE
   Local database directory = /arsdb
   Database release level = 8.00
   Comment =
   Directory entry type = Indirect
   Catalog node number = 0
2. Try connecting to the ARCHIVE database, but you will not be able to:
   # db2 "connect to archive"
   SQL5035N The database requires migration to the current release.
3. Migrate the database using the `db2 migrate database` command as follows:
   db2 "migrate database archive"
   When the database is migrated successfully, the following is displayed after running the above command:
   DB20000I The MIGRATE DATABASE command completed successfully.
4. Verify the database manager configuration and database configuration by running the following commands:
   # db2 "get dbm cfg"
   # db2 "get db cfg for archive"
   You can compare the outputs of the above commands with the outputs of the same commands that were run before the instance migration, e.g. `dbmcfg.out` and `dbcfg.out`. For example, one of the parameters you can check is that the primary log path is still the same as before. Optionally, you may update any of the database configuration parameters.

### 3.1.7 Rebind packages

During database migration, all existing packages are invalidated. After the migration process, each package is rebuilt when it is used for the first time by the Version 7.1 database manager. For better performance, during this migration process, you can rebind all the packages stored in the database by running the `db2 bind` command:

1. Connect to the OnDemand ARCHIVE database:
   # db2 "terminate"
   # db2 "connect to archive"
   Database Connection Information
   Database server       = DB2/6000 7.1.0
   SQL authorization ID  = ROOT
   Local database alias  = ARCHIVE
   Note the above output now states "DB2/6000 7.1.0".
2. Run the `db2 bind` command as follows:
   # db2 BIND /home/archive/sqllib/bnd/db2ubind.lst BLOCKING ALL GRANT PUBLIC
   This is a sample output when running the above command:
   LINE   MESSAGES FOR db2ubind.lst
   -----  -------------------------------------------------------------------
   SQL0061W The binder is in progress.
   LINE   MESSAGES FOR db2clpnc.bnd
3. Run the `db2 bind` command again as follows:

```bash
# db2 BIND /home/archive/sqlib/bnd/@db2cli.lst BLOCKING ALL GRANT PUBLIC
```

This is a sample output when running the above command:

```
LINE    MESSAGES FOR db2ucli.lst
------  -------------------------------------------------------------------
SQL0061W  The binder is in progress.
SQL0091N  Binding was ended with "0" errors and "0" warnings.
```

4. Stop DB2:

```bash
# db2 terminate
# db2stop
```

### 3.1.8 Run statistics and reorganize OnDemand system tables

Start the OnDemand database and use the `arsdb` command to run statistics and reorganize the OnDemand system tables:

```bash
# /usr/lpp/ars/bin/arsdb -gkv
# /usr/lpp/ars/bin/arsdb -mv
```

### 3.1.9 Migrating Administration Server instance

In addition to the OnDemand instance and database, if the DB2 Administration Server instance was created in DB2 Version 5.2, migrate the Administration Server instance:

```bash
# /usr/lpp/db2_07_01/instance/db2imigr -u db2as db2as
DBI1070I Program db2imigr completed successfully.
```
An OnDemand multi-platform Migration Guide

3.1.10 DB2 migration completed

The DB2 migration to Version 7.1 is completed. You may want to take a full system backup of your AIX operating system with the `mksysb` command. You may also want to take a backup of your DB2 database.

In addition, if you enable the logon security user exit in OnDemand, and if you have used DB2 embedded SQL in your programs, you may have to recompile any customized user exit programs, e.g., the security user exit program (`arsusec`).

Optionally, after all DB2 instances have been migrated to DB2 Version 7.1, you can remove the DB2 Version 5.2 software from the system through `smit`.

3.2 Migrating from DB2 version 6.1

If your current DB2 is Version 6.1 instead of Version 5.2, you can still follow most of the steps in the previous section, 3.1, “DB2 version 5.2 to version 7.1 migration tasks” on page 84, except for the steps on migrating the database (3.1.6, “Migrating ARCHIVE database” on page 91).

DB2 Version 6.1 is installed in the `/usr/1pp/db2_06_01` directory. When you are reading the text in the previous section, just replace the references to DB2 Version 5.2 directory, `/usr/1pp/db2_05_00`, with `/usr/1pp/db2_06_01`. 

Note: If migrating the DB2 Administration Server instance does not work, uninstall `db2as` in DB2 Version 5.2, and reinstall `db2as` in DB2 Version 7.1, as it is basically only an instance with no databases:

1. Logon as the Administration Server (`db2as`) instance and stop it:
   
   ```
   # su - db2as
   $ db2admin stop
   $ exit
   ```

2. Drop the `db2as` instance using DB2 Version 5.2 command:
   
   ```
   # /usr/lpp/db2_05_00/instance/dasidrop db2as
   DDII0701 Program dasidrop completed successfully.
   ```

3. Create the `db2as` instance using DB2 Version 7.1 command:
   
   ```
   # /usr/lpp/db2_07_01/instance/dasicrt db2as
   DDII0701 Program dasicrt completed successfully.
   ```
3.3 ADSM version 3.1 to TSM version 4.1 migration tasks

To migrate ADSM Version 3.1 to TSM Version 4.1 on AIX, we will use the Migrate Install installation option.

You should save copies of the following files: dsmserv.dsk, dsmserv.opt, dsm.sys, dsm.opt, dsm.opt.db2, the device configuration file, the volume history file, and any scripts that you may have written. You should also save information about the archive storage devices that are attached to the system. (For example, save the output from `lsdev -Cc optical` and `lsdev -Cc library`.)

Before you install Tivoli Storage Manager, ensure you have the following:

- You have an appropriately configured RISC System/6000® with at least 120MB of free disk storage and 128MB of memory.

References:

- Tivoli Storage Manager for AIX Quick Start Version 4 Release 1, GC35-0402-00
- IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1, GC27-0834-00

3.3.1 Backup ADSM database and operation files

1. Perform a full ADSM database backup. E.g.:
   ```
   adsm> backup db type=full devclass=dumpdev
   ```
2. Backup the volume history (volhist) and device configuration (devconfig). E.g.:
   ```
   adsm> backup volhist
   adsm> backup devconfig
   ```
3. Ensure that the dsmserv.dsk file is in the `/usr/lpp/adsmserv/bin` directory. This file will be automatically copied to the TSM server directory during TSM installation.
4. Create a temporary directory and copy the ADSM server and client option files, e.g. dsmserv.dsk, dsmserv.opt, dsm.sys, dsm.opt, dsm.opt.db2, to that directory.
5. Copy the volume history output file, e.g., volhist.out, and the device configuration output file, e.g., devconfig.out, to the same temporary directory.

Existing device configuration and volume history files are automatically migrated to TSM if they are named devconfig and volhist respectively. If the files are automatically copied, the server options file is automatically updated.
If these files are not named devconfig and volhist, you should back up the files and save them in a temporary directory. You can later edit the new server options file to include the names of these files.

6. Copy the output of the "query license" command:
   
   adsm> q license

   Copy and save the output to a text file. This will be used later for reregistering the TSM licenses.

7. Make a listing of all the AIX device definitions of the devices used by TSM, e.g. optical library and optical drives, with the lsdev -C command

3.3.2 Migrate install to Tivoli Storage Manager version 4.1

TSM Version 4.1 will be installed in the following directories:

- For the server: /usr/tivoli/tsm/server/bin
- For the AIX command line administrative client and the backup-archive client:
  /usr/tivoli/tsm/client/ba/bin
- For the TSM APIs: /usr/tivoli/tsm/client/api/bin

Here are the steps for installing TSM Version 4.1:

1. Logon to AIX as the root user if you have not already done so.
2. Halt the ADSM server. (Before doing this, make sure the command prompt is adsm> and not the AIX prompt!)
   
   adsm> halt

3. Insert the Tivoli Storage Manager Version 4.1 CD-ROM into the drive.
4. At the AIX command prompt, use the smitty command to install the TSM filesets, e.g.:
   
   # smitty install_latest

5. In the smitty menu screen, select your input device, e.g. /dev/cd0. For the software to install, select the TSM components you require, e.g.:
   
   - tivoli.tsm.client.api.aix43.32bit
   - tivoli.tsm.client.ba.aix43.32bit
   - tivoli.tsm.client.image.aix43.32bit
   - tivoli.tsm.client.web.aix43.32bit
   - tivoli.tsm.devices.rte
   - tivoli.tsm.license.rte
   - tivoli.tsm.server.com
   - tivoli.tsm.server.rte
   - tivoli.tsm.server.webadmin
   - tivoli.tsm.msg.en_US.[devices | server | webhelp] (these are installed automatically.)

6. Select the other install options, and start the installation. The installation may take a while.
7. After the installation has completed successfully, remove the CD and exit from smitty.

8. Verify that the dsmserv.opt and dsmserv.dsk files are in the /usr/tivoli/hsmserv/bin directory. If not, copy any of the missing files from the /usr/lpp/hsmserv/bin directory. (Optionally, update the parameters in dsmserv.opt, e.g., for buffer pool and log pool sizes, depending on memory available.)

9. Verify that the device configuration file, e.g., devconfig.out, and the volume history file, e.g., volhist.out, are in the /usr/tivoli/hsmserv/bin directory. If not, copy them from the /usr/lpp/hsmserv/bin directory, and edit the dsmserv.opt file with the new location of these files.

10. Verify that the dsm.sys and dsm.opt files are in the /usr/tivoli/hsmserv/bin directory (and/or /usr/tivoli/hsmserv/client/bin directory). If not, copy them from the /usr/lpp/adsm/bin directory.

11. Copy the dsm.opt.db2 file, if it exists, from the temporary directory to /usr/tivoli/hsmserv/client/bin directory.

### 3.3.3 Reconfigure files and scripts

- If you have created scripts that contain paths to "/usr/lpp/adsm/bin", change the paths to "/usr/tivoli/hsmserv/bin".

- If you have scripts that contain paths to "/usr/lpp/adsm/bin", change the paths to "/usr/tivoli/hsmserv/client/bin".

- In the /etc/inittab file, remove the "autosrvr" record if the /etc/inittab file already has a record for ars_adsm to start the ADSM/HSMS server.

- In the /usr/lpp/ars/bin directory, backup the ars_adsm file. Edit the ars_adsm file and locate the following variables and update those related to AIX with the new paths:

  ```
  ADSM_DIR=/usr/tivoli/hsmserv/bin
  ADSM_CLIENT_DIR=/usr/tivoli/hsmserv/client/bin
  ```

- In the /usr/lpp/ars/config directory, backup the ars.cfg file. Edit the ars.cfg file and locate the lines near the end of the file with the following variables, and update them with the new paths:

  ```
  ARS_DB2_ADSM_CONFIG=/usr/tivoli/hsmserv/client/api/bin/dsm.opt.db2
  DSMSERV_DIR=/usr/tivoli/hsmserv/bin
  DSMSERV_CONFIG=/usr/tivoli/hsmserv/client/api/bin/dsmserv.opt
  DSM_DIR=/usr/tivoli/hsmserv/client/api/bin
  DSM_CONFIG=/usr/tivoli/hsmserv/client/api/bin/dsm.opt
  DSMG_DIR=/usr/tivoli/hsmserv/client/ba/bin
  DSMG_CONFIG=/usr/tivoli/hsmserv/client/ba/bin/dsm.opt
  DSMI_DIR=/usr/tivoli/hsmserv/client/api/bin
  DSMI_CONFIG=/usr/tivoli/hsmserv/client/api/bin/dsm.opt
  ```
Normally, if TSM is used only for OnDemand purposes, then the dsm.opt and dsm.sys files in the api/bin sub-directory is symbolic linked to the same files in the ba/bin sub-directory. For example:

```
# cd /usr/tivoli/tsm/client/api/bin
# ln -s /usr/tivoli/tsm/client/ba/bin/dsm.sys
# ln -s /usr/tivoli/tsm/client/ba/bin/dsm.opt
# ln -s /usr/tivoli/tsm/client/ba/bin/dsm.opt.db2
```

### 3.3.4 Apply TSM server & client maintenance

After installing TSM Version 4.1 base code, apply the latest TSM maintenance updates for Version 4.1. At the time of writing, we used TSM server maintenance level 4.1.4.0 and TSM client maintenance level 4.1.3.0. You can download the maintenance updates from the following URL:


The TSM server PTFs for AIX are in the server/v4r1/AIX sub-directory, while the TSM client PTFs for AIX are in the client/v4r1/AIX sub-directory.

Use `smitty update_all` command to apply the updates. Do not commit the updates. You have to reboot the system after applying the updates. Go to the next step first before rebooting.

### 3.3.5 Initialize Web Administrative Interface Driver

Setup the server for the administrative Web interface by running the following commands:

```
# cd /usr/tivoli/tsm/server/bin
# ./dsmserv runfile /usr/tivoli/tsm/server/webimages/dsmserv.idl
```

Reboot the AIX server.

After the system restarts, verify that TSM server has started (if an entry is in /etc/inittab to start the TSM server), or start the TSM server now.

### 3.3.6 Reregister TSM licenses

Your licenses from the previous ADSM version are no longer valid and must be reregistered. Retrieve the saved output of the "query license" command, and reregister the same number of licenses. The TSM product you have installed on your OnDemand system would probably be licensed for use with OnDemand only.
Note a Client Node is now called a Managed System for LAN, and Advance Device Support is now called a Managed Library. For example, to register 10 client nodes (managed system for LAN) and one optical library (managed library), you would run the following commands:

```
  tsm> reg lic file=10mgsyslan.lic
  tsm> reg lic file=1library.lic
```

### 3.3.7 TSM migration completed

The TSM migration to Version 4.1 is completed. You may want to take a full system backup of your AIX operating system with the `mksysb` command. You may also want to take a backup of your TSM database.

After installing the TSM Version 4.1 filesets, most of the ADSM filesets would be obsolete. You should remove all the ADSM filesets after verifying that the TSM Version 4.1 installation and OnDemand is working. You have to reboot the system after removing them.

### 3.4 Migrating from TSM version 3.7

If you currently have TSM Version 3.7 installed instead of ADSM Version 3.1, you can still follow most of the steps in the previous section, 3.3, “ADSM version 3.1 to TSM version 4.1 migration tasks” on page 95, except for the steps on reconfiguring the paths in your files and scripts (3.3.3, “Reconfigure files and scripts” on page 97), since TSM Version 4.1 is installed in the same directory as TSM Version 3.7, i.e., `/usr/tivoli/tsm/`.

The `dmserv.dsk` and `dmserv.opt` files should already be in the `/usr/tivoli/tsm/server/bin` directory. The `dsm.sys`, `dsm.opt` and `dsm.opt.db2` option files should already be in the `/usr/tivoli/tsm/client/ba/bin` and/or `/usr/tivoli/tsm/client/api/bin` directories.

### 3.5 OnDemand version 2.2.1 to version 7.1 migration tasks

This section describes how to migrate OnDemand from Version 2.2.1 to Version 7.1. If you need to migrate more than one instance, then you must repeat the steps for each instance. If your OnDemand system contains servers on more than one physical node or workstation, then you must repeat the steps on each node or workstation.
Before migrating OnDemand to Version 7.1, you must have migrated DB2 to Version 7.1 and above, and TSM to Version 4.1 and above. Refer to the previous sections on DB2 migration (DB2 version 5.2 to version 7.1 migration tasks) and TSM migration (ADSM version 3.1 to TSM version 4.1 migration tasks). In addition, you must install or update the C Set ++ Runtime for AIX 4.3 (xlC.rte) to 5.0.0.0 level and above.

**Note:** If you are running a version earlier than Version 2.2.1.0, then you must upgrade to Version 2.2.1.0 first before you migrate to Version 7.1.

References:

- IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1, GC27-0834-00
- IBM Content Manager OnDemand for Multiplatforms Version 7.1 Release Notes

### 3.5.1 Backup DB2 ARCHIVE database (full offline)

Backup the OnDemand ARCHIVE database if you have not already done so.

### 3.5.2 Backup TSM database

Backup the TSM database if you have not already done so.

### 3.5.3 Backup OnDemand configuration files and scripts

1. Create a temporary directory/filesystem, e.g., `/temp/od221bkup`.
2. Make a copy of the following files:
   - `ars.cfg`, `ars.ini`, `ars.cache`, `ars.dbfs`, `arsload.cfg` in the `/usr/lpp/ars/config` directory, including those configuration files for your other OnDemand instances.
   - `ars_adsm`, `arslog` and `arsprt` in the `/usr/lpp/ars/bin` directory.
3. Also, make a copy of any customized user exit programs and scripts files/directories you may have created within the `/usr/lpp/ars` directory.

### 3.5.4 Uninstall OnDemand version 2.2.1

To uninstall OnDemand version 2.2.1, perform the following steps.

1. Run the `arslink` program to delete the symbolic links to the Version 2.2.1 server programs:
   ```bash
   # cd /usr/lpp/ars/config
   ```
# ./arslink -u

The arslink program no longer exists in Version 7.1; the bin/srvr sub-directory no longer exists and there are no longer symbolic links to the arsadmin, arsmaint, arsobjd, arssockd, and arstblsp programs. Each of these programs are individual executable files in the /usr/lpp/ars/bin directory.

2. Uninstall OnDemand Version 2.2.1 server software. This will remove all the files and directories under the /usr/lpp/ars directory related to OnDemand server. You have to remove prior versions of OnDemand client or server software if they still exist on the system. If you only have OnDemand server installed under /usr/lpp/ars, the /usr/lpp/ars directory will be removed as well. If you have the ODWEK (OnDemand Web Enablement Kit) code installed, which is in the /usr/lpp/ars/www directory, then the /usr/lpp/ars directory remains.

Use the smitty remove command to remove the OnDemand Version 2.2.1 fileset (ars.srvr), and also other prior versions of OnDemand, e.g., ars_client.win31 and/or ars_client.win32.

As a precautionary measure, you may want to backup the entire /usr/lpp/ars directory before removing the OnDemand Version 2.2.1 files, just in case you may have forgotten to backup one of your customized scripts or programs. For example, you may the tar command to do this:

```bash
# cd /usr/lpp/ars
# tar -cvf /temp/ars221.tar .
```

3. After uninstalling, exit SMIT. You may want to browse through the /usr/lpp/ars directory, if it still exists, to check if any files remain.

3.5.5 Install AIX C Set ++ runtime libraries

For AIX 4.3.3 or later servers, you must install the C Set ++ Runtime for AIX 4.3 (xlC.rte 5.0.0.0) before you migrate to OnDemand Version 7.1. You can get the latest version of this software from the IBM FTP Software site at this URL:


Use the smitty install_all command to install the C Set ++ Runtime filesets.

Alternatively, if your AIX server already has the xlC.rte fileset installed but it is a backlevel one, e.g. 4.0.2.0, you can download the Version 5 fixes from this URL:


You have to download the following files:

- xlC.rte
- xlC.aix43.rte (pre-requisitie of xlC.rte)
We used the 5.0.2.0 maintenance level as well as the latest 5.0.2.x PTF of the above filesets. Use the smitty update_all command to update the C Set ++ Runtime filesets.

### 3.5.6 Install OnDemand version 7.1 software

To install OnDemand version 7.1, perform the following steps:

1. Insert the Content Manager OnDemand Version 7.1 for AIX CD-ROM into the drive.
2. Use the smitty install_latest command to install the OnDemand product files using SMIT.
3. In the smit menu screen, select the CDROM drive, e.g., /dev/cd0.
4. Then, for Software to Install, display the software components on the CD-ROM to install and select the following:
   - 7.1.0.0 IBM Content Manager OnDemand for AIX (ars.srvr)
5. Use the following smit install options since we are installing the base installation code:
   - COMMIT software updates? yes
   - SAVE replaced files? no
6. When the installation completes successfully, exit SMIT and go to the AIX command prompt.
7. Run the following command to verify that the software has been installed correctly:
   ```
   # lppchk -v
   ```

### 3.5.7 Apply OnDemand version 7.1 PTF

After installing the OnDemand software from the CD-ROM, apply the latest service update for OnDemand. You can obtain the latest service update from the IBM FTP Software site on the Web at this URL:


At the time of writing, we applied the OnDemand 7.1.0.4 level PTF.

1. Download the update file, odaix, to a temporary directory, e.g., /temp/od7104ptf.
2. Install the OnDemand PTF by using the smitty update_all command:
   ```
   # cd /temp/od7104ptf
   # smitty update_all
   ```
3. In the smit menu screen, you can use the following options:
   - COMMIT software updates? no
   - SAVE replaced files? yes
This will update the ars.srvr fileset to the PTF level you downloaded, e.g., 7.1.0.4.

4. After the OnDemand PTF has been installed, exit SMIT and run the following command at the AIX command prompt to verify that the PTF has been installed correctly:
   
   # lppchk -v

3.5.8 Reconfigure OnDemand configuration files and scripts

This section will guide you to reconfigure your OnDemand configuration files, customized scripts and user exit programs.

1. Use the information from the files you have saved in a previous section, “Backup OnDemand configuration files and scripts”, and configure the following files:

   - ars.cfg (in /usr/lpp/ars/config)
     
     Edit the ars.cfg file and, based on the previous ars.cfg file, update the OnDemand parameters, e.g., ARS_NUM_LICENSE. Additionally, you may use the following definitions for the respective configuration parameters:

     ARS_DB2_ADSM_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt.db2
     DSMSERV_DIR=/usr/tivoli/tsm/server/bin
     DSMSERV_CONFIG=/usr/tivoli/tsm/server/bin/dsmserv.opt
     DSM_DIR=/usr/tivoli/tsm/client/api/bin
     DSM_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt
     DSMG_DIR=/usr/tivoli/tsm/client/ba/bin
     DSMG_CONFIG=/usr/tivoli/tsm/client/ba/bin/dsm.opt
     DSMI_DIR=/usr/tivoli/tsm/client/api/bin
     DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt

    Normally, if TSM is used only for OnDemand purposes, then the dsm.opt and dsm.sys files in the api/bin sub-directory can be symbolic linked to the same files in the ba/bin sub-directory. For example:

    # cd /usr/tivoli/tsm/client/api/bin
    # ln -s /usr/tivoli/tsm/client/ba/bin/dsm.sys
    # ln -s /usr/tivoli/tsm/client/ba/bin/dsm.opt
    # ln -s /usr/tivoli/tsm/client/ba/bin/dsm.opt.db2

   - ars.ini (in /usr/lpp/ars/config)
     
     If you have other configuration stanzas in the previous ars.ini file for other OnDemand instances, or for the OnDemand Production Data Distribution (PDD), edit the new ars.ini file with the additional information.

   - ars.cache (in /usr/lpp/ars/config)
     
     Edit the ars.cache file and, based on the previous ars.cache file, append the cache filesystems names.
1. Edit the ars.dbfs file and, based on the previous ars.dbfs file, append the database filesystems names. Remember to include the tablespace type as well, e.g. SMS.

2. Edit the ars_adsm file, and based on the previous ars_adsm file, update any parameters you had customized, e.g. CUST_DUMPDEV, USERID and PASSWD.

In addition, location the TSM_CLIENT_DIR parameter. The TSM backup/archive client directory for AIX should be /usr/bin:

   TSM_CLIENT_DIR=/usr/tivoli/tsm/client/ba/bin

3. Configure the arslog and arsprt files if there were previously customized.

2. Restore and reconfigure any other scripts and recompile any user exit programs that you may have written for previous versions, in order for them to work with OnDemand Version 7.1. (Do this preferably in a test environment first.)

3. Verify initialization processes and scheduled tasks. For example, you may need to modify the /etc/inittab file, crontab and other scheduled tasks.

4. Verify the DB2 log user exit, db2uext2, in the /home/archive/sql/lib/adm directory is symbolic linked to /usr/lpp/ars/config/db2uext2.disk (for archival to disk), or /usr/lpp/ars/config/db2uext2.adsm (for archival to TSM).

3.5.9 Upgrade OnDemand system tables

This section will guide you to update the OnDemand system tables in DB2 using the arsdb command:

1. Create a temporary directory, e.g., /temp/od221db, with at least 100MB of free space. (The exact amount of free space required depends on the number of application groups, folders and other OnDemand objects defined, and the number of annotations that are stored in the database.)

2. Make the temporary directory the current directory. E.g.:

   # cd /temp/od221db

3. Start DB2 if it is not already started:

   # /usr/lpp/ars/bin/arsdb -gkv

4. Export the OnDemand system tables. In this guide, we use the tee command in addition to the arsdb command in the command line so that any output from the arsdb command will be saved for your review:

   # /usr/lpp/ars/bin/arsdb -lxv | tee lxv.out

   This might take a while, especially when there are many annotations.

   Check the temporary directory and verify that the ars* files are created. (There were 26 “ars” prefixed files in our test environment.)
Browse through the lxv.out file for any errors.

5. Drop the old tables:
   `#/usr/lpp/ars/bin/arsdb -dv`
   You will be prompted with the following question:
   Are you sure you wish to drop the database tables and/or indexes:
   Type "y" and hit Enter to confirm. The arsdb command will then proceed to
drop the tables and indexes:
   Dropping table root.arsag

6. Create the new tables and indexes:
   `#/usr/lpp/ars/bin/arsdb -rtv | tee rtv.out`

7. Import the old table information from the exported files into the new tables:
   `#/usr/lpp/ars/bin/arsdb -ilv | tee ilv.out`
   This might take a while. For example, if you have many annotations, this
operation might seem to “hang” while it is importing the information into the
annotation database table.

Browse through the ilv.out file for any errors. There will be some warnings
that no data was available to load into database columns like
"UPD_USERID", "UPD_DATE" and "LAST_DOC_DATE". The messages are
normal, as these columns are some of the new database columns in the new
OnDemand system tables.

8. Lastly, run maintenance on the new tables:
   `#/usr/lpp/ars/bin/arsdb -mv`

9. Verify your OnDemand installation and check that the database and
   OnDemand processes (arssockd) are running:
   `#/usr/lpp/ars/bin/arsdb -gkv`
   `#/usr/lpp/ars/bin/arssockd`

### 3.5.10 OnDemand migration completed

Your OnDemand system is now migrated to Version 7.1. Take a full system
backup of your AIX operating system with the mksysb command. You may also
want to take a backup of your DB2 database as well as your TSM database.
Migrating an OnDemand Object server

In this part, we provide the steps on migrating OnDemand on the Object server from Version 2.2.1 to Version 7.1. We also provide instructions on migrating the DB2 and ADSM/TSM components as well.

The chapters in this part are divided by operating system, thus providing specific instructions that can be followed in almost any installation. The OnDemand Object server migration will be explained for:

- Microsoft Windows NT, see Chapter 4, “Windows NT” on page 109.
- IBM AIX, see Chapter 6, “AIX” on page 157.
Windows NT

This chapter provides step by step instructions on how to perform a complete OnDemand Object Server migration from version 2.2 to version 7.1 running on the Windows NT platform.

The migration scenario in this chapter is based on OnDemand running in an object server configuration and includes instructions on how to migrate ADSM/TSM to its most recent release.

The ADSM/TSM migration will be performed in two stages, providing flexibility for different real-world installations.

This chapter also discusses the following procedures:

- ADSM version 3.1 to TSM version 3.7 migration steps
- TSM version 3.7 to TSM version 4.1 migration steps
- OnDemand version 2.2.1 to version 7.1 migration steps
4.1 Migration Overview

In this chapter the necessary steps for migrating an OnDemand Object server will be covered. Object Server migration is simpler than that on a Library Server, because the Object Server uses no database manager.

Although fewer steps are required, we must carefully plan this migration. The procedure involves upgrading the OnDemand server code, and, in case it is implemented, upgrading the Storage Manager.

**Attention:** When planning an OnDemand migration, you should always remember that both Library and Object servers must be at the same release level at production time. This includes the four version digits, as 7.1.0.2 is not the same level as 7.1.0.3. Unpredictable results can happen if the above statement is not followed.

4.1.1 Migration Steps

The migration described on this chapter will involve OnDemand server upgrade and ADSM/TSM server upgrade.

We will begin with an old configuration, and then migrate to our target scenario. This migration will involve only one stage, as described in Figure 4-1.

The first section on this chapter will provide a thorough description of the initial environment, or Scenario. The next sections will then cover the migration stages, beginning with a full backup, as is mandatory before attempting any migration. Next, ADSM 3.1 will be upgraded to TSM 3.7, which in turn will be upgraded to TSM 4.1. The final stage will then be migrating the OnDemand server code from version 2.2 to version 7.1.
Figure 4-1  Object Server Migration Steps
4.2 Initial Environment and Full Backup

In this section we will describe both the hardware and software environment in which we performed our migration.

Also in this section, the instructions on how to perform a full OnDemand Object Server backup will be discussed.

4.2.1 Platform Description

The procedures described in this chapter were tested in the following platform:

- IBM PC300GL Personal Computer, with a 300 MHz Pentium II Processor, 96 MB of RAM and a 4GB Hard Disk Drive
- Microsoft Windows NT Server 4.0 with Service Pack 6.

4.2.2 OnDemand Environment Description

Our OnDemand environment consisted of the following.

Software Installation
The OnDemand related software was installed as follows:

- ADSM 3.1.2.90 was installed on c:\Program Files\IBM\ADSM, with both Administrative and Backup clients on the same directory.
- OnDemand 2.2.1.10 was installed on c:\Program Files\IBM\OnDemand for WinNT

ADSM Storage Configuration

The ADSM Storage was configured as follows:

Database volumes
The ADSM Database volumes were located in
- c:\adsmdata\db3.dsmSize: 50 MB
- c:\adsmdata\db4.dsmSize: 13 MB

Recovery Log volumes
The ADSM Recovery Log volumes were located in
- c:\adsmfiles\log3.dsmSize: 40MB.

Storage configuration
Client Node          ODNODE
Policy Domain        Standard
• Backup Retention: 0
• Archive Retention: 0

Active Policy Set Standard
Management Class Standard
• Space Management Technique: None
• Auto Migrate on non-use: 0
• Migration Requires Backup: Yes

**Note:** The above was set to Yes by default. In our Scenario, no migration was set inside TSM.

• Migration Destination: Archivepool

Archive Copy Group Standard
• Retain version: 5

**Note:** The value of Retain Version is normally set to 365 days or more. We used 5 days for test purposes only.

• Copy Serialization: SHRSTATIC
• Copy Destination: Archivepool

Storage Pool Archive Pool (Disk Storage Pool)
• Type: Primary
• Device Class Name: Disk
• Access: ReadWrite
• Cache Migrated Files: No

**Storage Pool Volumes:**
The volumes for the Archive Pool were located in
• c:\adsmdata\stvol1.dsm Size 200 MB

**OnDemand configuration**
OnDemand was configured as follows

**Server Definition**
• Server Name: odoswinnt
• Host Name: 10.1.1.2
• Type: Local Windows NT Server

**Instance Definition**
• Name: ARCHIVE
4.2.3 Performing a Full Object Server Backup

Because in an OnDemand Object Server there is no DB2, the backup procedures are limited only to the OnDemand Cache Storage directories and ADSM database and disk storage files.

Backing up OnDemand

Before backing up OnDemand, we must stop all OnDemand services.

1. Open the Services Console, using Start Menu -> Settings -> Control Panel -> Services
2. Select OnDemand Load Data, then click on Stop. See Figure 4-2.

![Figure 4-2 Stopping OnDemand Services](image)
3. Click on **OnDemand MVSD Server** (if it is running), then click **Stop**
4. Click on **OnDemand Scheduler**, then click **Stop**
5. Finally, Click on **OnDemand ObjSrvr**, and click **Stop**

Now, what we want to do is to set services to start manually, in order to have control on what services will be running during the migration.

6. Open the services console, Click on **OnDemand ObjSrvr**.
7. Click on **Startup**. A dialog box will appear, containing the properties for the specified service.
8. Select **Manual** in **Startup Type**.
9. Click on **OK** to close the window.

![Services](image)

**Figure 4-3** Configuring services to start manually

10. The above procedure must be repeated for the four OnDemand services.

**Backing up the cache storage**

The OnDemand cache storage is basically a directory tree structure that contains files which, in turn, contain the compressed objects. Because of that, backing up the cache storage is very similar to a regular file backup. In our environment, we used Winzip to backup this structure.

1. Open WinZip and create a new archive
2. Add the cache directory to the archive. Make sure that compression is set to None (Cache Storage files are already compressed), and that Save full path info is selected.
3. Repeat the above steps for every cache filesystem defined for the instance.
Custom files are any User-customized file that operates with OnDemand. An example of this could be a script, a custom User Exit, and the arslog.bat and arsprt.bat files in the \Program Files\IBM\OnDemand for WinNT\bin directory.

These files must be backed up in order to preserve them from any media failure.

1. Copy arsprt.bat and any scripts or custom User Exits to a backup directory

**Backing up the OnDemand registry keys**
The OnDemand registry keys contain all the OnDemand instance configuration information, like database filesystem paths and Concurrent Licenses.

2. Start the regedit program, using **Start Menu -> Run... -> regedit.exe**
3. Locate the **HKEY_LOCAL_MACHINE\SOFTWARE\IBM\OnDemand for WinNT** key. Use Figure 4-5 as a reference.
4. Make sure OnDemand for WinNT is highlighted, as in Figure 4-6, and click Registry -> Export Registry File.

5. Select the folder where you want to backup the registry (In our case, c:\backups\initial\ondemand), then type a name for the file.
6. Make sure that Selected branch is selected, as in figure Figure 4-7, and click save.
Backing up ADSM
In order to preserve the ADSM database information, we must create a full ADSM database backup.

1. Perform a full ADSM database backup. E.g.:
   adsm> backup db type=full devclass=dumpdev

   **Note:** We assume you have defined the dumpdev Device Class. Consult your ADSM documentation on how to prepare your system for database backup.

We must also save the server configuration files.

2. Copy the configuration files to a backup directory
   cp c:\Progra~1\ibm\adsm\server\dsmserv.opt c:\backups\initial\adsm
   cp c:\Progra~1\ibm\adsm\server\volhist.out c:\backups\initial\adsm
   cp c:\Progra~1\ibm\adsm\server\devcnfg.out c:\backups\initial\adsm
   cp c:\Progra~1\ibm\adsm\server\dsm.opt c:\backups\initial\adsm
   cp c:\Progra~1\ibm\adsm\server\dsmserv.dsk c:\backups\initial\adsm

**4.3 Storage Manager Migration**

This section covers the Storage Manager migration. There are different ways to perform this migration. The path we chose was to completely un-install ADSM, because it appears to be the cleanest migration path.
4.3.1 Migrating ADSM 3.1 to TSM 3.7.4

This section covers the migration of ADSM 3.1.2.90 to TSM 3.7.4.0. We will first migrate ADSM to TSM 3.7.3, and then apply the 3.7.4 fix.

We will first make a copy of the database and recovery log volumes, along with the configuration files. We will then uninstall ADSM, and then we will completely remove ADSM registry keys and directory structures. After ADSM is completely removed from the system, we will install TSM 3.7.3 as if it were a brand new installation. After installing and defining the new TSM server, we will put back in place the configuration files and the database and recovery log volumes. When we restart the server, and after upgrading the database, TSM will access the original database and storage files by using the original configuration files, and we will be able to access our archived objects the same way as we did before the migration.

Preparing data for migration

Before un-installing ADSM, we must make sure that we save all the information we will need to restore our server after the migration. This information consists on two parts:

- ADSM configuration files
- ADSM database and recovery log volumes

ADSM Configuration files

The configuration files are used by ADSM/TSM to identify database, recovery log, and storage volumes. They also keep very important configuration information that is not stored in the database.

dsmserv.opt Is the ADSM Server configuration file. It contains all user-defined options, like communications method.

volhist.out Is the ADSM Backup Volume History file. It helps ADSM to keep an index of all the storage volumes used for database backup, thus making it easier to restore the database from a particular backup.

devcnfg.out Is the ADSM Device Configuration File. It contains all device and device class definitions.

dsmserv.dsk Contains the full path and filenames of ADSM database and recovery log volumes.

dsm.opt Is the ADSM Client Options File. It contains user-defined configurations, like what server the client connects to, or what communications method to use.
**Note**: More information about this files can be found in ADSM/TSM manuals.

**ADSM Database and Recovery Log Volumes**
ADSM stores the database information in one or more files that are located in the hard disk drive of the ADSM server. This files are called database volumes.

Recovery Log volumes are the files in which ADSM stores the transactional log. This log helps rebuild the database in case a media failure should occur.

**Note**: More information about the ADSM Database can be found on the ADSM/TSM manuals.

**Saving the necessary files**
Make sure all ADSM services are stopped, and that they are configured to start manually.

1. **Using a Windows command line, create a temporary directory using**
   ```
   mkdir c:\backups\migration1\adsm
   ```

2. **Copy all ADSM configuration files**
   ```
   cp c:\Progra^1\ibm\adsm\server\dsmserv.opt c:\backups\migration1\adsm
   cp c:\Progra^1\ibm\adsm\server\volhist.out c:\backups\migration1\adsm
   cp c:\Progra^1\ibm\adsm\server\devcnfg.out c:\backups\migration1\adsm
   cp c:\Progra^1\ibm\adsm\server\dsmserv.dsk c:\backups\migration1\adsm
   cp c:\Progra^1\ibm\adsm\server\dsm.opt c:\backups\migration1\adsm
   ```

3. **Copy Database and Recovery Log volume files**
   ```
   cp g:\tsmdb\db1.dsm c:\backups\migration1\adsm
   cp g:\tsmdblog\log1.dsm c:\backups\migration1\adsm
   ```

**Un-installing ADSM 3.1**
We will now remove all ADSM related information from our server.

1. **Click on Start menu > Programs > IBM ADSM > Uninstall IBM ADSM Components**
Figure 4-8 Starting ADSM Un-install

2. Click **Select All**, and then click **Remove**.

Figure 4-9 Un-installing ADSM Components

3. Answer **Yes** to the “Are you sure you want to remove the selected application and all of its components?” message.

4. If any Shared Library related warning appears, answer **Yes to All**.

5. After all components have been removed, click **Done**.
6. Reboot your computer.
7. After rebooting, use Windows Explorer to completely remove the `c:\Program Files\IBM\ADSM` directory, including all subdirectories.
8. Using regedit, remove the `HKEY_LOCAL_MACHINE\SOFTWARE\IBM\ADSM` registry key, as in Figure 4-10.

![Figure 4-10  Removing ADSM Registry Keys](image)

9. Reboot your computer.

**Installing TSM 3.7.3**

After we have successfully removed all ADSM related information from our computer, we can now install TSM 3.7.3.

1. Start the Installation Wizard.
2. Click **Next** until the Destination Folder selection screen appears. We will use the default, so click **Next**.
3. Choose **Custom**, then click **Next**
4. Make sure all the components are selected. Click **Next**.
5. Click **Next**, and **Next** again to begin copying files.
6. After the installation finishes copying files, click **Finish** to reboot your computer.
**Configuring the new server**

After your computer reboots, you are presented with the TSM Server Utilities initial configuration screen. We need to configure a new server, just to get it registered in the registry. We will not be using any of the configurations we make at this time.

1. On the TSM Server Initial configuration, click *Ok*, then *Next*, and *Next* again.
2. Select *Stand-alone*, then *Next*, and *Finish*.
3. Now we are presented with the Performance configuration wizard. Click *Next*, then *Next*.
4. After the disk performance measuring, click *Next*. We will ignore that information.
5. Click *Next*, and uncheck all check-boxes. Then click *Finish*.
6. Now we are presented with the TSM Server initialization wizard. Accept the default instance directory, click *Next*. Accept the initial volume paths. We are not actually going to use them at all. Click *Next*, then *Next* again, and click on *Finish*.
7. Now, when the Database volume wizard appears, click *Cancel*. Click *Yes*, then close the Server Utilities main window.

**Restoring the server**

After the server was registered, we need to discard its configuration and replace it with our previous server’s configuration and information. We will do this by copying the files that we have previously saved into their new locations.

1. Rename all the newly generated configuration files, in order to keep a backup of them:
   ```
c: cd \Progra~1\tivoli\tsm\server1
   ren dsmserv.opt dsmserv.opt.backup
   ren dsmserv.dsk dsmserv.dsk.backup
   ren devcnfg.out devcnfg.out.backup
   ren volhist.out dsmserv.out.backup
   cd \Progra~1\tivoli\tsm\baclient
   ren dsm.opt dsm.opt.backup
   ```

2. Copy the original configuration files, using the following commands in a Windows Command Line:
   ```
   copy c:\backups\migration1\adsm\dsmserv.opt c:\Progra~1\tivoli\tsm\server1
   copy c:\backups\migration1\adsm\dsmserv.dsk c:\Progra~1\tivoli\tsm\server1
   copy c:\backups\migration1\adsm\volhist.out c:\Progra~1\tivoli\tsm\server1
   ```
3. Now we will upgrade our database files. From a Windows Command Line, type
   
   c:\ cd \Progra~1\tivoli\tsm\server
dsmserver upgradedb

4. Using our previously saved configuration files, the TSM server locates the original database volumes and upgrades them to the current format. As we want to run TSM as a service, and not from the command line, type
   halt

5. Restart your computer

**Upgrading TSM to 3.7.4**

To upgrade TSM to version 3.7.4, perform the following steps. TSM 3.7.4 can be downloaded from the following address:

ftp://service.boulder.ibm.com/storage/tivoli-storage-management/maintenance/server/v3r7/NT/3.7.4.0/

1. After downloading, uncompress it to a temporary directory by double-clicking on the archive file
2. Stop the TSM Server1 service.
3. Start the installation by running setup.exe from the installation images directory
4. Click Next, and Next again.
5. The installation will detect the previous TSM installation. Accept the default install directory by clicking Next
6. Select Custom, then click Next
7. Make sure your selection includes Server, Client and Online Help. Click Next
8. Click Next again. This will start the file copying process.
9. After the files are copied, click Finish to restart the computer.
10. After the computer restarts, we are presented with the TSM Server Configuration Utilities. As the server has already been initialized, we do not need to use this utilities at this time. Click Cancel, then close the main window.

---

**Important:** As the reader might notice, we have not copied back in place the Database and Recovery Log files. This happens because we had initially put our Database and Log files outside the ADSM server directory, and so they remained intact after ADSM was un-installed. Although many installations place their Database and Log files in separate drives, it may be possible that a particular installation does not. In that case, as we removed the ADSM Server directory, after the TSM installation the Database and Log files should be copied back to the TSM Server instance directory. Notice that this directory is now located (in our scenario) in c:\progra~1\tivoli\tsm\server1
11. We now have to upgrade the TSM database. Open a windows Command Line and type the following:

c:\
cd \Program Files\Tivoli\tsm\server
dsmserv upgradedb
halt

4.3.2 Migrating TSM version 3.7 to version 4.1

To upgrade TSM version 3.7 to version 4.1, perform the following steps.
1. Start the installation from the CD, or by running setup.exe
2. Click Next. Accept the default installation directory by clicking Next.
3. Select Custom, as in Figure 4-11, and click Next.

Figure 4-11  TSM 4.1 Setup Type selection

4. All the necessary components are selected by default (see Figure 4-12 on page 126). Click Next.
5. Click **Install** to begin copying files.

6. After files have been copied, click **Finish**.

7. Click **Yes** to restart your computer.

8. After the computer reboots, open a Windows Command Line and run the following:

   ```
   c:\cd \Progra~1\tivoli\tsm\server
   dsmserv upgradedb
   halt
   ```

### 4.4 OnDemand Migration

After ADSM is migrated to TSM 4.1, we can now migrate OnDemand to the 7.1 version.

The OnDemand Object Server migration requires less steps than that on a Library Server, because no database migration is required, as there is no database. The procedure will require to uninstall OnDemand 2.2, and then installing OnDemand 7.1. Configuration information remains in the Windows registry, so after installing the new version of OnDemand, all the previous instance configuration will remain in place.

**Saving the configuration files**

Before we uninstall OnDemand v2.2 we have to save some information. This includes:
To save the configuration steps, perform the following steps.

1. Stop OnDemand services
2. Make a copy of these files to a temporary directory, i.e., \c:\backups\ondemand, or to a tape device if more reliability is required.

**Note:** You may notice that we are not saving the arslog.bat file. The arslog file is the System Log User Exit, and since all the Log processing occurs at the Library Server, this file does not exist in this installation.

- any custom User Exits, as well as any scripts you might me using with OnDemand.

### Un-installing OnDemand v2.2

The next step in the migration is to completely uninstall any OnDemand v2.2 software from the computer. This includes both the server and the client code.

1. Go to **Start Menu > Settings > Control Panel > Add/Remove Programs**. Select **IBM OnDemand32** and click on **Remove**.
2. Follow the instructions on the screen to completely remove OnDemand client software. Do not restart your computer.
3. When the un-install finishes, repeat from Step 74, but this time select IBM OnDemand for Windows.
4. Follow the instructions to fully remove OnDemand server software. Do not restart your computer after uninstall finishes.

Installing OnDemand v7.1
After un-installing v2.2, we must install OnDemand version 7.1.
1. We will begin by installing the server software. Start the installation by double-clicking setup.exe on the installation media.
2. Run setup.exe from the installation media.
3. Click Next, then Next again (Accept the default directory)
4. Click Next, and the files will begin to be copied.
5. Click Finish. The computer does not need to be restarted.

Now, we proceed to install the v7.1 client:
1. Start the installation by double clicking on setup.exe in the installation image directory. Follow the on-screen instructions. Make sure you install an Administrator client in addition to the OnDemand client (See Figure 4-14).
After OnDemand v7.1 has been installed, we must reconfigure it:

1. Copy the saved arsprt.bat file back into x:\Program Files\IBM\OnDemand for WinNT\bin
2. If necessary, recompile custom User Exits and/or reconfigure required custom scripts.
3. If necessary, reconfigure Scheduled Tasks using OnDemand Administrator.

**Re-configuring OnDemand TSM Storage**

When we un-installed v2.2, all instance configuration information remained in the Windows Registry, thus providing the new v7.1 installation all the ADSM configuration information.

But, ADSM has been migrated to TSM, so we must perform an additional step before getting OnDemand back into production.

When OnDemand is configured to work with TSM, it will look for TSM client files at the location specified in the OnDemand Configurator. Before the migration, OnDemand was accessing ADSM client files. After the migration, OnDemand has to access TSM Client files, and of course, the location of these files is different from the ADSM ones. If we attempted to start OnDemand without updating the configuration, we would get an error message indicating a problem with communications and Storage Management. That is because OnDemand is looking for the TSM files where the ADSM files used to be. In order to solve it, we must:

2. Double click on your server, then click on **Instances**
3. Double click on **ARCHIVE**, then click the **Storage** tab. See Figure 4-15 on page 130.

![Figure 4-15  OnDemand Configurator - Storage Properties](image)

4. Click on **TSM Options**, and change the paths to the actual TSM Backup-Archive Client installation paths. In our scenario, that is `c:\Program Files\IBM\tsm\baclient`. Use Figure 4-16 on page 131 as a reference.
5. Change the TSM options file path to `c:\Program Files\Tivoli\tsm\baclient\dsm.opt`.
6. Click **Ok**, then **Ok** again to save the changes.

**Upgrading to OnDemand 7.1.0.4**

The final step in the migration will be to upgrade OnDemand up to the current level, 7.1.0.4. This FixPack can be found at:

```
ftp://ftp.software.ibm.com/software/ondemand/fixes/v71/7.1.0.4
```

Then perform the following steps.

1. Make sure all OnDemand services are stopped.
2. After your computer restarts, start the installation by clicking on `setup.exe` in the installation directory.
3. Follow the on-screen instructions. This is a very straightforward installation.
4. After the server is upgraded, do not reboot.
5. Start the OnDemand Client installation by uncompressing the downloaded FixPack and running `setup.exe`.
6. Follow the on-screen instructions to install the clients. Make sure you select an Administrator client in addition to the OnDemand client.

---

*Figure 4-16 OnDemand Configurator - TSM Options*
Testing the migration
After all migration steps have been completed, we must now test our system to see if it is correctly set up.

1. If it is not already started, start TSM. Use the Services Console to start the TSM Server1 service.
2. Start OnDemand. Use the Services Console to start the OnDemand services.

Everything should start normally. Below are some check procedures you can use to test your system.

3. Open an OnDemand Client and retrieve a document that is stored on TSM.
4. Load a document that uses custom User Exits (if any) to cache storage
5. Run arsmaint -v (Cache Filesystem verification/validation) from an OnDemand Command Prompt. Check that no errors appear in the System Log.
This chapter describes how to migrate OnDemand Version 2.2.1 to Version 7.1, including TSM migration from Version 3.7 to TSM Version 4.1, on the Windows 2000 operating system platform. The migration scenario in this chapter is based on OnDemand running in an object server.

This chapter contains the following sections:

- “TSM version 3.7 to TSM version 4.1 migration tasks”
- “OnDemand version 2.2.1 to version 7.1 migration tasks”
5.1 TSM version 3.7 to TSM version 4.1 migration tasks

This section will help you migrate from TSM Version 3.7 to Version 4.1 on Win 2000.

Our test server is initially installed with TSM server Version 3.7.4.0 and TSM client Version 3.7.2.0.

TSM program files and configuration files are stored in the C:\Program Files\Tivoli\TSM directory.

The TSM Server is installed as “TSM Server1”.

5.1.1 Backup TSM database and operation files

Before performing the TSM migration, backup the TSM server database, volume history and device configuration:

1. Perform a full database backup of the TSM server. E.g.:
   
   tsm> backup db type=full devclass=dumpdev

2. Backup the volume history (volhist) and device configuration (devconfig). E.g.:
   
   tsm> backup volhist
   tsm> backup devconfig

3. Copy the output of the “query license” command:
   
   tsm> q license

Copy and save the output to a text file. This will be used later for reregistering the TSM licenses.

5.1.2 Upgrading to Tivoli Storage Manager version 4.1

These are the steps for installing TSM Version 4.1:

1. From the Win 2000 Services console, stop the “TSM Server1” service.
2. Insert the Tivoli Storage Manager Version 4.1 CD-ROM into the drive. The setup program automatically starts and a readme file will open. Close it and the installation process will continue.
3. Select Setup language, e.g. English (United States), and click OK.
   (Figure 5-1)
4. The InstallShield Wizard will setup the install environment. (Figure 5-2)

5. At the TSM InstallShield Wizard Welcome screen, click Next. (Figure 5-3)

6. In the Choose Destination Folder dialog box, optionally change or accept the given directory, e.g., \Program Files\Tivoli\TSM\. Then, click Next. (Figure 5-4)
7. In the Setup Type dialog box, select Complete and then click Next. (Figure 5-5)

8. In the Ready to Install the Program dialog box, when you are ready to start the TSM Version 4.1 installation, click Install. (Figure 5-6)
Figure 5-6 Ready to Install the Program screen

9. InstallShield starts installing the TSM Server. (Figure 5-7)

Figure 5-7 Installing TSM Server screen

10. After the installation completes, the InstallShield Wizard Completed dialog appears. Click Finish. (Figure 5-8)
11. If prompted, the TSM Installer then asks you to restart your system. We recommend that you restart the system as soon as possible before restarting TSM or running any TSM utilities. (Figure 5-9)

If you have problems starting your TSM server, refer to the Tivoli Storage Manager for Windows Quick Start Version 4 Release 1 manual for more information on TSM installation.

5.1.3 Apply TSM server & client maintenance

After installing TSM Version 4.1 base code, apply the latest TSM maintenance updates (PTFs) for Version 4.1. At the time of writing, we used TSM server maintenance level 4.1.4.0 and TSM client maintenance level 4.1.3.0. You can download the maintenance updates from the following URL:

The TSM server PTFs for Windows NT/2000 are in the server/v4r1/NT sub-directory, while the TSM client PTFs for Windows NT/2000 are in the client/v4r1/NT sub-directory.

If you are applying TSM server PTF 4.1.3.0 and above, you must uninstall the TSM Server Version 4.1.0.0 code first, and then install from the maintenance level 4.1.3.0 setup. Next, either selectively reinstall the license files and licensing from the TSM Version 4.1 CDROM, or make a copy of all the *.lic files and the adsmlicn.dll file before uninstalling TSM Server Version 4.1.0.0. Review the readme files that come with the TSM Server PTFs.

Additionally, backup the baclient\dsm.opt, server1\dmserv.dsk, dsmopt, device configuration and volume history files.

### 5.1.4 Reregister TSM licenses

Your licenses from the previous ADSM version are no longer valid and must be reregistered. Retrieve the saved output of the "query license" command, and and reregister the same number of licenses. Note a Client Node is now called a Managed System for LAN, and Advance Device Support is now called a Managed Library. For example:

```
  tsm> reg lic file=10mgsyslan.lic
  tsm> reg lic file=1library.lic
```

### 5.2 OnDemand version 2.2.1 to version 7.1 migration tasks

This section describes how to migrate OnDemand from Version 2.2.1 to Version 7.1. If you need to migrate more than one instance, then you must repeat the steps for each instance. If your OnDemand system contains servers on more than one physical node or workstation, then you must repeat the steps on each node or workstation.

Before migrating OnDemand to Version 7.1 on the object server, you must have migrated TSM to Version 4.1 and above. Refer to the previous section for the steps on TSM migration.

The Library server and the Object servers must always use the same version of the product. The Library server and the Object servers that connect to the Library server must be migrated to Version 7.1 together. In addition, if you load reports from one OnDemand library server to another, both must also be migrated to Version 7.1.
In our test server, the OnDemand server programs are installed in the
C:\Program Files\IBM\OnDemand for WinNT directory. The OnDemand userid in
Windows is **odadmin**, and the OnDemand instance name is ARCHIVE.

---

**Note:** If you are running a version earlier than Version 2.2.1.0, then you must
upgrade to Version 2.2.1.0 first before you migrate to Version 7.1.

---

5.2.1 Backup TSM database

Backup the TSM database if you have not already done so.

5.2.2 Backup OnDemand configuration and programs

To backup the OnDemand configuration and programs, perform the following
steps.

1. Logon to Windows as **odadmin**.
2. In the Windows Services console, stop the **OnDemand ObjSrvr (ARCHIVE)**
   service, and the other OnDemand services as well.
3. Backup the Windows Registry. In particular, select
   My Computer\HKEY_LOCAL_MACHINE\SOFTWARE\IBM\OnDemand for WinNT and
   export and save that selected branch. (Figure 5-10)
4. Backup any customized user exit programs and scripts you may have written.

5. Make a backup copy of the following files: `arslog.bat`, `arsprt.bat`. They can be found in the `\bin` sub-directory of the OnDemand program directory, e.g., `C:\Program Files\IBM\OnDemand for WinNT\bin`.

### 5.2.3 Un-install OnDemand version 2.2.1

Uninstall the OnDemand Version 2.2.1 server software. You also have to remove prior versions of OnDemand client or server software if they still exist on the system. As a precautionary measure, you may want to backup the entire `C:\Program Files\IBM\OnDemand for WinNT` directory, including the files and sub-directories structure, before removing the OnDemand software.

1. Open Control Panel, and start Add/Remove Programs.
2. Select IBM OnDemand for WinNT, and click Change/Remove. (Figure 5-11)
3. In the Confirm File Deletion dialog box, click OK.
4. Upon completion, the setup/remove program asks to restart computer. Select No, and click Finish. (Figure 5-12)

5. Also, in Add/Remove Programs, select “IBM OnDemand32” to remove the client software.
6. Go to the Services console, and set the OnDemand services to Manual startup.
7. Reboot the server.

5.2.4 Install OnDemand version 7.1 software

To install OnDemand version 7.1, perform the following steps.
1. After the system restarts, logon to Windows as odadmin again.
2. Insert the Content Manager OnDemand Version 7.1 Installation CDROM into the drive. If the installation does not automatically start, go to the CDROM directory and run setup.exe.
3. In the Welcome screen, click Next. (Figure 5-13)

4. In the Choose Destination Location dialog box, accept the default destination folder (C:\Program Files\IBM\OnDemand for WinNT) or Browse to select the required destination folder, and click Next. (Figure 5-14)
5. In the Select Program Folder dialog box, accept the default “IBM OnDemand for Windows”, and click Next. (Figure 5-15)

6. In the Start Copying Files dialog box, verify the selected settings, and click Next. (Figure 5-16)
7. OnDemand will begin installing. (Figure 5-17)

8. After the installation completes, click Finish. Optionally, view the Readme file. (Figure 5-18)
5.2.5 Apply OnDemand version 7.1 PTF

After installing the OnDemand software from the CD-ROM, apply the latest service update for OnDemand. You can obtain the latest service update from the IBM FTP Software site on the Web at this URL:

At the time of writing, we applied the OnDemand 7.1.0.4 level PTF.

To install the OnDemand 7.1.0.4 PDF, follow the following steps.
1. Download the update file, odwinnt.exe, to a temporary directory, e.g., d:\temp\.
2. From Windows NT Explorer, launch odwinnt.exe.
3. The InstallShield Wizard dialog box opens, click Next. (Figure 5-20)

![InstallShield Wizard for OnDemand PTF](image)

**Figure 5-20** InstallShield Wizard for OnDemand PTF

4. In the Welcome screen, click Next. (Figure 5-21)

![Welcome screen for OnDemand PTF installation](image)

**Figure 5-21** Welcome screen for OnDemand PTF installation
5. In the Start Copying Files dialog box, verify the settings, and click Next.  
(Figure 5-22)

![Figure 5-22 Start Copying Files screen for OnDemand PTF installation](image)

6. The OnDemand fixes will be installed.
7. After installation is complete, click Finish, and optionally read the Readme file.  
(Figure 5-23)

![Figure 5-23 OnDemand PTF installation complete](image)

8. In the Maintenance Complete dialog box, select No and click Finish.  
(Figure 5-24) Do not reboot the server yet.
5.2.6 Backup OnDemand configuration and programs

This section will guide you to reconfigure your OnDemand configuration, customized scripts and user exit programs.

1. Restore and reconfigure any other scripts and recompile any user exit programs that you may have written for previous versions, in order for them to work with OnDemand Version 7.1. (Do this preferably in a test environment first.)

2. Configure the arslog.bat and arsprt.bat files if they were previously customized.

3. Open the OnDemand Configurator program from Start -> Program Files -> IBM OnDemand for Windows -> Configurator.

4. Click on Instances, and on the right pane, right-click on ARCHIVE and select Properties from the pop-up menu. (Figure 5-25)
5. Verify the configuration settings under each of the following menu tabs:

a. **Server**: Library Server Name, Object Server Name are correct.

b. **Directory**: Temporary File Path, Print File Path, Data Directories are correct.

c. **Storage**: Whether “Cache Only” or “TSM” is selected as before, and Cache File Systems are correct.
   - If TSM is selected, click on “TSM Options…” to verify the paths and the filename of the TSM options file. Update the fields if necessary. Then, click OK. (Figure 5-26)
6. Click OK.

7. A warning message appears. Click OK to continue. (Figure 5-27)

8. In the main OnDemand Configurator window, click on Services on the left pane, and then right-click on OnDemand ObjSrvr (ARCHIVE) service on the right pane, and select Properties from the pop-up menu. (Figure 5-28) The status of the service should be stated as Stopped. If it is not, then stop the ObjSrvr service.
9. In the Startup Type section, revert the Startup Type to be **Automatic**.
10. In the Required Services section, verify that the prerequisite service stated is "TSM Server1", and is selected. Click OK. (Figure 5-29)
11. Update the rest of the OnDemand services startup type. Right-click on OnDemand Scheduler service, and select Properties from the pop-up menu. (Figure 5-30)
12. Update the Startup Type to **Automatic** and click OK. (Figure 5-31)
13. Reboot the server to complete the reconfiguration.
14. After the server has restarted, verify that the OnDemand services are running.

Figure 5-31  Update OnDemand Scheduler service startup type
Chapter 6. AIX

This chapter discusses migrating an AIX OnDemand Object Server to the most current level. It looks at the necessary steps in back ups, upgrading and finally migrating not only the OnDemand Object server code but also the ADSM code which typically will co-exist with an object server implementation.
6.1 Overview

The purpose of this chapter is to provide the necessary steps in porting over an AIX OnDemand object server and requisite software such as ADSM to the most current levels.

References:

* IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1, GC27-0834-00
* Tivoli Storage Manager for AIX Quick Start Version 4 Release 1, GC35-0402-00
* IBM Content Manager OnDemand for Multiplatforms Version 7.1 Release Notes

6.1.1 Environment Configuration Information

The following details the specific server information used in this migration exercise.

**OnDemand Object Server Details**

- 1 processor 44P
- 2 GB memory

**Software installed**

- AIX 4.3.3
- ADSM Client Version 3.1.0.8
- ADSM Server Version 3.1.2.90
- OnDemand Object Server Version 2.2.1.10

**Target Migration State**

- AIX 4.3.3
- TSM Client Version 4.1.3.0
- TSM Server Version 4.1.4.0
- OnDemand Object Server Version 7.1.0.4

6.1.2 Pre-requisite Information

We recommend that you check the following before performing the upgrade process:
1. The hardware and software pre-requisites for OnDemand 7.1, TSM 4.1 and have been met
2. The code levels for the Object Server to be upgraded are at least as specified in 6.1.1, “Environment Configuration Information” on page 158.
3. Have a ‘mksysb’ and ‘savevg’ backups of the volume groups of the AIX server.
4. The Library server to which this object server responds to has been upgraded to the same levels (or higher) of code that this object server is to be upgraded to.

6.1.3 Scenario Information

Essentially we shall discuss:

1. Backing up the ADSM database and ADSM configuration files of the AIX OnDemand object server
2. Upgrading ADSM to the latest version of TSM on the object server
3. Upgrading OnDemand to the latest version of OnDemand on the object server

6.2 Migrating ADSM to TSM

To migrate from ADSM to TSM, perform the following steps.

6.2.1 Preparing ADSM

Backing up the ADSM database
Before the migration and upgrade is started, it is good practice to backup the ADSM database. Perform the following:

Create a File Device Class for ADSM Backup
1. Create a filesystem called ‘adsmdbbkp’ from smitty with ample disk space and mount it on the directory ‘/adsmdbbkp’
2. Launch the ADSM web administration window at http://loopback:1580
3. Enter as the ADSM administrator
4. Go to Object View>Server Storage>Device Classes>File Device Class
5. From the pull down menu choose ‘Define Device Class’
6. Enter the Device Class Name ‘adsmdbbkp’ (or the name of your liking)
7. Leave the Mount Limit and Maximum Capacity as defaulted
8. Enter ‘/adsmdbbkp’ (This directory has to be created beforehand from smitty).
9. Click on ‘Finish’ to create the device class
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The ADSM database backup command
Once the File Device Class has been created, the ADSM database can now be backed up:

1. Execute `dsmadmc`
2. Enter as the administrator ID
3. Issue the command `q dev` to confirm that the file device class was created
4. Issue the command `backup db type=full devclass=adsmdbbkp` where `devclass` is the device class name you chose from the previous section
5. Issue the command `q process` to determine if the backup command has completed (no processes will show completion).
6. This concludes backup of the ADSM database
7. The resultant backup files created in '/adsmdbbkp' can be backed up to tape through normal tape backup procedures for further safe keeping.

Backing up ADSM Configuration files
Along with the ADSM database, there are critical configuration files that need to be backed up. The combination of these will assist in restoring the ADSM database if the need arises. The following are the files that need to be backed up:

1. `dsmserv.dsk`
2. `dsmserv.opt`
3. `volhist.out`
4. `devcnfg.out`
5. `dsm.sys`
6. `dsm.opt` (if this has been customized)
7. any written scripts

The above files can be backed up to a temporary directory and/or to tape for safe keeping.

Additional Files
To backup the additional files, perform the following steps.

1. Issue the command `q lic > /tmp/lic.txt`. This will store ADSM license information in the lic.txt file for future use.
2. For additional precaution, it would be good to keep the device configuration setup:
   a. Open an ADSM command line window
   b. Enter as the administrator
   c. issue the command `q dev f=d > /tmp/devinfo.txt`

Tip: In the event that backup does not occur, change the ‘Mount Limit’ to 256.
d. followed by `q libr f=d >> /tmp/devinfo.txt`
e. and `q drive f=d >> /tmp/devinfo.txt`

This will save the device configuration file information in the devinfo.txt file

3. Make a listing of all the AIX device definitions of the devices used by ADSM, e.g. optical library and optical drives, with the `lsdev -C` command

4. Halt the ADSM Server. (Enter dsmadm as the administrator ID and issue the command ‘halt’)

### 6.2.2 Installing TSM version 4.1

To install and configure TSM Version 4.1, refer to the following:

3.3.2, “Migrate install to Tivoli Storage Manager version 4.1” on page 96

Ensure that any additional scripts or config files have been updated as well as the latest maintenance level (TSM Server 4.1.4.0 and TSM Client 4.1.3.0 at the time of this redbook) have been applied. Refer to the following:

3.3.3, “Reconfigure files and scripts” on page 97

3.3.4, “Apply TSM server & client maintenance” on page 98

3.3.5, “Initialize Web Administrative Interface Driver” on page 98

Also, ensure that licensing information is up to date and once everything has been verified, remove the ADSM filesets. Refer to the following:

3.3.6, “Reregister TSM licenses” on page 98

3.3.7, “TSM migration completed” on page 99

This completes TSM 4.1 installation. Let us move on to the OnDemand Object Server upgrade.

### 6.3 Migrating the Object Server to Version 7.1.0.4

The distinction between an AIX machine being an OnDemand object server or being an OnDemand library/object server combination essentially lies in the specification chosen within the ars.cfg file. This will result in, assuming all other factors are functional, either the arssockd process, signifying a library/object server combination, or an arsobjd process, signifying an object server only situation, to run. Hence, once this distinction has been clearly defined (as well as the storage set that refers to this object server has been defined on the library
server), the migration and upgrade of an AIX object server closely mirrors the migration of a library/object server situation save the need of doing any work on DB2 since the object server only situation does not use DB2. Thus, references from Chapter 3 shall be used in this section.

6.3.1 Preparing for migration

As always, several steps are required before migration can take place.

**Backing up ADSM**

Refer to:
1. “The ADSM database backup command” on page 160
2. “Backing up ADSM Configuration files” on page 160
3. “Additional Files” on page 160

**Backing up OnDemand related information**

Refer to the following:

3.5.3, “Backup OnDemand configuration files and scripts” on page 100

6.3.2 Migrating OnDemand

To upgrade OnDemand from version 2.1 to version 7.1 in the AIX environment, OnDemand version 2.1 needs to be un-installed first.

Refer to 3.5.4, “Uninstall OnDemand version 2.2.1” on page 100

**Installing AIX C Set libraries**

As a pre-requisite, some C Set ++ run time libraries need to be installed before OnDemand 7.1 can be installed.

Refer to 3.5.5, “Install AIX C Set ++ runtime libraries” on page 101

**Installing OnDemand Version 7.1**

Refer to 3.5.6, “Install OnDemand version 7.1 software” on page 102

**Upgrading OnDemand to Version 7.1.0.4**

Refer to 3.5.7, “Apply OnDemand version 7.1 PTF” on page 102
Post-Installation Steps

After OnDemand Version 7.1 has been installed and the latest maintenance levels applied, there are several steps that need to be done to complete the migration process.

This section will guide you to reconfigure your OnDemand configuration files, customized scripts and user exit programs.

Use the information from the files you have saved in a previous section, “3.5.3, “Backup OnDemand configuration files and scripts” on page 100”, and configure the following files:

- ars.cfg (in /usr/lpp/ars/config)
  Edit the ars.cfg file and, based on the previous ars.cfg file, update the OnDemand parameters, e.g. ARS_NUM_LICENSE. Additionally, you may use the following definitions for the respective configuration parameters:
  ```
  ARS_DB2_ADSM_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt.db2
  DSMSERV_DIR=/usr/tivoli/tsm/server/bin
  DSMSERV_CONFIG=/usr/tivoli/tsm/server/bin/dsmserv.opt
  DSM_DIR=/usr/tivoli/tsm/client/api/bin
  DSM_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt
  DSMG_DIR=/usr/tivoli/tsm/client/ba/bin
  DSMG_CONFIG=/usr/tivoli/tsm/client/ba/bin/dsm.opt
  DSMI_DIR=/usr/tivoli/tsm/client/api/bin
  DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt
  
  Normally, if TSM is used only for OnDemand purposes, then the dsm.opt and dsm.sys files in the api/bin sub-directory can be symbolic linked to the same files in the ba/bin sub-directory. For example:
  ```
  # cd /usr/tivoli/tsm/client/api/bin
  # ln -s /usr/tivoli/tsm/client/ba/bin/dsm.sys
  # ln -s /usr/tivoli/tsm/client/ba/bin/dsm.opt
  # ln -s /usr/tivoli/tsm/client/ba/bin/dsm.opt.db2
  ```

- ars.ini (in /usr/lpp/ars/config)
  If you have other configuration stanzas in the previous ars.ini file for other OnDemand instances, or for the OnDemand Production Data Distribution (PDD), edit the new ars.ini file with the additional information.

- ars.cache (in /usr/lpp/ars/config)
  Edit the ars.cache file and, based on the previous ars.cache file, append the cache filesystems names.

- ars_adsm (in /usr/lpp/ars/bin)
Edit the ars_adsm file, and based on the previous ars_adsm file, update any parameters you had customized, e.g. CUST_DUMPDEV, USERID and PASSWD.

In addition, location the TSM_CLIENT_DIR parameter. The TSM backup/archive client directory for AIX should be ba/bin:

```
TSM_CLIENT_DIR=/usr/tivoli/tsm/client/ba/bin
```

- Configure the arslog and arsprt files if there were previously customized.

Restore and reconfigure any other scripts and re-compile any user exit programs that you may have written for previous versions, in order for them to work with OnDemand Version 7.1. (Do this preferably in a test environment first.)

Verify initialization processes and scheduled tasks. For example, you may need to modify the `/etc/inittab` file, `crontab` and other scheduled tasks.

This completes the Object Server migration on AIX. Verify that data can be retrieved from this object server from an OnDemand Client and that loads into the object server are successful.
Migrating OnDemand from Machine to Machine

In view of the increasing workload as well as the increasing computing power available to us, it is a very real scenario that a machine housing an OnDemand server may require migration to a more powerful machine.

In this part, we provide step-by-step instructions on migrating a single OnDemand Version 7.1 Library/Object server from one machine to another. This includes the necessary steps of migrating the accompanying DB2 and TSM software which are the database and storage managers of choice for OnDemand.

These instructions are divided by operating systems:

- AIX, see Chapter 8, “AIX” on page 189.

In this chapter, we introduce the steps needed in moving an OnDemand implementation from one Windows 2000 server to another Windows 2000 server. The steps are also applicable in moving from one Windows NT server to another Windows NT/2000 server.

As customers archive more and more data and previous generations of hardware become less able to cope and have less room for expansion, such a scenario is very real. This chapter shall discuss:

- Preparing OnDemand, DB2 and TSM related files to be ported over from the source OnDemand server to the target OnDemand server
- Installing and setting up OnDemand, DB2 and TSM on the target OnDemand server
- Configuring the target OnDemand server to use the settings of the source OnDemand server
7.1 Introduction

The purpose of this chapter is to provide the necessary steps in porting over an OnDemand implementation from one Win2000 server to another Win2000 server. There is similarity here with the discussion on migrating OnDemand on the same server but there are additional steps that need to be implemented as well.

References:

*IBM Content Manager OnDemand for Multiplatforms Version 7.1 Release Notes*

*IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for Windows Servers Version 7.1, GC27-0835-00*

*IBM DB2 Universal Database for Window Quick Beginnings Version 7, GC09-2971-00*

*Tivoli Storage Manager for Windows Quick Start Version 4 Release 1, GC35-0409-00*

7.1.1 Environment Configuration Information

The following details the specific server information used in this migration exercise.

**Source OnDemand Server Details**

- Server memory : 256 MB RAM
- Server processors : 1

**Software installed**

- Windows 2000 with Service Pack 2
- DB2 Version 7.1 (fixpack 2a)
- TSM Client Version 4.1.3.0
- TSM Server Version 4.1.4.0
- OnDemand Server and Clients Version 7.1.0.4

**Partition Information**

- c: - 4 GB for Win 2000 and applications
- d: - 2 GB for ADSM database, logs, data, database and log mirrors.
  - ADSM database size = 216 MB (equivalent size for mirror)
  - ADSM logs size = 108 MB (equivalent size for mirror)
  - ADSM data = 100 MB (disk storage pool)
- e: - 4 GB for DB2 data and logs
7.1.2 Prerequisite Information

We recommend that you check the following before performing the upgrade process:

1. The hardware and software pre-requisites for OnDemand 7.1, TSM 4.1 and DB2 7.1 have been met
2. The Source OnDemand installation, including all components involved like TSM and DB2 are functioning properly.
3. Have a backup of the Windows 2000 registry of the source server.
4. The target Win 2000 server should have at least the same, or better, hardware configuration as the source Win 2000 server.
5. The directory structure on the target Win 2000 server should be set up the same as the source Win 2000 server. If there is plenty of new hard disk space left over after duplicating the directory structure then you can do what you will with this extra space. It is IMPORTANT that the directory structure mirror each other so as to allow for seamless operation of OnDemand on the target Win 2000 server.
6. The OnDemand System Administrator ID has been created in the target OnDemand server. (Typically odadmin is used, use the same user ID and permissions as on the source server.) It should have administrator privileges as well as the following advanced user rights:

- f:\ - 5.7 GB for OnDemand cache 1
- g:\ - 5.7 GB for OnDemand cache 2 and temporary data and load directories

Indexed Data
- ASCII Line Data
- AFP Fully composed Data
- AFP uncomposed Data
- PDF
- Generic Indexed data (PDF)

Target Migration State
- Windows 2000 with Service pack 2
- DB2 Version 7.1 (fixpack 2a)
- TSM Client Version 4.1.3.0
- TSM Server Version 4.1.4.0
- OnDemand Server and Clients Version 7.1.0.4

User IDs
- Windows 2000 and OnDemand System Administrator user id - odadmin
- DB2 instance owner user id - odadmin
- ADSM admin user id - admin
a. Act as part of the operating system
b. Create token object
c. Increase quotas
d. Replace a process level token

7. Have a copy of the OnDemand instance configuration of the source server so that it can be replicated in instance creation on the target server.

7.1.3 Scenario Information

Essentially we shall discuss:
1. Backing up the DB2 database of the source OnDemand server
2. Installing DB2 on the target OnDemand server
3. Backing up the TSM database and TSM configuration files of the source OnDemand server
4. Installing TSM on the target OnDemand server and subsequently loading the TSM backup and TSM configuration information into the target OnDemand server
5. Installing OnDemand on the target OnDemand server
6. Restoring the OnDemand database and the OnDemand structures such as cache directories, load directories, etc.

7.2 Porting DB2

To port DB2 from the source server to the target server, perform the following steps.

7.2.1 Backing up DB2 on source OnDemand Server

Do the following to perform a full offline backup of DB2:
1. Stop the OnDemand Library Server from the OnDemand Configurator
2. Open an OnDemand command prompt
3. Run the command `arsdb -y pathname` where `pathname` is the path where you would like to store the database backup
4. For additional precautionary measures, you can then backup the resulting file to tape.

Note: The above can also be performed by using the OnDemand Configurator. Choose ‘Scheduled Tasks’ and configure the ‘OnDemand Database Backup (ARCHIVE)’ task to do a full off-line backup in the near future to a target location.
For further information on doing DB2 backups, refer to the Administration Guide for your DB2 product for information on making a backup copy of a database and to the Command Reference for the syntax of the backup command.

### 7.2.2 Installing DB2 on the target OnDemand Server

The following denotes the steps necessary in installing DB2:

1. Log on with the OnDemand system administrator account
2. Insert the DB2 CD-ROM into the CD-ROM drive. The setup program automatically starts after you load the CD-ROM into the drive.
3. Read the Welcome screen and then click ‘Install’. (Figure 7-1)

![DB2 - Welcome Screen](image)

4. The ‘Select Products’ window appears. Select DB2 Universal Database Enterprise Edition. Click ‘Next’. (Figure 7-2)
5. The ‘Setup Options’ window appears. The screen provides three choices of DB2 installation namely ‘typical’, ‘compact’ and ‘custom’. If you are comfortable with a ‘typical’ installation, go ahead and choose that and click on ‘Next’. We recommend choosing ‘Custom’ and selecting the components we want installed from the list. This can help to save installing unneeded data as well as save some space on the hard disk drive. Go ahead and choose ‘custom’ and click on ‘Next’. (Figure 7-3)

6. Refer to the following figure (Figure 7-4) as to the minimal choice of components for DB2 installation. Note that ‘Getting Started’ is also chosen.
but is not viewable in Figure 7-4. (The summary of components installed is provided at the end of this section.) We recommend that you accept the default directory name. Click ‘Next’ to continue.

![Select Components](image)

**Figure 7-4  DB2 - Selecting DB2 Components**

7. If an Information window appears, Click on ‘OK’. (Figure 7-5)

![Information Window](image)

**Figure 7-5  DB2 - Information Window**

8. The ‘Create DB2 instance’ window appears as in the next figure (Figure 7-6).

**Important:** It is IMPORTANT that the DB2 instance is first created in the target OnDemand server since the DB2 database backup will restore to the target DB2 instance.

9. So go ahead and choose ‘Yes’ to create the DB2 instance and click on ‘Next’ to continue.
10. The ‘Configure DB2 Services’ window as in the next figure (Figure 7-7) is shown. **Choose default values** for protocols and startup for all 3 listed items. Click ‘Next’ to continue.

11. The User Name and Password window appears. **Enter the username and password of the OnDemand administrator account** as in the next figure (Figure 7-8). Ensure that the radio button ‘Use the same values for the remaining DB2 Username and Password settings’ is ticked.
Note: In Figure 7-8, the ‘Confirm password’ box should be grayed out. This indicates that the user ID you have given exists on the system as it should be.

Figure 7-8  DB2 - Username and Password

12. Click ‘Next’. The Start Copying Files window appears.

Figure 7-9  DB2 - Start Copying Files

13. Click ‘Next’. The progress window appears.
14. When the process completes, the Setup Complete window appears.
15. Click ‘Finish’ to complete the installation.
16. Click ‘Yes’ to restart the computer.
17. When the system restarts, log on with the OnDemand system administrator account.
18. Register DB2.
19. Open up the DB2 First Steps tool if it does not execute automatically. With the First Steps tools, create the sample database and run a simple query to verify the installation of DB2.

**Summary of DB2 Components Installed**

Components to Install:

1. Required DB2 components
2. Application Development Interfaces
   - JDBC Support
   - SQLJ Support
   - IBM enhanced Java Runtime Environment
   - ODBC Support
   - OLE DB Support
3. Base DB2 UDB Support
4. Administration and Configuration Tools
   - Client Configuration Assistant
   - Client Tools
   - Command Center
   - Control Center
   - Database Tools
   - Event Analyzer
   - LDAP Directory Exploitation
   - Web Administration
   - Control Server
5. Getting Started
   - First Steps
   - Sample Databases
   - Business Intelligence Tutorial

### 7.2.3 Restoring the OnDemand database

In order to ensure that all pointers are setup correctly, it is best to restore the OnDemand database AFTER the OnDemand server has been installed on the target OnDemand server and the OnDemand ARCHIVE instance has been created. Refer to the ‘Porting OnDemand’ section of this chapter for further information.
7.2.4 Patching DB2

The following are some brief steps in patching DB2:
1. Stop all DB2 related services from Win2000 Services.
2. Execute the Fixpack 2a level WR221250 file.
3. Accept the defaults and allow the Fixpack to be installed.
4. Rebind DB2 packages as per described in the Fixpack READMEs.
5. Refer to the READMEs provided with the Fixpack for further information.
6. Reboot the server (optional but recommended).

7.3 Porting TSM

To port TSM from the source server to the target server, perform the following steps.

7.3.1 Backing up TSM on the Source Server

The steps to backing up the TSM Server are the same as in Chapter 1. Please refer to “Backing up the ADSM database” on page 16. Apply these steps to the source OnDemand server.

Transfer the backed up TSM files to the target OnDemand server, taking care to place the files in the same directory(s) as they were in the source OnDemand server. This is important as the path of the TSM database backup is embedded in the volume history file.

In addition to the above steps, all TSM database, log and mirror files should be backed up and restored on the target server to the EXACT paths as they existed on the source server. This is important as the paths to these files are embedded within the TSM configuration files.

7.3.2 Installing TSM on the Target Server

After having backed up the TSM database and configuration files on the OnDemand source server and transferred them to the target server, we can begin installing TSM on the target server:
1. Insert the TSM 4.1.0.0 install CD into the CD-ROM drive.
2. Choose to install TSM (if no auto-run exists, execute setup.exe from the CD-ROM drive).
3. Click ‘Next’ at the Welcome screen.(Figure 7-10)
4. The ‘Destination Folder’ window appears. Choose the default ‘C:\Program Files\Tivoli\TSM’ directory. Click ‘Next’ to continue. (Figure 7-11)

5. Choose the ‘Complete’ setup type and click ‘Next’ to continue. (Figure 7-12)
6. Click on ‘Install’ to begin the installation. (Figure 7-13)

7. Click on b to complete the installation.

8. Reboot the server.
Initial TSM Setup

After reboot, logon to Win 2000 using the OnDemand System Administrator ID.

1. Launch the ‘TSM Server Utilities’ tool and choose ‘Initial Configuration’. Click ‘OK’ to continue. (Figure 7-14)

![Figure 7-14 TSM - TSM Server Utilities](image)

2. The next window will be the welcome screen to the TSM Installation wizard. Click on ‘Next’ to continue. (Figure 7-15)
3. You can click on ‘Next’ and accept all the defaults. Take note to choose the ‘Standalone’ server as in the next figure Figure 7-16.

Note: If there are external storage devices connected to the server, e.g. an optical jukebox, then you may have to reconfigure the library and drive definitions to comply to the new jukebox specifications.
4. Choose default paths for TSM Server 1, database, logs and disk. Accept the defaulted values for sizes as well.

**Note:** The purpose of this section is to setup the TSM server with default settings. These settings will not be used as the original settings from the source server will be used.

### 7.3.3 Patching TSM Server to Version 4.1.4.0 (4.1.3.0 Client)

To patch the TSM server to version 4.1.4.0, perform the following tasks.

**Licensing**

After installation of TSM version 4.1.4.0, License files will no longer be available. Licenses must be reinstalled by doing one of the following:

- Do a custom install of the license feature using the original GA media.

or

- Save license files to a temporary location. The license files consist of:
  - files with a file extension of .lic
  - adsmlicn.dll file
  - Copy the license files as described above back to the server directory after installation of the server.

**Un-installing TSM Version 4.1.0.0**

Patching TSM server version 4.1.0.0 to TSM server version 4.1.4.0 requires that TSM version 4.1.0.0 is un-installed first. This is to prevent unwanted registry changes that can adversely affect TSM operation.

1. Make note of the TSM installation directory. It should be C:\Program Files\IBM\Tivoli\TSM\.
2. After stopping the server, use the Add/Remove Programs. Select the Tivoli Storage Manager Server and then select the Change option.
3. Remove the complete product by selecting the Remove radio button.
4. Reboot the server.

**Note:** Databases, Logs and other pertinent files to your current installation will remain allowing re-initialization when the new server files are installed.

Refer to the READMES provided with the patch for further information.
Installing TSM Version 4.1.4.0
Upon reboot and entering Win 2000 with the OnDemand Administrator ID, we can begin the installation of TSM Server Version 4.1.4.0 (The TSM Client Version 4.1.3.0 will also be installed together). The steps are as follows:
1. Execute the patch .exe file, in this case it is the IP22350_Server.exe.
2. Choose a temporary directory for the installation files.
3. The Install Shield should now be launched. Click on ‘Next’ until you reach the ‘Destination Folder’ window as in the next image.
4. Ensure that the correct directory is chosen here. The directory, should be C:\Program Files\Tivoli\TSM\.
5. Choose the ‘Complete’ Setup Type in the next window and Click on ‘Next’.
6. Click on ‘Install’ to begin the installation.
7. Click on ‘Finish’ upon completion.
8. Click on ‘Yes’ to reboot the system. (Always Reboot even if you are not asked the question)
9. Enter Win 2000 using the OnDemand System Administrator id
10. The TSM Server should now start up automatically. Start it if it is not. Verify the TSM Server start-up and installation by opening the TSM Admin Command Line and entering as administrator. A successful login indicates the server is up. Take note of the Server and Client versions that can be seen from this command line. They should be TSM Server 4.1.4.0 and TSM Client 4.1.3.0 respectively.

7.3.4 Setting up TSM on the Target Server

Having successfully patched the TSM server, it is time to setup the TSM server as per the configuration of the source machine. Follow these steps:
1. Stop the ‘TSM Server1’ service from the Win 2000 services.
2. Open up a Windows Explorer and select the C:\Program Files\Tivoli\TSM\Server1\ directory.
3. Locate the dsmserv.opt file and rename it to dsmserv.opt.old.
4. Locate the dsmserv.dsk file and rename it to dsmserv.dsk.old.
5. Copy the 4 configuration files backed up from the source server into this directory (dsmserv.dsk, dsmserv.opt, devcfg.out, volhist.out).
6. Ensure that the TSM backup exists in the same directory structure in the target server as in the source server.
   E.g., if the TSM backup existed in the g:\adsmdbbkp directory on the source machine, then the same g:\adsmdbbkp directory should be created on the target server and the backup files copied into this directory.
7. Ensure that the TSM database, log and disk files exist in the same directory structure in the target server as in the source server in the same way as the previous point.
8. Open an MS-DOS Command Prompt and change into the C:\Program Files\Tivoli\TSM\Server1\ directory. Run the `dsmServ` command to start up the TSM Server. Ensure that ‘successful’ messages are seen.

9. Do simple queries from this command line such as ‘q vol’, ‘q db’ and ‘q log’ to ensure that the TSM Server has started up with the correct configuration. (These values should match the values on the source server.)

7.4 Porting OnDemand

Having setup DB2 and TSM on the target server, we can now move on to installing and porting OnDemand.

7.4.1 Installing OnDemand Version 7.1.0.0

Refer to 1.4.2, “Installing OnDemand Server Version 7.1.0.0” on page 28

Refer to 1.4.3, “Installing OnDemand Client Version 7.1.0.0” on page 30

7.4.2 Patching OnDemand to Version 7.1.0.4

Refer to 1.4.4, “Patching OnDemand to Version 7.1.0.4” on page 33

7.4.3 Configuring the OnDemand Instance

In order to successfully restore the OnDemand database from the source machine, it is necessary to create an OnDemand instance first so that the relevant tables within DB2 and any associate links have been created.

The steps to create a new instance from the OnDemand Configurator are as follows:

1. Launch the OnDemand Configurator.
2. From the File Menu, select New Server. The Add a Server dialog box appears.
3. Enter the information in the spaces provided.
4. When complete, click OK to define the server.
5. The configurator adds an entry for the server in the navigator pane.
6. Click Instances. The Instance dialog box appears.
7. Name the instance using the same name as that was used for the source server. It is ARCHIVE in our case.
8. Click Next to continue and specify the properties of the instance:
   a. Server type and other options
      i. On the Server Type page, select ‘Library and Object Server’ or ‘Object Server Only’.
ii. If you selected Object Server Only, identify the Library Server Name and the Object Server Name.

iii. In our case select Library and Object Server, click Advanced Options. Change the defaults provided for number of database servers to the value set for the source machine.

iv. Click OK to close the Advanced Options dialog box and return to the Server Type page.

v. Click Communications. If different, change the default Protocol and Port Number to the value set for the source machine.

vi. Click OK to close the Communications dialog box and return to the Server Type page.

vii. Click Next to continue.

b. NLS parameters

i. On the Language page, verify the Language and Code Page to ensure it is the same as the source server.

ii. To change the defaults provided, select a different Language. The configurator automatically selects the correct code page for the language that you select.

iii. Click Next to continue.

c. Directories for OnDemand programs to use

i. On the Directory page, add directories according to the directory setup of the source machine.

ii. When finished, click Next to continue.

d. Database manager options (library server only)

iii. On the Database page, select the Database Engine. This is DB2 in our case.

iv. If your source server uses TSM to maintain DB2 archived log files and backup image files, select the Use TSM for DB2 files check box. We do not use this option so go on to the next point.

v. Click Advanced Database Options. The Advanced Options dialog box appears.

vi. Configure the database options:

vii. DB2:

- Database Location
- Primary Log File Path
- Archive Log Path (Or Archive Log TSM Option File, if you selected Use TSM for DB2 files on the Database page.)
- Log File Size
- Number of Primary Log Files

Note: The above information can be replicated from the details of the source OnDemand instance properties
viii. Click OK to close the Advanced Options dialog box and return to the
Database page.
ix. Since the Database Engine is DB2, define DB2 File Systems. You can
add one or more table space file systems to the list.
e. Storage manager options
i. On the Storage page, configure the storage manager. Select Cache
Only or TSM as per the configuration of the source machine.
ii. If you selected TSM, click TSM Options to verify the location of the
TSM program directory and client options file used to maintain
application group data.
iii. Define cache file systems. Be sure to define the cache file systems
EXACTLY as specified in the source machine. Be sure to also have
copied the cache directories from the source machine to their
subsequent respective directories on the target machine.
9. Verify that you have completed all of the required options.
10. Click Finish. The configurator displays the Install Services dialog box. Click
Create Database Now. The configurator creates and initializes the database.
11. Verify the database creation by using the OnDemand client and searching the
system log.
12. This completes the creation of the OnDemand ARCHIVE instance. Let us go
on to restoring the DB2 database of the source machine into the target
machine. After which, you should configure the OnDemand services,
scheduled tasks and system application groups of the target machine as per
the specification on the source machine.

Restoring the OnDemand DB2 database

Once the OnDemand ARCHIVE instance/database has been created, it is
necessary to restore the ARCHIVE database from the source machine into the
target machine. The steps are as follows:

1. Stop the OnDemand Library server from the OnDemand Configurator.
2. Launch the DB2 Command Window and ensure that there are no other
applications connected to DB2 by using the \texttt{DB2 List Applications}
command. Stop them if there are.
3. If not already done so, transfer the DB2 full offline backup files into a
temporary directory. Note this directory as the path will be used in the restore
command.
4. Next execute the DB2 restore command as follows:

\texttt{restore db archive FROM dbackuppath taken at yyyyymmdd NEWLOGPATH
logpath replace existing without rolling forward}

where:

a. ‘archive’ is the OnDemand database name
b. ‘dbbackuppath’ is the directory path containing the full DB2 off-line backup files.

**Tip:** ‘dbbackuppath’ need only be the path to the ‘ARCHIVE.0’ dir, so if this is at i:\db2\ARCHIVE.0, then use the value ‘i:’ as ‘dbbackuppath’

c. When multiple database backups exist, use the ‘taken at’ variable plus the date like ‘20011207’ as a variable.

**Tip:** This date would be the name of the last sub directory within the database backup directory. for example i:\db2\ARCHIVE.0\DB2\NODE0000\CATN0000\20011207, the ‘taken at’ value is the last folder name.

d. ‘logpath’ is the primary log path for DB2. This path should be setup as the same value of primary log path as was setup for the source OnDemand instance. The directory must exist beforehand. (If this step is not included, then the restore DB will result in DB2 using default paths for logs.)

5. Once the command is executed, the following message will appear so do not panic:

```
SQL2523W Warning! Restoring to an existing database that is different from the database on the backup image, but have matching names. The target database will be overwritten by the backup version. The Roll-forward recovery logs associated with the target database will be deleted
```

This should be followed by a successful restore message:

```
DB20000I The RESTORE DATABASE command completed successfully
```

6. Verify the restore by doing queries from DB2 itself and by starting OnDemand and doing queries from OnDemand. Test for files that are both in cache and in TSM only to ensure that the restore was successful. (Again, ensure that the cache directories have been copied to the same path in the target server as they were in the source server).

7. Configure the services, scheduled tasks and system application groups on the target machine as per the source machine.
In this chapter, we introduce the steps needed to migrate an OnDemand installation from one AIX server to a different AIX server.

This chapter will discuss:

- Preparing OnDemand, DB2 and TSM related files to be moved from the source OnDemand server to the target OnDemand server
- Installing and setting up OnDemand, DB2 and TSM on the target OnDemand server
- Configuring the target OnDemand server to use the configurations and the data transferred from the source OnDemand server
8.1 Migration Overview

Migrating OnDemand from one AIX box to another is much like a backup and restore operation. As we will be working with a complete OnDemand system, that includes not only OnDemand but DB2 and TSM, the reader will be able to follow a complete, step by step backup and restore, that can then be used as a guide for developing a custom Backup and Restore Procedure.

This migration consists of two servers, the Source Server and the Target Server, both running AIX 4.3.3. The Source Server is loaded with a full OnDemand Library Server, which consists of the OnDemand v7.1 software, the DB2 7.1 software, and the TSM 4.1 software. This server is configured to archive different types of reports, and to store them in both cache and TSM storage.

The Target Server has no OnDemand software on it, although it could be being used for other purposes. Figure 8-1 shows a schematic view of this chapter’s migration.

![Source Server](source_server.png)

**Figure 8-1** Migration Overview

The Source Server was configured as a real-world installation, with different filesystems containing the various OnDemand components in a relatively complex directory structure. Our goal is to be able to reproduce in the Target Server the same directory and filesystem layout.

8.1.1 Source Server description

The Source Server was configured as follows:

**Software installation**

The following OnDemand related software was installed:
User IDs
The DB2 Instance Owner was set to ARCHIVE at the time of installation. The OnDemand instance owner is root. Root was assigned to the sysadm1 group.

TSM Storage configuration
The TSM Storage was configured as follows:

Database volumes
The TSM Database volumes were located in
/dsmdb/dbvol1 Size: 100 MB
/dsmdb/dbvol2 Size: 100 MB

Recovery Log volumes
The ADSM Recovery Log volumes were located in
/dsmlog/logvol1 Size: 64 MB,
/dsmlog/logvol2 Size: 64 MB

Storage configuration
Client Node ODNODE
Policy Domain ODPD
   • Backup Retention: 30
   • Archive Retention: 365
Active Policy Set ODPS
Management Class ODMG
   • Space Management Technique: None
   • Auto Migrate on non-use: 0
   • Migration Requires Backup: Yes
   • Migration Destination: SPACEMGPOOL
Archive Copy Group Standard
   • Retain version: 5

Note: The above was set to Yes by default. In our Scenario, no migration was set inside TSM.
Copy Serialization: SHRSTATIC
Copy Destination: ODSTGP1
Storage Pool ODSTGP1 (Sequential Access Storage Pool)
- Type: Primary
- Device Class Name: File
- Access: ReadWrite
- Cache Migrated Files: No

Storage Pool Volumes:
The volumes for the Archive Pool
- /dsmdisk/diskvol1
- /dsmdisk/diskvol2

OnDemand configuration
OnDemand was configured as follows

Instance Definition (ars.ini file)
- Instance Name: ARCHIVE
- Host: (blank)
- Protocol: 2 (TCP/IP)
- Port: 0 (Defaults to 1445)
- SRVR_INSTANCE (the name of the OnDemand database): ARCHIVE
- SRVR_INSTANCE_OWNER: root
- SRVR_OD_CFG: /usr/lpp/ars/config/ars.cfg
- SRVR_DB_CFG: /usr/lpp/ars/config/ars.dbfs
- SRVR_SM_CFG: /usr/lpp/ars/config/ars.cache

Instance Configuration (ars.cfg file)
- ARS_LANGUAGE: ENU
- ARS_SRVR: (Blank as this is a Library Server)
- ARS_LOCAL_SRVR: (Blank as this is a Library Server)
- ARS_NUM_DBSRVR: 8
- ARS_TMP: /arsfiles/arstmp
- ARS_PRINT_PATH: /arsfiles/arstmp
- ARS_DB_ENGINE: DB2
- ARS_DB_PARTITION: (Blank - No partition)
- DB2INSTANCE: archive
- Parameters for Database creation:
  - ARS_DB2_DATABASE_PATH: /arsfiles/arsdb/arsdb

Note: The value of Retain Version is normally set to 365 days or more. We used 5 days for test purposes only.
- ARS_DB2_PRIMARY_LOGPATH:/arsfiles/arsdb/arsdb_primarylog
- ARS_DB2_ARCHIVE_LOGPATH:/arsfiles/arsdb/arsdb_archivelog
- ARS_DB2_LOGFILE_SIZE:1000
- ARS_DB2_LOG_NUMBER:40

- Storage Manager Parameters:
  - ARS_STORAGE_MANAGER:TSM
  - DSMSERV_DIR=/usr/tivoli/tsm/server/bin
  - DSMSERV_CONFIG=/usr/tivoli/tsm/server/bin/dsmserv.opt
  - DSM_DIR=/usr/tivoli/tsm/client/api/bin
  - DSM_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt
  - DSM_LOG=/tmp
  - DSMG_DIR=/usr/tivoli/tsm/client/ba/bin
  - DSMG_CONFIG=/usr/tivoli/tsm/client/ba/bin/dsm.opt
  - DSMG_LOG=/tmp
  - DSMI_DIR=/usr/tivoli/tsm/client/api/bin
  - DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin/dsm.opt
  - DSMI_LOG=/tmp

**Database File Systems (ars.dbfs file)**
- /arsfiles/arsdbfs/db1/SMS (Type SMS)
- /arsfiles/arsdbfs/db2/SMS (Type SMS)
- /arsfiles/arsdbfs/db3/SMS (Type SMS)

**Cache Filesystems (ars.cache file)**
- /arsfiles/arscache/arscache1
- /arsfiles/arscache/arscache2
- /arsfiles/arscache/arscache3

Note: For more information on the OnDemand configuration files and their parameters, refer to the IBM Content Manager OnDemand for Multiplatforms Version 7.1 Installation and Configuration Guide for UNIX® Servers.

**Filesystem Layout**
Figure 8-2 shows a schematic view of the OnDemand related filesystems.
Figure 8-2  Source Server filesystem layout
8.2 Backing up the Source Server

The first step in the migration will be to backup the Source Server in a way that will allow us to deploy OnDemand on the Target Server. In order to do this, we must backup DB2, TSM and OnDemand.

The first step will be to create a directory structure that allows us to accommodate backups.

<table>
<thead>
<tr>
<th>Directory</th>
<th>Directory Ownership</th>
<th>Directory Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>archive:sadm1</td>
<td>drwxrwx---</td>
</tr>
<tr>
<td>/arsmigr</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/db2</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/ondemand</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/tsm</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/dbvolumes</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/logvolumes</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/dsmdisk</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/dsmdump</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/textfiles</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/ondemand</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
<tr>
<td>/tsm</td>
<td>root:system</td>
<td>drwxrwxrwx</td>
</tr>
</tbody>
</table>

1. Use an AIX terminal to create this directories.

```bash
# mkdir /arsmigr
# mkdir /arsmigr/db2
# mkdir /arsmigr/ondemand
# mkdir /arsmigr/tsm
# mkdir /arsmigr/tsm/dbvolumes
# mkdir /arsmigr/tsm/logvolumes
# mkdir /arsmigr/tsm/dsmdisk
# mkdir /arsmigr/tsm/dsmdump
# mkdir /arsmigr/textfiles
# mkdir /arsmigr/textfiles/ondemand
# mkdir /arsmigr/textfiles/tsm
```

2. Use the chown and chmod commands to assign the correct permissions.

```bash
# chown -R root:system /arsmigr
# chmod -R 777 /arsmigr
```
# chown archive:sysadm1 /arsmigr/db2
# chmod 770 /arsmigr/db2

**Note:** Optionally, the /arsmigr directory could be mounted on its own filesystem, in case extra space is needed.

### 8.2.1 Backing up DB2

We will now proceed to backup DB2.

3. First, stop OnDemand
   a. list all arssockd processes

```
# ps -ef |grep arssockd
root 13658 27794   3 08:44:54 pts/0  0:00 grep arssockd
root 15032 21762   0 Nov 24 - 1:19 arssockd: db (idle)
root 16028 21762   0 Nov 24 - 1:02 arssockd: db (idle)
root 18816 21762   0 Nov 24 - 0:12 arssockd: license (Cur(0), Max(100))
root 21436 21762   0 Nov 24 - 0:51 arssockd: db (idle)
root 21762   1  0 Nov 24 - 0:13 arssockd: (accepting)
root 22220 21762   0 Nov 24 - 1:30 arssockd: db (idle)
root 26610 21762   0 Nov 24 - 1:02 arssockd: db (idle)
```

b. Kill the "arssockd: (accepting)" process (this process's PPID (Parent Process ID) is always 1):

```
# kill 21762
# ps -ef |grep arssockd
root 13660 27794   3 08:47:11 pts/0  0:00 grep arssockd
```

4. Stop TSM
   a. Use the TSM Administration Client to halt the server

```
# dsmadmc
tsm: ADSM> halt
ANR2234W This command will halt the server; if the command is issued from a remote client, it may not be possible to restart the server from the remote location.

Do you wish to proceed? (Yes/No) y

ANS80021 Highest return code was 0.
```

5. Generate a full ARCHIVE database backup
   a. Stop and restart DB2

```
# arsdb -hv
# su - archive
```
Chapter 8. AIX

8.2.2 Backing up TSM

6. Make sure TSM is stopped.
   # ps -ef|grep dsm
   root 43872 45790 1 17:58:44 pts/11 0:00 grep dsm
   #

7. Copy your database volumes to the backup directory.
   # cp /dsmdb/dbvol* /arsmigr/tsm/dbvolumes
   You must repeat this step for every database volume in your system.

8. Copy your recovery log volumes to the backup directory
   # cp /dsmlog/logvol* /arsmigr/tsm/logvolumes
   You must repeat this step for every recovery log volume in your system.

9. Copy TSM configuration files.
   cp /usr/tivoli/tsm/server/bin/dsmserv.opt /arsmigr/textfiles/tsm
   cp /usr/tivoli/tsm/server/bin/dsmserv.dsk /arsmigr/textfiles/tsm
   cp /usr/tivoli/tsm/server/bin/volhist.out /arsmigr/textfiles/tsm
   cp /usr/tivoli/tsm/server/bin/devconfig.out /arsmigr/textfiles/tsm

10. Copy TSM disk storage volumes. Check your configurations for details on what should you copy.
    # cp /dsmdump/* /arsmigr/tsm/dsmdump
    # cp /dsmdisk/* /arsmigr/tsm/dsmdisk

   **Important:** Make sure that you remember the exact original path of each of the TSM files. This information is vital and there is always the chance that the Source Server is no longer available when we configure the Target Server. Using a text file in the /arsmigr directory is a good option.

8.2.3 Backing up OnDemand

As we have already backed up the archive database, we must now proceed to backup the rest of OnDemand: the configuration files and the cache storage.

11. Copy the configuration files
a. We will begin by saving the files stored in the config directory

```
# cp /usr/lpp/ars/config/ars.* /arsmigr/textfiles/ondemand
# cp /usr/lpp/ars/config/arsload.cfg /arsmigr/textfiles/ondemand
```

b. If configured, you may want to keep the arslog and arsprt files

```
# cp /usr/lpp/ars/bin/arslog /arsmigr/textfiles/ondemand
# cp /usr/lpp/ars/bin/arsprt /arsmigr/textfiles/ondemand
```

c. It is also necessary to copy any scripts or custom User Exits you might have created.

12. Copy the OnDemand Cache

**Important:** There are many methods among to choose for transferring the cache structure from one machine to another. No matter which one you choose, keep in mind that is very important to preserve the original permissions and links that exist inside this structure. OnDemand uses this information for various purposes, and your data may become inaccessible if proper care is not taken.

```
# cd /arsfiles/arscache
# tar -cvf /arsmigr/ondemand/arscache1.tar arscache1
# tar -cvf /arsmigr/ondemand/arscache2.tar arscache2
# tar -cvf /arsmigr/ondemand/arscache3.tar arscache3
```

**Note:** We use three different files for each cache directory because they are mounted on different filesystems, and we want to regenerate the same structure in the Target Server.
8.3 Restoring to the Target Server

After we have successfully backed up the Source Server, we can now proceed to restoring the backup on our Target Server.

We will begin by transferring the files, then installing the software on the new machine, and finally restore all components to their new locations, making ourselves sure that the migration was successful.

8.3.1 Transferring the files

There are several ways of transferring the files to the new server. We opted to make a huge `.tar` file, and then use `ftp` to transfer it, because we had plenty of disk space. Another method could be using a tape device. No matter what method you decide to use, it is very important to keep the original file ownership, permissions and links.

13. Use the `tar` command to generate the archive:

```
# cd /
# tar -cvf /<temp_dir>/arsmigr.tar /arsmigr
```

14. Use `ftp` to transfer the archive to a temporary directory the new server

15. Create a filesystem in the Target Server with enough space to hold the `/arsmigr` directory

16. Use the `tar` command to restore the files in the archive:

```
# mount /arsmigr
# cd /
# tar -xvf /<temp_dir>/arsmigr.tar
```

8.3.2 Installing the software

After the backup has been transferred to the Target Server, we can now install the software. Procedures for installing the software can be found in the corresponding manuals. We will point out specific procedures that must be accomplished in order for the backup to function properly.

Installing DB2

We now must perform a regular DB2 installation, as if it were for a brand new OnDemand system.

17. Refer to `IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1` and `IBM DB2 Universal Database for UNIX Quick Beginnings Version 7` manuals for instructions on how to install DB2 using the `db2setup` utility.
18. During the installation, you must create the DB2 Archive Instance, as required for a regular OnDemand installation.

19. Assign root to the sysadm1 group.

**Installing TSM**

Use smitty to install TSM 4.1. Directions can be found on the *Tivoli Storage Manager for AIX Quick Start Version 4 Release 1* manual.

20. Follow the steps until the smitty installation is finished. We do not need to set up a server right now.

**Installing OnDemand**

Use smitty to install OnDemand. Follow the instructions on *IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1*.

21. Follow the steps until the smitty installation is finished. We do not need to set up an OnDemand instance (because we already have one!).

22. Apply the 7.1.0.4 FixPack using smitty.

**8.3.3 Creating the OnDemand directory structure**

Before we can restore our server, we must recreate the directory structure.

23. Use the mkdir command to create the directory structure.

```bash
# mkdir /arsfiles
# mkdir /arsfiles/arsdb
# mkdir /arsfiles/arsdb/arsdb
# mkdir /arsfiles/arsdb/arsdb_primarylog
# mkdir /arsfiles/arsdb/arsdb_archivelog
# mkdir /arsfiles/arsdbfs
# mkdir /arsfiles/arsdbfs/db1
# mkdir /arsfiles/arsdbfs/db1/SMS
# mkdir /arsfiles/arsdbfs/db2
# mkdir /arsfiles/arsdbfs/db2/SMS
# mkdir /arsfiles/arsdbfs/db3
# mkdir /arsfiles/arsdbfs/db3/SMS
# mkdir /arsfiles/arscache
# mkdir /arsfiles/arscache/arscache1
# mkdir /arsfiles/arscache/arscache2
# mkdir /arsfiles/arscache/arscache3
# mkdir /arsfiles/arsstmp
# mkdir /dsmdb
# mkdir /dsmlog
# mkdir /dsmdisk
# mkdir /dsmdump
```
24. Use smitty to create the fourteen corresponding filesystems. Use the mount command to mount all fourteen filesystems. Use Figure 8-2 as a reference on what filesystems are needed and where they should be mounted.

25. Use the chmod and chown commands to assign the correct permissions to the directories. Use Figure 8-2 as a reference on what permissions does each filesystem require.

8.3.4 Restoring DB2

After all the software has been installed, we can restore our data. The first step is to restore the DB2 archive database.

Before restoring the database, we must make sure that the filesystems and directories that are needed in order to hold the restored database are in place. This includes the database directory and the Tablespace Filesystems directories.

26. Make sure the OnDemand database directories have the correct permissions. If they do not, use the following:

```
# chown -R archive:sysadm1 /arsfiles/arsdb
# chmod -R 755 /arsfiles/arsdb
# chown -R archive:sysadm1 /arsfiles/arsdbfs
# chmod -R 755 /arsfiles/arsdbfs
```

27. Use the db2 command interpreter to restore the Archive database.

```
# su - archive
$ db2start
$ db2 restore db archive from /arsmigr/db2 to /arsfiles/arsdb/arsdb without rolling forward
$ db2 connect to archive
```

Database Connection Information

```
Database server = DB2/6000 7.1.0
SQL authorization ID = ARCHIVE
Local database alias = ARCHIVE
```

```
$ db2 terminate
$ db2stop
$ exit
```

28. As the root user, run the db2ln command

```
# /usr/lpp/db2_07_01/cfg/db2ln
```

29. Re-link the DB2 User Exit.

```
# cd /home/archive/sql1lib/adm
# ln -s /usr/lpp/ars/config/db2uext2.disk db2uext2
```
8.3.5 Restoring TSM

The TSM restore is basically copying files back to their original locations.

30. Copy all configuration files to their original directories. In our example, this is the server directory.
   
   ```
   cp /arsmigr/textfiles/tsm/* /usr/tivoli/tsm/server/bin
   ```

31. Copy all database volumes to their corresponding locations. In our example /dsmdb.
   
   ```
   cp /arsmigr/tsm/dbvolumes/* /dsmdb
   ```

32. Copy all recovery log volumes to their corresponding locations. In our example, this is /dsmlog.
   
   ```
   cp /arsmigr/tsm/logvolumes/* /dsmlog
   ```

33. Copy any disk storage volumes to their corresponding locations. In our example:
   
   ```
   cp /arsmigr/tsm/dsmdisk/* /dsmdisk
   cp /arsmigr/tsm/dsmdump/* /dsmdump
   ```

34. After all files are in place, reconfigure the corresponding dsm.opt and dsm.sys client options files.

35. Finally, test the TSM migration by running the following

   ```
   # cd /usr/tivoli/tsm/server/bin
   # dsmserv &
   # dsmadmc
   ```

   Tivoli Storage Manager
   Command Line Administrative Interface - Version 4, Release 1, Level 0.0
   (C) Copyright IBM Corporation, 1990, 1999, All Rights Reserved.

   Enter your user id: admin

   Enter your password:

   Session established with server ADSM: AIX-RS/6000
   Server Version 4, Release 1, Level 0.0
   Server date/time: 12/17/01 20:37:20 Last access: 12/17/01 17:56:01

   tsm: ADSM>q vol

<table>
<thead>
<tr>
<th>Volume Name</th>
<th>Storage</th>
<th>Device</th>
<th>Estimated</th>
<th>Pct Volume</th>
</tr>
</thead>
</table>

   Note: If your installation is using TSM for DB2 archived logs, then the above step must be done replacing db2uext2.disk with db2uext2.adsm
## 8.3.6 Restoring OnDemand

After both TSM storage and the DB2 archive database have been restored, the final step is to restore OnDemand.

The first step in doing this is to restore the Cache storage directory structure to its original location.

**Important:** The cache structure must be restored to the same absolute paths. In short, the cache structure must be the exact same as the one in the source server.

36. Restore the cache structure using the tar command:
   
   a. Make sure all the arscache filesystems are mounted
   b. Run the following:
      
      ```
      # cd /arsfiles/arscache
      # tar -xvf /arsmigr/ondemand/arscache1.tar
      # tar -xvf /arsmigr/ondemand/arscache2.tar
      # tar -xvf /arsmigr/ondemand/arscache3.tar
      ```

37. Now copy the configuration files back to their directories. You might want to make a backup copy of the original files.

   ```
   # cp /arsmigr/textfiles/ondemand/ars.* /usr/lpp/ars/config
   # cp /arsmigr/textfiles/ondemand/arsload.cfg /usr/lpp/ars/config
   ```

38. If you saved them, copy back the arslog and arsprt files

   ```
   # cp /arsmigr/textfiles/ondemand/arslog /usr/lpp/ars/bin
   # cp /arsmigr/textfiles/ondemand/arsprt /usr/lpp/ars/bin
   ```

39. Reconfigure any scripts and/or restore any custom user exits you might have saved.
Testing the migration
After all migration steps have been completed, we must now test our system to see if it is correctly set up.

40. If it is not already started, start TSM
   # cd /usr/tivoli/tsm/server/bin
   # dsmrsv quiet &

41. If it is not already started, start DB2
   # /usr/lpp/ars/bin/arsdb -gkv

42. Start OnDemand
   # /usr/lpp/ars/bin/arssockd

Everything should start normally. Below are some check procedures you can use to test your system.

43. Open an OnDemand Client and retrieve a document that is stored on TSM.
44. Load a document that uses custom User Exits (if any) to cache storage
45. Run arsmaint -v (Cache Filesystem verification/validation). Check that no errors appear in the System Log
Hints & tips

In this appendix, we provide a few hints and tips on some issues and observations related to the migration of OnDemand to Version 7.1:

- OnDemand user password policy
- TSM client nodes
- Changes to OnDemand system tables in the ARCHIVE database
OnDemand user password policy

All along, OnDemand logon security verifies only the first eight characters of the password entered by the user. This is stated in the OnDemand product documentation. However, previous versions of OnDemand allowed users to provide passwords with more than eight characters. This gave a false sense of security.

Thus, starting from OnDemand Version 7.1, OnDemand password policy is tightened. If the logon security user exit (arsusec) is not used, and only (the standard) OnDemand logon security is used, then passwords are limited to a maximum of 8 characters in length. Though password length can range from one to 128 characters, the additional characters are provided for customers who choose to implement their own password security by enabling the logon security user exit. For example, if a user enters more than eight characters when updating his/her password, then the OnDemand client will display an error message “Password must not exceed 8 characters in length”.

Furthermore, users with passwords that have more than 8 characters prior to migrating OnDemand to Version 7.1 must take note. After OnDemand is migrated to Version 7.1, if they try to login with those passwords, their login will fail. The work-around is to use the first eight characters of the password, and they will be able to login. They should update their passwords immediately after login.

This also includes OnDemand commands that require a userid and password, e.g., arsload.

Therefore, prior to migrating OnDemand to Version 7.1, prepare and inform your OnDemand users to update their passwords to contain eight or fewer characters (including any passwords embedded in command line scripts).

If your organization does not use the logon security user exit, then the maximum valid value that you can specify for the Minimum Password Length option in OnDemand System Parameters is 8 (eight) characters.

TSM Client Nodes

A TSM client node is defined for each OnDemand storage node.

In TSM Version 4.1, a client node has a new parameter called Maximum Mount Points Allowed (MAXNUMMP). This specifies the mount points a client node is allowed to use on the server. If a client node is registered in Version 3.7 or later, the value will be between 0-999, depending on the value that is set with the
MAXNUMMP parameter of the register node command. The default value is 1 (one). If the client node was registered under previous versions of ADSM and the MAXNUMMP parameter was not explicitly set using the update node command, then the value is set to "Unlimited".

If you register a new node and accept the default value of 1 for the MAXNUMMP parameter, your OnDemand server may encounter problems when it is performing multiple concurrent loading or retrieving of files from one TSM client node, as the client node is restricted to only one mount point.

Therefore, when you register a new client node in TSM Version 4.1, specify a number greater than 1 (one) for the MAXNUMMP parameter. For example, as a guideline, if you have an optical library with four drives, set the MAXNUMMP parameter to 4 (four).

Changes to OnDemand system tables in the ARCHIVE database

In the new OnDemand Administrator Client Version 7.1, when viewing OnDemand objects such as Application, Application Group and Folder, you will notice there are two new columns, ‘Modified’ and ‘Modified By’. For example, in Application Groups view, previous versions of the OnDemand Admin Client only had ‘Name’ and ‘Description’ columns in the view. Now, in Version 7.1, it has added ‘Modified’ and ‘Modified By’ columns in the view to indicate the date and time of the latest update to the Application Group, and the OnDemand administrator userid that was used to make that update.

In order to support this new feature, changes had to be made to the OnDemand system tables in the OnDemand database. This is one of the reasons for the need of those steps in the OnDemand migration related to the OnDemand systems tables.
Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

Other resources

These publications are also relevant as further information sources:

- **IBM DB2 Universal Database for UNIX Quick Beginnings Version 7**, GC09-2970-00
- **IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for UNIX Servers Version 7.1**, GC27-0834-00
- **Tivoli Storage Manager for AIX Quick Start Version 4 Release 1**, GC35-0402-00
- **IBM Content Manager OnDemand for Multiplatforms Version 7.1 Release Notes**
- **IBM Content Manager OnDemand for Multiplatforms Installation and Configuration Guide for Windows Servers Version 7.1**, GC27-0835-00
- **IBM DB2 Universal Database for Window Quick Beginnings Version 7**, GC09-2971-00
- **IBM DB2 Quick Beginnings for Windows Version 6.1**, GC09-2835-00
- **Tivoli Storage Manager for Windows Quick Start Version 4 Release 1**, GC35-0409-00

Referenced Web sites

These Web sites are also relevant as further information sources:

- Content Manager OnDemand for Multiplatforms Product Page
  http://www.ibm.com/software/data/ondemand/mp
- Content Manager OnDemand for Multiplatforms Version 7.1 fixes
- DB2 Fixes
- TSM fixes
  http://www.tivoli.com/support/storage_mgr/servers.html

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Glossary

A.

abstract class. A class that provides common behavior across a set of subclasses but is not itself designed to have instances. An abstract class represents a concept; classes derived from it represent implementations of the concept. See also base class.

access modifier. A keyword that controls access to a class, method, or attribute. The access modifiers in Java are public, private, protected, and package, the default.

accessor methods. Methods that an object provides to define the interface to its instance variables. The accessor method to return the value of an instance variable is called a get method or getter method, and the mutator method to assign a value to an instance variable is called a set method or setter method.

applet. A Java program designed to run within a Web browser. Contrast with application.

application. In Java programming, a self-contained, stand-alone Java program that includes a main() method. Contrast with applet.

application programming interface (API). A software interface that enables applications to communicate with each other. An API is the set of programming language constructs or statements that can be coded in an application program to obtain the specific functions and services provided by an underlying operating system or service program.

argument. A data element, or value, included as a parameter in a method call. Arguments provide additional information that the called method can use to perform the requested operation.

associated. In WebSphere Studio, a file that is marked as belonging to a site. Associated files display as non-dimmed icons in the File View.

attribute. A specification of an element of a class. For example, a customer bean could have a name attribute and an address attribute.

B.

base class. A class from which other classes or beans are derived. A base class may itself be derived from another base class. See also abstract class.

bean. A definition or instance of a JavaBeans component. See also JavaBeans.

BeanInfo. (1) A companion class for a bean that defines a set of methods that can be accessed to retrieve information on the bean’s properties, events, and methods. (2) In the VisualAge for Java IDE, a page in the Class Browser that provides bean information.

beans palette. In the Visual Composition Editor, a pane that contains beans that you can select and manipulate to create programs. You can add your own categories and beans to the beans palette.

break point. A point in a computer program where the execution will be halted.
browser. (1) In VisualAge for Java, a window that provides information about program elements. There are browsers for projects, packages, classes, methods, and interfaces. (2) An Internet-based tool that lets users browse Web sites.

category. In the Visual Composition Editor, a selectable grouping of beans on the palette. Selecting a category displays the beans belonging to that category. See also beans palette.

child. In WebSphere Studio, a file that is referenced by another file.

class. A template that defines properties, operations, and behavior for all instances of that template.

class hierarchy. The relationships among classes that share a single inheritance. All Java classes inherit from the Object class.

class library. A collection of classes.

class method. See method.

CLASSPATH. (1) In VisualAge for Java the lists of pathnames which will be searched for dynamically loaded classes, BeanInfo information and external source for debugging. (2) In your deployment environment, the environment variable that specifies the directories in which to look for class and resource files.

client/server. The model of interaction in distributed data processing where a program at one location sends a request to a program at another location and awaits a response. The requesting program is called a client, and the answering program is called a server.

Class Browser. In the VisualAge for Java IDE, a tool used to browse the classes loaded in the workspace.

component model. An architecture and an API that allows developers to define reusable segments of code that can be combined to create a program. VisualAge for Java uses the JavaBeans component model.

composite bean. A bean that is composed of other beans. A composite bean can contain visual beans, nonvisual beans, or both. See also bean, nonvisual bean, and visual bean.

concrete class. A non-abstract subclass of an abstract class that is a specialization of the abstract class.

connection. In the Visual Composition Editor, a visual link between two components that represents the relationship between the components. Each connection has a source, a target, and other properties. See also event-to-method connection, parameter connections, and property-to-property connection.

console. In VisualAge for Java, the window that acts as the standard input (System.in) and standard output (System.out) device for programs running in the VisualAge for Java IDE.

construction from parts. A software development technology in which applications are assembled from existing and reusable software components, known as parts. In VisualAge for Java, parts are called beans.

constructor. A special class method that has the same name as the class and is used to construct and possibly initialize objects of its class type.
**container.** A component that can hold other components. In Java, examples of containers include Applets, Frames, and Dialogs. In the Visual Composition Editor, containers can be graphically represented and generated.

**current edition.** The edition of a program element that is currently in the workspace. See also open edition.

**custom link.** In WebSphere Studio, a relationship between files that you identify and WebSphere Studio does not automatically recognize.

**domain.** A domain name server (DNS) or Internet protocol (IP) address, for example, software.ibm.com or 123.45.67.8.

**domain name server.** A system for translating domain names such as www.software.ibm.com into numeric Internet protocol addresses such as 123.45.67.8.

**double-byte character set (DBCS).** A set of characters in which each character is represented by 2 bytes. Languages such as Japanese, Chinese, and Korean, which contain more symbols than can be represented by 256 code points, require double-byte character sets. Compare with single-byte character set.

**dynamic information.** Information that is created at the time the user requests it. Dynamic information changes over time so that each time users view it, they see different content.


**encapsulation.** The hiding of a software object’s internal representation. The object provides an interface that queries and manipulates the data without exposing its underlying structure.

**event.** An action by a user program, or a specification of a notification that may trigger specific behavior. In JDK 1.1, events notify the relevant listener classes to take appropriate actions.

**event-to-method connection.** A connection from an event generated by a bean to a method of a bean. When the connected event occurs, the method is executed. See also connection.

**federated search.** A search that runs against disparate content servers.

**FTP.** See “file transfer protocol.”

**factory.** (1) A component of VisualAge for Java that is installed separately using the QuickStart. (2) A method, field, or event that is available from a bean’s interface and to which other beans can connect.

**feature.** (1) A component of VisualAge for Java that is installed separately using the QuickStart. (2) A method, field, or event that is available from a bean’s interface and to which other beans can connect.

**field.** See attribute.

**file transfer protocol.** An international standard for transferring files from one computer to another across a network.
File View. In WebSphere Studio, graphical representation of all the files in your site arranged in folders.

flatten. Synonymous with demarshal.

Folder. In WebSphere Studio, a group of related files.

free-form surface. The open area of the Visual Composition Editor where you can work with visual and nonvisual beans. You add, remove, and connect beans on the free-form surface.

G.

generated link. In WebSphere Studio, a link that is created by WebSphere Studio based on the parameters of a code file.

graphical user interface (GUI). A type of interface that enables users to communicate with a program by manipulating graphical features, rather than by entering commands. Typically, a GUI includes a combination of graphics, pointing devices, menu bars and other menus, overlapping windows, and icons.

H.

HTML. See “hypertext markup language.”

HTTP. See “hypertext transfer protocol.”

home page. See “start page.”

hyperlinks. Areas on a Web page that, when clicked, connect you to other areas on the page or other Web pages.

Hypertext Markup Language (HTML). The basic language that is used to build hypertext documents on the World Wide Web. It is used in basic, plain ASCII-text documents, but when those documents are interpreted, or rendered, by a Web browser such as Netscape, the document can display formatted text, color, a variety of fonts, graphical images, special effects, hypertext jumps to other Internet locations, and information forms.

Hypertext Transfer Protocol (HTTP). The protocol for moving hypertext files across the Internet. Requires an HTTP client program on one end, and an HTTP server program on the other end. HTTP is the most important protocol used in the World Wide Web.

I.


IP. See “Internet protocol address.”

IP number. An Internet address that is a unique number consisting of four parts separated by dots, sometimes called a dotted quad (for example: 198.204.112.1). Every Internet computer has an IP number, and most computers also have one or more domain names that are mappings for the dotted quad.

Import Wizard. A WebSphere Studio feature that copies an existing Web site into the WebSphere Studio environment.

inheritance. (1) A mechanism by which an object class can use the attributes, relationships, and methods defined in classes related to it (its base classes). (2) An object-oriented programming technique that allows you to use existing classes as bases for creating other classes.

inside link. In WebSphere Studio, a file within a WebSphere Studio site that links to other files in the site.
instance. Synonym for object, a particular instantiation of a data type.

integrated development environment (IDE). In VisualAge for Java, the set of windows that provide the user with access to development tools. The primary windows are Workbench, Class Browser, Log, Console, Debugger, and Repository Explorer.

interchange file. A file that you can export from VisualAge for Java that contains information about selected projects or packages. This file can then be imported into any VisualAge for Java session.

interface. A named set of method declarations that is implemented by a class. The Interface page in the Workbench lists all interfaces in the workspace.

Internet. The collection of interconnected networks that use TCP/IP and evolved from the ARPANET of the late 1960s and early 1970s.

Internet Protocol (IP). The protocol that provides basic Internet functions.

Internet protocol address. A numeric address that uniquely identifies every computer connected to a network. For example, 123.45.67.8

intranet. A private network, inside a company or organization, that uses the same kinds of software that you would find on the public Internet. Many of the tools used on the Internet are being used in private networks; for example, many companies have Web servers that are available only to employees.

Java. A programming language invented by Sun Microsystems that is specifically designed for writing programs that can be safely downloaded to your computer through the Internet and immediately run without fear of viruses or other harm to your computer or files.

Java archive (JAR). A platform-independent file format that groups many files into one. JAR files are used for compression, reduced download time, and security.

JavaBeans. The specification that defines the platform-neutral component model used to represent parts. Instances of JavaBeans (often called beans) may have methods, properties, and events.

JavaServer Pages. A server side scripting technology that allows for dynamic generation of the response on the server.

JSP. See "JavaServer Pages."

K.

keyword. A predefined word reserved for Java, for example, return, that may not be used as an identifier.

L.

library server. See server - library.

listener. In JDK 1.1, a class that receives and handles events.

local area network (LAN). A computer network located on a user’s establishment within a limited geographical area. A LAN typically consists of one or more server machines providing services to a number of client workstations.

log. In VisualAge for Java, the window that displays messages and warnings during development.
M.

MIME type (Multi-purpose Internet Mail Extensions). An international standard for categorizing types of Web files such as text and images.

MVC. See Model View Controller.

marshal. Synonymous with deserialize.

message. A communication from one object to another that requests the receiving object to execute a method. A method call consists of a method name that indicates the requested method and the arguments to be used in executing the method. The method call always returns some object to the requesting object as the result of performing the method. Synonym for method call.

method. A fragment of Java code within a class that can be invoked and passed a set of parameters to perform a specific task.

method call. Synonymous with message.

model. A nonvisual bean that represents the state and behavior of an object, such as a customer or an account. Contrast with view.

Model View Controller. An application architecture which separates the components of the application: the model represents the business logic or data; the view represents the user interface and the controller manages user input, or, in some cases the application flow.

mutator methods. Methods that an object provides to define the interface to its instance variables. The accessor method to return the value of an instance variable is called a get method or getter method, and the mutator method to assign a value to an instance variable is called a set method or setter method.

N.

named package. In the VisualAge for Java IDE, a package that has been explicitly named and created.

nesting. In WebSphere Studio, the number of folder levels beneath other folders. One level of folders gives you a “nesting” of one. If that folder contains other folders, you have a nesting of two and so on.

nonvisual bean. In the Visual Composition Editor, a bean that has no visual representation at run time. A nonvisual bean typically represents some real-world object that exists in the business environment. Compare with model. Contrast with view and visual bean.

O.

ODBC driver. An ODBC driver is a dynamic link library that implements ODBC function calls and interacts with a data source.

object server. See server - object.

object. (1) A computer representation of something that a user can work with to perform a task. An object can appear as text or an icon. (2) A collection of data and methods that operate on that data, which together represent a logical entity in the system. In object-oriented programming, objects are grouped into classes that share common data definitions and methods. Each object in the class is said to be an instance of the class. (3) An instance of an object class consisting of attributes, a data structure, and operational methods. It can represent a person, place, thing, event, or concept. Each instance has the same properties, attributes, and methods as other instances of the object class, although it has unique values assigned to its attributes.
object class. A template for defining the attributes and methods of an object. An object class can contain other object classes. An individual representation of an object class is called an object.

object-oriented programming (OOP). A programming approach based on the concepts of data abstraction and inheritance. Unlike procedural programming techniques, object-oriented programming concentrates on those data objects that constitute the problem and how they are manipulated, not on how something is accomplished.

Open Database Connectivity (ODBC). A Microsoft-developed C database API that allows access to database management systems calling callable SQL, which does not require the use of an SQL preprocessor. In addition, ODBC provides an architecture that allows users to add modules (database drivers) that link the application to their choice of database management systems at run time. Applications no longer need to be directly linked to the modules of all the database management systems that are supported.

open edition. An edition of a program element that can still be modified; that is, the edition has not been versioned. An open edition may reside in the workspace as well as in the repository.

operation. A method or service that can be requested of an object.

outside link. In WebSphere Studio, a link to a file that is located outside the current Web site.

P.

package. A program element that contains related classes and interfaces.

palette. See beans palette.

parent. In WebSphere Studio, a file that contains a reference to another file.

parent class. The class from which another bean or class inherits data, methods, or both.

part. An existing, reusable software component. In VisualAge for Java, all parts created with the Visual Composition Editor conform to the JavaBeans component model and are referred to as beans. See also nonvisual bean and visual bean.

primitive bean. A basic building block of other beans. A primitive bean can be relatively complex in terms of the function it provides.

private. In Java, an access modifier associated with a class member. It allows only the class itself to access the member.

process. A collection of code, data, and other system resources, including at least one thread of execution, that performs a data processing task.

program. In VisualAge for Java, a term that refers to both Java applets and applications.

program element. In VisualAge for Java, a term referring to any of the entities under source control. Program elements are projects, packages, classes, interfaces, or methods.

project. In VisualAge for Java, the topmost kind of program element. A project contains Java packages.

promotion. Within a JavaBean, to make features of a contained bean available to be used for making connections. For example, a bean consisting of three push buttons on a panel. If this bean is placed in a frame, the features of the push buttons would have to be promoted to make them available from within the frame.
property. An initial setting or characteristic of a bean; for example, a name, font, text, or positional characteristic.

property sheet. In the Visual Composition Editor, a set of name-value pairs that specify the initial appearance and other bean characteristics.

property-to-property connection. A connection from a property of one bean to a property of another bean. See also connection.

protected. In Java, an access modifier associated with a class member. It allows the class itself, subclasses, and all classes in the same package to access the member.

protocol. (1) The set of all messages to which an object will respond. (2) Specification of the structure and meaning (the semantics) of messages that are exchanged between a client and a server. (3) Computer rules that provide uniform specifications so that computer hardware and operating systems can communicate.

prototype. A method declaration or definition that includes the name of the method, the return type and the types of its arguments. Contrast with signature.

publishing. In WebSphere Studio, the process of copying your site's files to Web servers.

Publishing View. In WebSphere Studio, a graphical representation of the stages (for example Test or Production) where you define the layout of your Web servers and identify the files you want in your Web site.

R.

Relations View. In WebSphere Studio, a graphical representation of each file in your site and the links between those files.

Remote Method Invocation (RMI). In JDK 1.1, the API that enables you to write distributed Java programs, allowing methods of remote Java objects to be accessed from other Java virtual machines.

repository. In VisualAge for Java, the storage area, separate from the workspace, that contains all editions (both open and versioned) of all program elements that have ever been in the workspace, including the current editions that are in the workspace. You can add editions of program elements to the workspace from the repository.

Repository Explorer. In VisualAge for Java, the window from which you can view and compare editions of program elements that are in the repository.

resource file. A file that is referred to from your Java program. Examples include graphics and audio files.

Resources folder. In WebSphere Studio, the folder that physically holds a site's folders and files.

resurrect. Synonymous with deserialze.

RMI compiler. The compiler that generates stub and skeleton files that facilitate RMI communication. This compiler can be automatically invoked from the Tools menu item.

RMI registry. A server program that allows remote clients to get a reference to a server bean.

S.

Scrapbook. In VisualAge for Java, the window from which you can write and test fragments of code, without having to define an encompassing class or method.

serialize. Synonymous with demarshal.

servlet. A Java program designed to run within a Java-enabled Web server.
server - library. The library server manages catalog information and provides pointers to the objects held in the object server.

server - object. The object server contains the actual digitized content files of a digital library, such as a video clip.

signature. The part of a method declaration consisting of the name of the method and the number and types of its arguments. Contrast with prototype.

single-byte character set. A set of characters in which each character is represented by a 1-byte code.

SmartGuide. In IBM software products, an interface that guides you through performing common tasks.

source link. In WebSphere Studio, a link you create to identify the source file of a publishable file.

Start page. The first page a user sees when browsing a Web site, also known as the “home page.”

static information. Web files that do not change on every access.

sticky. In the Visual Composition Editor, the mode that enables an application developer to add multiple beans of the same class (for example, three push buttons) without going back and forth between the beans palette and the free-form surface.

superclass. See abstract class and base class.

T.

tear-off property. A property that a developer has exposed as a variable to work with as though it were a stand-alone bean.

thread. A unit of execution within a process.

type. In VisualAge for Java, a generic term for a class or interface.

U.

URL. See “uniform resource locator.”

Unicode. A character coding system designed to support the interchange, processing, and display of the written texts of the diverse languages of the modern world. Unicode characters are typically encoded using 16-bit integral unsigned numbers.

uniform resource locator (URL). A standard identifier for a resource on the World Wide Web, used by Web browsers to initiate a connection. The URL includes the communications protocol to use, the name of the server, and path information identifying the objects to be retrieved on the server.

user interface (UI). (1) The hardware, or software, or both that enables a user to interact with a computer. (2) The term user interface typically refers to the visual presentation and its underlying software with which a user interacts.

V.

variable. (1) A storage place within an object for a data feature. The data feature is an object, such as number or date, stored as an attribute of the containing object. (2) A bean that receives an identity at run time. A variable by itself contains no data or program logic; it must be connected such that it receives run-time identity from a bean elsewhere in the application.

versioned edition. An edition that has been versioned and can no longer be modified.

versioning. An edition that has been versioned and can no longer be modified.
view. (1) A visual bean, such as a window, push button, or entry field. (2) A visual representation that can display and change the underlying model objects of an application. Views are both the end result of developing an application and the basic unit of composition of user interfaces. Compare with visual bean. Contrast with model.

visual bean. In the Visual Composition Editor, a bean that is visible to the end user in the graphical user interface. Compare with view. Contrast with nonvisual bean.

visual programming tool. A tool that provides a means for specifying programs graphically. Application programmers write applications by manipulating graphical representations of components.

Visual Composition Editor. In VisualAge for Java, the tool where you can create graphical user interfaces from prefabricated beans and define relationships (connections) between both visual and nonvisual beans. The Visual Composition Editor is a page in the class browser.

W.

Web application. A software system that is designed to automate a business process and is delivered on intranets or the Internet.

Workbench. In VisualAge for Java, the main window from which you can manage the workspace, create and modify code, and open browsers and other tools.

workspace. The work area that contains all the code you are currently working on (that is, current editions). The workspace also contains the standard Java class libraries and other class libraries.
## Abbreviations and acronyms

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<th>Description</th>
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<tr>
<td>TSM</td>
<td>Tivoli Storage Manager</td>
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<tr>
<td>ADSM</td>
<td>IBM ADSTAR Distributed Storage Manager</td>
</tr>
<tr>
<td>IBM</td>
<td>International Business Machines Corporation</td>
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<tr>
<td>ITSO</td>
<td>International Technical Support Organization</td>
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<tr>
<td>AIX</td>
<td>Advanced Interactive Executive</td>
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<tr>
<td>AFP</td>
<td>Advanced Function Presentation</td>
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<td>PDF</td>
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(0.5” spine)
0.475”<->0.875”
250 <-> 459 pages
To determine the spine width of a book, you divide the paper PPI into the number of pages in the book. An example is a 250 page book using Plainfield opaque 50# smooth which has a PPI of 526. Divided 250 by 526 which equals a spine width of .4752". In this case, you would use the .5" spine. Now select the Spine width for the book and hide the others: Special>Conditional Text>Show/Hide>SpineSize(→Hide)->Set
An OnDemand multi-platform Migration Guide

A complete, step by step guide to migrate OnDemand to its latest release

Upgrade DB2 and TSM in realistic OnDemand scenarios

Migrate OnDemand from one server to another

This Redbook provides a step by step guide on how to migrate an existing OnDemand version 2.2.1 implementation to version 7.1. We focus on OnDemand implementations that exist on Windows NT, Windows 2000 and AIX operating system platforms, paying particular attention to not only the OnDemand software but also to DB2 and ADSM/TSM. Each Part of this redbook is catered towards a particular scenario where each chapter within each part then discusses issues and steps for specific operating system platforms. The three parts that form our base scenarios for this migration guide include Migrating a single OnDemand library/object server, Migrating an OnDemand object server and Migrating an OnDemand library/object server from one machine to another.

The chapters are designed to discuss chronological steps in performing the migration. This includes backups, upgrades and necessary configuration updates needed for DB2, ADSM/TSM and OnDemand.

It is our intention to provide this redbook as a guide to the audience of OnDemand Administrators, IBM Business Partners and IBM employees who support and implement OnDemand.

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