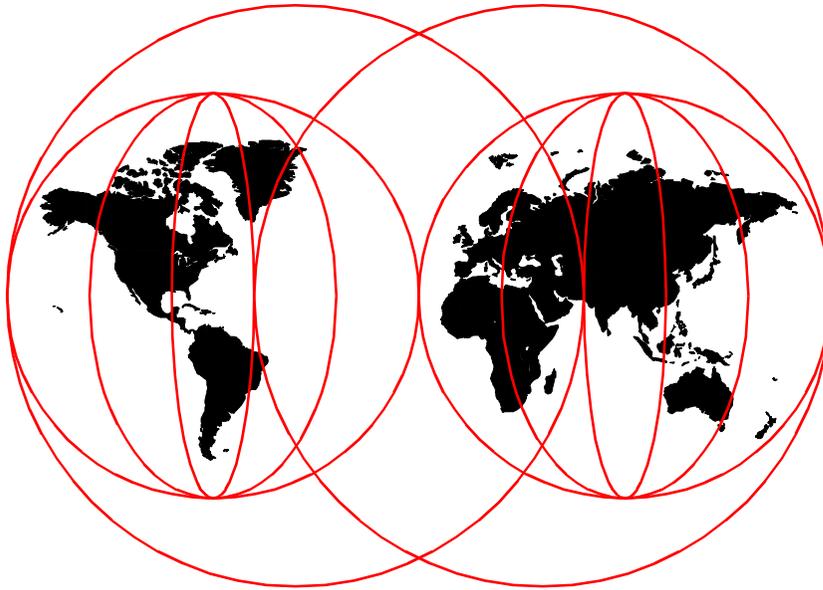IBM

# Windows 2000 Deployment:
# Using Universal Manageability

*Barry Nusbaum, Raymond Cook III, Olaf Menke, Rok Rebolj*
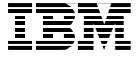
**International Technical Support Organization**

SG24-5668-00

**IBM**  International Technical Support Organization

# Windows 2000 Deployment:
# Using Universal Manageability

March 2000

> **Take Note!**
>
> Before using this information and the product it supports, be sure to read the general information in Appendix C, "Special notices" on page 341.

**First Edition (March 2000)**

This edition applies to LCCM V2.5.1, Software Delivery Assistant V1.1 and System Migration Assistant V2.1 for use with the Windows NT and Windows 2000 operating system

Comments may be addressed to:
IBM Corporation, International Technical Support Organization
Dept. HZ8  Building 678
P.O. Box 12195
Research Triangle Park, NC 27709-2195

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# Contents

# Preface

This redbook will help you either upgrade or install Windows 2000 on your clients and servers using the IBM Universal Manageability tools. We show you the added value of these tools over and above the base Microsoft tools and documentation that are provided with Windows 2000. In addition, this book provides some basic details on how to implement Software Delivery Assistant and the new version of System Migration Assistant. This book also incorporates the new function for Windows 2000 deployment in LCCM.

Examples are provided of how to use Netfinity Director to determine which of your clients and servers are candidates for migration to Windows 2000. In addition to the examples provided throughout this redbook, there is a chapter that covers the support structure for the tools used in this book as well as a chapter on frequently asked questions.

## 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, Raleigh Center.



*Figure 1. Team that wrote this redbook*

**Barry Nusbaum** is a Consulting International Technical Support representative at the International Technical Support Organization, Raleigh Center. He writes extensively and teaches IBM classes worldwide on all areas of Tivoli and Netfinity systems management on the NT and AIX platforms. He is also currently working on projects related to the e-business Application Framework and WebSphere. Before joining the ITSO seven years ago, he worked in Professional Services in the United States as a National Communications Specialist. He can be reached at busbaum@us.ibm.com.

**Raymond Cook III** is the World Wide Level 2 Product Leader for Universal Management Solutions at the Personal Systems Group Help Center in the United States. He has over five years of experience supporting IBM hardware and software solutions. His areas of expertise include IBM Netfinity Servers, IBM Commercial Desktop systems, IBM Universal Management Solutions, Santa Cruz Operations Unix, and RedHat Linux. He is a RedHat Certified Engineer and an IBM Professional Server Specialist (PSS). You can reach him by e-mail at raycook@us.ibm.com.

**Olaf Menke** is a systems engineer and Netfinity Server specialist with IBM Germany. He has over six year's experience in support of computer systems and software. He has worked for over three years with IBM Global Services in the Netfinity Pre-Sales support team. He holds a degree in Information Technology from the Technische Universitaet in Dresden. His areas of expertise include IBM Netfinity Server, Netfinity Manager, UMA, and Windows NT. He is a Microsoft Certified System Engineer (MCSE) and an IBM Professional Server Expert (PSE). You can reach him by e-mail at cspmenke@de.ibm.com.

**Rok Rebolj** is a PC Institute Instructor in Slovenia. He currently teaches PC Institute and Tech Connect classes in different countries around EMEA. He has seven years of experience in the PC computer industry. He holds a degree in Electronics Engineering from the University in Ljubljana. His areas of expertise include Netfinity servers, Netfinity Manager, Windows NT and OS/2. He is an Associate Professional Server Expert (APSE) and a Microsoft Certified Trainer (MCT) for NT 4.0 track. You can reach him by e-mail at rok.rebolj@siol.net.

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

Julianne Bielski, Kofi Kekessie, Paulette Lewison
IBM RTP Development

Wade Mahan, Steve Murphrey, Karen Rowlands, Goran Wibran
IBM RTP Development

James Bezanson
IBM Kirkland Development

David Doria, David Rhodes
IBM RTP Development Management

## Comments welcome

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- Use the online evaluation form found at `http://www.redbooks.ibm.com/`
- Send your comments in an Internet note to `redbook@us.ibm.com`

# Chapter 1. Deploying Windows 2000 using UM deployment tools

This redbook shows how you can use the IBM Universal Manageability (UM) tools to deploy Microsoft Windows 2000. It shows how you can do this better than with the tools delivered by Microsoft itself. We show you how the UM tools can help reduce the total cost of ownership (TCO).

Microsoft wrote a *Deployment Planning Guide* for upgrading or deploying Windows 2000 on Intel-based PC platforms. This is a large document that should help you to upgrade and deploy your systems to Windows 2000.

**Note:** You can find the *Microsoft Windows 2000 Deployment Planning Guide* on the following Web site:

```
http://www.microsoft.com/WINDOWS2000/library/resources/reskit/dpg/default.asp
```

IBM will also use this guide as the basis or development of Universal Manageability (UM) tools for deploying Windows 2000 on IBM and non-IBM systems. These tools are part of the Universal Manageability initiative from IBM that can help you to manage your systems easier and reduce the TCO. In this chapter we give you a short overview of the Universal Manageability tools and start with the planning of the Windows 2000 deployment.

The UM tools are all based on industry standards such as:

- Wired for Management (WfM)
- Wake on LAN (WOL)
- Desktop Management Interface (DMI)
- Common Information Model (CIM)
- Simple Network Messaging Protocol (SNMP)

**Note:** Information about these industry standards can be found on the following Web sites:

```
http://www.pc.ibm.com/us/infobrf/
http://www.intel.ie/support/desktopmgmt/apptech.htm
http://www.faqs.org/rfcs/
```

You can also search for the terms using the different search engines on the Internet, such as:

```
http://www.yahoo.com
http://www.altavista.com
http://www.lycos.com.
```

The UM tools we used for deploying Windows 2000 were:

- LANClient Control Manager (LCCM) Version 2.5.1 Service Pack 3
- System Migration Assistant (SMA) Version 2.1
- Software Deploying Assistant (SDA) Version 1.1
- Netfinity Director/Universal Manageability Services (UM Services) V2.12

All tests and deployments made in this book were based on the following operating system levels:

- Microsoft Windows 2000 Professional (build 2195)
- Microsoft Windows 2000 Server (build 2195)
- Microsoft Windows NT Server 4.0 with Service Pack 6a
- Microsoft Windows NT Workstation 4.0 with Service Pack 6a
- Microsoft Windows 98 Second Edition

If you use other versions, some details may be different and some settings may not work the same way.

For the examples described in this book we used the following hardware components:

- IBM PC 300PL
- Netfinity 3000
- Netfinity 5000
- Ethernet hub
- Dell OptiPlex GX1
- HP Vectra VLI8

## 1.1 Universal Manageability tool

This section gives you an overview of the UM tools that we used for this redbook. This is only a short introduction to the tools. You can find links to the chapters where the tools are described in more detail.

### 1.1.1 LANClient Control Manager (LCCM)

The LANClient Control Manager (LCCM) is part of the IBM Universal Manageability initiative. This tool helps you to deploy basic programs to new systems. The basic programs include operating system and additional applications, such as word processing software and system management tools. We used LCCM V2.5.1 Service Pack (SP)3. With SP3, LCCM supports the deployment of Microsoft Windows 2000 Professional, Server and Advanced Server. The SP3 upgrade also has an enhanced profile, a new wizard, SMA integration and several other enhancements. You can use the wizard to create profiles for deploying Microsoft Windows 2000 systems.

**Note:** LCCM and the Service Pack are available from the following Web site:

`http://www.pc.ibm.com/us/desktop/lccm/`
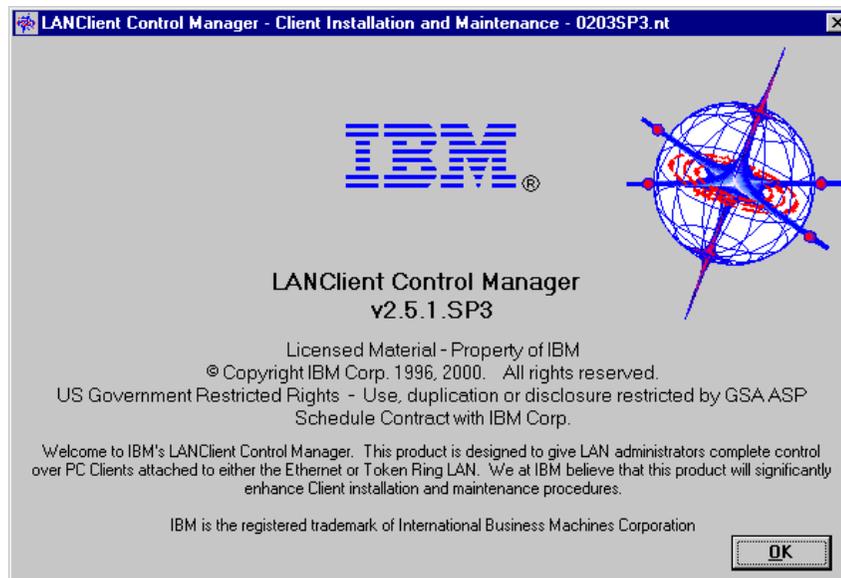


*Figure 2. LANClient Control Manager*

**Note:** Information about the features of the LANClient Control Manager can be found in the redbook *Using LCCM Functions with Servers and Workstations,* SG24-5292 and in the LCCM 2.5.1 Training and Procedures Guide. Both can be downloaded from the above LCCM Web site.

When starting the LCCM Server, you will see the window shown in Figure 3. This windows contains five main parts:

- Menu bar
- Scan button for new clients
- The left pane with the unassigned clients
- The center pane with profiles and assigned clients
- The right pane with the clients database search
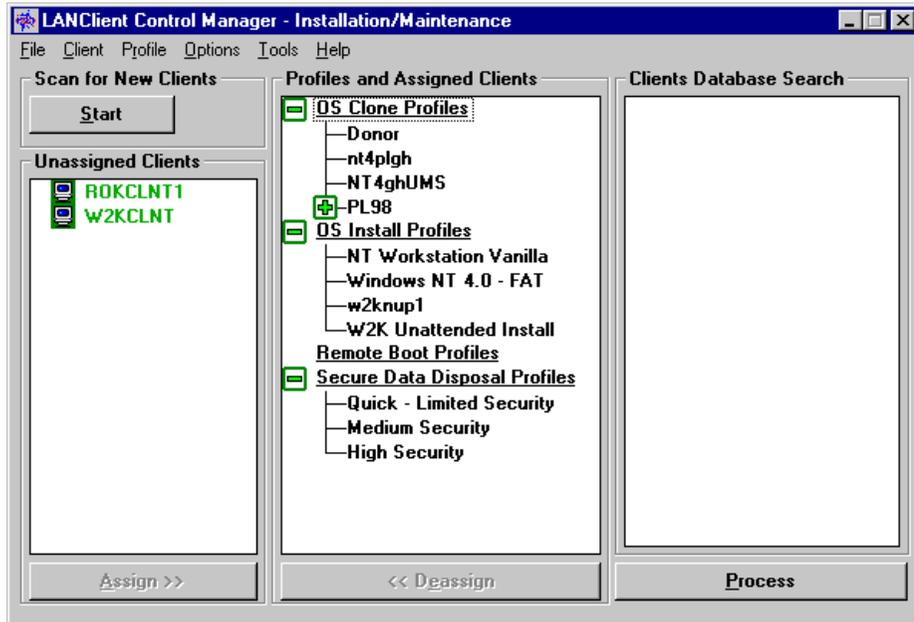


*Figure 3. LCCM program window*

LCCM gives you different ways to deploy your systems. You can make an image from a reference system and deploy it or perform an unattended installation on the client system.You can use the wizard to create a profile or do it manually with the profile notebook. You will be asked about this when you select **Profile -> Create New** (Figure 4).

*Figure 4. Wizard selection*

When you select the Profile Wizard, the following window is displayed:
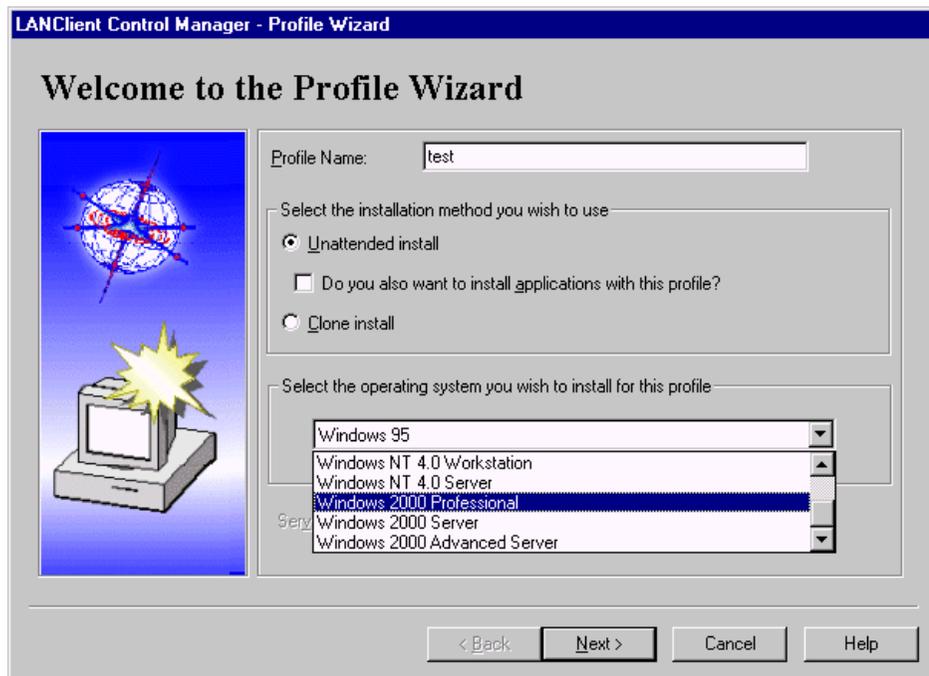


*Figure 5. LCCM 2.5.1 SP3 Profile Wizard*

The Windows 2000 operating system is supported by LCCM 2.5.1 with SP3 (see Figure 5). The way to use LCCM to deploy Windows 2000 is described in 3.1, "LCCM" on page 101.

**Note:** Information about the supported systems is available on the following Web site:

```
http://www.pc.ibm.com/us/desktop/lccm/compat.html
```

### 1.1.1.1 Asset ID

You always have to scan the clients, to bring the clients into LCCM. You can start the scan in two ways:

1. Power on the system.

2. Wake up the clients.

To wake them, the clients must support Wake on LAN (WOL). To start the wake-up process you must know the MAC address of the clients to send the magic packet to.

To get the MAC address from IBM systems that support the Asset ID chip, you can use the Asset ID reader (Figure 6 on page 6) without the systems being powered on. On the packaging for the IBM desktop systems there is a special symbol that looks like a target. Behind this symbol are the antenna from the Asset ID chip which contains the information you can scan with your Asset ID reader (including the MAC address of the system).

You can also use the Asset ID reader to set up the LCCM profile name in the Asset ID chip, so that they can automatically process a profile at scan time without the need for using the LCCM drag and drop feature.



*Figure 6. Using Asset ID reader on desktop boxes, Intellistation and ThinkPad*

The following IBM systems are currently supported by the Asset ID reader:

- IBM PC 300PL (6862, 6892, 6584, 6594, 6565)
- IntelliStation (MPro 6889, EPro 6893, ZPro 6865)
- ThinkPad - Through options available by the IBM Authorized Assembler Program (AAP) (TP 600 2645AAU with antenna 05k6010, TP 770 954883U with antenna 05k5753)

For further information about supported systems check the following Web site:

```
http://www.pc.ibm.com/ww/assetid/systems.html
```

More information about Asset ID and the use of the Asset ID reader can be found at the following Web site:

```
http://www.pc.ibm.com/us/desktop/assetid/index.html
```

### 1.1.2 System Migration Assistant (SMA)

The System Migration Assistant (SMA) is an IBM Universal Manageability tool that runs on Microsoft Windows operating systems. We used SMA V2.1 (shown in Figure 7) in these examples.

**Note:** SMA is available for downloading from the following Web site:

```
http://www.pc.ibm.com/us/software/sysmgmt/products/sma/
```



*Figure 7. System Migration Assistant*

SMA helps you to migrate all the personality and connectivity settings, applications, files and folders from one system to a new system. SMA has two parts: a source and a target. On the system that you want to take the settings from for migration, you should run the source part of the SMA. SMA gives you two ways to migrate from one system to another. These processes are Selective Migration and Mass Migration, as shown in Figure 8.
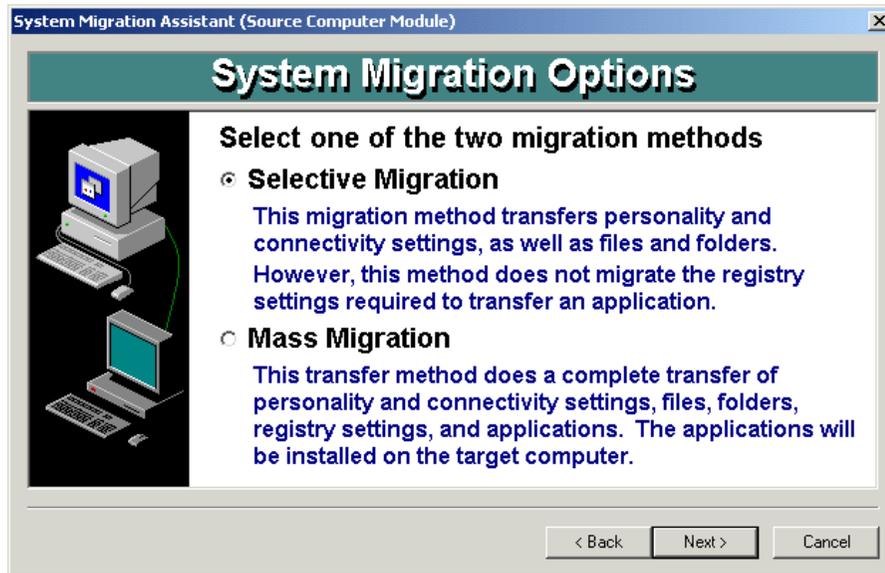
*Figure 8. Selection of the migration method*

In Selective Migration, only selected personality, connectivity settings, files and folders are migrated. No applications or registry entries are migrated with this method.

When you use Mass Migration, all of your personality and connectivity settings (without the ability to select which ones), all registry settings, applications, files and folders are transferred. You can select which drives, folders and files should be transferred. Mass Migration can only be done in the same operating system.

The information and files are stored as *.SMA, *.PRC and *.C01 files. When you have finished this part, move the files to the new system. On the new system you should start the target part of the SMA. Here you should select which *.SMA files you want to use (see Figure 9 on page 9) and start the installation.
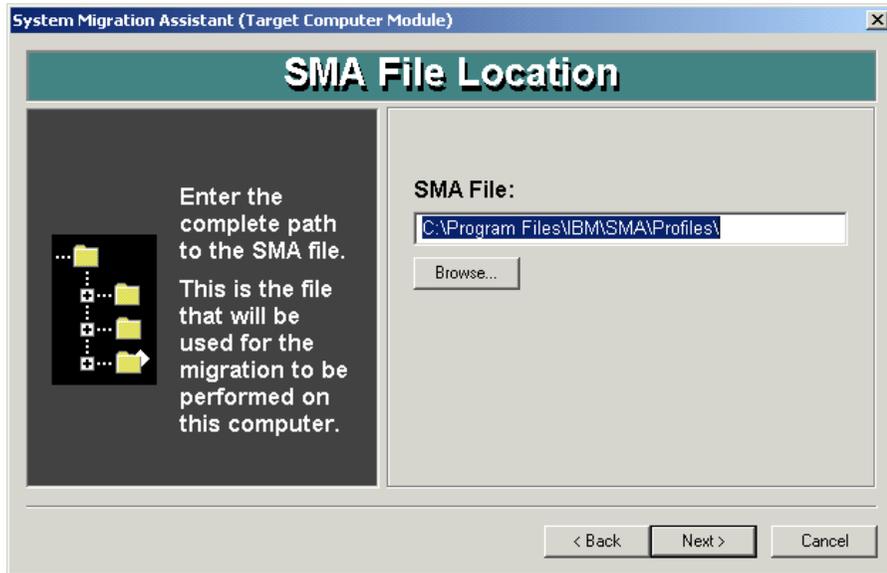
*Figure 9. Selecting SMA files*

In Figure 10 on page 10 check the box **Edit the SMA file** if you want to change some settings, such as computer name, domain/workgroup or IP settings. This will be necessary if you installed the saved settings on another system. This can be useful if you are going to install the saved settings on multiple systems.
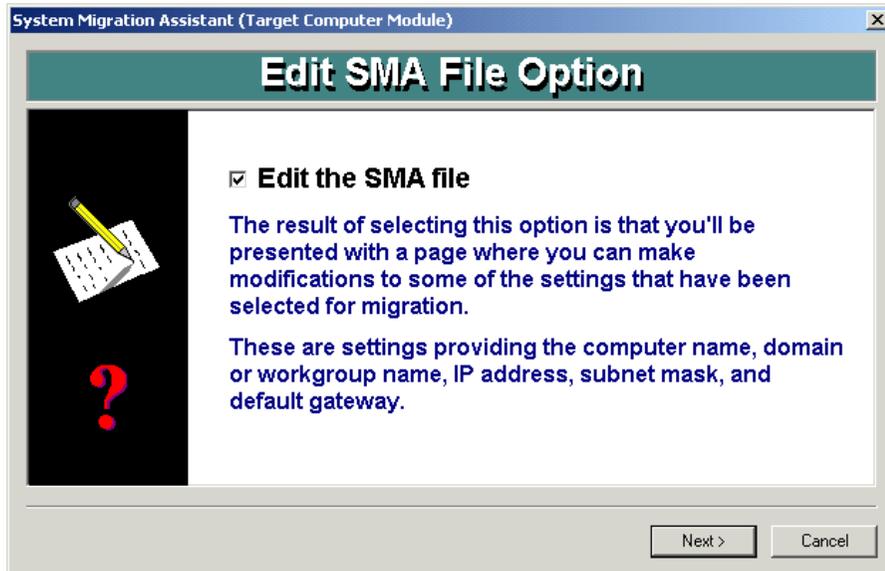
*Figure 10. Select the edit option*

Select the check box now and click **Next**. That brings you to Figure 11 on page 11 where you can see which settings are stored in the SMA file and where you can change these settings. When you have finished the changes, click **Next**. A window pops up and asks you if you want to continue (Figure 12 on page 11). Select **Yes** and the installation starts.
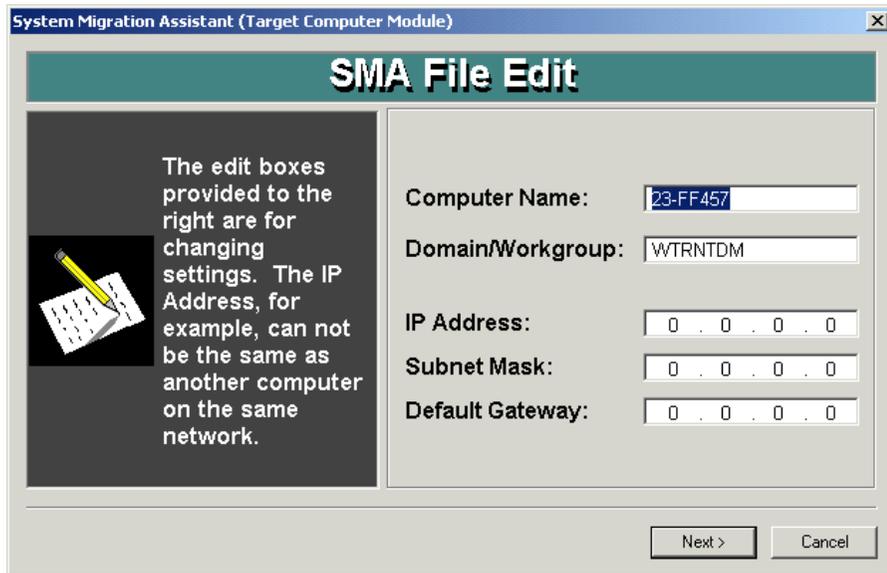
*Figure 11. Edit the SMA file settings*
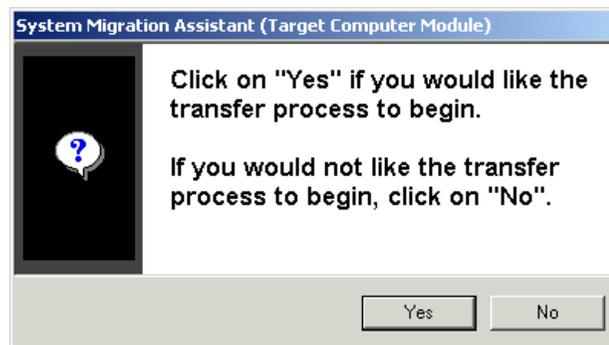


*Figure 12. Start installing on target system*

A new window shows the progress of the installation. After finishing the installation process you should see the following window:

*Figure 13. SMA migration process*

Select **Next** and the summary window shows you summary status information about the success of the installation process. This is shown in Figure 14.
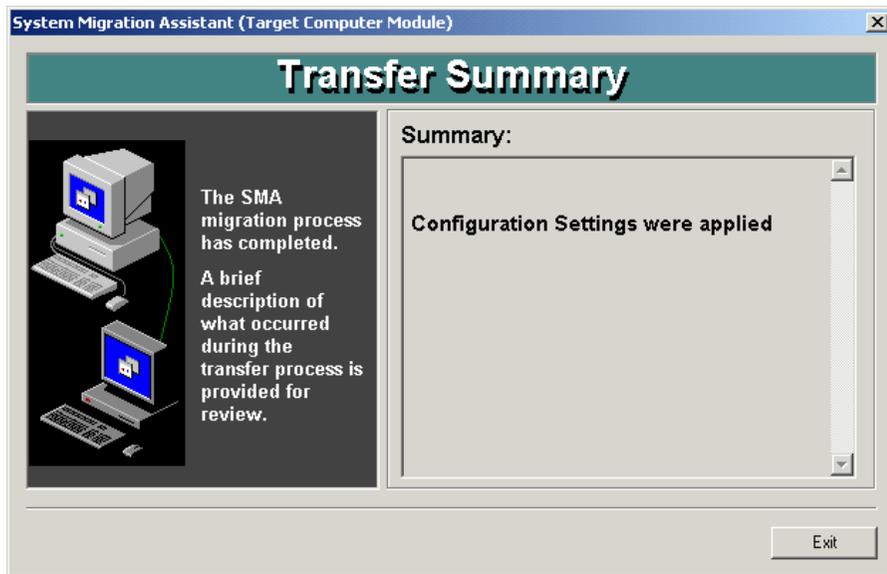


*Figure 14. Summary of the transfer process*

When you click **Exit** you are informed that you need to reboot your system in order for the changes to take effect. Click **OK** to close all applications and reboot your system. You have now finished the SMA process.

A detailed description of how to use the System Migration Assistant to deploy Microsoft Windows 2000 can be found in 5.1, "System Migration Assistant" on page 211.

### 1.1.3 Software Delivery Assistant (SDA)

Software Delivery Assistant is an IBM Universal Manageability tool that simplifies the deployment of IBM systems (PC, IntelliStation, ThinkPad and Netfinity Servers). We used SDA V1.1. SDA runs on Microsoft Windows operating systems (Windows 95/98, Windows NT 4.0 and Windows 2000).

**Note:** You can download SDA from the following Web site:

`http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda/index.html`

The Software Delivery Assistant creates custom software installation images to be deployed on new systems. SDA consists of two parts: the SDA-Administrator and the SDA-Installer. The SDA-Administrator is used to create and customize the images and the SDA-Installer is used to install the images on the end user's system.

You can run the SDA-Installer in different ways. The SDA-Installer can be started automatically when you create an entry in the registry on the system where SDA-Installer should run (`HKEY_LOCAL_MACHINE\Software\Microsoft \Windows\CurrentVersion\RunOnce, create the following entry: SDA "d:\imagepath\SWSELECT.EXE")`. Or you can create a shortcut on the user's desktop that points to SWSELECT.EXE. That way, the user can start the SDA-Installer program more easily.

**Note:** For installation on Windows NT systems, you will need administrator privileges to install applications through the SDA-Installer, because some applications update Windows resources such as registry keys and directories.

SDA supports the following operating systems:

- Windows 95
- Windows 98
- Windows NT
- Windows 2000

After installing SDA, you can start the SDA-Administrator program by clicking **Start -> Programs -> IBM SDA1.1**.



*Figure 15.  Software Delivery Assistant*

When The SDA-Administrator is started you have the option to create a new image, use an existing workspace or import a workspace from an existing image. When using SDA for the first time you should select **Create a new workspace**.
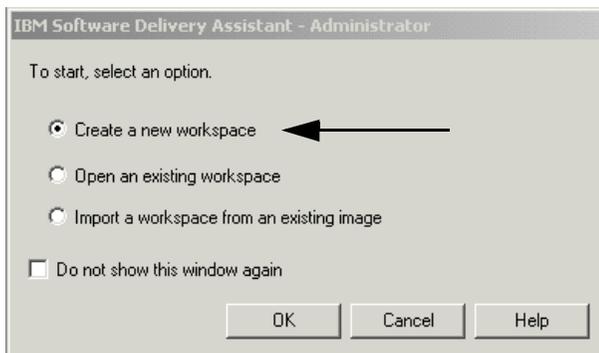


*Figure 16.  Select the workspace for SDA*

A wizard guides you through the steps of creating a basic workspace. A detailed explanation of creating a new workspace can be found in 4.1, "Software Delivery Assistant" on page 175.
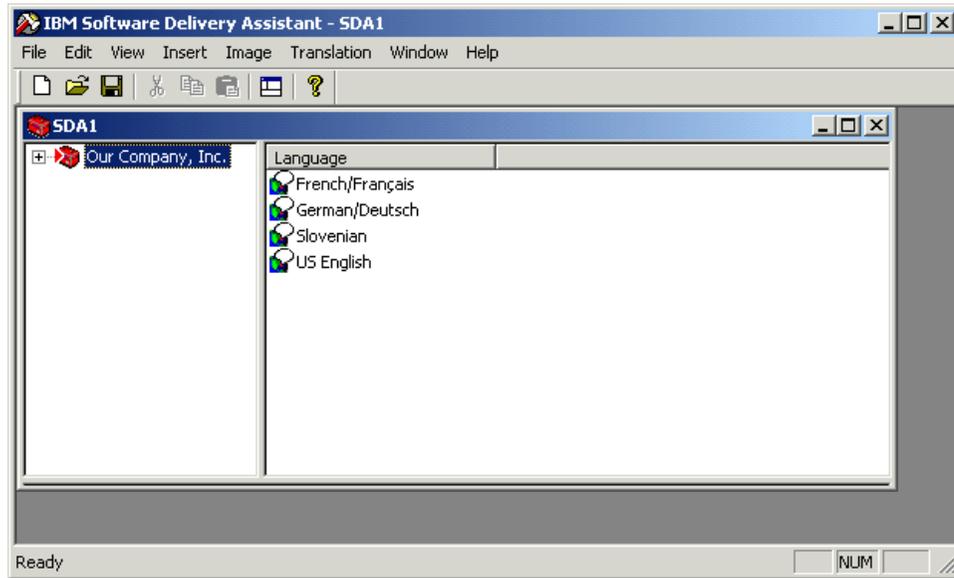
*Figure 17. SDA Administrator program - new workspace*

Now that you have a basic workspace, you can begin to customize it by adding and removing languages, group profiles and applications. The interface provides the cut, copy and paste, as well as drag and drop features to allow you to easily customize your workspace.
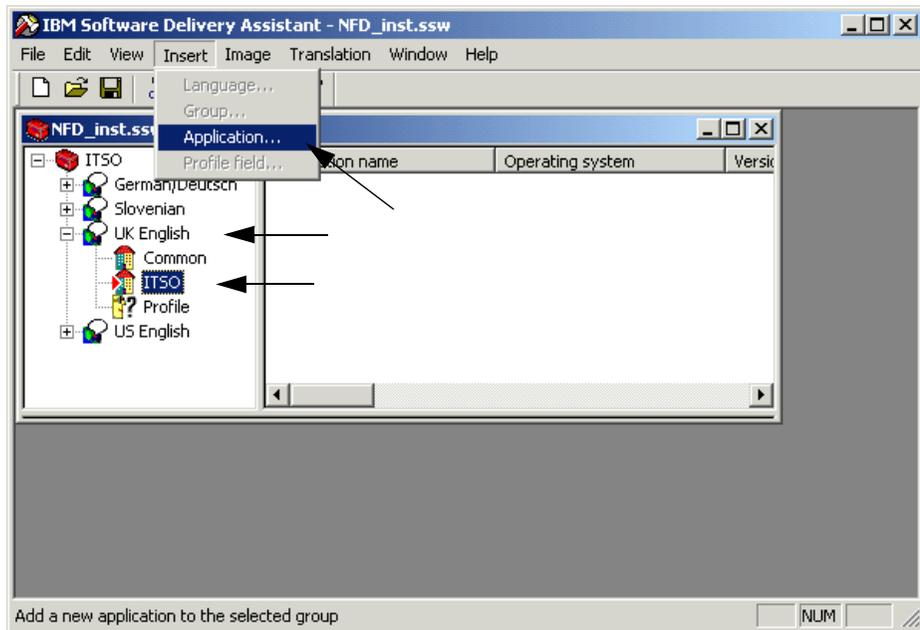
*Figure 18.  Start to make the application image*

To insert applications, click on the language and group that should contain the application and select **Insert -> Application**. At a minimum every application should have the following information:

- Application name
- Operating system(s)
- Location of the installation files
- A silent and/or custom installation command (to run the setup program)
- The install type (required, recommended, user's choice)

For a detailed description of this information see 4.1.2, "SDA-Administrator" on page 180.
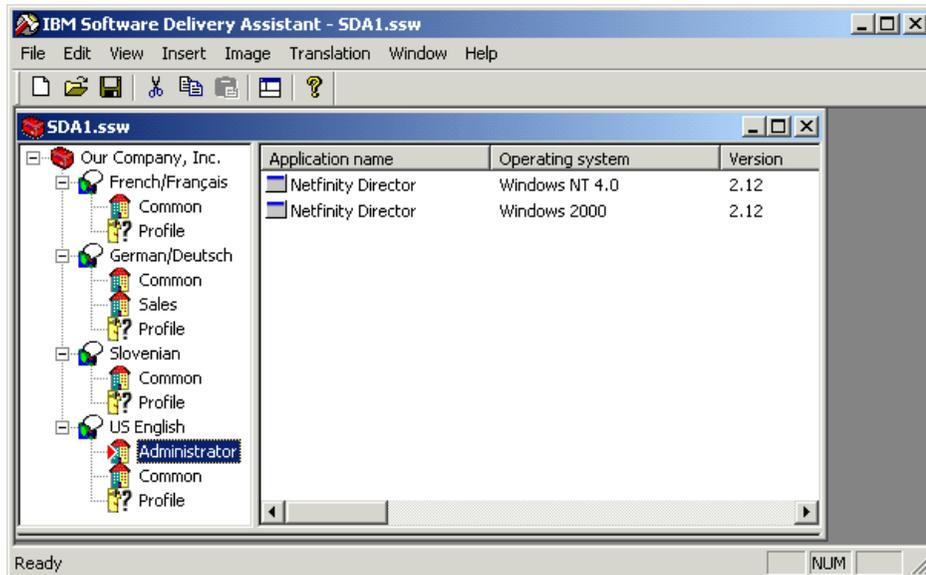
*Figure 19.  Complete workspace*

When you have your workspace completed, the images need to be built. To start the creation of the image click **Image** from the menu bar. Click **Preview** to simulate the end user's experience with the SDA-Installer and to verify that all settings in the workspace are correct. Click **Build** to create the application setup image. Select the folder where the image should be stored. The SDA-Installer will also be copied to this folder. During the build, all applications will be checked for accuracy. If any errors are encountered, they are shown in the bottom portion of the window. Double-clicking on an error takes you directly to the problem so you can fix it. See Figure 20 on page 18 for this.
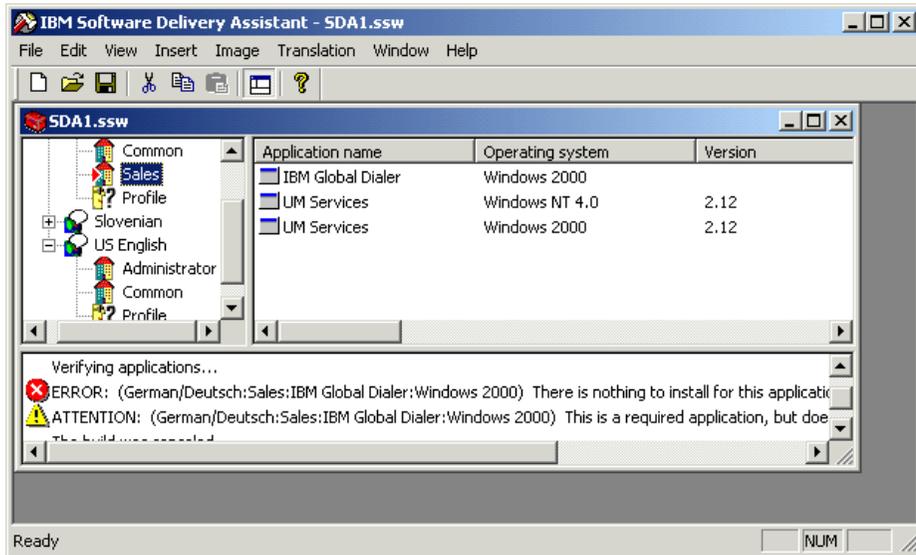
*Figure 20.  Building image and fixing errors*

**Note:** If any two applications share the same install files, the files will only be copied to the image once and the applications using these files will use the same copy.

Once all errors have been fixed and the image built, you can update the image without entirely rebuilding it. For example, when you get an updated version of one of the applications, all you need to do is update the location of the installation files for that application (and any other fields that have changed) and rebuild the image in the same folder as before. The SDA-Administrator gives you the option to rebuild the entire image or just apply any changes that were made (Figure 21 on page 18).
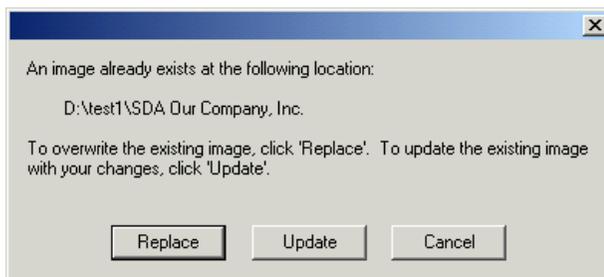


*Figure 21.  Incremental build*

Copy the created folder (named \SDA %Workspace%) to the client (you can deploy this together with the operating system using LCCM) or map the directory where the files are located to the client. Here SDA-Installer can be run automatically by creating an entry in the registry on the client system (in HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run). Create the following entry: `SDA "x:\imagepath\SWSELECT.exe"`), or create a shortcut to SWSELECT.EXE on the user's desktop, allowing the user to run the SDA-Installer at their leisure.

When the SDA-Installer is run for the first time, the user is prompted to complete the profile field and to choose a group (Figure 22).



*Figure 22. Profiling the user*

The group that the user chooses determines which applications are automatically installed. First, the Common required applications are installed and then the group's required applications are installed (Figure 23). If more than one group is selected, the required applications for all selected groups are installed.
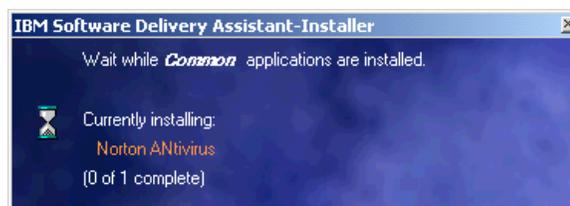


*Figure 23. Installing required applications*

After all required applications are installed, the main window appears. Here you can select additional software to be installed. After selecting the applications you can start the installation process by clicking **Install**. You can install more than one software program within this process.
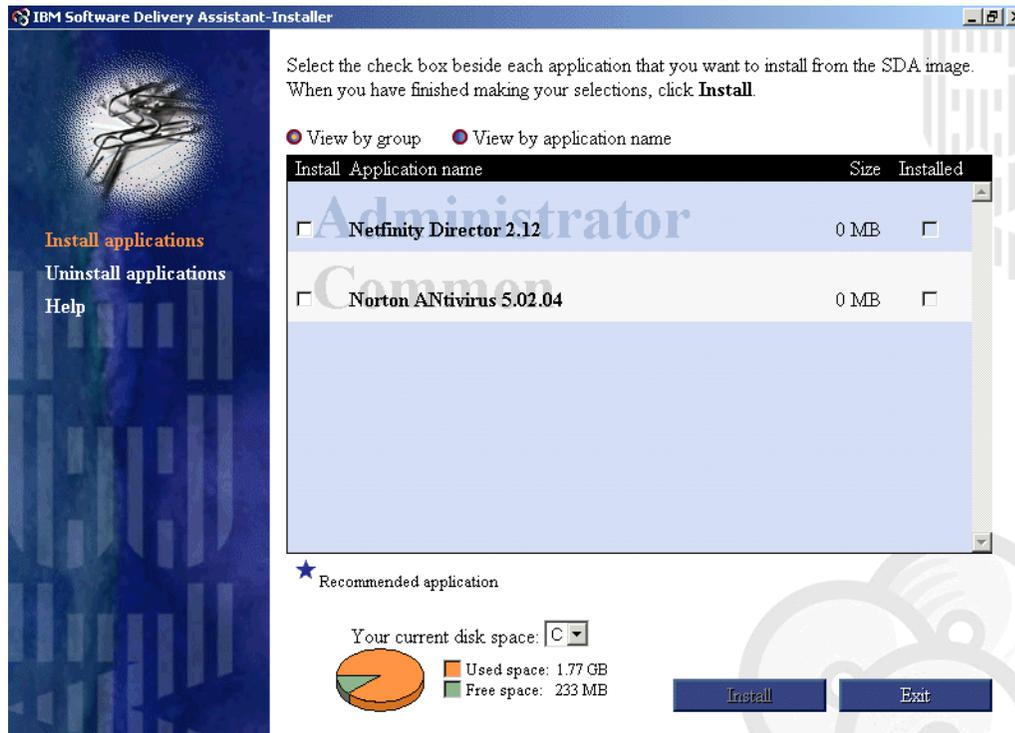


*Figure 24. SDA Installer main window*

For a detailed description of additional SDA settings and how you should use SDA to install applications on client systems, see 4.1, "Software Delivery Assistant" on page 175.

### 1.1.4 Netfinity Director and Universal Manageability Services

Netfinity Director is the follow-on product to IBM Netfinity Manager. Netfinity Director is a part of the Universal Manageability initiative by IBM based on industry standards. It provides you with an impressive suite of systems management tools. Netfinity Director allows you to manage your systems from a central point. Netfinity Director consists of the following parts:

• Netfinity Director Server

• Netfinity Director Console

• Universal Manageability Services (UM Services) agent

**Note:** Information about the features of Netfinity Director can be found in the redbook *Netfinity Director-Integration and Tools,* SG24-5389*.*

When you start the Netfinity Director (Figure 25), you will see the console windows divided into five main parts:

1. Group pane

2. Group Contents pane

3. Tasks pane

4. Task bar

5. Status line
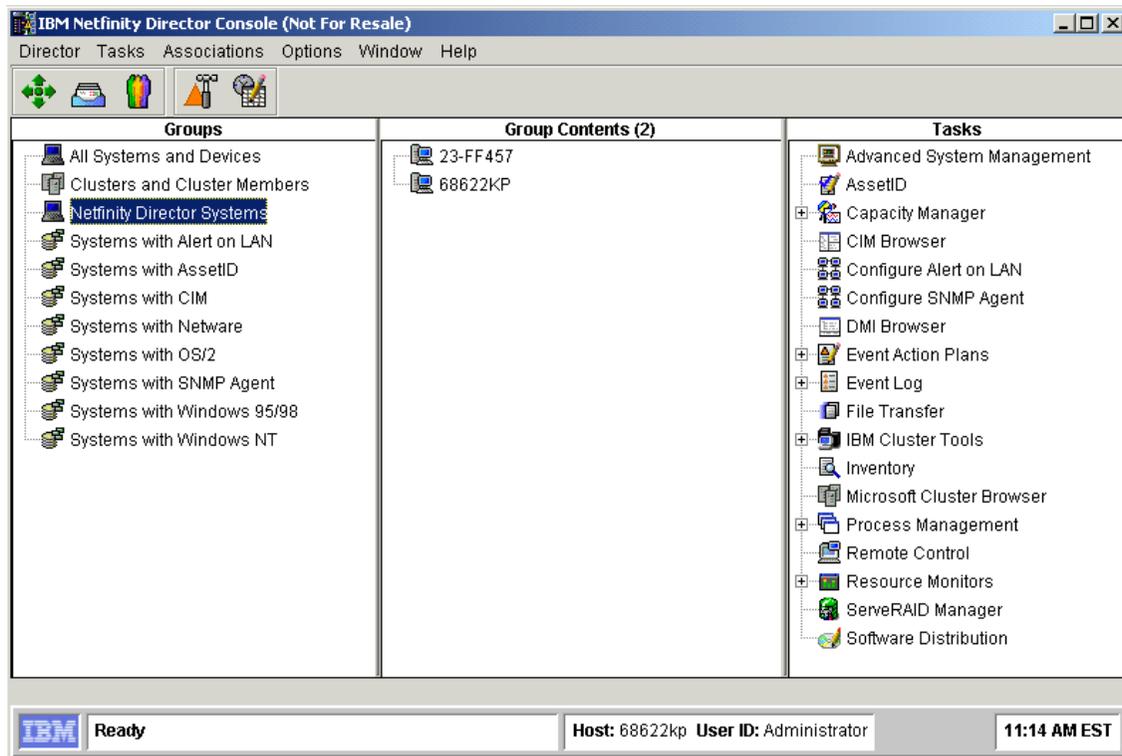


*Figure 25. Netfinity Director Console*

On the left pane you select the group. In the center pane you can see the systems that are in this group. To activate a task for a system or for the group, drag the system (group) and drop it on the task in the right pane. Then the

task window will open (for example, in Figure 26 on page 22 we show the inventory task window for one of our systems).
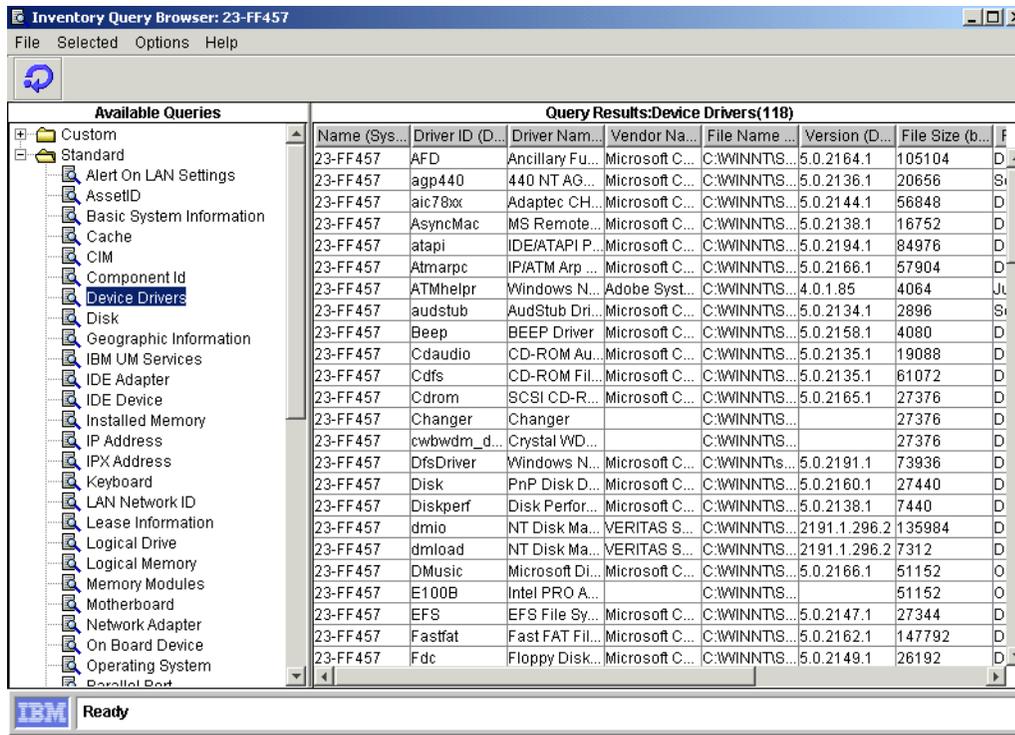


*Figure 26. Inventory task display*

We used Netfinity Director to check all our systems from one central point for Windows 2000 readiness. We created a new dynamic group named "System not W2k ready". For this group we set the minimum requirements for Windows 2000. All members of this group are not Windows 2000 ready. Now that we know this we can make the systems Windows 2000 ready. The process to do that as well as how to use Netfinity Director is described in 2.2.1, "Use Netfinity Director to determine hardware and software" on page 35.

UM Services must be installed on the client systems. You must select **Client Installation** during the installation process (Figure 27).

**Select Components** ✕

Please select the components that you want to install.

Server
Includes Server, Console, and Client

Console
Remote user interface for Netfinity Director
Servers.

Client
Install on machines to be managed

Workgroup/Enterprise Integration
Installs UM Services integration for
management environments.

< Back    Next >    Cancel
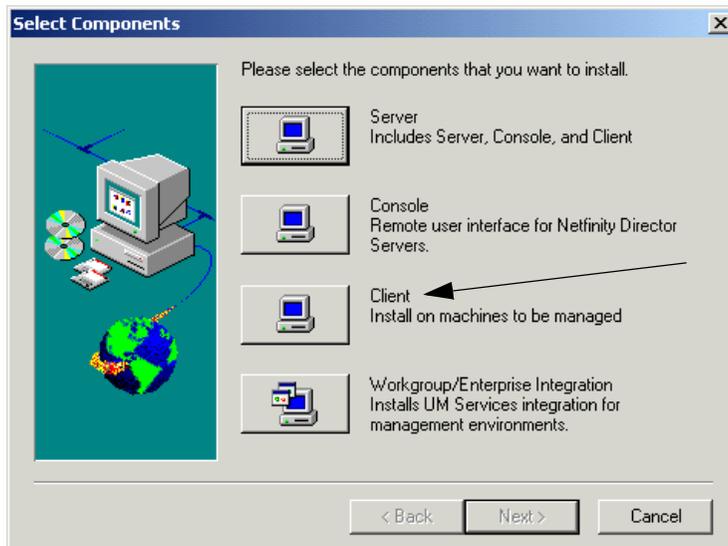
*Figure 27. Installation of UM Services*

This will install UM Services on your client systems. When it is installed, all of your clients should be selected when you click **Tasks -> Discover Systems -> All Systems and Devices** from your Netfinity Director console.

In Chapter 2, "Upgrade of clients to Windows 2000" on page 35 you can find detailed information about using Netfinity Director to help deploy Windows 2000.

You can use UM Services to manage your local system. You can also use the Microsoft Management Console (MMC) within Microsoft SMS or a Web browser (for example, Netscape Navigator or Microsoft Internet Explorer) to access the UM Services. To start UM Services select **Start -> Programs -> IBM UM Services** and then **Microsoft Management Console** to start the access over MMC or **IBM UM Services Browser** to access UM Services over the browser. When you start UM Services in a Web browser, it will look similar to Figure 28 on page 24. When starting it in the MMC, you will see a window similar to Figure 29 on page 25.

**Note:** More Information about UM Services and its integration can be found in the following redbooks: *Universal Manageability: Enterprise Management Integration,* SG24-5388-00 and in *Netfinity Director - Integration and Tools,* SG24-5389-00.
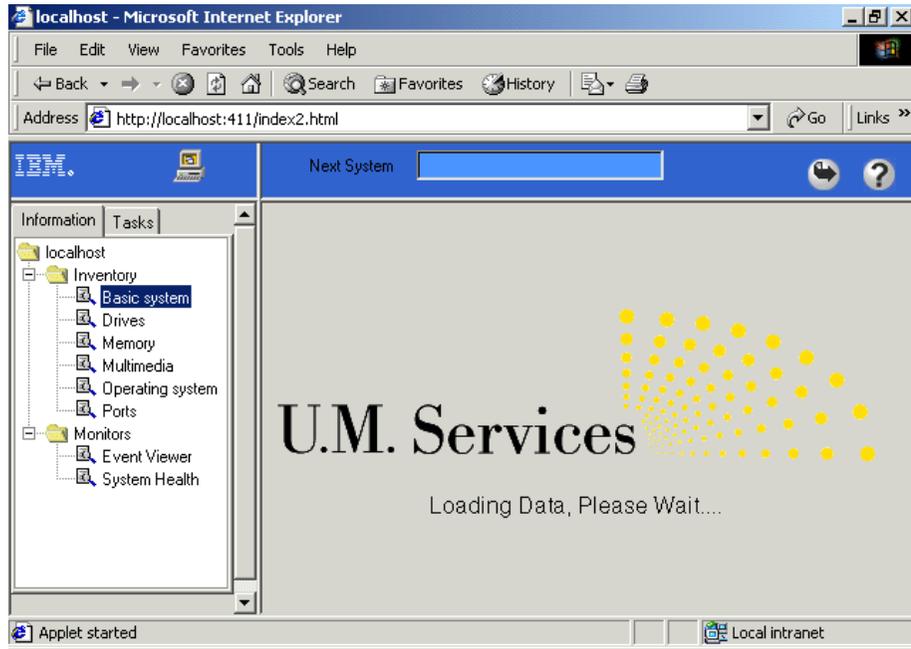
*Figure 28. UM Services running in Internet Explorer*
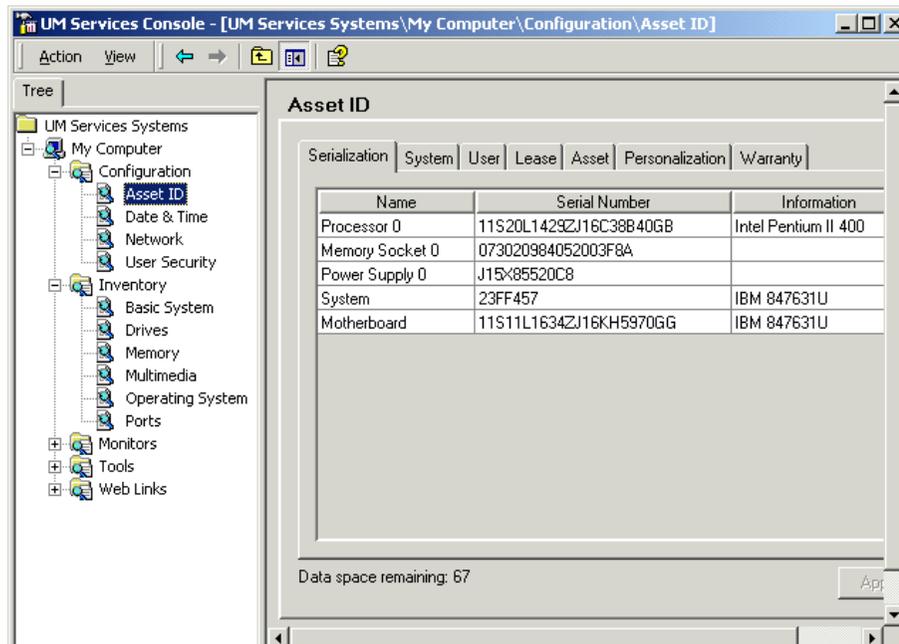
*Figure 29. UM Services running in MMC*

UM Services also works as the client for Netfinity Director. You can access the systems where UM Services is installed from the Netfinity Director console.

### 1.1.5 Why should you use the UM tools

The UM tools give you additional features that help you to manage your deployment better than the standard tools that are delivered by Microsoft for deployment and upgrades. An advantage of the UM tools is that they upgrade and support all Windows 32-bit operating systems, not only Windows 2000.

Table 1 shows the features of the UM tools compared with the Windows 2000 standard features:

*Table 1. Comparisons between LCCM and RIS*

| Feature | LCCM (LANClient Control Manager) | RIS (Remote Integration Service) |
|---|---|---|
| Imaging drive C | Yes | Yes |
| Imaging Drive D+ | Yes (only with OEM imaging tool) | No |
| NIC support | Yes | limited (25 PCI based adapter cards) |
| Support Windows 2000 Pro | Yes | Yes |
| Support Windows 2000 Server and Adv. Server | Yes | No |
| Support Windows 95/98 | Yes | No |
| Support Windows NT | Yes | No |
| Additional information | Runs on standard system; no Active Directory Service required | Run only with a Windows 2000 Domain with Active Directory Service and DNS |
|  | No direct access to system necessary when NIC with WOL functionality used | Require Boot Disk -> need direct access to the system |

You can see in this table that LCCM gives you more features, supports more operating systems, and helps you to reduce your costs. This is due to the fact that you do not need to access each system manually to perform the installation.

Microsoft has a tool on the following Web site to check your system's readiness for running Microsoft Windows 2000:

```
http://www.microsoft.com/windows2000/upgrade/compat/RAread.asp
```

We have compared the tool with Netfinity Director. We used Netfinity Director to dynamically check Windows 2000's readiness for all our systems. The results can be seen in Table 2:

*Table 2. Netfinity Director and Windows 2000 readiness analyzer*

|  | **Netfinity Director** | **Microsoft Windows 2000 Readiness Analyzer** |
|---|---|---|
| Centrally usable | Yes | No |
| Completely remote operation possible. Does not require physical access to the system | Yes | No |
| Supports dual boot systems (NT4 and W9x) | Yes | No |
| Dynamic update of the results | Yes | No |

You can see from this table that Netfinity Director gives you more flexibility, central management, and helps to reduce the TCO.

For the deployment and upgrade you can bring the personality settings, network connections and files and folders to a new system. IBM has created the System Migration Assistant, which makes this possible. The SMA lets you bring your settings from one system to another, and also from one Windows version to a newer one. This means you can migrate the systems from Windows 98 or Windows NT to Windows 2000. We compare this tool with the IntelliMirror tool that is provided by Microsoft for Windows 2000.

The most important fact about SMA is that it is not required to run in a Windows 2000 environment.

*Table 3. Comparison between SMA and IntelliMirror*

|  | SMA | IntelliMirror |
|---|---|---|
| Support for Windows 98 | Yes | No |
| Support for Windows NT | Yes | No |
| Support for Windows 2000 | Yes | Yes |
|  | SMA can run in a standard Windows environment. SMA doesn't need Active Directory to run. | IntelliMirror needs the Active Directory installed on the system. Due to that fact, IntelliMirror is limited to use only with Windows 2000. |
|  | With SMA you can bring settings from an NT or Windows 98 system to Windows 2000. | Only settings from one Windows 2000 system can be migrated to another Windows 2000 system. |

SMA gives you the ability to bring settings from your installed systems running Windows 98 or Windows NT to the new Windows 2000 systems by using the Selective Migration function of SMA. It also lets you bring settings from a donor system to the other systems running the same operating system when you use the Mass Migration function of SMA. All these features give you great flexibility, help to bring the settings quickly and easily to your systems as well as help you to reduce the TCO.

IBM also has a tool that allows you to deploy applications to different systems. This is the IBM Software Delivery Assistant. We compared this tool with Intellimirror.

**Note:** SDA can be run in Windows 98, Windows NT and Windows 2000.

*Table 4.  Comparisons between SDA and IntelliMirror*

|  | **SDA** | **IntelliMirror** |
|---|---|---|
| Support for Windows 98 | Yes | No |
| Support for Windows NT | Yes | No |
| Support for Windows 2000 | Yes | Yes |
| Usable without active directory | Yes | No |
| Can build images on W98/NT for W2000 | Yes | No |

Here you can see how SDA gives you more flexibility for deploying applications than IntelliMirror. Through this flexibility, SDA helps you to save time and money. You can use your existing environment to prepare images that need to be deployed on Windows 2000.

## 1.2  Deployment planning considerations when using UM tools

Before you can start to deploy your Windows 2000 systems or before you upgrade your system to Windows 2000, you should have a plan. Table 2 shows which UM tools you should use to upgrade or deploy your systems.

*Table 5.  Planning guide*

| **What do you want to do?** | **You should use the following UM tool** | **Reference to the following chapters** |
|---|---|---|
| Check if your system is Windows 2000 ready | Netfinity Director | 2.2, "Analysis of systems for upgrade" on page 35 |
| Upgrade your system to Windows 2000 | Netfinity Director | 2.4, "Upgrading to Windows 2000 Professional" on page 86 |
| Install a new Windows 2000 Professional system on a desktop | LCCM | 3.1.1, "Unattended install of Windows 2000 Professional on a client" on page 102 |
| Install a new Windows 2000 Server system on a server | LCCM | 3.1.2, "Unattended install of Windows 2000 Server on a server" on page 148 |

| What do you want to do? | You should use the following UM tool | Reference to the following chapters |
|---|---|---|
| Install a new Windows 2000 Server system on a Netfinity server (example) | LCCM | Chapter 6, "Installing Netfinity Servers with UM deployment tools" on page 253 |
| Upgrade Windows 98 settings to Windows 2000 Professional | SMA | 5.1, "System Migration Assistant" on page 211 |
| Upgrade Windows NT 4 Workstation settings to Windows 2000 Professional | SMA | 5.1, "System Migration Assistant" on page 211 |
| Upgrade Windows NT 4 Server settings to Windows 2000 Server | SMA | 5.1, "System Migration Assistant" on page 211 |
| Deploy Software to a Windows 2000 system (Professional and Server) | SDA or LCCM | 4.1, "Software Delivery Assistant" on page 175 |

As you can see, there are UM tools available for each of the steps you have to take. First you should check to see if your hardware is Windows 2000 ready. To do this you can use different tools. Microsoft delivers on its Web page a tool which checks your hardware and software. IBM offers tools to help you check your hardware and software for Windows 2000 readiness. If you have installed Netfinity Director you can use it to check your systems. Netfinity Director is shipped with each IBM Netfinity server. Netfinity Director gives you the ability to perform a hardware and software inventory of all the systems in your network. The use of Netfinity Director will be discussed in 2.2.1, "Use Netfinity Director to determine hardware and software" on page 35.

You should also check the corresponding Web site for your system to check if there is a BIOS update necessary, to make your system run with Windows 2000. To do this, you can use UM Services. In UM Services you can find the System Updates function as shown in Figure 30.
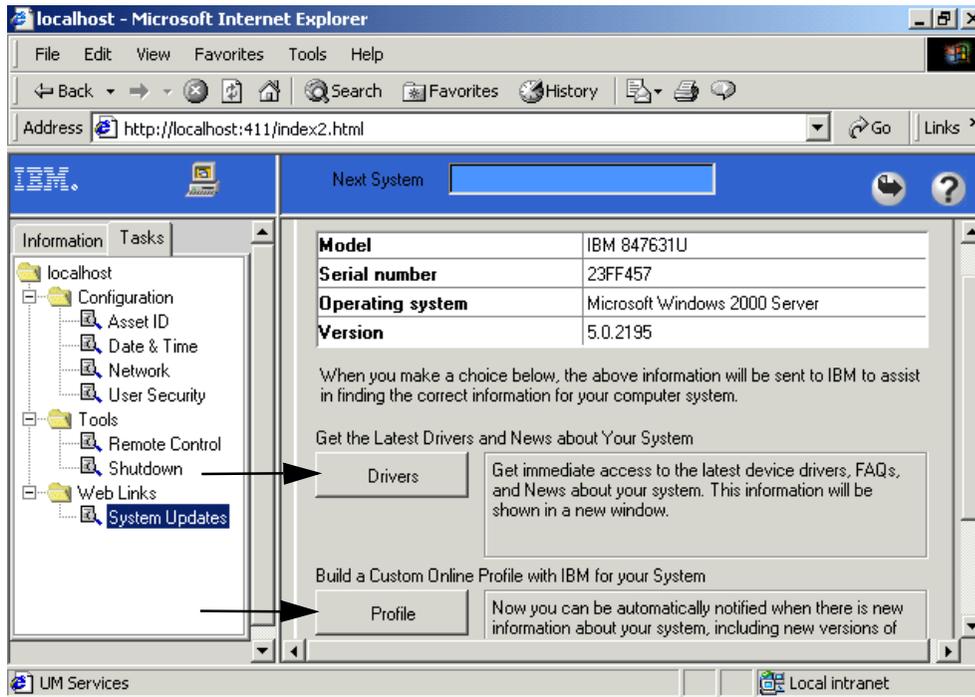
*Figure 30. UM Services - System Update*

When selecting this function you can connect directly to the corresponding IBM Web site for your system. For example, we used a Netfinity 3000 (8647-31U) running Windows 2000 and UM Services 2.12. We selected the **System Upgrade -> Drivers** function, and were connected to the following system-specific Web site:

```
http://www.pc.ibm.com/support?page=847631U
```

From the system-specific Web site to which you get connected by selecting this function, you can download the latest drivers and BIOS versions for your system. You can also create a profile (the Profile function found at **UM Services -> System Update**). With this function you will be connected to an IBM Web site. Select the browser that you use and fill out the profile template. You can also add additional systems and components to the profile. You only need to create a profile once for all of your IBM systems.

You can search the Web for driver and BIOS updates and you can optionally use LCCM to deploy the new BIOS updates. To do that you should connect to the following Web site:

```
http://www.pc.ibm.com/support
```

When checking the Windows 2000 readiness of your systems hardware, you should be sure that all the applications installed on your systems are also Windows 2000 ready. To check that, you can use Netfinity Director and the Microsoft winnt32 /checkupgradeonly audit tool. This procedure is described in 2.2.1, "Use Netfinity Director to determine hardware and software" on page 35.

You should also contact the software manufacturer or your business partner to ask about the Windows 2000 readiness of the installed application. You can also check the Windows 2000 readiness for your software products on the following Web site:

```
http://www.microsoft.com/windows2000/upgrade/compat/search/default.asp
```

When applications installed on your systems are not Windows 2000 ready you should uninstall them before you start the upgrade or deployment of Windows 2000. This is described in 2.3.1, "Removal of incompatible applications and services" on page 69.

When you check your systems for Windows 2000 readiness, you must select what you want to do. You have some choices. You can upgrade an existing Windows 98 or Windows NT system or you can deploy a complete installation with LCCM, including applications.

It is important to know that you can only upgrade your system to the following versions:

*Table 6. Upgrade path to Windows 2000*

| Installed | Upgrading to |
|---|---|
| Windows 95/98/98SE | Windows 2000 Professional |
| Windows NT 4.0 Workstation or Windows NT 3.51 Workstation | Windows 2000 Professional Windows 2000 Server |
| Windows NT 4.0 Server or Windows NT 3.51Server | Windows 2000 Server Windows 2000 Advanced Server |
| Windows NT 3.51 Server with Citrix | No upgrade, only full installation |
| Windows NT 4.0 Terminal Server | Windows 2000 Server Windows 2000 Advanced Server |
| Microsoft Backoffice Small Business Server | No upgrade, only full installation |

| Installed | Upgrading to |
|---|---|
| Windows NT Server 4.0 Enterprise Editition | Windows 2000 Advanced Server<br>Windows 2000 Data Center |

**Note:** For Windows 98 there is a suggestion from Microsoft that home computer users who have installed Windows 95/98 should wait for the next version of the consumer operating system, code named "Millennium".

Microsoft indicates that when you want to use your system for music and video work, to play PC games, or if you need easy home networking and Internet access, you should leave Windows 98 on your system. If you want to have the highest reliability for your business, enhanced security and the best support for mobile users you should use Windows 2000 Professional edition on your systems. For more information see the Microsoft Web site:

`http://www.microsoft.com/windows2000/upgrade/path/win9x.asp`

In some cases it is better to install a completely new system. For example, you might want to change your hardware environment, or you may want to run both operating systems on the same hardware. In addition, it might be an opportunity to start a complete new installation and remove some old problems that were occurring on your original operating system installation.

To bring all your personalized settings, connection information and personal files and folder to the new system, IBM has created the System Migration Assistant (SMA). Detailed information about the System Migration Assistant can be found in 5.1, "System Migration Assistant" on page 211.

With SMA you have a powerful tool that can help you save time and money when you upgrade your systems. It gives users, after the upgrade, the same resources and the same personalized settings that they had on their pre-migrated system. Thus, you won't incur the additional costs of reconfiguring the new system. Users can start working on the new system faster and with less training since they will see the same settings, such as printer and network drives, which also helps reduce the TCO.

Another important UM tool is the Software Delivery Assistant (SDA). This tool lets you prepare the installation of programs and allows the installation of specific applications for this user from a common installation base. Detailed information about the Software Delivery Assistant can be found in 4.1, "Software Delivery Assistant" on page 175.

SDA gives you the chance to prepare a complete installation of all applications in your company on one system. You can also prepare the

complete package delivery. SDA gives you the opportunity to check the packages on your systems before you deliver them to the end users. When building an image, you can upgrade the image without installing all of the applications which are part of the image. SDA can run without user interaction to install required applications quicker. You can start with the creation of the images on your existing environment running Windows 98 or Windows NT. This helps you to reduce the costs and time for preparing additional systems before you start your migration and deployment.

# Chapter 2. Upgrade of clients to Windows 2000

Migrating from either the Windows NT 4.0 or Windows 98 platform to Windows 2000 Professional on desktop clients doesn't have to be a difficult experience. Proper planning, preparation, and tools can make even a large rollout flow smoothly. IBM's Universal Manageability applications can enhance your migration by automating many of the time consuming and mundane tasks associated with such an undertaking. This chapter provides specific details on how to use IBM's suite of total cost of ownership (TCO) tools with the IBM desktop (client) line.

## 2.1 Our environment

The examples in this chapter were performed on a pair of PC 300PL (6862) desktop systems connected via the onboard Etherjet adapters through an IBM 8222 10 Mbps Ethernet hub. The Netfinity Director server was running on Windows NT 4.0 Server, Service Pack 6a, and Netfinity Director V2.11. The Windows NT 4.0 Workstation client had Service Pack 6.0a and UMS V2.11 installed. All base system drivers were installed from the 2.1 Ready to Configure CD. The Windows Scripting Host and Visual Basic Script programs in this chapter were tested using Windows Script V5.1.

## 2.2 Analysis of systems for upgrade

As with any new application or operating system there is a specific set of minimum hardware and software requirements that must be met for the software to work properly. Windows 2000 Professional is no exception and without current configuration information about your clients it would be difficult to anticipate the problems that may be encountered. Through the use of Netfinity Director, Universal Manageability Services (UM Services), and Microsoft's Analysis Tool we are able to gather the information needed. For further information on IBM Universal Management Tools and to download the applications go to:
`http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/index.html`.

### 2.2.1 Use Netfinity Director to determine hardware and software

Netfinity Director is a powerful and flexible management tool based on Tivoli's IT Director. We examined specific aspects of data capture and filtering in Netfinity Director, using many examples to provide step-by-step instructions. Those unfamiliar with Netfinity Director may find it helpful to refer both to the

user documentation for the product and to the redbook *Netfinity Director - Integration and Tools,* SG24-5389.

### 2.2.1.1  How to use Netfinity Director to gather inventory

The simplest method of discovering what machines meet the minimum hardware installation requirements for Windows 2000 Professional is to create a dynamic group based on that criteria.

The first step is to right click on an empty area in the Groups pane and then select **New Dynamic Group** from the resulting pop-up window.
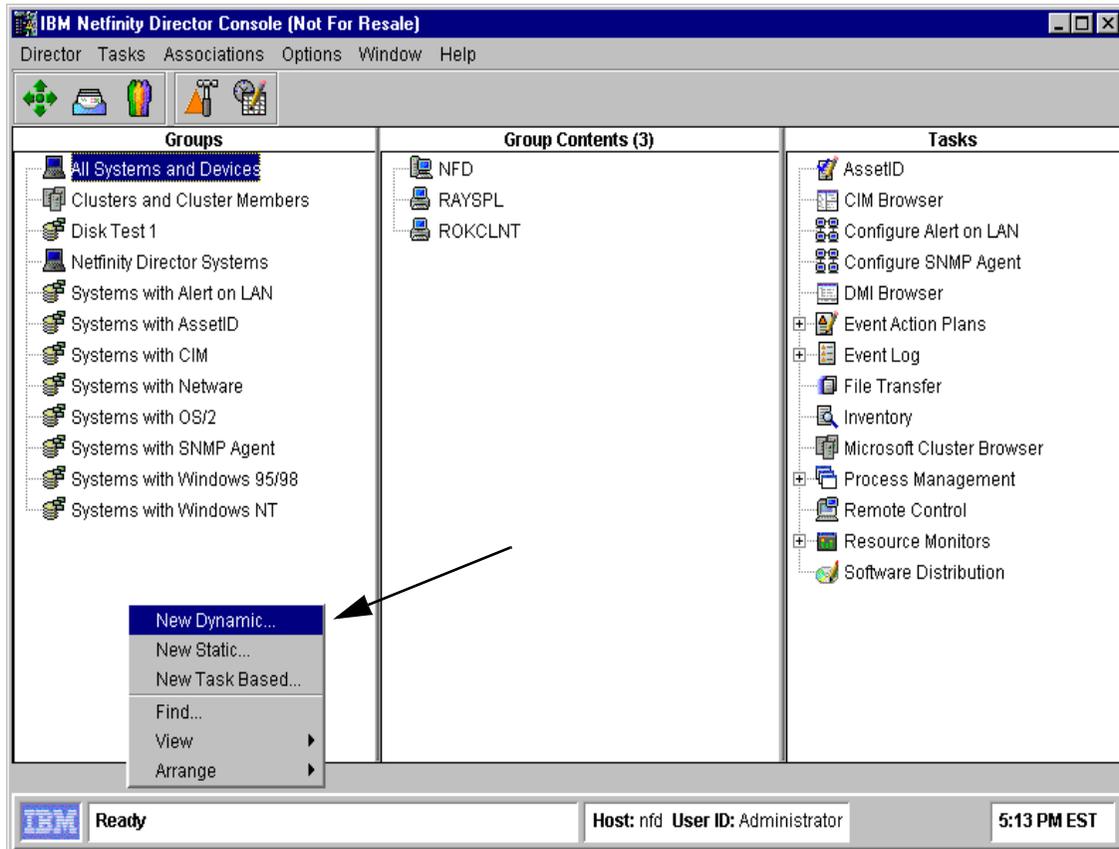


*Figure 31.  New group menu*

This will produce the Dynamic Group Editor window. Start by selecting the first criteria that you want to filter on. Click the **+** sign for **Disk -> Total Size (KB).** Next select one of the drive icons flagged with a numeric value.
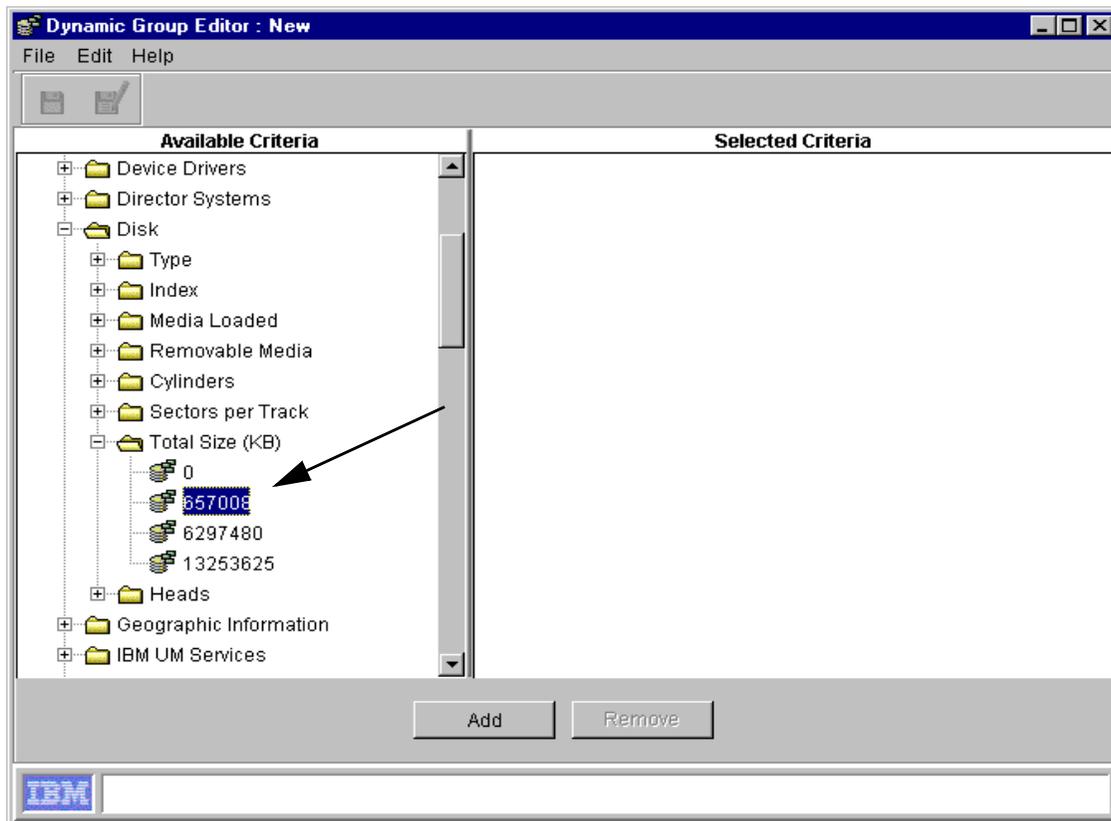
*Figure 32.  Dynamic Group Editor*

Click the **Add** button and the object appears in the Selected Criteria pane. Select the newly added criteria and choose **Edit -> Change Criteria Value**.
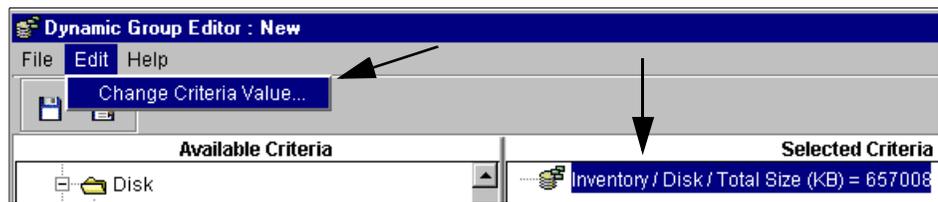


*Figure 33.  Change Criteria Value menu item*

Once the Update Value window appears we select the Change operator value by clicking the drop-down menu arrow and choosing **Less than**. Next, the hard drive size in kilobytes was entered in the Change value field. This value

should be the minimum hard drive space requirement for the installation of Windows NT 2000 Professional as indicated by Microsoft or the specific value needed for your implementation. Clicking **OK** returns you to the Dynamic Group Editor window.
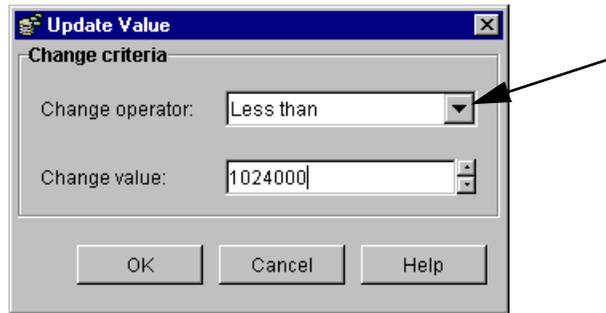


*Figure 34. Update Value window for changing criteria*

The next step is to set the criteria and logical operator that will ensure that only hard disk drives are checked for the space requirements. Select **Disk ->Type -> HARDDISK** and click **Add**.
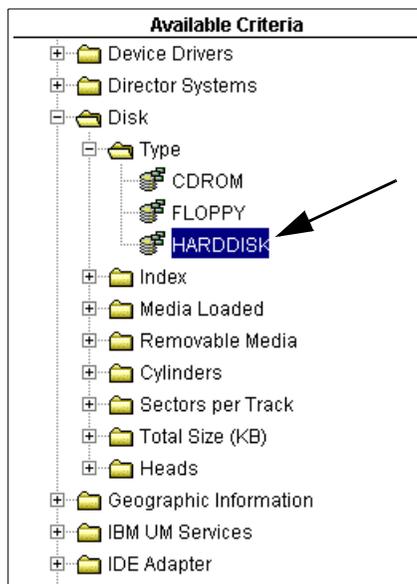


*Figure 35. Selecting disk type*

The Choose Add Operation window will appear. Select the **All true for the same disk** radio button and then **OK**.
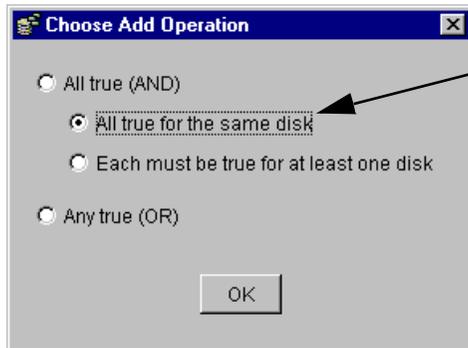
*Figure 36. Choose Add Operation*

After clicking the **+** next to **All true for the same disk** the Selected Criteria pane will appear as in the following figure:
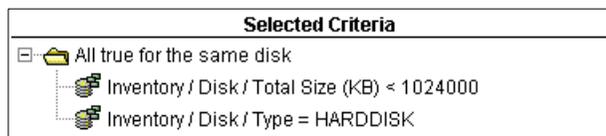


*Figure 37. Selected Criteria for hard disk size*

If the Dynamic Group was saved with only these criteria it would display those machines that did not meet the space requirements for Windows 2000 Professional. There are, however, two more hardware concerns that should be checked before a machine is considered as meeting the minimum requirements: memory size and processor speed. To set up the criteria for memory, select **Installed Memory -> Physical Memory Installed**. Next, choose any of the icons representing the amount of memory installed and click **Add**.
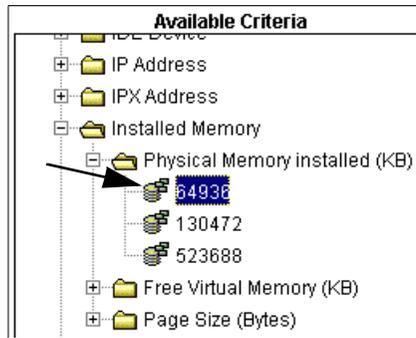
*Figure 38.  Adding Physical Memory installed criteria*

The Choose Add Operation window will appear. Select the **Any true (OR)** radio button and click **OK**.
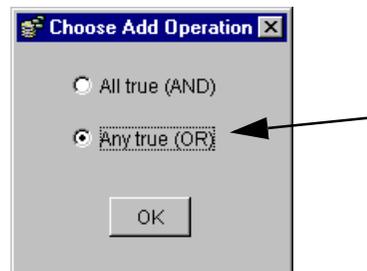


*Figure 39.  Add operation for memory criteria*

After expanding the tree, the Selected Criteria panel will look like Figure 40.
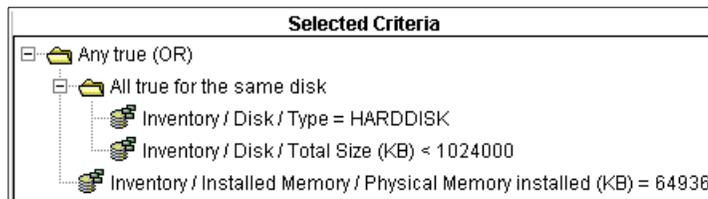


*Figure 40.   Selected Criteria: hard disk and memory*

To modify the memory criteria, highlight **Physical Memory Installed** and select **Edit -> Change Criteria Value**.
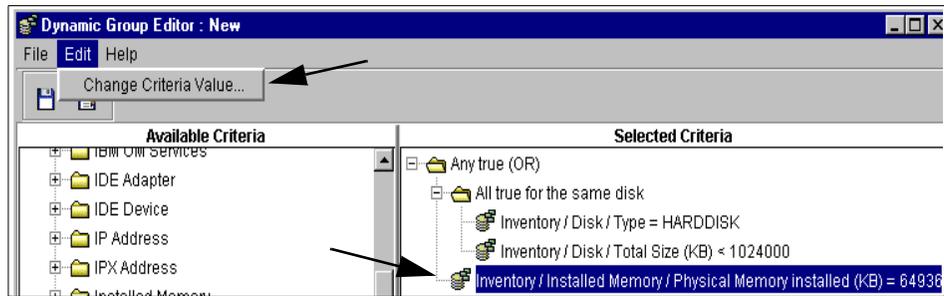
*Figure 41. Modifying Physical Memory criteria*

The Update Value window will appear. Select **Less than** from the Change operator pull-down menu, enter the minimum amount of RAM needed by Windows 2000 Professional in the Change value field, and click **OK**.
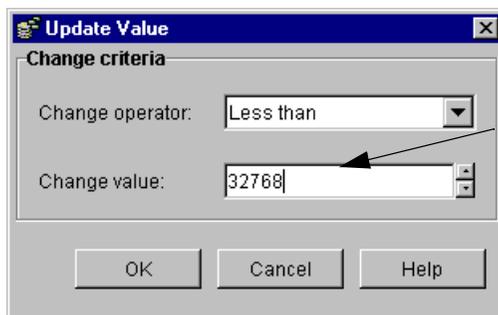


*Figure 42. Modify RAM criteria*

To add the final dynamic group criteria expand **Processor -> Maximum speed of installed processor (MHz)** and choose any of the icons representing processor speed. Click the **Add** button.
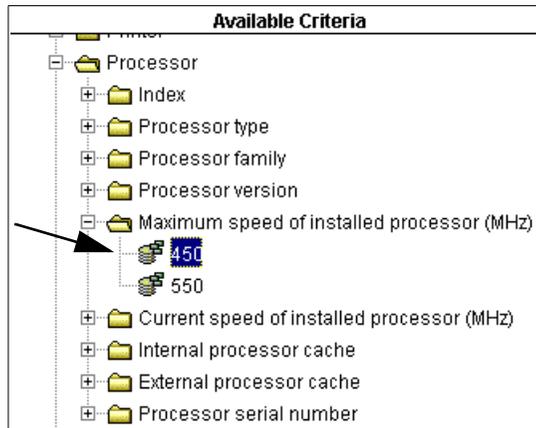
*Figure 43. Adding processor criteria*

In the Choose Add Operation window, select **Any true (OR)** and click **OK**.
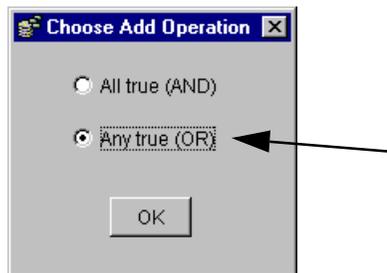


*Figure 44. Specifying an add operation*

Fully expand the Selected Criteria pane and highlight **Maximum speed of installed processor**. Then choose **Edit -> Change Criteria Value**.
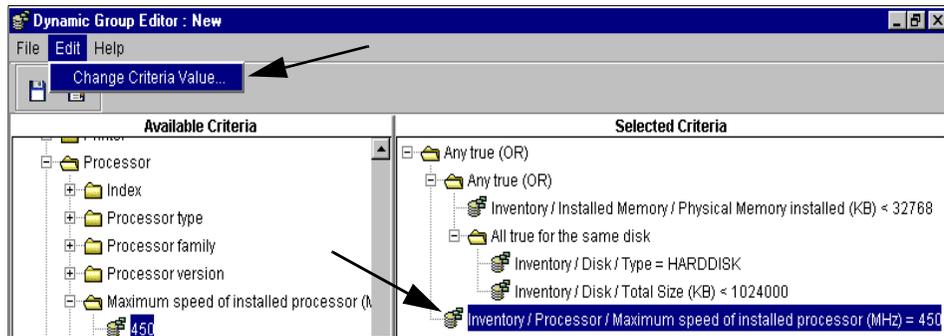
*Figure 45.  Selecting processor speed criteria for modification*

Choose **Less than** from the Change operator drop-down menu and specify the minimum processor speed (MHz) in the Change value field. Then click **OK**.
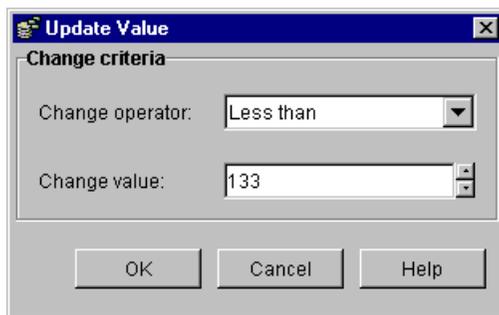


*Figure 46.  Updating processor speed criteria*

When fully expanded, the Selected Criteria pane will look like Figure 47.
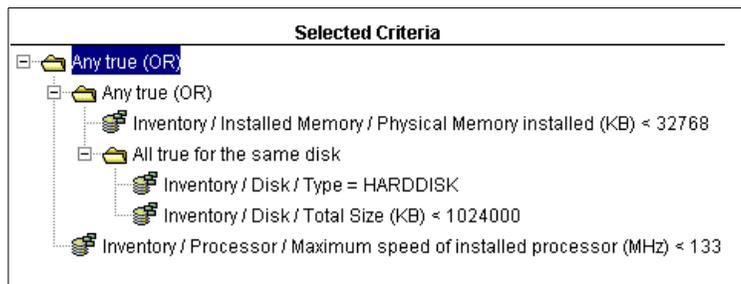


*Figure 47.  Complete criteria for minimum hardware dynamic group*

Once we have finished specifying the criteria for our new dynamic group it can be saved by selecting **File -> Save As**, entering a name for the group, and clicking **OK**.
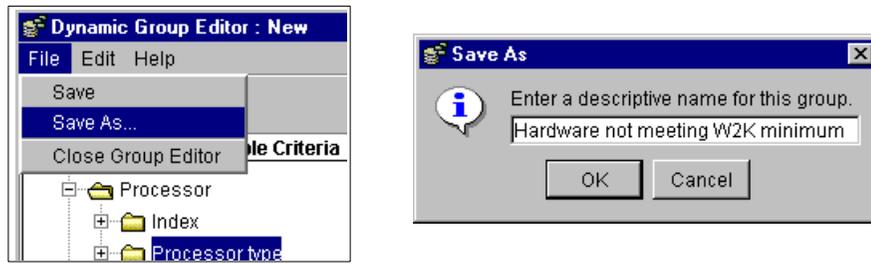


*Figure 48.  Saving the dynamic group*

The new dynamic group is added to the Netfinity Director Console Groups pane. The new group will be automatically updated with the machines meeting the criteria specified; thus all machines not meeting the minimum processor, memory, or hard drive values will appear in this group.
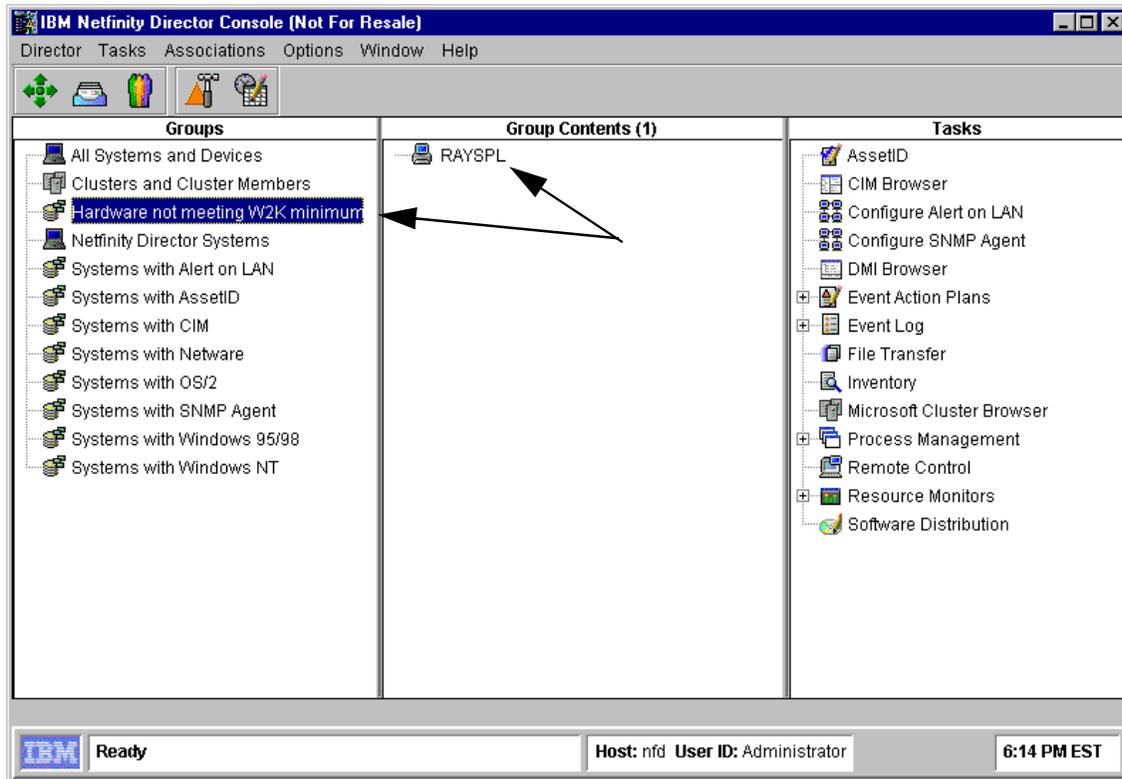
*Figure 49.  Windows 2000 Professional minimal hardware requirements*

This simple format is helpful for a quick overview of what machines are not compliant but it does not present you with what components failed or allow you to export the needed information. A few more steps are necessary to provide specific details in a flexible format. Creating a custom inventory query will allow us a simple point-and-click method of viewing or exporting the information to CSV or HTML format. To create the query we must first open the Inventory Query Browser for our Windows 2000 Professional minimum hardware requirements group by right clicking the group we just created and selecting **View Inventory**.

| Groups | Gr |
|---|---|
| All Systems and Devices | |
| Clusters and Cluster Members | |
| Hardwar | |

Edit...
Copy...
Copy as Static...
Delete
Rename...
Perform Inventory Collection
Event Log
**View Inventory**
CIM Browser
DMI Browser
Event Action Plans
Set Presence Check Interval
All Available Recordings
All Available Thresholds
Resource Monitors
Distribution Preferences
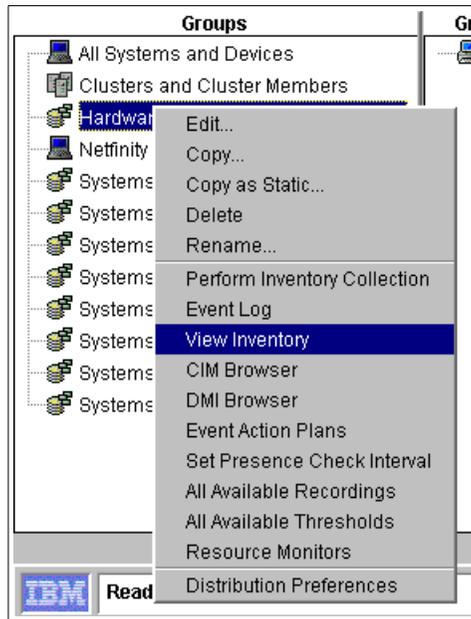
*Figure 50. Opening Inventory Query Browser window*

The Inventory Query Browser window will appear. Right click **Custom** in the Available Queries pane and then choose **Build Custom Query**.
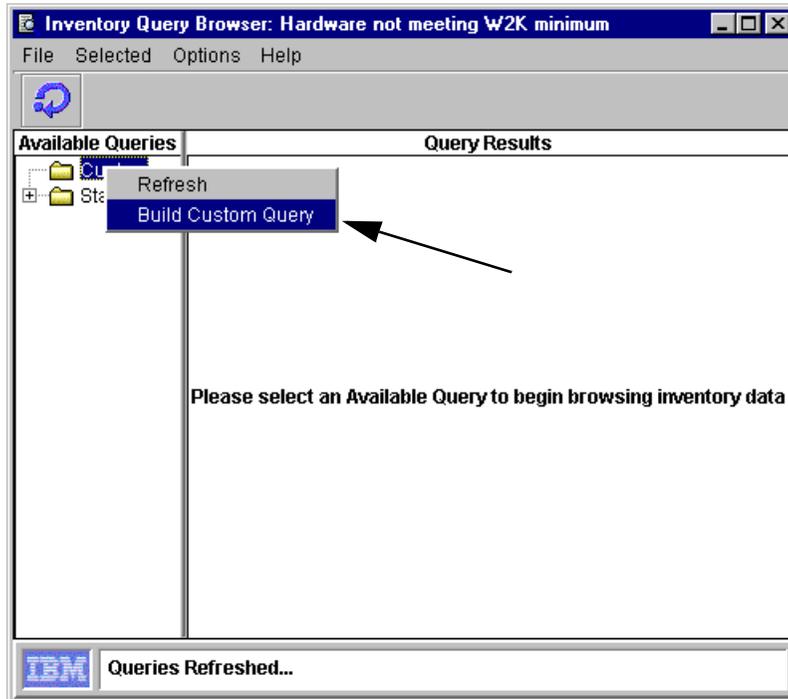
*Figure 51. Opening Inventory Query Builder window*

The Inventory Query Builder will be presented. In the Available Criteria pane expand **Disk** and choose **Type -> Add**.
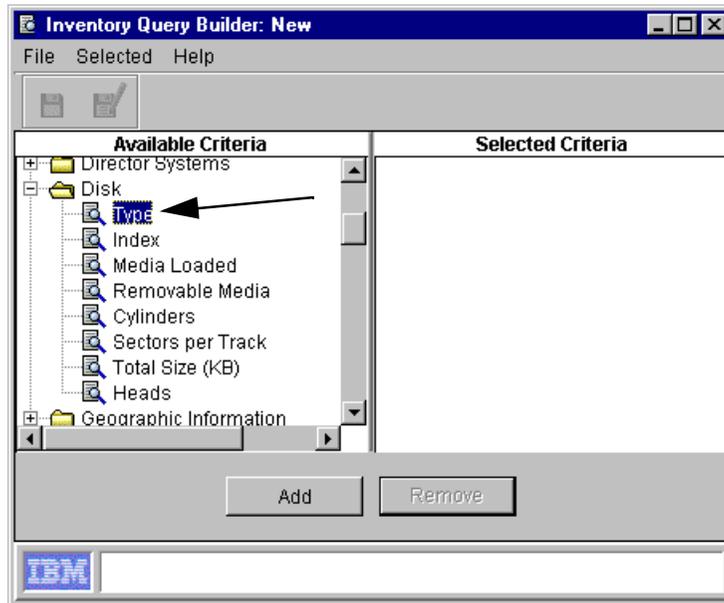
*Figure 52.  Setting disk criteria*

Follow the same process to add the following. Click:

- **Disk -> Total Size**
- **Processor -> Maximum speed of installed processor (MHz)**
- **Installed Memory -> Physical Memory installed (KB)**
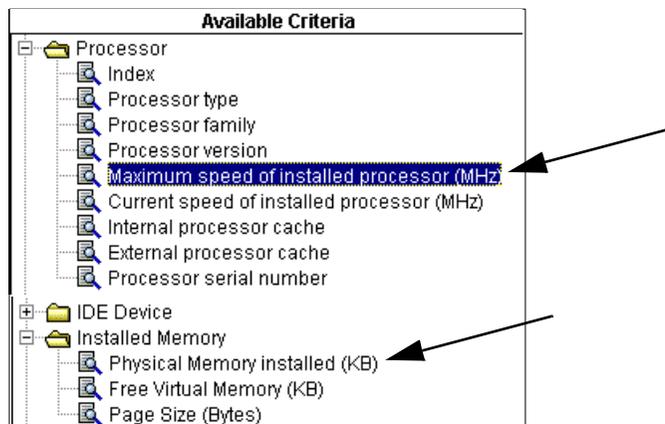


*Figure 53.  Hardware criteria*

Additional criteria can be added to make the information a little more meaningful. Click:

- **User Details -> User Name**
- **User Details -> User Phone**
- **User Details -> User Department**
- **User Details -> System Location**
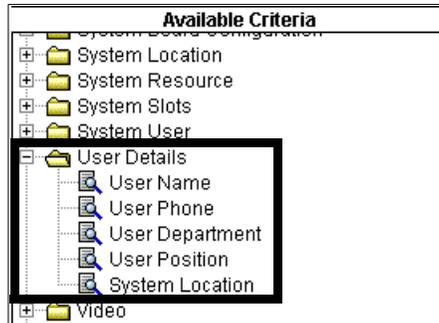


*Figure 54.  Additional criteria*

The Selected Criteria pane will resemble Figure 55.
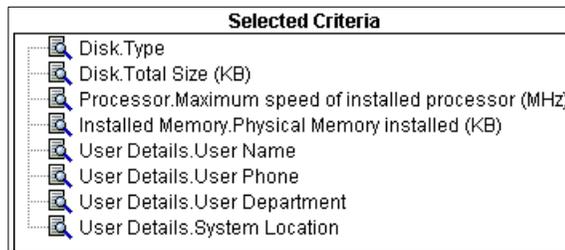


*Figure 55.  Suggested criteria for custom query*

Select **FIle -> Save**.

Figure 56. Saving custom query

Enter a name for the custom query, click **OK**, and close the window.



Figure 57. Naming custom query

We are returned to the Inventory Query Browser. Upon expanding the Custom tree we find our query. If selected, the criteria requested in the query is displayed in the Query Results pane.



| Query Results:W2K Hardware Minimum Details(3) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Name ... | Type (Disk) | Total Size (KB)... | Maximum speed... | Physical Memory... | User Name... | User Phone... | User Depa... | System Location... |
| RAYSPL | HARDDISK | 6297480 | 450 | 64936 | Raymond C... | 555-1234 | ITSO | UM Lab - D103-B |
| RAYSPL | FLOPPY | 0 | | | | | | |
| RAYSPL | CDROM | 0 | | | | | | |

Figure 58. Results of the custom query

This is the level of detail we need to assist us in evaluating what machines may require hardware upgrades to support Windows 2000 Professional presented in a simple format. There are situations, however, where the query results need to be manipulated in another application, such as a spreadsheet or database. The Inventory Query Browser allows you to export to either Comma Separated Value (CSV) or HTML language. To do this, click **File -> Export** and the format you need, in this case CSV.

*Figure 59. Selecting export format*

The export window displays the format type selected. Provide a name and save location for the file. Click **OK**.
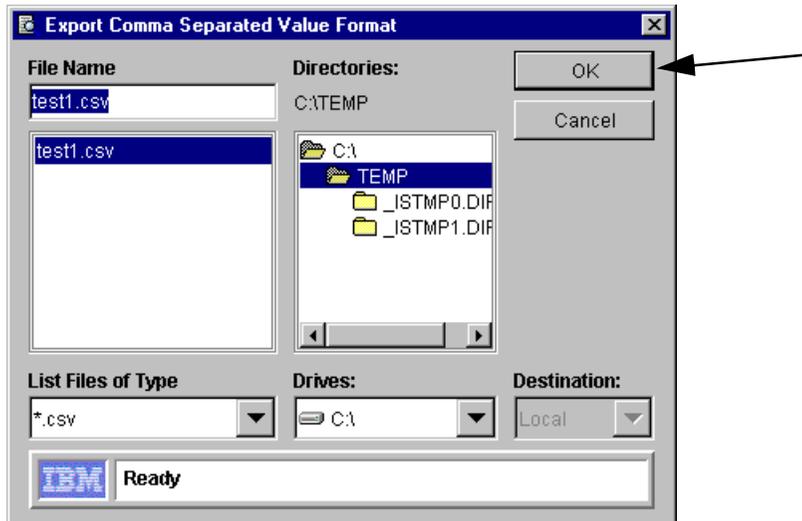


*Figure 60. Saving exported data*

A window appears confirming that the export completed successfully. Click **OK** to finish the export.

### 2.2.1.2  Software collections

Determining if the pre-existing software installed on deployed client machines is compatible with Windows 2000 Professional is a multi-part process. First you need to determine what applications should be maintained on the current image. A good starting point for this is to ensure that the applications and drivers contained in the base image deployed to the machines are compliant. Next, gathering an inventory of the software and drivers currently installed on a sample group of clients will inform you of what software or devices are being used in addition to the base image. After determining what software you wish to allow, performing software and device driver inventories with

custom dictionary entries, if necessary, will allow you to plan for what software and data directories need to be migrated or removed.

A good example of how to easily find the existence of incompatible device drivers and applications for a remote client using IBM Universal Manageability tools is a scenario involving two known incompatible software components. Let's examine how to leverage dynamic groups and custom inventory queries to present what software is involved and where it is installed. This example will assume the Netfinity Director software dictionary has been appended with appropriate entries for the application in question. For details on how to update the software dictionary or any of the other basic concepts presented in this example, please see the *Netfinity Director Users Guide* or refer to the redbook *Netfinity Director - Integration and Tools,* SG24-5389.

Our initial step is to create a dynamic group for the machines that possess the non-compliant software. From the Netfinity Director Console, right click an empty area of the Groups pane to produce a pull-down menu. From that menu choose **New Dynamic**.
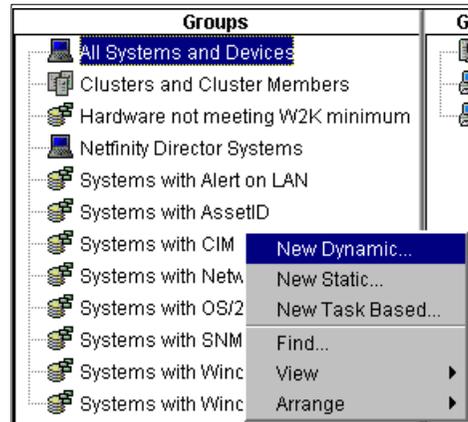


*Figure 61. Opening Dynamic Group Editor*

Once the Dynamic Group Editor window appears expand **Software -> Program Title** under Available Criteria. Highlight the application from the software dictionary that you wish to find and click **Add**.
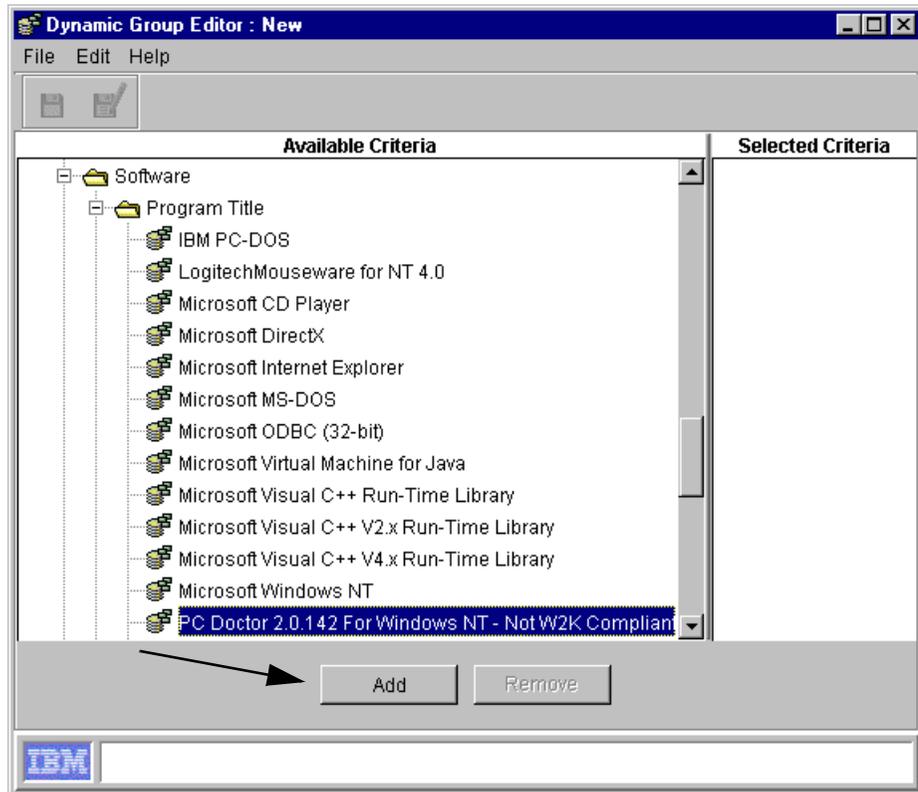
*Figure 62. Adding criteria to a new dynamic group*

The application will now appear under Selected Criteria. In addition to the application, we would also like to query for a Windows 2000 incompatible device driver. Add this criteria by expanding the **Device Drivers -> Driver Name** tree under Available Criteria, choose the incompatible driver, and clicking **Add**.
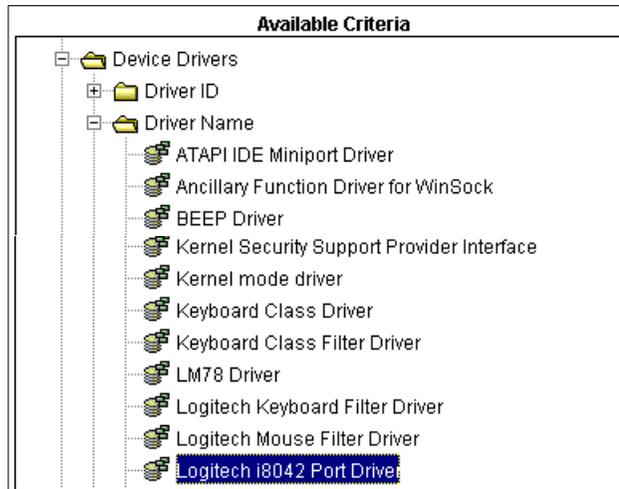
*Figure 63. Adding device driver criteria to a dynamic group*

The Choose Add Operation window will appear. Select the **Any true (OR)** radio button and click **OK**.
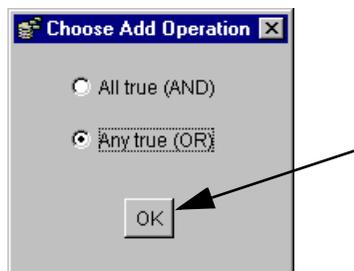


*Figure 64. Selecting criteria add operation*

You will now have the same criteria under the Selected Criteria pane as the following figure.
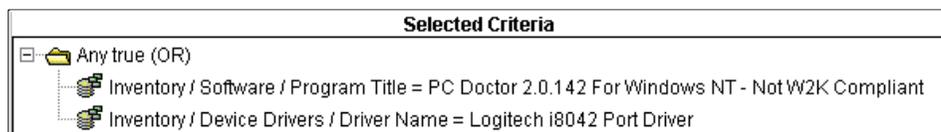


*Figure 65. Suggested criteria for Windows 2000 software compatibility*

To save the Dynamic Group choose **File -> Save** then in the Save As window enter a name for the Dynamic Group and click **OK**.
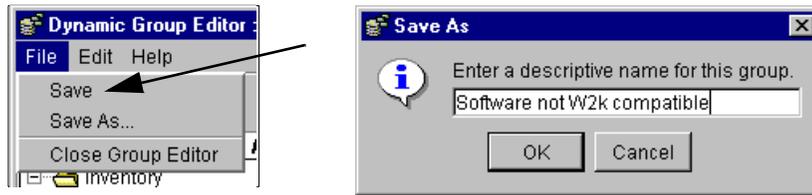
*Figure 66.  Saving a dynamic group*

The new Dynamic Group will appear under the Groups pane on the Netfinity Director Console. When the dynamic group is selected, the machines meeting the criteria, in this case systems that contain Windows 2000 Professional incompatible software, will appear in the Group Contents pane.
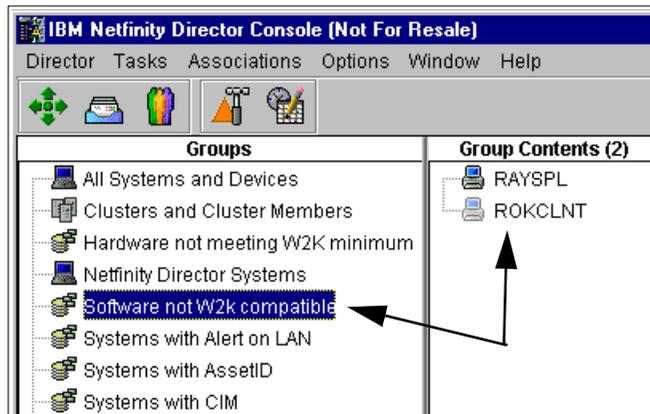


*Figure 67.  Dynamic group contents*

This provides an excellent overview of what machines possess incompatible Windows 2000 software.  However, it does not illustrate which software and  it is not presented in a flexible format. A custom inventory query can be used to expand the amount of data shown and how it is formatted.

To create a custom inventory query, start by clicking the dynamic group that was just created and choose **View Inventory**.
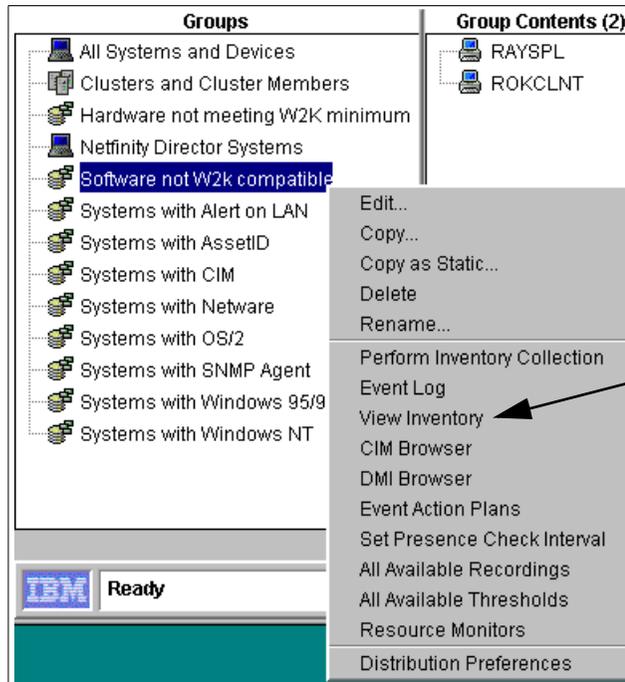
*Figure 68. Opening View Inventory for a dynamic group*

The Inventory Query Browser window will be displayed. To build a custom query right-click **Custom** under the Available Queries pane and select **Build Custom Query** from the pop-up menu.
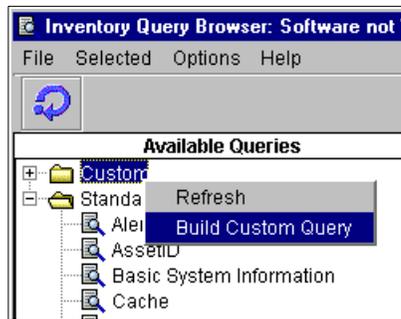


*Figure 69. Opening Custom Query Builder*

The Inventory Query Builder appears. To select criteria for the query, expand **Device Drivers** under the Available Criteria pane and choose **Driver Name**.

Next, click **Add** and the highlighted criteria will be added to the Selected Criteria pane.
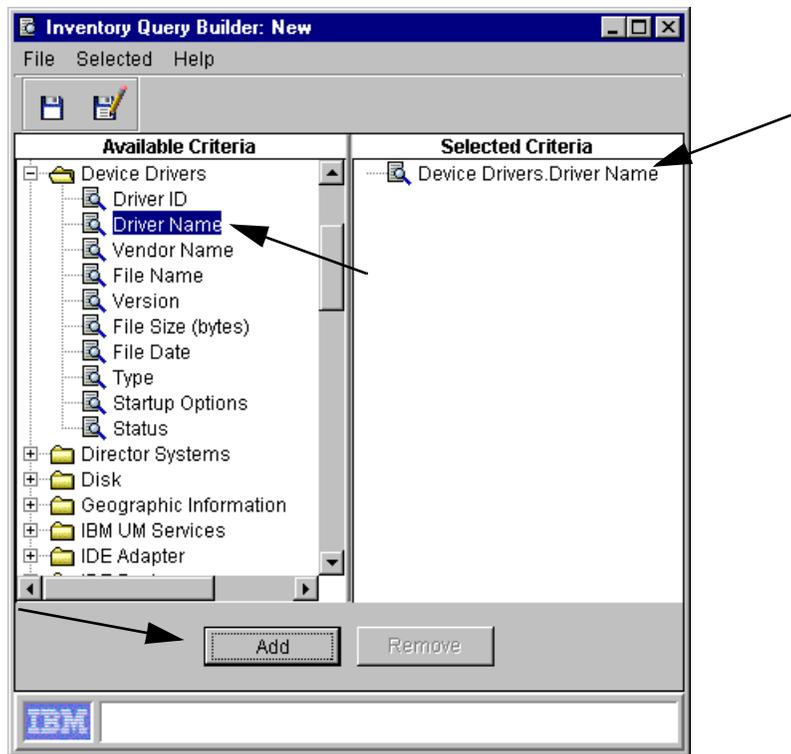


*Figure 70. Adding device driver criteria*

Repeat this procedure to add the following criteria:

- **Device Drivers -> Version**
- **Device Drivers -> Startup Options**
- **Device Drivers -> Status**

Follow the same process to add the software dictionary data outlined in the following list:

- **Software -> Program Title**
- **Software -> Version ID**
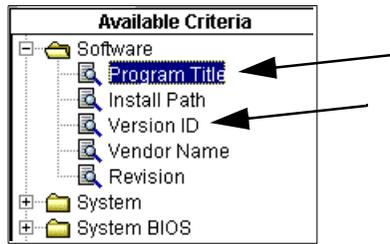
*Figure 71.  Adding software criteria*

The completed list of Selected Criteria will be the same as Figure 72.
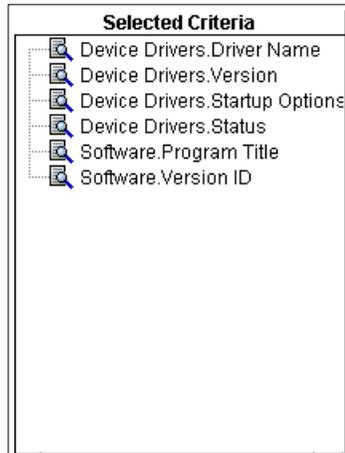


*Figure 72.  Suggested criteria for software query*

To save the custom query select **File -> Save**, then in the Save Query window that appears enter a name for the query and click **OK**.
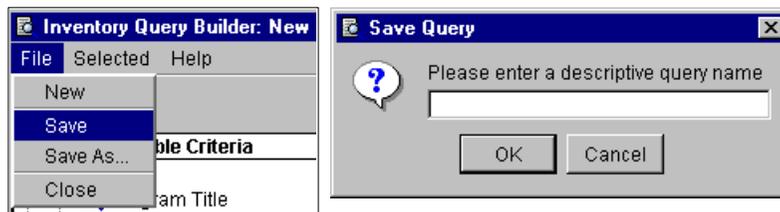


*Figure 73.  Saving a custom query*

Close the Inventory Query Builder to reveal the Inventory Query Browser. The new custom query will appear in the Available Queries pane. To view the

results for the query click the desired query, and the data will be displayed in the Query Results pane.
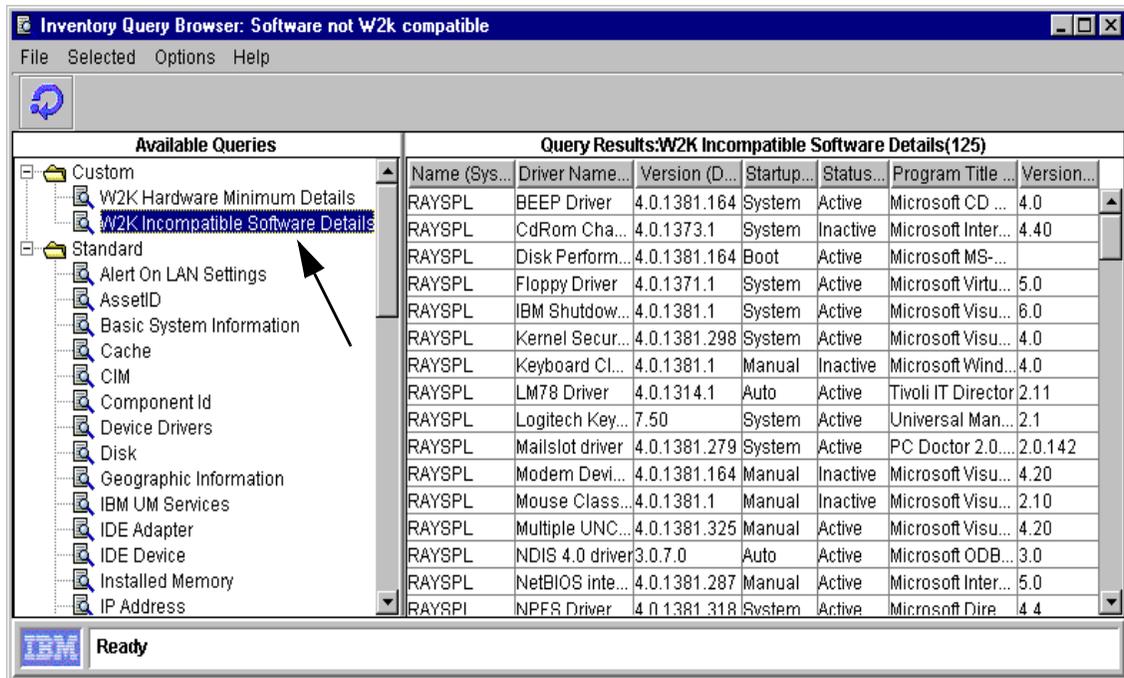


*Figure 74. Query results for example software custom query*

This query provides all the information needed to discover what software or device drivers specified in the dynamic group are incompatible with Windows 2000. The format that the data is presented in, however, may not meet the needs of individuals who have to place this information in another application such as a spreadsheet or database. There are two export format options available for this query data, Comma Separated Value and Hypertext Markup Language. To export the data highlight the desired query and select **File -> Export** and the desired format, in this case **Spreadsheet (.CSV)**.
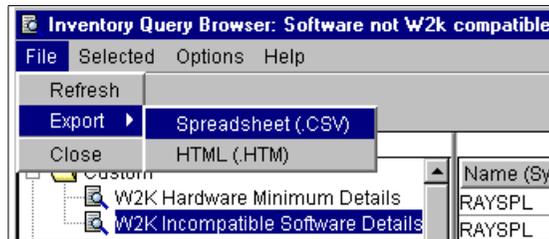
*Figure 75. Exporting Inventory Query Browser data*

When the Export Comma Separated Value Format window is displayed, enter
the name and the location of where the file will be saved and then click **OK**.
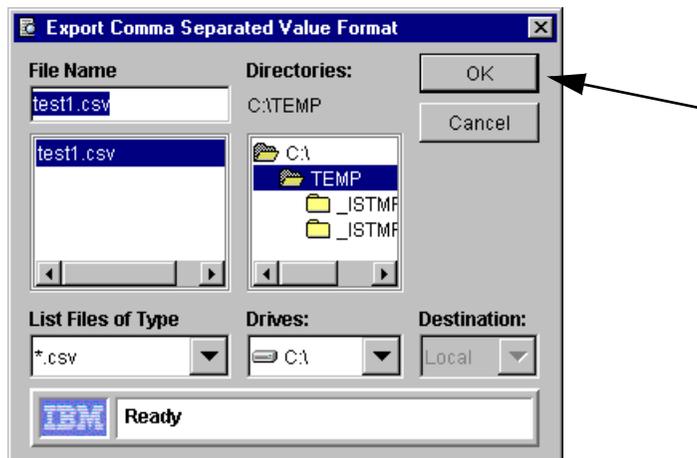


*Figure 76. Export file information*

A window appears confirming that the export completed successfully. Click
**OK** to finish the export.

### 2.2.1.3  Netfinity Director and Microsoft's Analysis tool

Microsoft has created a pair of applications based on the same tools for
detecting Windows 2000 upgrade compatibility from Windows 9x or Windows
NT 3.51, 4.0, and Terminal Server. The two utilities differ only in how they are
packaged and executed. The stand-alone tool can be downloaded from
Microsoft at `http://www.microsoft.com/technet/download/default.asp` and run
interactively on a client. The second analysis tool is executed during the
upgrade installation process and it can be scripted to run unattended or
interactively on the target machine.

Netfinity Director can be used to schedule the `winnt32.exe` command line audit to run unattended on remote clients via a point-and-click interface. Configuring this scenario requires a minimum amount of setup. To start, a share point with the Windows 2000 Professional installation files should be created. In this example, the shared folder has already been created. The directory C:\Archive has been shared as \\23ff458\Archive. We then created a subdirectory called W2KPro and copied the x:\I386 subdirectory from the Windows 2000 Professional CD-ROM to C:\Archive\W2KPro. This will result in a share point called \\23ff458\Archive\W2KPro\I386. An additional pair of directories were created for the script files and the resulting log files generated by the analysis utility, C:\Archive\W2KPro\Scripts and C:\Archive\W2KPro\Scripts\log.

*Table 7. Example share points*

| Purpose | Directory Name | Share Name |
|---------|----------------|------------|
| Windows 2000 installation files share point | C:\Archive\W2KPro\I386 | \\23ff458\Archive\W2KPro\I386 |
| Batch file share point | C:\Archive\W2kPro\Scripts | \\23ff458\Archive\W2KPro\Scripts |
| Log share point | C:\Archive\W2KPro\Scripts\log | \\23ff458\Archive\W2KPro\Scripts\log |

Once a share point has been established, the batch files that call the winnt32.exe audit function need to be created under the exported directory.

There are many ways to script this function. In this case we created a simple, single batch program that illustrates some of the options available.

*Figure 77. upcheck.bat*

```
@ echo off

rem This script is used to check for Windows 2000 upgrade compatibility on
rem remote machines using Netfinity Director and Microsoft's
rem winnt32 /checkupgradeonly audit tool.

IF EXIST %windir%\WINIPCFG.EXE GOTO W98
IF %OS%==Windows_NT GOTO NT
GOTO END

:W98
\\23ff458\Archive\W2KPro\I386\WINNT32 /unattend:\\23ff458\Archive\W2kPro\Scripts\w98check.txt
GOTO END

:NT
\\23ff458\Archive\W2KPro\I386\WINNT32 /CHECKUPGRADEONLYQ
COPY %SystemRoot%\WINNT32.LOG \\23FF458\Archive\W2KPro\Scripts\log\%COMPUTERNAME%.LOG
DEL %SystemRoot%\WINNT32.LOG
GOTO END

:END
```

The method by which the audit utility is run depends on what the target operating system is. Therefore, we must first determine what supported operating system is installed on the machine. This can be accomplished either through Netfinity Director using dynamic groups that sort machines according to their installed platform, or the script file itself can determine what is running on the client. In this example we have illustrated two simple methods that determine what operating system is running on the client and in turn run the appropriate command for the platform. The `IF EXIST %windir%\WINIPCFG.EXE GOTO W98` statement determines whether a specific file exists, which indicates if Windows 98 SE is installed; in this case we used `WINIPCFG.EXE`. The next line, `IF %OS%==Windows_NT GOTO NT`, uses the default Windows NT %OS% environment variable to determine if the operating system in question is running.

Once the operating system has been determined, the proper command can be run to launch the audit utility. To start the analysis tool under Windows 98 an unattended script file must first be created that sets the options allowing only the tool to run. The example on the following page provides an example of the unattend.txt file to be used. The save location and name for the log file is set here. In this case it is: \\23FF458\Archive\W2KPro\Scripts\log\ %COMPUTERNAME%.LOG . The file should be placed in a shared directory such as \\23ff458\Archive\W2KPro\Script .

**Note:** A valid product ID must be used for the operation to complete successfully.

```
[Unattended]
Win9xUpgrade=yes

[UserData]
ProductID=XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

[Win9xUpg]
ReportOnly=yes
SaveReportTo=\\23FF458\Archive\W2KPro\Scripts\log\%COMPUTERNAME%.LOG
```

The Win98 section of the batch file shown in Figure 77 on page 62 contains the command `\\23ff458\Archive\W2KPro\I386\WINNT32 /unattend:\\23ff458\ Archive\W2kPro\Scripts\w98check.txt`. This requests WINNT32.EXE from the \\23ff458\Archive\W2KPro\I386 share point to execute using the w98check.txt unattend.txt file from the \\23ff458\Archive\W2kPro\Scripts share point.

Configuring the analysis tool for Windows NT 4.0 is a bit more straightforward. The command `\\23ff458\Archive\W2KPro\I386\WINNT32 /CHECKUPGRADEONLYQ` in Figure 77 on page 62 asks WINNT32.EXE from the \\23ff458\Archive\W2KPro\I386 share point to run using the /CHECKUPGRADEONLYQ option. This will initiate the audit tool in quiet mode and create a log file named WINNT32.LOG in the Windows NT installation directory. The next command in the NT section of the batch file, `COPY %SystemRoot%\WINNT32.LOG \\23FF458\Archive\W2KPro\Scripts\log\%COMPUTERNAME%.LOG` transfers the log file to a central repository and renames it to the target computer name. The share point \\23FF458\Archive\W2KPro\Scripts\log is once again used as the log save location.

To test the example batch file and share points we ran the following command at a command prompt on the target machine:

`\\23ff458\Archive\W2KPro\Scripts\upcheck.bat`

The batch file upcheck.bat from the Figure 77 on page 62 is being executed from the \\23ff458\Archive\W2KPro\Scripts share point. A log file named after the target computer will appear after a few moments in the log file target directory.

```
 Directory of C:\Archive\W2KPro\Scripts\log

01/31/2000  02:08p       <DIR>           .
01/31/2000  02:08p       <DIR>           ..
01/31/2000  02:02p                1,742 NFD.LOG
02/07/2000  11:46a                   64 RAYSPL.LOG
01/31/2000  01:58p                3,898 ROKCLNT.LOG
               3 File(s)          5,704 bytes
               2 Dir(s)   5,290,799,104 bytes free
```

**Note:** The Windows 98 audit process will produce a window for the duration
of the analysis but will not require user interaction.

The final set of steps involved with using the Microsoft Windows 2000
compatibility analysis tool with IBM Netfinity Director centers around creating
a Process Task. This will allow the batch file to be run on remote machines
through Netfinity Director. To create a new Process Task, in the Tasks pane
expand **Process Management**, right-click **Process Task** and select **Open**
from the pop-up menu.
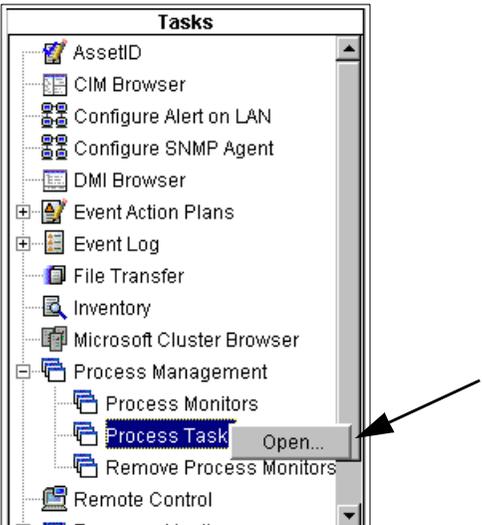


*Figure 78.  Opening a new Process Task*

 A Process Task window will appear. In the Command field enter
`\\23ff458\Archive\W2KPro\Scripts\upcheck.bat` and in the Login section enter
the user ID and password for an account with the proper permissions to
access the machine and run the executable.
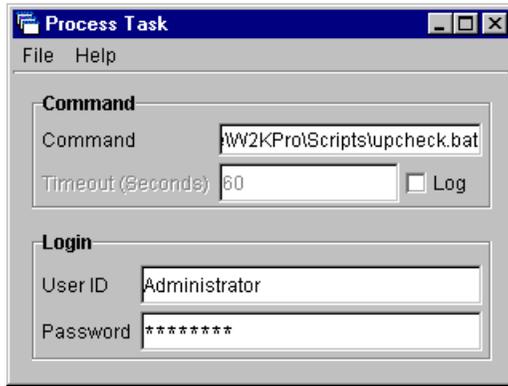
*Figure 79. Creating the analysis tool process task*

Save the new Process Task by clicking **File**, selecting **Save As** from the pull-down menu, entering a name for the task in the Save As window, and clicking **OK**.
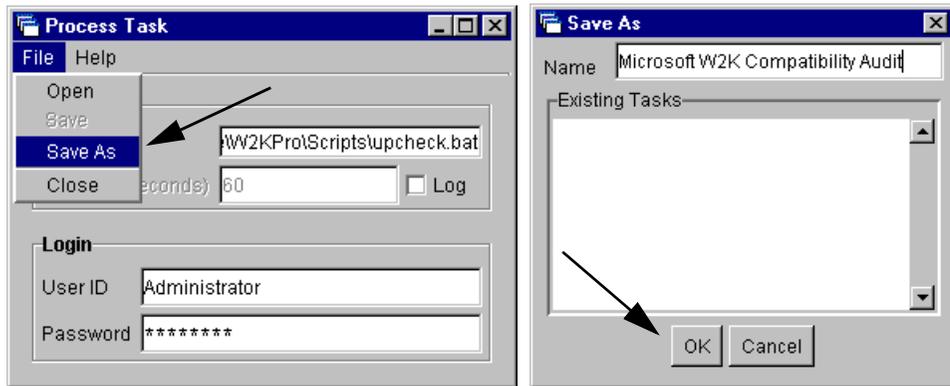


*Figure 80. Saving the Microsoft W2K compatibility audit Process Task*

Close the Process Task window. The new task should appear under Process Tasks in the Tasks pane.
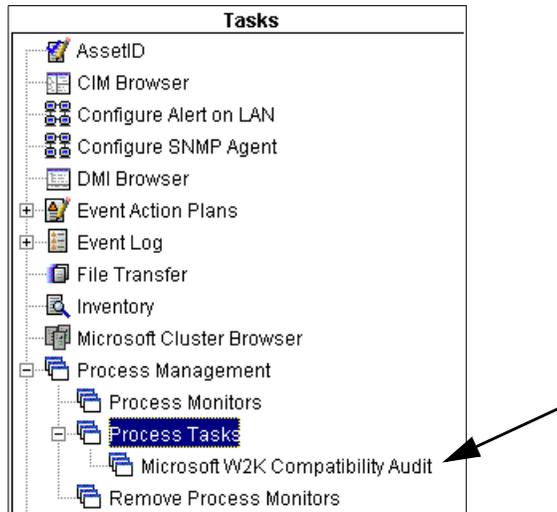
*Figure 81.  Microsoft W2K Compatibly Audit task*

To execute the audit on a single remote machine, drag and drop the client from the Group Contents pane on to the task. To assign multiple machines to the task, use a group from the groups pane containing the desired systems. Either action will cause a window to appear asking how you want the job executed. It can be canceled, executed now, or scheduled for a later date. Click **Execute Now** to run the audit immediately.
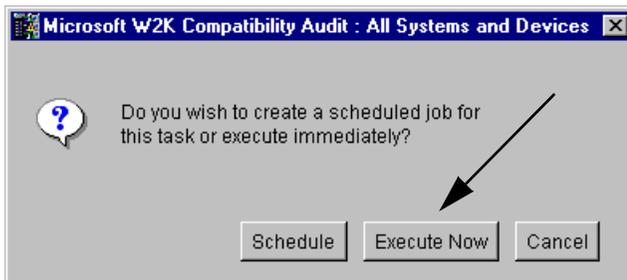


*Figure 82.  Task execution selection window*

The Execution History window is presented showing the status of the task.
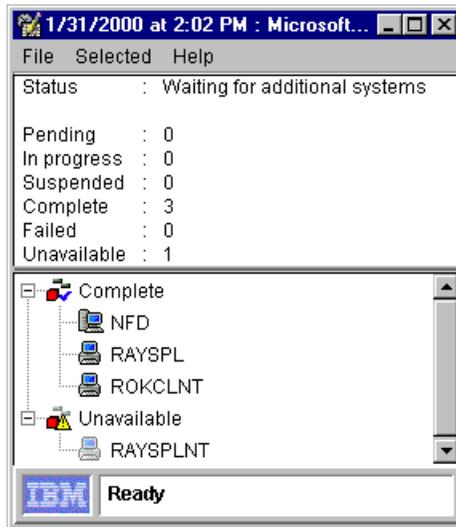
*Figure 83. Execution History*

Once all the machines have completed the task, you will find the audit logs for the clients in the specified log directory. The logs detail hardware and software Windows 2000 compatibility concerns. The Table 8 on page 67 illustrates the information contained in the log. The section tag points to the location of the data in the sample log file on page Start Menu Contents on page 68

*Table 8. Windows 2000 Analysis Tool log data types*

| Data Type | Section |
|---|---|
| Amount of Memory | (A) |
| Drive Size and Free Space | (B) |
| Incompatible Drivers | (C) |
| Contents of the Windows Start Menu | (D) |

```
*********************************************************************

 Windows NT Upgrade Verification Tool

*********************************************************************

Detected 512 MBytes of memory.        (A)

                                                                    (B)
Examining system partition for adequate space for temporary boot files.
Drive C: acceptable for boot files

Examining disk for adequate space expand the WinDir.
Drive C: acceptable for final installation directory.

Examining Disks for adequate space for temporary setup files.
Drive A: doesn't exist or is not a local hard drive
Drive A: not valid for holding temporary installation files.
Drive C: acceptable for local source.

sermouse                          (C)
3com 3C562D/3C563D
CrystalWare Audio Driver
Logitech Mouseware Drivers
Logitech Mouseware Drivers
Logitech Mouseware Drivers
Intel PIIX IDE Controller
Directory Replicator
                                                                    (D)
*********************************************************************

 Start Menu Contents

*********************************************************************

  \Start Menu
    \Programs
      \Startup
      \Administrative Tools (Common)
        Disk Administrator.lnk
        Performance Monitor.lnk
        Backup.lnk
        Event Viewer.lnk
        Windows NT Diagnostics.lnk
        Remote Access Admin.lnk
        User Manager.lnk
      \IBM UM Services
        IBM UM Services Browser.url
        Troubleshooting Guide.lnk
        IBM UM Services Help.lnk
      \System Migration Assistant
        Source.lnk
        Target.lnk
  \Start Menu
    \Programs
      \Startup
        \Accessories
```

## 2.3  Pre-deployment

Once it has been determined what immediate road blocks will be encountered when attempting to migrate from either Windows 98 Second Edition or Windows NT 4.0, Service Pack 6a to Windows 2000 Professional, the next obvious step is to remove them. IBM Universal Manageability tools can once again be leveraged to provide flexible assistance. This section examines how IBM tools can be used to remove incompatible applications and services along with migrating user client settings and updating system BIOS.

### 2.3.1  Removal of incompatible applications and services

When migrating to Windows 2000 Professional from a legacy operating system, service or application incompatibilities may be discovered. Removing this software can become complex depending upon what procedure needs to be used. Netfinity Director can help simplify this process by distributing and scheduling these automated tasks via a point and click interface.

#### 2.3.1.1  Removing incompatible applications

Removing an incompatible application using Netfinity Director is a simple process. For our example we used the Windows PC Doctor application that is shipped on the IBM 300PL Ready-to-Configure CD, V2.1. This utility is not compatible with Windows 2000 Professional and therefore must be uninstalled. This example is a two-part process: first a series of batch files need to be created allowing the automated removal of the application, then the scripts will be incorporated into a Process Task for distribution to the target machines.

PC Doctor uses the Wise Installation System for its delivery method. This software uses a combination of an executable UNWISE.EXE and a log of the initial installation called INSTALL.LOG. The command `C:\WINDOWS\UNWISE.EXE /A /S C:\PCDU\INSTALL.LOG` silently uninstalls PC Doctor from C:\PCDU on the Windows 98 platform. This assumes that the default installation directories were used. Further details about the Wise Installation System can be found at the Wise Solutions home page `http://www.glbs.com/Default.htm`. To implement this command for both Windows 98 Second Edition and Windows NT 4.0 operating systems, we incorporated it into the batch files shown in Figure 84 and Figure 85 on page 71.

```
@ ECHO OFF
REM This script is part one of a two part process which uninstalls the PC DOCTOR
REM Application from the Windows NT 4.0 and Windows 98 platforms. The second part
REM ofthis process is started by PCDUINST.BAT.

REM Connect to the sharepoint
NET USE U: \\23ff458\Archive

REM Open a command interpreter with enough environment space to run PCDUINST.BAT
REM and execute it.
COMMAND /E:2048 /C U:\Scripts\PCDUINST.BAT

REM Disconnect from the sharepoint
ECHO Y | NET USE U: /DELETE

 :END
```

*Figure 84.  Install PC Doctor*

```
@ ECHO OFF
REM This script is part two of a two part process which uninstalls the PC DOCTOR
REM Application from the Windows NT 4.0 and Windows 98 platforms. The first part
REM of this process is started by BOOST.BAT.

REM Add U:\Scripts to the PATH variable and move to the share point.
PATH=%PATH%;U:\Scripts
u:
cd \Scripts

REM Discover where on the C: drive PC Doctor is installed and place the
REM information in a.DAT file.
DIR /S /B C:\*.LOG | FIND /I "PCDR" > PCDUTMP.DAT

REM Add and extra space to the .DAT file so DATE does not wait for input.
echo.>> pcdutmp.dat

REM Set the %DIR% variable to the information contained in PCDUTMP.DAT
TYPE PCDUTMP.DAT | DATE | FIND "Enter" > PCDUTMP.BAT
ECHO SET DIR=%%4 > Enter.BAT
CALL PCDUTMP.BAT

REM Check to see if we are under Windows NT then run the appropriate uninstall
REM command.
IF %OS%==Windows_NT GOTO NT
GOTO W98

:W98
%windir%\UNWISE.EXE /A /S %DIR%
GOTO CLEANUP

:NT
%SYSTEMROOT%\UNWISE.EXE /A /S %DIR%
GOTO CLEANUP

REM Remove uneeded files.
:CLEANUP
DEL PCDUTMP.DAT
DEL Enter.BAT
DEL PCDUTMP.BAT
C:
GOTO END

:END
```

*Figure 85. The rest of the PC Doctor install*

Figure 84 on page 70 starts by connecting to the share point NET USE U:
\\23ff458\Archive. This is the working directory for the scripts where all
processing will take place. Next, it uses `COMMAND /E:2048 /C`
`U:\Scripts\PCDUINST.BAT` to open a command interpreter with 2048 bytes of
initial environment space and executes the second batch file. It is necessary
to initiate a separate command interpreter with additional environment
resources due to the limited amount of space provided by the Process Task.

The main purpose of Figure 84 on page 70 is to configure a workspace for PCDUINST.BAT.

The uninstallation of the application takes place in PCDUINST.BAT which appears in Figure 85 on page 71, though there is a lot of ground work performed before it is removed. Initially the script adds the working directory on the share point to the %PATH% and moves you to the U:\Scripts directory.

Once we are in the right location, the C: drive is scanned for the default installation directory of PC Doctor and the path is stored in PCDUTMP.DAT by the command `DIR /S /B C:\*.LOG | FIND /I "PCDR" > PCDUTMP.DAT`. This is done because PC Doctor installs to \PCDR under Windows 98 or to \PCDRNT for Windows NT 4.0. `DIR /S /B C:\*.LOG` finds all .LOG files in all subdirectories on the `C:` drive and presents them to standard out in a bare format. This information is then piped to `FIND /I "PCDR"`, which looks for any line containing the string PCDR. The result of this query is redirected to the file PCDUTMP.DAT which, under Windows 98 SE, will contain C:\PCDR\INSTALL.LOG.

The next steps take the information stored in PCDUTMP.DAT and assign it to a variable. Typically this is accomplished via a small C or Visual Basic program but due to the lack of a native solution common to both Windows NT 4.0 and Windows 98 Second Edition a process consisting of batch files was used. The command `echo.>> pcdutmp.dat` is used to add an empty line to PCDUTMP.DAT which will allow DATE in the next line to continue without requiring user input. To reformat the data contained in PCDTMP.DAT so that it calls a known batch file name, the line `TYPE PCDUTMP.DAT | DATE | FIND "Enter" > PCDUTMP.BAT` is used. First, `TYPE PCDUTMP.DAT` sends the contents of PCDUTMP.DAT to standard out, which is then piped to the `DATE` command. The date command will try and use the contents of PCDUTMP.DAT as the input for its request for a new date. DATE will then return an invalid date error and request input for a new date. This is where the additional blank line added by `echo.>> pcdutmp.dat` comes into play. The empty entry provides a blank space and carriage return for `DATE`, which allows the command to end as if the Enter key were pressed. If we interrupted the process at this point the output would appear as in Figure 86.

```
C:\Scripts>TYPE PCDUTMP.DAT | DATE
Current date is Wed 02-02-2000
Enter new date (mm-dd-yy): C:\PCDR\INSTALL.LOG

Invalid date
Enter new date (mm-dd-yy):
```

Figure 86. Sample output for TYPE PCDUTMP.DAT | DATE

The contents of standard out is then piped to `FIND "Enter" > PCDUTMP.BAT`. This will look for any line containing the string "Enter" and redirect it to the file `PCDUTMP.BAT`. The final contents of `PCDUTMP.BAT` are shown in Figure 87.

```
Enter new date (mm-dd-yy): C:\PCDR\INSTALL.LOG
Enter new date (mm-dd-yy):
```

*Figure 87. Contents of PCDUTMP.BAT*

A temporary batch file called Enter.BAT is created via `ECHO` by the command `ECHO SET DIR=%%4 > Enter.BAT`. This script will contain `SET DIR=%4`. The extra percent symbol in %%4 tells ECHO to produce the string %4 rather than translating the variable to the fourth option on the batch file command line.

The last step in setting the variable %DIR% consists of the command `CALL PCDUTMP.BAT`. Figure 87 shows the contents of PCDUTMP.BAT. As we can see, `Enter` is the first command that it will attempt to execute with the rest of the text acting as command options. `Enter.BAT` is the first executable it runs since it is the first encountered. This will always be the case because Enter.BAT is created in the same directory as PCDUTMP.BAT. Enter.BAT then sets the fourth command line option to the variable %DIR%. In this example it will be C:\PCDR\INSTALL.LOG.

Once the location of the PC Doctor installation log has been determined and set to a variable we need to determine what platform we are running on. There are command line utilities that are capable of querying the registry which would aid in this process but for simplicity in this example we used the Windows NT %OS% variable. If %OS% is equal to Windows_NT then we know the client is using Windows NT and are directed to the :NT subsection. If the check fails then the platform should be Windows 9x and therefore directed to the `:W98` subsection. This check is required due to the lack of a shared platform variable that presents the Windows installation directory.

The :W98 section puts all of the data collected together and runs the PC Doctor uninstallation command `%windir%\UNWISE.EXE /A /S %DIR%`. The batch file interprets the variables and presents `C:\Windows\UNWISE.EXE /A /S C:\PCDR\INSTALL.LOG` for execution. Further details about the Wise Installation System can be found at the Wise Solutions Web site: `http://www.glbs.com/Default.htm`.

The :NT section performs the same duties as the :W98 portion. The only difference is what variable is being used for the location of the Windows installation directory. The command `%SYSTEMROOT%\UNWISE.EXE /A /S %DIR%` initiates the quiet software removal process.

Now that the uninstallation process has finished it is time to clean up the files and shares left behind. The :CLEANUP section deletes the three temporary files used to set the %DIR% variable, moves to the C: drive, and passes control back to the batch file that spawned it. The last action of `BOOST.BAT`, who is now in control, is to disconnect from the U: \\23ff458\Archive share point using `ECHO Y | NET USE U: /DELETE`. The `ECHO Y` piped to `NET USE` replies to the executable's request for confirmation that we want to disconnect from the share.

To remotely execute this series of batch files on the target machines a Process Task needs to be created in Netfinity Director. To create a new Process Task, under the Tasks pane expand **Process Management**, right click **Process Task** and select **Open** from the pop-up menu.
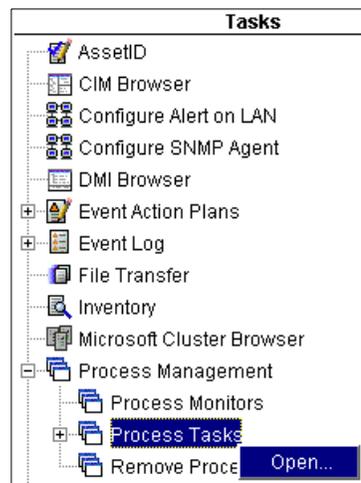


*Figure 88.  Creating a new process task*

A Process Task window appears. In the Command field enter `\\23ff458\Archive\Scripts\BOOST.BAT` and in the Login section enter the user ID and password for an account with the proper permissions to access the machine and run the executable.
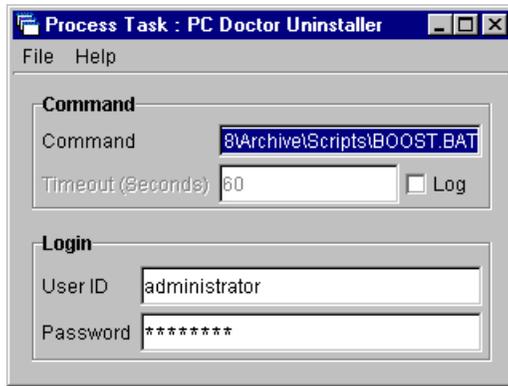
*Figure 89.  Creating the PC Doctor unistaller process task*

Save the new Process Task by clicking **File**, selecting **Save As** from the pull-down menu, entering a name for the task in Save As window, and clicking **OK**.



*Figure 90.  Saving the process task*

Close the Process Task window. The new task should appear under Process Tasks in the Tasks pane.

*Figure 91.  The PC Doctor Uninstaller*

To execute the audit on a single remote machine, drag and drop the client from the Group Contents pane on to the task. To assign multiple machines to the task, use a group from the Groups pane containing the desired systems. Either action causes a window to appear asking how you want the job executed. It can be canceled, executed now, or scheduled for a later date. Click **Execute Now** to run the audit immediately.
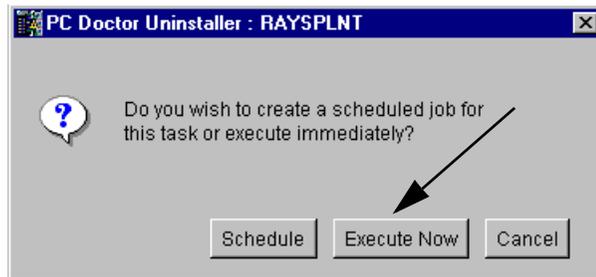


*Figure 92.  PC Doctor Uninstaller job schedule window*

The Execution History window details the status of the task.
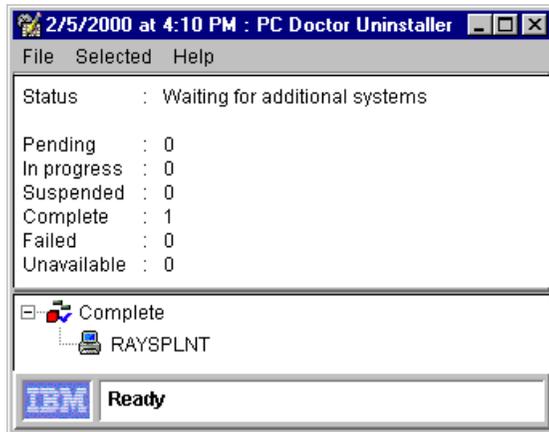
*Figure 93. PC Doctor Uninstaller task execution history window*

Once the machine has completed its task, the PC Doctor application will have been removed from the target system.

### 2.3.1.2 Modifying incompatible services under Windows NT 4.0

There are several ways to remotely change the settings for a service under Windows NT 4.0. The least complicated involves a utility provided in the Windows NT 4.0 Resource Kit called SC.EXE. This allows service states and configurations to be changed from the command line. To stop and then disable a service on remote systems using Netfinity Director, a process task executing a batch file can be used.

The batch file for this example connects to the share point \\23ff458\Archive to execute SC.EXE with the correct parameters to disable the win32SL service. The two variables set at the beginning of the script describe the share point where SC.EXE is stored and which service we want to disable. The next section stops the service to be disabled via the command %SHARE%\SC.EXE STOP %SERVICE%. This would be interpreted at the command prompt as \\23ff458\Archive\Scripts\SC.EXE STOP win32sl. The batch file then disables the service by executing %SHARE%\SC.EXE CONFIG %SERVICE% start= disabled. At the command prompt this line appears as \\23ff458\Archive\Scripts\SC.EXE CONFIG win32sl start= disabled. For further information about SC.EXE please refer to the Microsoft Resource Kit 4.0 Support Tools documentation.

```
REM This script uses the Microsoft Windows NT Resource Kit tool SC.EXE to stop
REM and then disable a service on a remote machine through IBM Netfinity
REM Director.

SET SHARE=\\23ff458\Archive\Scripts
SET SERVICE=win32sl

%SHARE%\SC.EXE STOP %SERVICE%
%SHARE%\SC.EXE CONFIG %SERVICE% start= disabled

:END
```

To create the process task for disabling a Windows NT service, start at the IBM Netfinity Director Console and expand Process Management under the Tasks pane. Right-click **Process Tasks** and choose **Open**.
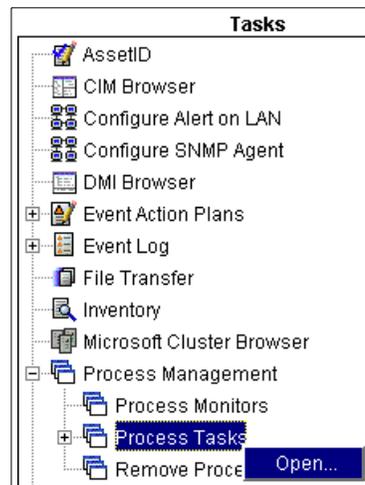


*Figure 94.  Creating a new process task*

When the Process Task windows appears enter `\\23ff458\Archive\Scripts\SERVICED.BAT` in the Command field. In the Login section, provide the user ID and password for an account with the appropriate permissions to execute the command. Click **File** and select **Save As** from the pull-down menu.

*Figure 95. Saving the process task*

In the Save As window enter a name for the task and click **OK**.
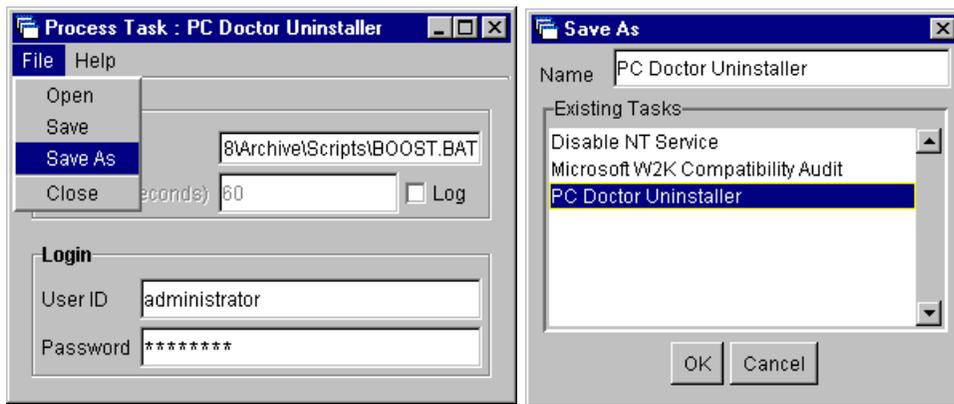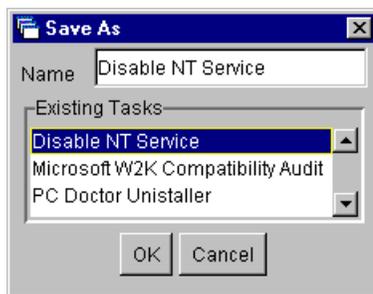


*Figure 96. Saving the process task*

Close the Process Task window. The new task should appear under Process Tasks in the Tasks pane.
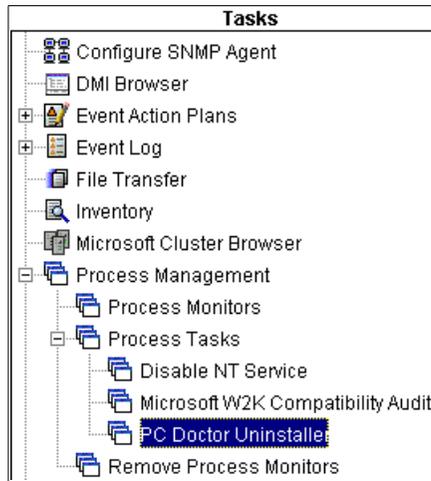


*Figure 97. The Disable NT Service process task*

To execute the audit on a single remote machine, drag and drop the client from the Group Contents pane on to the task. To assign multiple machines to

the task, use a group from the Groups pane containing the desired systems. Either action will cause a window to appear asking how you want the job executed: it can be canceled, executed now, or scheduled for a later date. Click **Execute Now** to run the audit immediately.
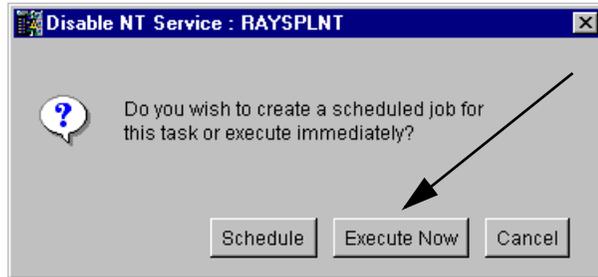


*Figure 98. Disable NT Service job schedule window*

The Execution History window gets presented detailing the status of the task.
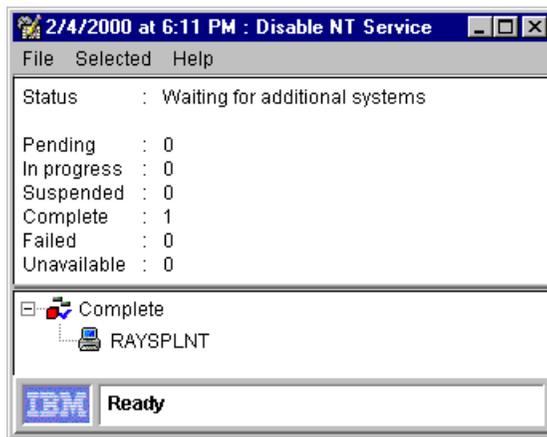


*Figure 99. Execution history window*

Once all of the systems have finished processing the win32sl service will appear as disabled under **Control Panel -> Services** on the target machine.
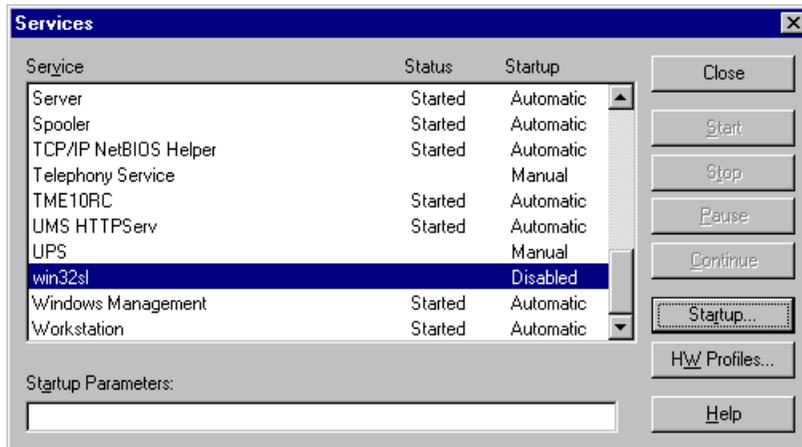
*Figure 100. Disabled win32sl service*

### 2.3.2 Updating BIOS and changing CMOS settings

On some older machines it may be necessary to update the BIOS or change the CMOS configuration of the client to allow the proper function of Windows 2000 Professional. Information about BIOS updates for IBM Personal Computers can be found at `http://www.pc.ibm.com/support`. In a situation where a large number of machines require such an upgrade, it can become time consuming and expensive to manually update each machine. A solution to this problem can be done with the BIOS and CMOS update function of LANClient Control Manager (LCCM). LCCM is capable of remotely flashing the BIOS and modifying the CMOS settings of a target machine across the network. A simple GUI interface is used to configure and deploy the new images.

**Note:** In order for BIOS or CMOS updates to work (or any LCCM function), the system must be known to LCCM. This usually happens during a scan process. In this case, the system must be set to boot from the network. If it's powered off, it has to be Wake on LAN-enabled (or left powered on).

#### 2.3.2.1 Upgrading BIOS remotely via LCCM

Flashing the BIOS of a remote client via LCCM is a two-step process. First the BIOS image must be converted into a format that can be used by LCCM, then the target machine is assigned to a maintenance profile and processed. To create the BIOS update, start by obtaining the BIOS flash disk appropriate for the target system. In the LANClient Control Manager Installation and Maintenance window click **Tools** and from the resulting pull-down menu select **Import BIOS files -> Read BIOS flash disk**.
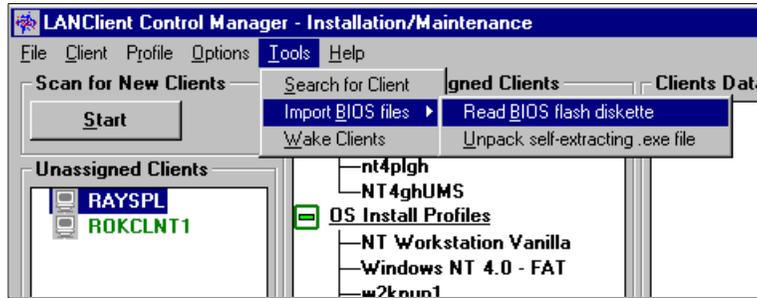
*Figure 101. Importing BIOS image under LCCM*

When the BIOS Flash Setup window appears, insert the BIOS Flash diskette in the floppy drive and select its drive letter from the select drive drop-down menu. The version of the update will appear in the Flash level window. Click **Setup**.
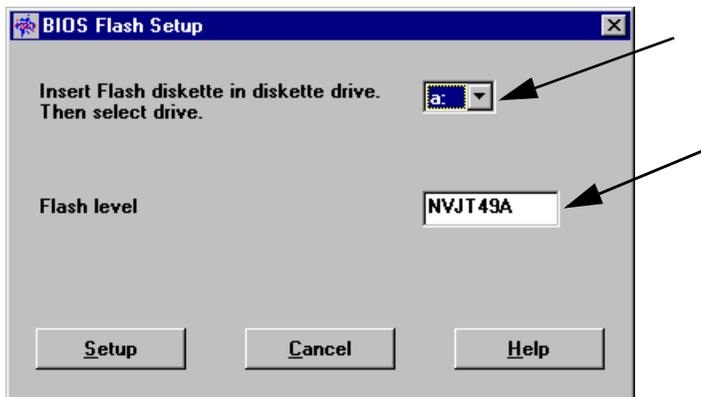


*Figure 102. Selecting flash disk for import*

The floppy drive reads data from the disk for several seconds. Upon completion, a window informs you that the BIOS flash diskette has been copied successfully. The BIOS level is now ready to be assigned to a client and processed.

The first step in requesting a BIOS flash for a system is to open its Individual Client Details. From the LCCM Installation and Maintenance window, highlight the system you want to open in the Unassigned Clients pane. Click **Client** and choose **Configure** from the drop-down menu.
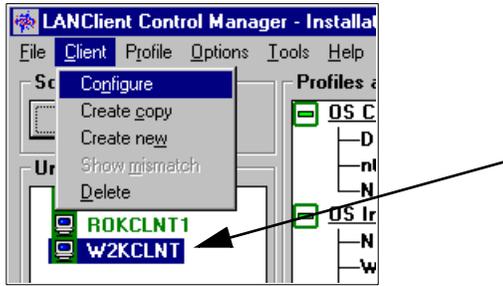
*Figure 103. Opening the individual client settings*

The LANClient Control Manager Individual Client Details window is sometimes presented with the Details page open. Click the **Maintenance** tab to reveal the BIOS and CMOS setup options. Select the desired BIOS level from the pull-down menu. This automatically places a mark in the Update BIOS check box thereby enabling a remote flash for this machine. Select the desired language from the Language drop-down and click **OK** to assign the image to the client.
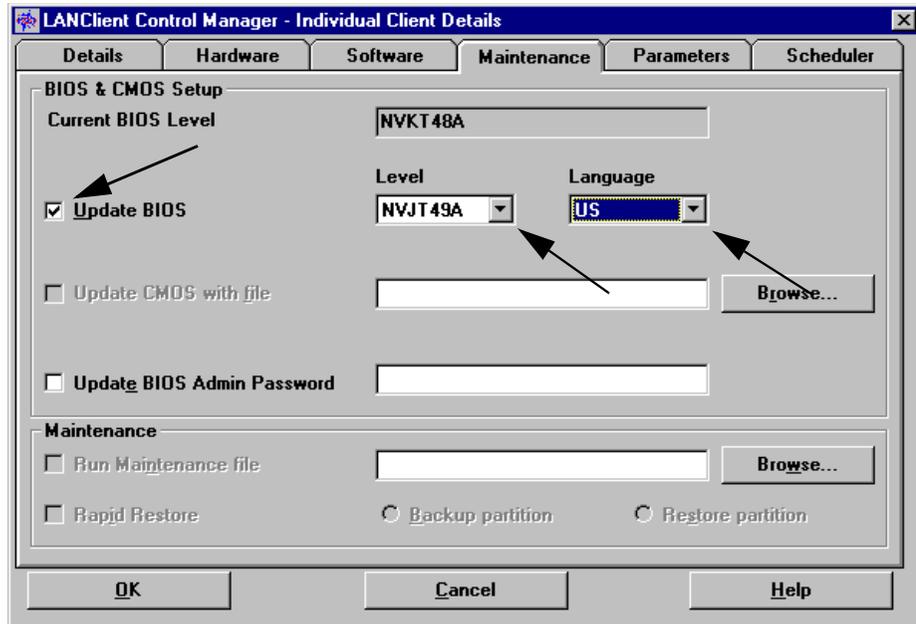


*Figure 104. Selecting BIOS level for update*

We are returned to the LCCM Installation and Maintenance window. Click **Process** to start the remote BIOS flash. For further information on this

procedure please refer to *Using LCCM Functions with Servers and Workstations,* SG24-5292 or the product documentation.

### 2.3.2.2 Changing CMOS configuration remotely

Modifying the CMOS settings for a client is a simple procedure that has elements on both the client and the LANClient Control Manager Server. On the client side, a single machine is be used as the donor for the captured CMOS settings. The resulting CMOS image is then transferred to the LCCM server and distributed over the network to selected machines with the same BIOS level as the donor.

Select a donor machine that has the same BIOS level as the target systems. The CMOS changes can only be transferred to the matching BIOS level that they were captured from. Enter the BIOS Configuration/Setup Utility by pressing the F1 key at the IBM splash screen during system POST. Make the needed modifications to the configuration, save the settings, and reboot to a DOS operating system. For this example we used Windows 98 Second Edition. To capture the CMOS settings, one of three command line utilities is used: `SRCMOS.EXE`, `SRCMOSNV.EXE`, or `CMOSUTIL.EXE`. One of them will be on the BIOS flash disk for the level being modified. Place the appropriate BIOS flash disk in the floppy drive and open a command prompt. For BIOS level 49a the executable `SRCOMOSNV.EXE` is used; therefore, the command to capture the current CMOS configuration would be `A:\SRCMOSNV C:\TEMP\300PL.CMS /CAPTURE`. This creates the file 300PL.CMS in C:\TEMP. Transfer the file containing the captured CMOS settings to the LCCM server. In our example we used  E:\LCCM\CLNTFILE\BIOS\NVJT49A\300PL.CMS.

Make sure that you shut down the target system and power it off.  It should get powered on by the Wake on LAN function.

**Note:** Captured CMOS settings can only be transferred to machines with the same BIOS level as the donor.

**Note:** The CMOS capture utilities will not work at a Windows NT command prompt. Boot a DOS disk to allow the capture of CMOS settings on a Windows NT system.

Move to the LANClient Control Manager server and from the LCCM Installation and Maintenance window, highlight the system you want to open in the Unassigned Clients pane. Click **Client** and choose **Configure** from the drop-down menu.
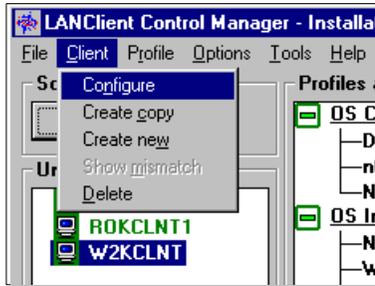
*Figure 105. Opening the individual client settings*

The LANClient Control Manager Individual Client Details window is presented with the Details page open. Click the **Maintenance** tab to reveal the BIOS and CMOS Setup options. Select which CMOS configuration file to use by clicking **Browse** across from Update CMOS with file.
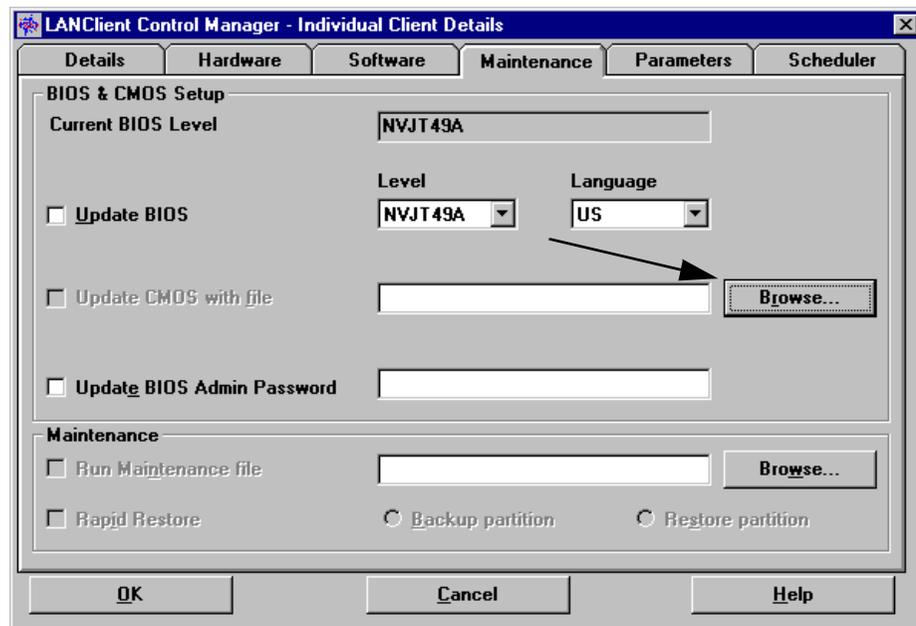


*Figure 106. Selecting CMOS configuration file*

A window requesting the location and name of the file will appear. Navigate to the file's location, highlight it, and click **Open**.
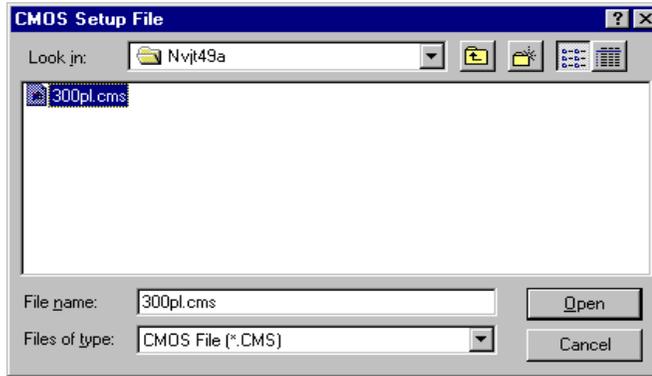
*Figure 107. Locating the CMOS configuration file*

The LANClient Control Manager Individual Client Details window will reappear. Click the **Update CMOS with file** check box and select **OK**.



*Figure 108. Enable Update CMOS with file*

You are returned to the LCCM Installation and Maintenance window. Click **Process** to start the remote CMOS update. For further information on this procedure please refer to *Using LCCM Functions with Servers and Workstations,* SG24-5292 or the product documentation.

## 2.4  Upgrading to Windows 2000 Professional

The simplest path to deploying Windows 2000 Professional is its unattended upgrade capability. The majority of the system configuration settings are migrated to Windows 2000 along with existing data directories and applications that have the capability of being transferred from a legacy software platform. The one major drawback of this process is that the upgrade can only be initiated from within the active target operating system. One way around this restriction is to use Netfinity Director to distribute the task to running clients.

### 2.4.1  Unattended upgrade to Windows 2000 Professional

An unattended upgrade from Windows 98 Second Edition or Windows NT 4.0, Service Pack 6a can be started remotely through a Netfinity Director process

task. The procedure is performed in three parts: system preparation, uninstallation of Universal Management Services, and Windows 2000 Professional unattended installation. Each part, or phase, is executed by a separate Visual Basic Script run under Windows Scripting Host Version 5.1.

The first step in setting up the upgrade process requires the creation of a share point for both the Windows 2000 Professional installation files and the Visual Basic Scripts. In this example, the shared folder has already been created. The directory C:\Archive has been shared as \\23ff458\Archive. We then created a subdirectory called W2KPro and copied the x:\I386 subdirectory from the Windows 2000 Professional CD-ROM to C:\Archive\W2KPro. This will result in a share point called \\23ff458\Archive\W2KPro\I386. An additional directory, C:\Archive\W2KPro\Scripts, was created for the script files. Table 9 on page 87 illustrates the share names and their locations.

*Table 9. Share point for Windows 2000 Migration example*

| Purpose | Directory Name | Share Name |
|---|---|---|
| Windows 2000 installation files share point | C:\Archive\W2KPro\I386 | \\23ff458\Archive\W2KPro\I386 |
| Script file share point | C:\Archive\W2kPro\Scripts | \\23ff458\Archive\W2KPro\Scripts |

Now that the share point has been established the script files can be created. All of the script files used in this example are presented full length in Appendix B, "Scripts for the Windows 2000 upgrade example" on page 335. The first phase of the remote upgrade, system preparation, is performed by BOOST.VBS. The first section of this script sets up the Windows Shell Script and Visual Basic objects used in the rest of the file.

```
' Set up the required objects
Dim WSHShell,FSO
Set WSHShell = WScript.CreateObject("WScript.Shell")
Set FSO = CreateObject("Scripting.FileSystemObject")
Set WSHEnvironment = WSHShell.Environment
```

Next, the script checks to see what operating system is installed and calls the appropriate subroutine. If (WSHEnvironment("OS")="Windows_NT") uses the %OS% Windows NT environment variable to determine if the machine is running Windows NT. If the query indicates that %OS% is equal to Windows_NT then sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%") is executed to set the variable sysdir to the Windows NT installation directory and Call NT() is

used to move us to the NT() subroutine. If the check fails then the environment variable sysdir is set to the Windows 98 installation directory and the subroutine W98() is called.

```
' Check what operating system is running on the target machine, set the sysdir
' variable, and run the appropriate subroutine
If (WSHEnvironment("OS")="Windows_NT") Then
    sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%")
    Call NT()
Else
    sysdir = WSHShell.ExpandEnvironmentStrings("%windir%")
    Call W98()
End If
WScript.Quit
```

The subroutine for Windows NT starts off by copying the Microsoft Windows Resource Kit file SHUTDOWN.EXE from the sharepoint to the target machine from the sharepoint by `FSO.Copyfile`
`"\\23ff458\Archive\W2KPro\Scripts\SHUTDOWN.EXE", sysdir + "\"`. This executable is used to reboot or shut down Windows NT systems from the command line. The next series of instructions, which appear under the Create the Autologon entries to be used with the Startup Folder process section, write the appropriate registry entries to enable an Autologon for the next reboot. `FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\PREUPGRD.VBS",`
`sysdir + "\Profiles\Administrator\Start Menu\Programs\Startup\"` copies PREUPGRD.VBS to the system's Startup folder for the account being used with Autologon. This script is the second part of the upgrade process and will be executed once the system reboots and the contents of the Startup folder are executed. The last entry in this subroutine, `WSHShell.Run "SHUTDOWN /L /R` `/T:0 /Y /C",0`, runs the `SHUTDOWN` command with options that tell the system to immediately reboot the machine.

**Note:** PREUPGRD.VBS cannot be run directly via a task process. PREUPGRD.VBS uninstalls Universal Manageability Services; therefore, once UM Services is removed, the task process is complete and the script will end. Since the system needs to be rebooted after the removal of UM Services the script will not be able to perform this action remotely. That is why the script is set up to be executed automatically on the target system.

**Note:** PREUPGRD.VBS on the Windows NT platform can be placed in a Runonce registry entry. This is not done here to be consistent with the method employed for Windows 98. The method used to reboot Windows 98 has a restriction which prevents the use of Runonce with this script.

```
' Subroutine for Windows NT 4.0 Operating System
Sub NT()
  ' Copy the file needed for rebooting Windows NT
  FSO.Copyfile "\\23ff458\Archive\W2KPro\Scripts\SHUTDOWN.EXE", sysdir + "\"

  ' Create the Autologon entries to be used with the Startup Folder process
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\AutoAdminLogon", 1
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultPassword", "password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultUserName", "administrator"

  ' Copy PREUPGRD.VBS to the Startup Folder
  FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\PREUPGRD.VBS", sysdir +
  "\Profiles\Administrator\Start   Menu\Programs\Startup\"

  ' Reboot the system
  WSHShell.Run "SHUTDOWN /L /R /T:0 /Y /C",0
End Sub
```

The Windows 98 subroutine, W98(), follows the same basic principle as the NT() subroutine. The Microsoft utility TWEAKUI.CPL is copied from the share point to the target machine using the instruction `FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\TWEAKUI.CPL", sysdir + "\system\"`. This file is used to facilitate the Autologon process under Windows 98. The next section, Create the Autologon entries to be used with the Startup Folder process, contains several instructions to write Autologon information to the registry. The entry `WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\RunServicesOnce\Tweak UI", "RUNDLL32.EXE TWEAKUI.CPL,TweakLogon` sets up the TWEAKUI Autologon service to run once, which allows the Windows 98 client to automatically log on. The script now copies the file PREUPGRD.VBS to the target machine's Startup folder for the account set in the Autologon section. This script is the second part of the upgrade process and will be executed once the system reboots and the contents of the Startup folder are executed. The final instruction in the subroutine, `WSHShell.Run "rundll32 shell32.dll,SHExitWindowsEx 2",0`, tells the system to immediately reboot.

**Note:** PREUPGRD.VBS can't be executed from Runonce on a Windows 98 system. SHELL32.EXE is used in conjunction with SHELL32.DLL to reboot the machine. When SHELL32.EXE is called it automatically executes the contents of the Runonce registry entry. Since the last action of the script is to reboot the system, any commands placed in Runonce are immediately executed. PREUPGRD.VBS is placed in the Startup folder of the Autologon account to avoid this problem.

**Note:** `WSHShell.Run "rundll32 shell32.dll,SHExitWindowsEx 2",0` will not work under Windows 95. The SHExitWIndowsEx *function is only supported under Windows 98. To restart a Windows 95 machine try `rundll.exe user.exe, exitwindowsexec EW_REBOOTSYSTEM, 0`. This method has not been tested with the scripts contained in the example.

```
  Subroutine for Windows 98 Second Edition Operating System
Sub W98()
  ' Copy the file needed for AutoLogon under Windows 98
  FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\TWEAKUI.CPL", sysdir + "\system\"

  ' Create the Autologon entries to be used with the Startup Folder process
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\AutoAdminLogon", 1
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultPassword",
"password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultUserName",
"administrator"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\RunServicesOnce\Tweak UI",
"RUNDLL32.EXE TWEAKUI.CPL,TweakLogon"

  ' Copy PREUPGRD.VBS to the Startup Folder
  FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\PREUPGRD.VBS", sysdir + "\startm~1\Programs\StartUp\"

  ' Reboot the system
  WSHShell.Run "rundll32 shell32.dll,SHExitWindowsEx 2",0
```

The next phase of upgrading to Windows 2000 Professional, uninstallation of Universal Manageability Services, is performed by the script PREUPGRD.VBS. The first section of this script sets up the Windows Shell Script and Visual Basic objects used in the rest of the file.

```
  ' Set up the required objects
  Dim WSHShell, FSO
  Set WSHShell = WScript.CreateObject("WScript.Shell")
  Set FSO = CreateObject("Scripting.FileSystemObject")
  Set WSHEnvironment = WSHShell.Environment
```

The script checks to see what operating system is installed and calls the appropriate subroutine. `If (WSHEnvironment("OS")="Windows_NT")` uses the %OS% Windows NT environment variable to determine if the machine is running Windows NT. If the query indicates that %OS% is equal to Windows_NT then `sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%")` is executed to set the variable sysdir to the Windows NT installation directory and Call NT() is used to move us to the `NT()` subroutine. If the check fails then the environment variable sysdir is set to the Windows 98 installation directory and the subroutine W98() is called.

```
' Check what operating system is running on the target machine, set the sysdir
' variable, and run the appropriate subroutine
If (WSHEnvironment("OS")="Windows_NT") Then
  sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%")
  Call NT()
Else
  sysdir = WSHShell.ExpandEnvironmentStrings("%windir%")
  Call W98()
End If
WScript.Quit
```

The Windows NT subroutine starts off in the Create the Autologon entries to be used with the Runonce section by creating the registry entries needed for Autologon. These will be used in conjunction with the reboot required to fully uninstall UM Services and start the Windows 2000 Upgrade process. UM Services is uninstalled next by executing the instruction `WSHShell.Run "%COMSPEC% /C %SystemRoot%\uninsums.exe /u",0`. Script execution is now moved to the Wait() subroutine by Call Wait(). This subroutine monitors the existence of the UM Services uninstallation file. When the file is removed it waits for a brief amount of time and returns control to the section that called it. This is necessary since the command line UM Services uninstaller does not have a reboot option. If the SHUTDOWN command that appears later in the script were called too early the removal of Universal Manageability Services would be interrupted. This subroutine ensures the uninstall of UM Services completes before the NT() subroutine continues. Wait() is examined more closely in Sub Wait() on page 93. After Wait() returns to the NT() subroutine the Runonce registry entry for the next phase, W2KUPGRD.VBS, is added by `WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Runonce\W2KUPGRD", "CSCRIPT \\23ff458\Archive\W2KPro\Scripts\W2KUPGRD.VBS"`

**Note:** Any Runonce registry entries under Windows NT must be made after UMS is uninstalled from the command line. Entries made before the uninstallation will be removed.

A reboot is called next by using the instruction `WSHShell.Run "SHUTDOWN /L /R /T:0 /Y",0`. Finally, just before the system reboots, the file is removed from the Startup folder by `FSO.DeleteFile(sysdir + "\Profiles\Administrator\Start Menu\Programs\Startup\PREUPGRD.VBS")`.

```
' Subroutine for Windows NT 4.0 Operating System
Sub NT()
 ' Create the Autologon entries to be used with the Runonce
 WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\AutoAdminLogon", 1
 WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultPassword",
 "password"
 WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultUserName",
 "administrator"

 ' Running the command to uninstall Universal Management Services
 WSHShell.Run "%COMSPEC% /C %SystemRoot%\uninsums.exe /u",0

 ' Call the subroutine wait which delays reboot until the uninstallation finishes
 Call Wait()

 ' Add the Runonce entry for W2KUPGRD.VBS
 WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Runonce\W2KUPGRD", "CSCRIPT
\\23ff458\Archive\W2KPro\Scripts\W2KUPGRD.VBS"

 ' Reboot the machine
 WSHShell.Run "SHUTDOWN /L /R /T:0 /Y",0

 ' Delete the Startup Folder process
 FSO.DeleteFile(sysdir + "\Profiles\Administrator\Start Menu\Programs\Startup\PREUPGRD.VBS")
End Sub
```

The Windows 98 subroutine mirrors the flow of `NT()`. It begins by writing the Autologon registry entries for the administrator account and creating a RunServicesOnce entry for TWEAKUI.CPL. Next, a Runonce entry is created for the last phase of the Windows 2000 Professional install, and W2KUPGRD.VBS is added by `WSHShell.RegWrite`
`"HKLM\Software\Microsoft\Windows\CurrentVersion\Runonce\W2KUPGRD", sysdir +`
`"\COMMAND\CSCRIPT \\23ff458\Archive\W2KPro\Scripts\W2KUPGRD.VBS"`

**Note:** Uninstalling UM Services under Windows 98 does not disable Runonce entries as it does under Windows NT; however, it does stop RUNDLL32.EXE from automatically running the contents of Runonce. This is why a Runonce entry can be used with Windows 98 in this section.

Once the preparation for the reboot has been completed the uninstallation of UM Services is started by `WSHShell.Run "%COMSPEC% /C %windir%\uninsums.exe`
`/u",0`. As with the NT() subroutine, this process is monitored by the Wait() subroutine which is called by the next entry Call Wait(). Once released by Wait(), the W98() subroutine uses `WSHShell.Run "rundll32`
`shell32.dll,SHExitWindowsEx 2",0` to reboot the system. The last action of the script, just before it restarts, is to execute `FSO.DeleteFile(sysdir +`
`"\startm~1\Programs\StartUp\PREUPGRD.VBS")`. This will remove the file PREUPGRD.VBS from the Startup folder.

```
Sub W98()
  ' Create the Autologon entries to be used with the Runonce
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\AutoAdminLogon", 1
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultPassword", "password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultUserName",
  "administrator"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\RunServicesOnce\Tweak UI",
  "RUNDLL32.EXE   TWEAKUI.CPL,TweakLogon"

  ' Add the Runonce entry for W2KUPGRD.VBS
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Runonce\W2KUPGRD",
  sysdir + "\COMMAND\CSCRIPT \\23ff458\Archive\W2KPro\Scripts\W2KUPGRD.VBS"

  ' Run the command to uninstall Universal Management Services
  WSHShell.Run "%COMSPEC% /C %windir%\uninsums.exe /u",0

  ' Call the subroutine wait which delays reboot until the uninstallation finishes
  Call Wait()

  ' Reboot the machine
  WSHShell.Run "rundll32 shell32.dll,SHExitWindowsEx 2",0

  ' Delete the Startup Folder process
  FSO.DeleteFile(sysdir + "\startm~1\Programs\StartUp\PREUPGRD.VBS")
End Sub
```

The final subroutine in this script, Wait(), monitors the status of the UM Services uninstall process. One of the last files that is deleted by the uninstallation process is UNINSUMS.EXE. `If (FSO.FileExists(sysdir + "\uninsums.exe")) Then` checks to see if the file exists. If it still does, it executes `WScript.Sleep 30000`. This causes the script to delay for 30000 milliseconds. It then calls itself again to complete a loop until UNINSUMS.EXE is removed. Once the file is deleted, the subroutine will hand control back over to the section of script that called it.

```
' Subroutine that waits for the uninstallation of UMS to complete.
Sub Wait()
  If (FSO.FileExists(sysdir + "\uninsums.exe")) Then
    WScript.Sleep 30000
    Call Wait
  End If
End Sub
```

Now that all of the ground work has been laid, the last reboot in this process will call the unattended upgrade installation of Windows 2000 Professional. The final script, W2KUPGRD.VBS, starts off by setting up all of the required objects.

```
' Set up the required objects
Dim WSHShell,WSHNetwork,FSO
Set WSHShell = WScript.CreateObject("WScript.Shell")
Set WSHNetwork = WScript.CreateObject("WScript.Network")
Set FSO = CreateObject("Scripting.FileSystemObject")
Set WSHEnvironment = WSHShell.Environment
```

The next step is to connect to the Windows 2000 Professional sharepoint.
This is accomplished by the instruction `WSHNetwork.MapNetworkDrive "Z:",
"\\23ff458\archive"`. In our example \\23ff458\archive is mapped to Z:.

```
' Map Windows 2000 Professional sharepoint
WSHNetwork.MapNetworkDrive "Z:", "\\23ff458\archive"
```

The script determines what operating system is installed and calls the
appropriate subroutine. `If (WSHEnvironment("OS")="Windows_NT")` uses the %OS%
Windows NT environment variable to determine if the machine is running
Windows NT. If the query indicates that %OS% is equal to Windows_NT then
`sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%")` is executed to set the
variable sysdir to the Windows NT installation directory and Call NT() is used
to move us to the NT() subroutine. If the check fails then the environment
variable sysdir is set to the Windows 98 installation directory and the
subroutine W98() is called.

```
' Check what operating system is running on the target machine and run the appropriate

If (WSHEnvironment("OS")="Windows_NT") Then
  Call NT()
Else
  Call W98()
End If
WScript.Quit
```

The Windows NT 4.0 subroutine, NT(), first removes the Autologon registry
entries using the instructions contained in the Remove the AutoLogon
Registry Entries section. Next, the file SHUTDOWN.EXE is deleted from the
system since it is not longer needed. The last instruction `WINNTCMD =
WSHShell.Run("%COMSPEC% /C Z:\W2KPro\I386\WINNT32
/UNATTEND:Z:\W2KPro\Scripts\NT4UPGRD.TXT",1,TRUE)` starts the Windows 2000
Professional upgrade from the Windows NT 4.0 platform. `WINNT32.EXE` is run
from the Z:\W2KPro\I386 directory on the distribution point and the answerfile
NT4UPGRD.TXT is pulled from Z:\W2KPro\Scripts\.

```
' Subroutine for Windows NT 4.0 Operating System
Sub NT()
  ' Remove the AutoLogon Registry Entries
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\AutoAdminLogon")
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultPassword")
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultUserName")

  ' Remove the Windows NT Shutdown utility
  FSO.DeleteFile(WshShell.ExpandEnvironmentStrings("%SystemRoot%" + "\SHUTDOWN.EXE"))

  ' Run the Windows 2000 Professional upgrade
  WINNTCMD = WSHShell.Run("%COMSPEC% /C Z:\W2KPro\I386\WINNT32
  /UNATTEND:Z:\W2KPro\Scripts\NT4UPGRD.TXT",1,TRUE)
End Sub
```

NT4UPGRD.TXT instructs Windows 2000 Professional to perform a full
unattended upgrade of Windows NT 4.0. It will attempt to use all of the
settings from Windows NT to guide the installation of Windows 2000. For
further information on the creation of Windows 2000 Professional unattended
installation answer files please refer to Microsoft's White Paper *Deployment
Guide: Automating the Windows 2000 Upgrade* and *MS Windows 2000
Unattended Setup Parameters Guide.* Both may be found at:
`http://www.microsoft.com/technet/win2000/` by searching for the document
title.

```
[Unattended]
Unattendmode = FullUnattend
OemPreinstall = No
OemSkipEula = Yes
NtUpgrade = Yes

[UserData]
ProductID = XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
```

The Windows 98 subroutine, W98(), follows the same basic path as NT(). It
starts by removing the registry entries associated with Autologon. This is
done in section Remove the Autologon Registry Entries. The next section
removes the TWEAKUI.CPL file using
`FSO.DeleteFile(WshShell.ExpandEnvironmentStrings("%WinDir%" +
"\system\TWEAKUI.CPL"))`. The final instruction for Windows 98 in this script
initiates the Windows 2000 upgrade. `WIN98CMD = WSHShell.Run("%COMSPEC% /C
Z:\W2KPro\I386\WINNT32 /UNATTEND:Z:\W2KPro\Scripts\W98UPGRD.TXT",1,TRUE)`
runs `WINNT32.EXE` from the distribution share Z:\W2KPro\I386\ using the
answer file W98UPGRD.TXT. The answer file is kept in Z:\W2KPro\Scripts.

```
' Subroutine for Windows 98 Second Edition Operating System
Sub W98()
 ' Remove the AutoLogon Registry Entries
 WSHShell.RegDelete("HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\AutoAdminLogon")
 WSHShell.RegDelete("HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultPassword")
 WSHShell.RegDelete("HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultUserName")

 ' Remove the Windows 98 AutoLogon utility
 FSO.DeleteFile(WshShell.ExpandEnvironmentStrings("%WinDir%" + "\system\TWEAKUI.CPL"))

 ' Run the Windows 2000 Professional Upgrade
 WIN98CMD = WSHShell.Run("%COMSPEC% /C Z:\W2KPro\I386\WINNT32
 /UNATTEND:Z:\W2KPro\Scripts\W98UPGRD.TXT",1,TRUE)
End Sub
```

W98UPGRD.TXT instructs Windows 2000 Professional to perform a full unattended upgrade of Windows 98 SE. It will attempt to use all of the settings from Windows NT 4.0 to guide the installation of Windows 2000. For further information on the creation of Windows 2000 Professional unattended installation answer files please refer to Microsoft's White Paper *Deployment Guide: Automating the Windows 2000 Upgrade* and *MS Windows 2000 Unattended Setup Parameters Guide*. Both may be found at `http://www.microsoft.com/technet/win2000/` by searching for the document title.

```
[Unattended]
Win9xUpgrade=yes

[UserData]
ProductID=XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

[Win9xUpg]
```

To create the process task for the unattended upgrade of Windows 2000 Professional start at the IBM Netfinity Director Console and expand Process Management under the Tasks pane. Right-click **Process Tasks** and choose **Open**.
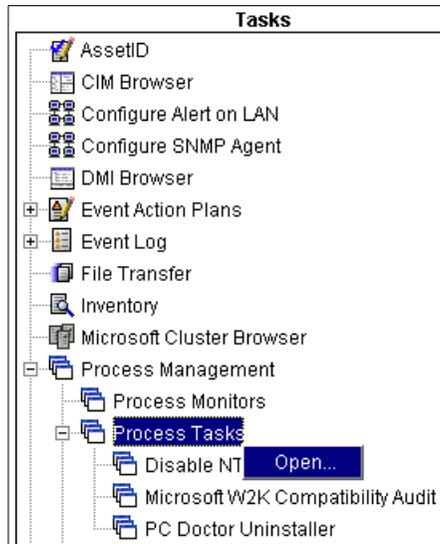
*Figure 109.  Creating the Windows 2000 Professional upgrade task*

When the Process Task window appears enter
`\\23ff458\Archive\W2KPro\Scripts\BOOST.VBS`  in the Command field. In the
Login section, provide the user ID and password for an account with the
appropriate permissions to execute the command. Click **File** and select **Save
As** from the pull-down menu.
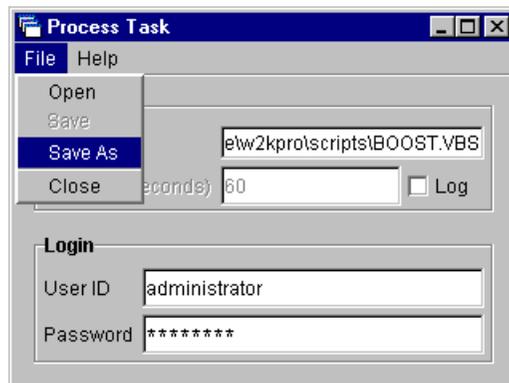


*Figure 110.  Saving the Windows 2000 Professional upgrade task*

In the Save As window enter a name for the task and click **OK**.
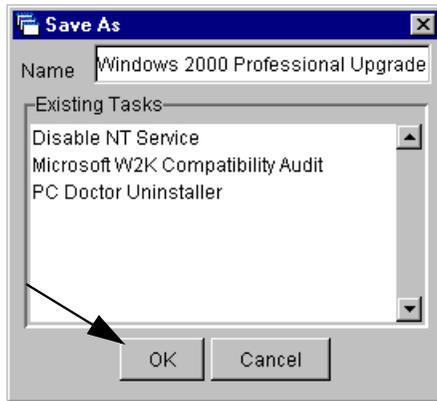
*Figure 111. Naming the Windows 2000 Professional upgrade task*

Close the Process Task window. The new task should appear under Process Tasks in the Tasks pane.
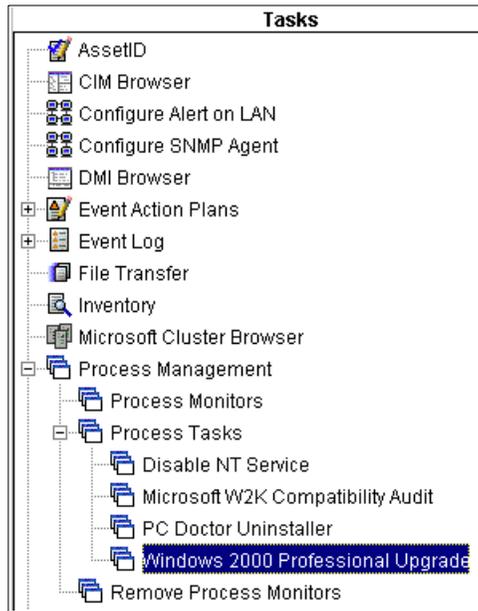


*Figure 112. The Windows 2000 Professional upgrade task.*

To execute the upgrade process on a single remote machine, drag and drop the client from the Group Contents pane on to the task. To assign multiple machines to the task, use a group from the Groups pane containing the desired systems. Either action will cause a window to appear asking how you

want the job executed. It can be canceled, executed now, or scheduled for a later date. Click **Execute Now** to run the Windows 2000 Professional upgrade process immediately.
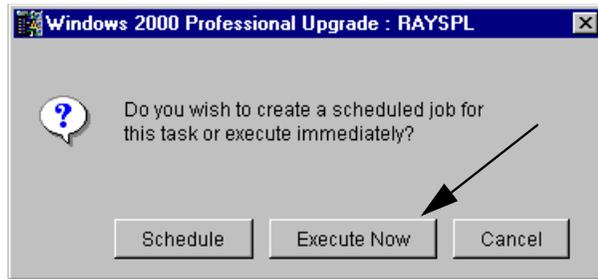


*Figure 113. Scheduling the Windows 2000 Professional upgrade task*

The Execution History window gets presented detailing the status of the task.
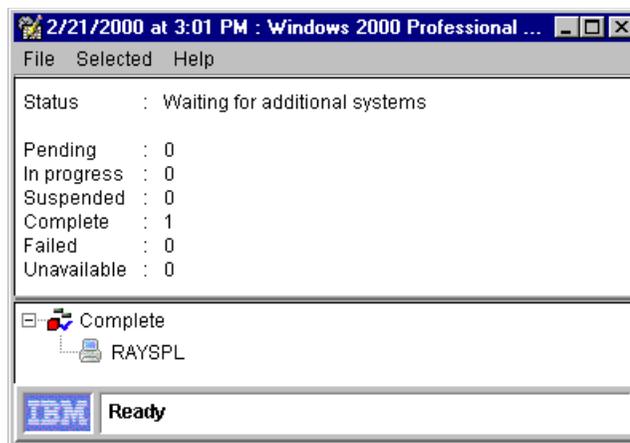


*Figure 114. Execution history for the WIndows 2000 upgrade process task*

Once all of the systems have finished processing, the upgrade will have begun on the target systems. This is indicated by a series of three reboots and on the final restart, windows relating to the upgrade will be presented.
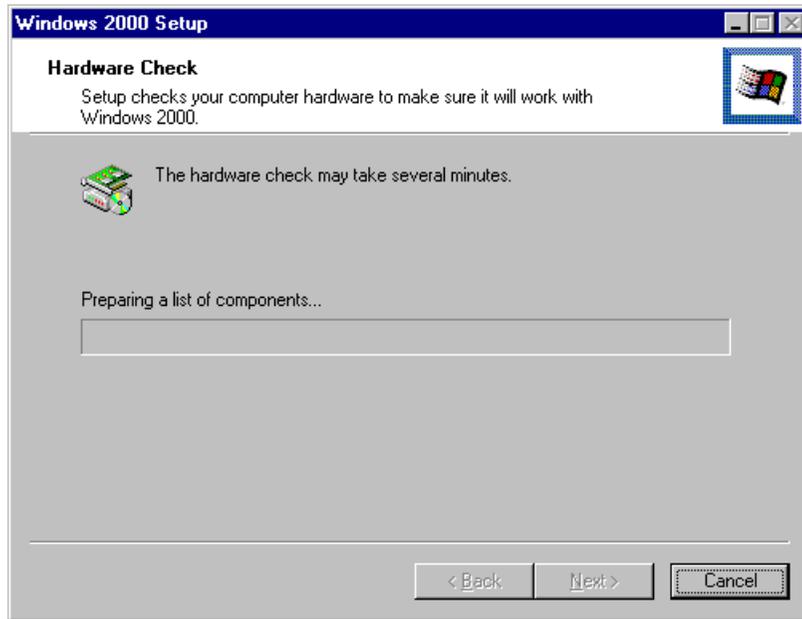
*Figure 115.  The Windows 2000 Professional process task running*

# Chapter 3. Unattended Windows 2000 deployment for new systems

This chapter shows how to use LCCM for deploying Windows 2000 on new systems (not upgrades). This is done for both a client and a server.

## 3.1 LCCM

LANClient Control Manager (LCCM) is IBM's tool for automating the deployment of operating systems as well as additional applications. As a part of the Universal Manageability offering it simplifies the deployment procedures, and once it is set up, allows for the repetition of that process.

For the most current information on LCCM or for downloading installation code and updates, please go to:

`http://www.pc.ibm.com/us/desktop/lccm/`

Our intention for this chapter is to show the use of LCCM in deploying Windows 2000 operating systems on typical IBM machines. In our examples we set up two different scenarios:

1. Unattended installation of Windows 2000 Professional on an IBM PC 300PL

2. Unattended installation of Windows 2000 Server on an IBM Netfinity 3000

Together with the operating system, it is often necessary to install additional applications. This is shown in our examples using a utility within LCCM called DiffTool. Norton AntiVirus was chosen as an example application.

For all client examples in this chapter we used the following hardware environment: PC 300PL desktop machines and Netfinity 3000 Servers connected to the network using on-board Etherjet controllers through an IBM 8222 10 Mbps Ethernet hub.

The LCCM server was installed on a Windows NT Server machine with Service Pack 6a. Another machine was running the Microsoft DHCP service. For a detailed description of LCCM and the installation and setup procedure, please see *Using LCCM Functions with Servers and Workstations,* SG24-5292 and readmeSP3.txt file from Service Pack 3.

To be able to deploy Windows 2000 clients, it is necessary to upgrade the LCCM V2.5.1 code with Service Pack 3.

**Note**: We were working with beta code, because Service Pack 3 was not generally available at the time this book was written.

To upgrade to SP3, log on to the server using an account with administrative privileges. Make sure that LCCM is not running and execute the downloaded file lccmsp3.exe.The upgrade process preserves the settings and existing profiles. Following are the new features in SP3:

- Profile wizard supports unattended installation of Windows 2000 Professional, Server and Advanced server.
- Profile wizard supports unattended installation of Windows 98 with the latest Service Pack 1 and Windows 98 Second Edition.
- Profile wizard supports Windows NT 4.0 Service Packs 3, 4, 5, 6 and 6a.
- Profile wizard allows true maximum size NTFS and FAT32 partitions.
- New IBM systems and network adapters are supported. For the complete list please see the updated *Compatibility and Configuration Guide* on the following IBM Web page:

        http://www.pc.ibm.com/us/desktop/lccm/compat.html

- Profile wizard supports installing IBM UM Services V2.11 (instead of UMA) as part of an unattended installation profile.
- Profile wizard supports built-in integration with IBM System Migration Assistant V2.1.
- DiffTool supports application installation during Windows 2000 Professional, Server and Advanced Server unattended installation.

You can find a complete list of changes and additions in the readmeSP3.txt file that comes with the Service Pack 3 installation file.

### 3.1.1  Unattended install of Windows 2000 Professional on a client

After you have successfully scanned in the clients (using the procedure described in the redbook *Using LCCM Functions with Servers and Workstations,* SG24-5292) and before you can start the actual deployment, the installation profile, which contains various configuration files and parameters, needed for the LCCM installation, has to be created. The easiest way to do this is by using the Profile wizard.

The Profile wizard leads you through a series of windows, asking questions about options necessary for the installation.

#### 3.1.1.1  Creating a software profile using the Profile wizard

Start the LCCM program if it is not already started and click **Profile -> Create new**.
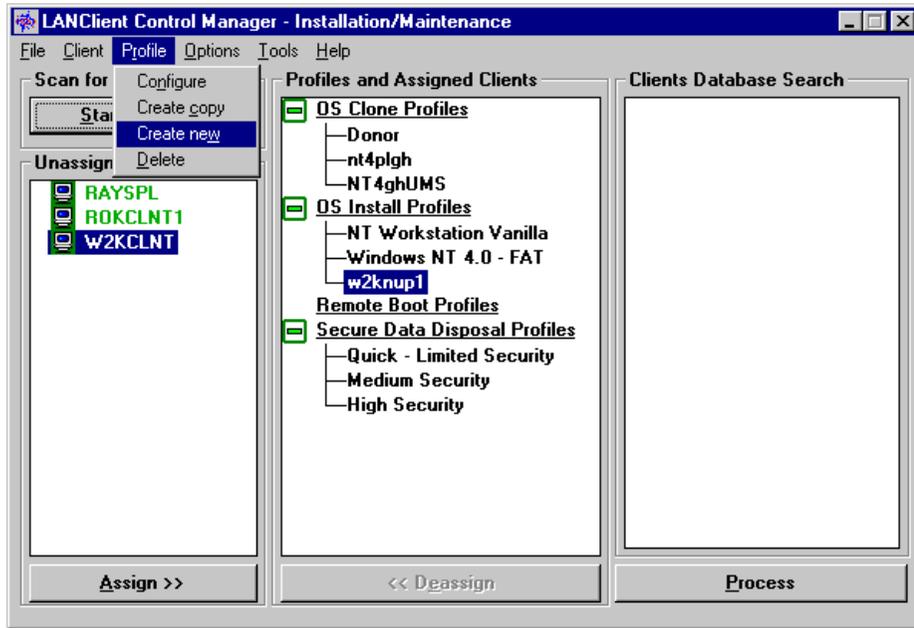
*Figure 116. Creating new profiles*

A pop-up window asks whether you want to create a profile manually or use a wizard. Click **Use the Profile Wizard**.
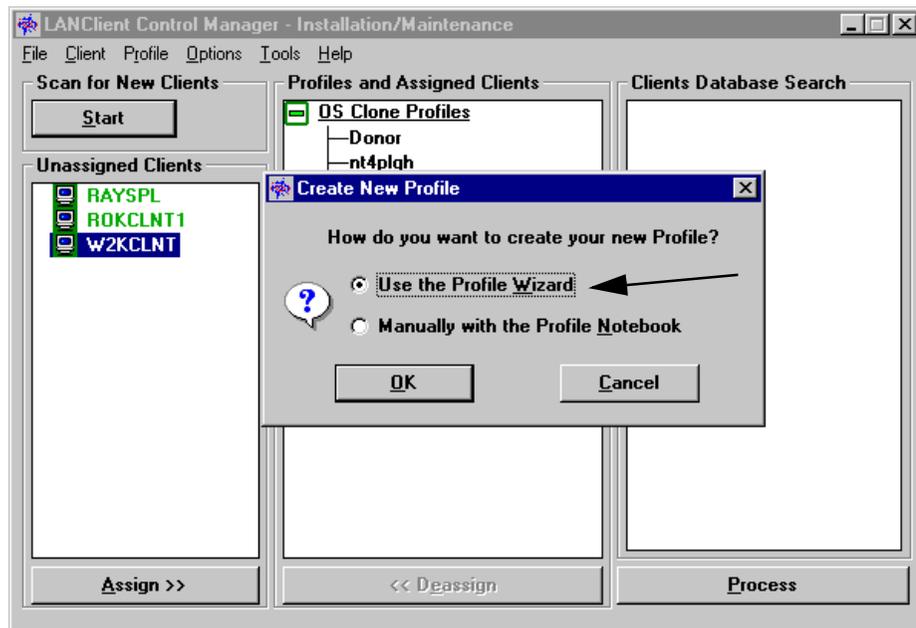
*Figure 117. Starting the Profile Wizard*

The welcome screen is opened. Here you are asked to provide the following information:

- Profile Name: Enter desired name, which identifies this profile later in the Profiles and Assigned Clients pane of the main LCCM window.

- Installation method: Select **Unattended Install** and select the check box **Do you also want to install applications with this profile?**

- Operating system you wish to install: Select **Windows 2000 Professional.**
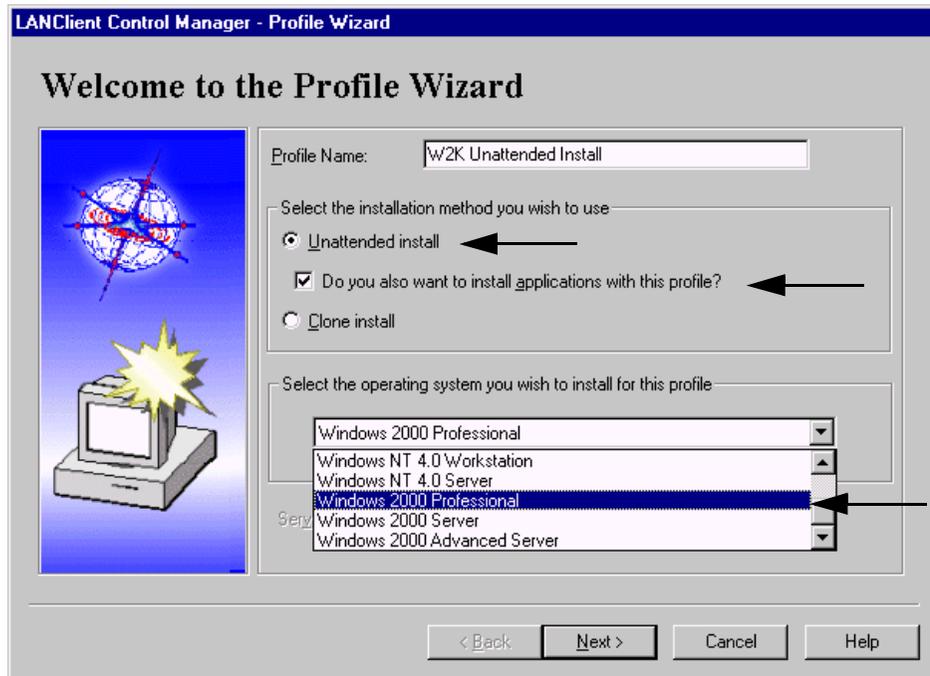
*Figure 118.  Profile Wizard*

In the next window select the language for the Windows 2000 Professional
operating system you would like to install:

*Figure 119. Supported international language selection*

If your machine has a RAID adapter installed click **Yes, the target clients have RAID adapters installed** check box and specify file name and location of an existing RAID configuration, then click **Next**.
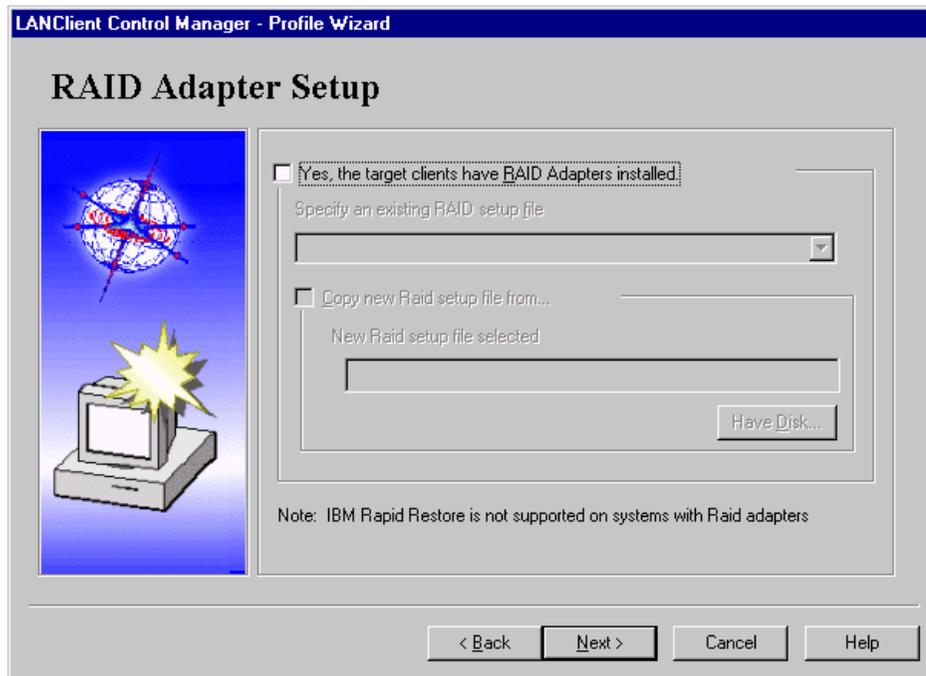
*Figure 120. RAID Adapter Setup*

If you want to create a local backup of the entire client installation partition click **Yes, create a hidden local copy of the entire client image** option in the next window.

If this option is enabled, the maximum size of the working partition will be limited to half of the available hard disk space minus 5 MB used for administrative purposes.

For a detailed explanation of the Rapid Restore please see 3.1.3, "Rapid Restore" on page 169 or the *LCCM V2.5.1 Training and Procedures Guide*.

**Note:** If you have selected the RAID option on the previous window, the Rapid Restore option will not be available.
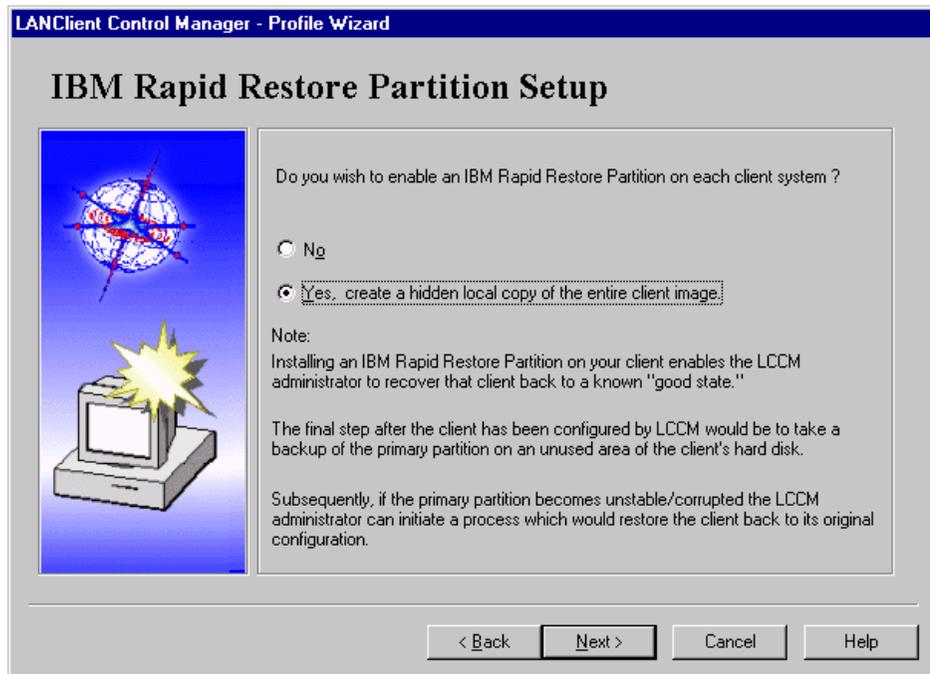
*Figure 121. IBM Rapid Restore Partition Setup*

Next, you specify the size and organization of the client's hard disk. The following options are available:

1. Single partition of fixed size

2. Single partition using maximum available space

3. First partition of fixed size, and second partition using remaining allowed space

Select appropriate option and insert the partition size value for options 1 and 3.

You also have to decide on the file system to be used for formatting all client partitions. Choose from:

- FAT16
- FAT32
- NTFS

**Note**: To install the Windows 2000 operating system using the Profile Wizard the minimum installation partition size is 1800 MB. If you want to install on a

smaller partition, you need to create the profile manually, but we do not recommend you do it manually.
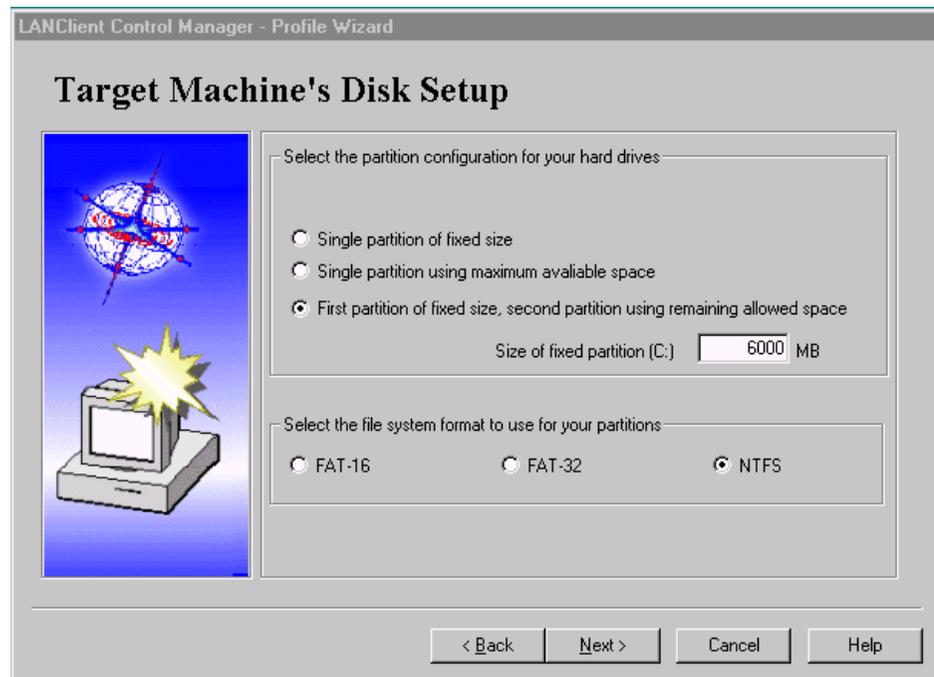


*Figure 122. Target Machine's Disk Setup*

**Note**: NTFS formatting of a selected partition is done for you automatically. It starts with a FAT32 partition and then it automatically converts it for you to NTFS.

From the Profile Customization window you can customize the installation profile by providing the Company Name (this is required by the operating system installation procedure).

If you want to change the background of the client computer click the **Specify bitmap to be used as default desktop wallpaper** check box and select the bitmap file name and location.

If your company uses multi-user licensing, you can enter the CD key in the space provided.
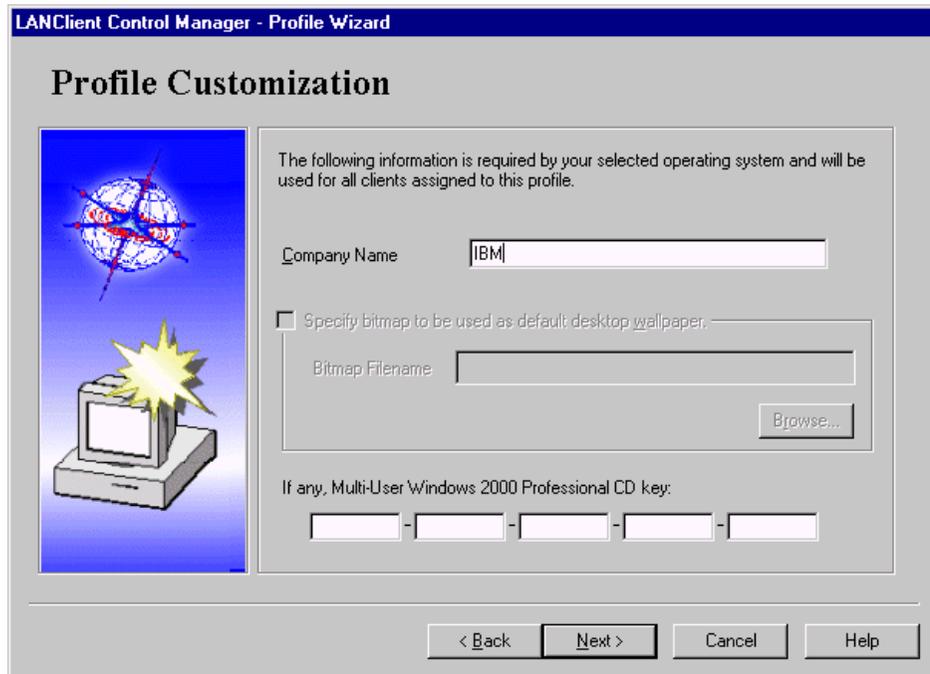
*Figure 123. Profile Customization*

LCCM can be used to deploy the user settings, previously collected using the System Migration Assistant (SMA). Select the SMA check box to enable this option during the Profile wizard creation. For a more detailed SMA explanation please refer to 5.1, "System Migration Assistant" on page 211.

*Figure 124. Deploying user settings gathered previously with SMA*

Select the appropriate time zone in the Regional Settings window:
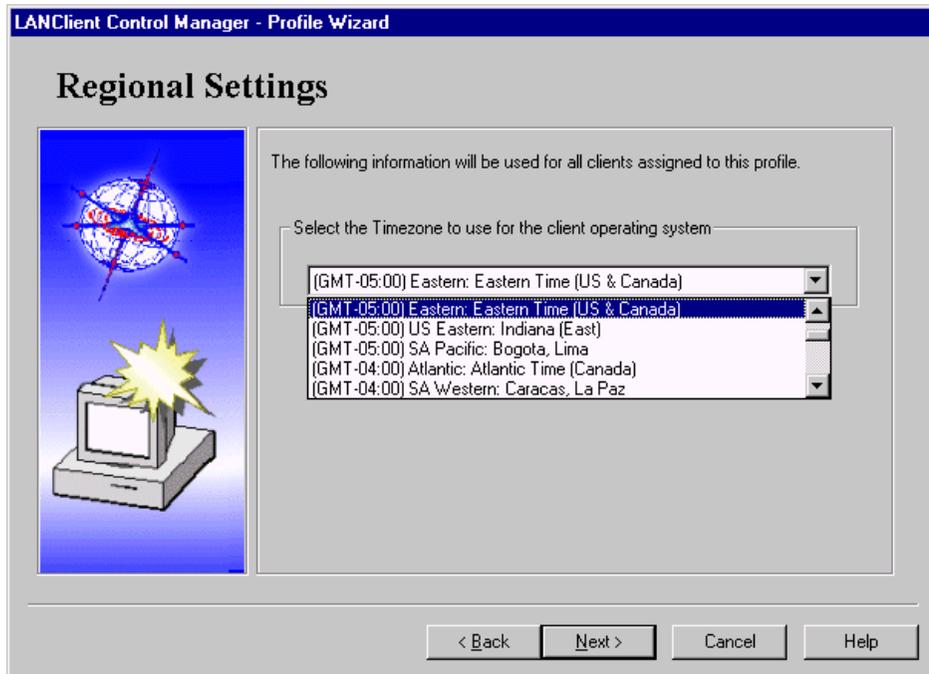
*Figure 125.  Regional Settings*

Next, several windows concerning networking settings appear. On the first, as shown in Figure 126 on page 113, choose between Workgroup or Domain according to the networking environment into which this client will connect. Enter the workgroup/domain name as well.

In order to be able to connect with this client, at least one of the provided network protocols has to be enabled (NetBEUI and TCP/IP are enabled by default).
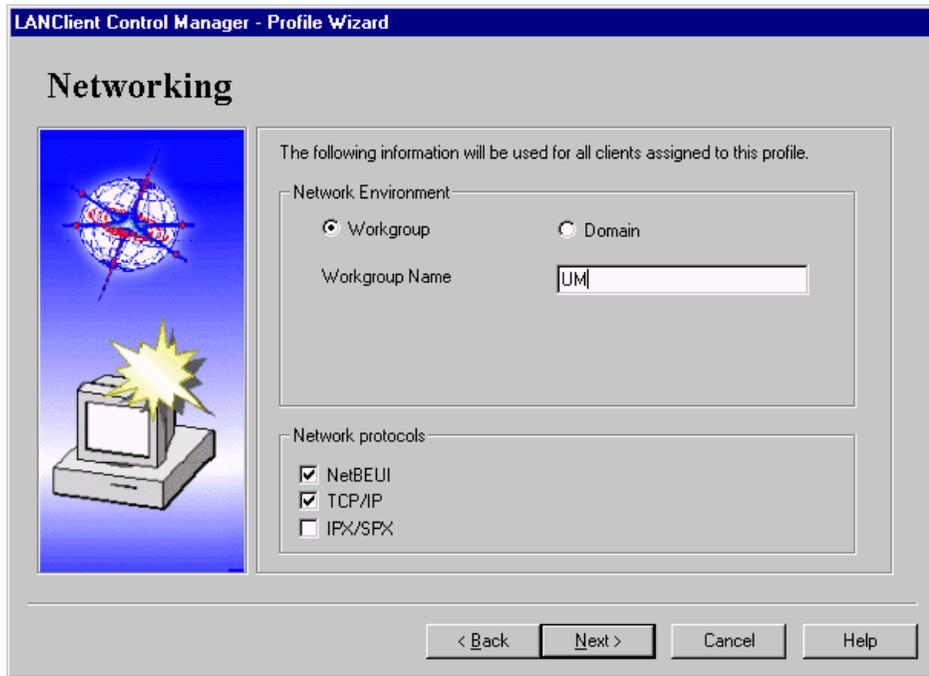
*Figure 126. Workgroup/Domain and network protocol selection*

If you selected TCP/IP, you have to decide how the client will get its IP address. Click **Obtain IP addresses from a DHCP Server** to configure the client dynamically or select **Configure TCP/IP settings manually** and enter the subnet mask and Default gateway (optional) information.
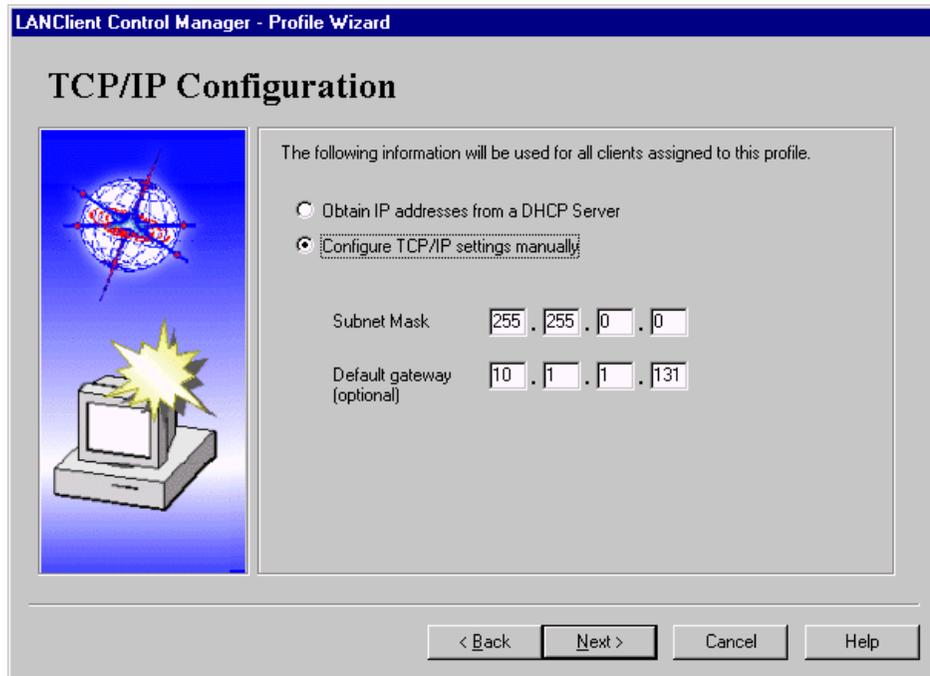
*Figure 127.  TCP/IP Configuration window*

If static TCP/IP configuration was selected, the next window pops up so you can configure WINS or DNS services for the client.
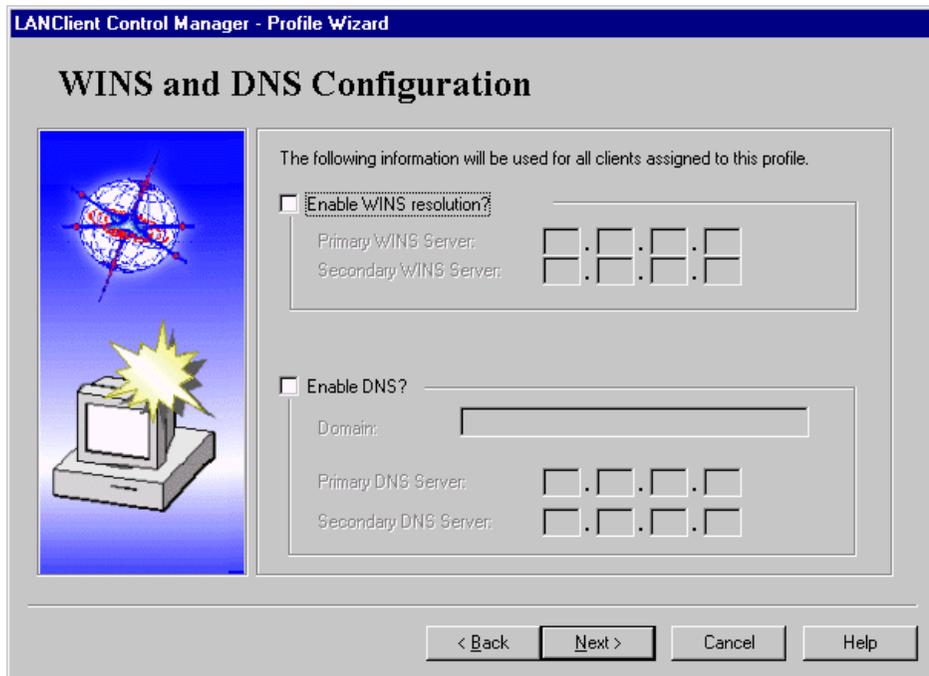
*Figure 128. WINS and DNS Configuration window*

In the following window you can select additional applications to install along with the operating system.

**Note**: If there are no applications available with this operating system you can use the DiffTool (before you create the profile) to add an application to the LCCM client deployment process. For the detailed procedure please refer to 3.1.1.3, "Adding applications to LCCM using DiffTool" on page 135.
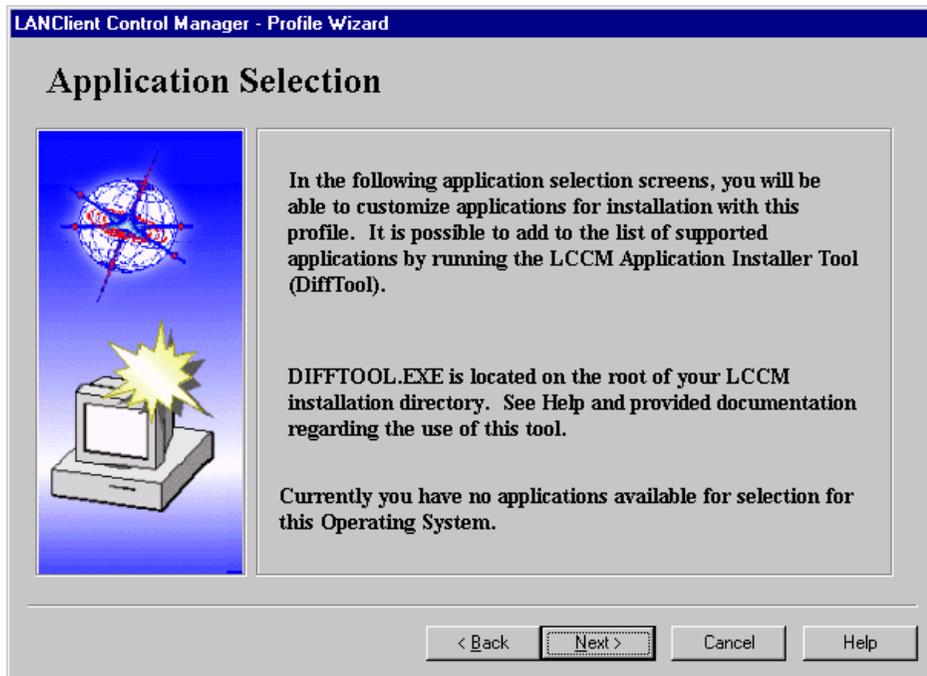
*Figure 129.  Application Selection window*

Now the Profile Summary window appears. Here you can verify the settings of the current profile and type in the description for this profile. If you want to make some changes to the profile just click the **Back** button to the desired page. To proceed, click the **Next** button.
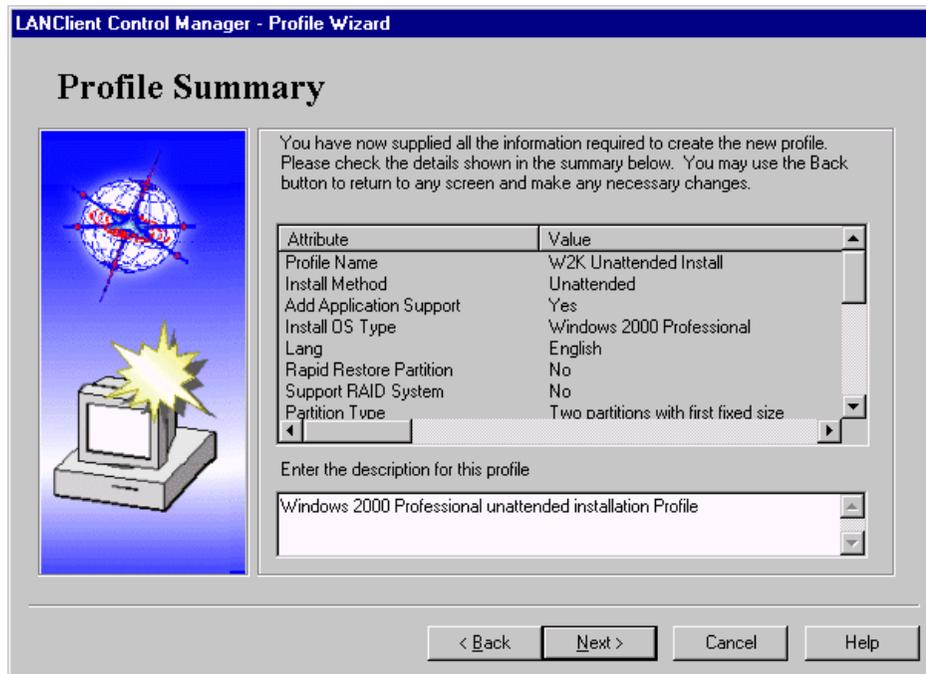
*Figure 130. Profile Summary window*

Next you will start creating the installation images for the selected operating system and applications by clicking the **Build images** button.

*Figure 131. Image Building window*

On the confirmation window select **Yes** to start building the image(s).
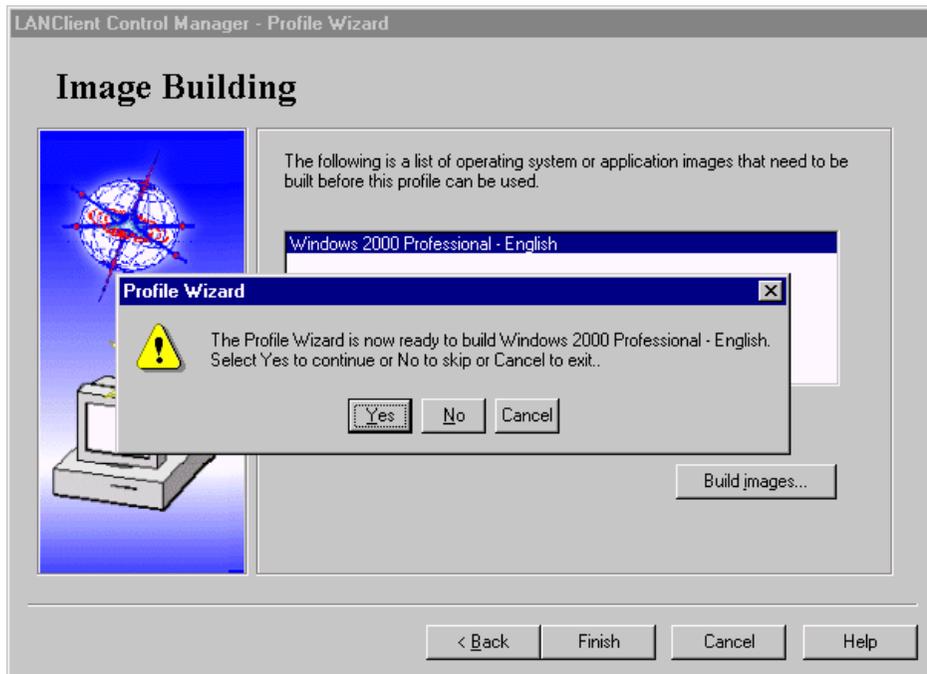
*Figure 132. Image Building confirmation window*

In the next step you have to provide the file name and location of the operating system's installation file. In our case it is the Winnt.exe file on the Windows 2000 Professional installation CD.
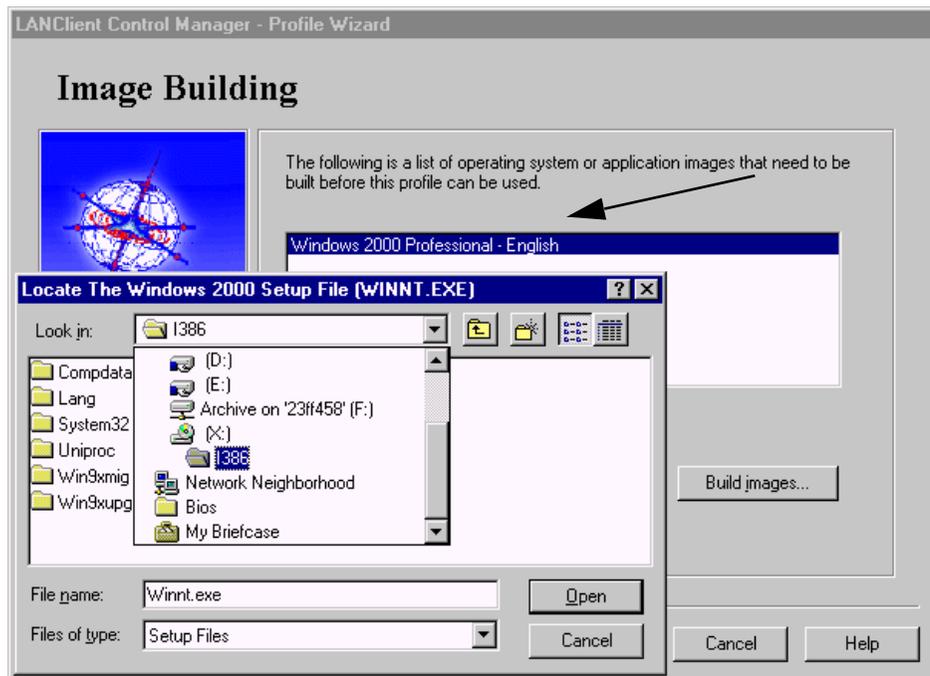
*Figure 133. Locating image files*

The Profile wizard will copy the Windows 2000 Professional installation files from the CD's I386 directory to the \LCCM\Clntfile\W2KPROF\eng directory on the LCCM server.
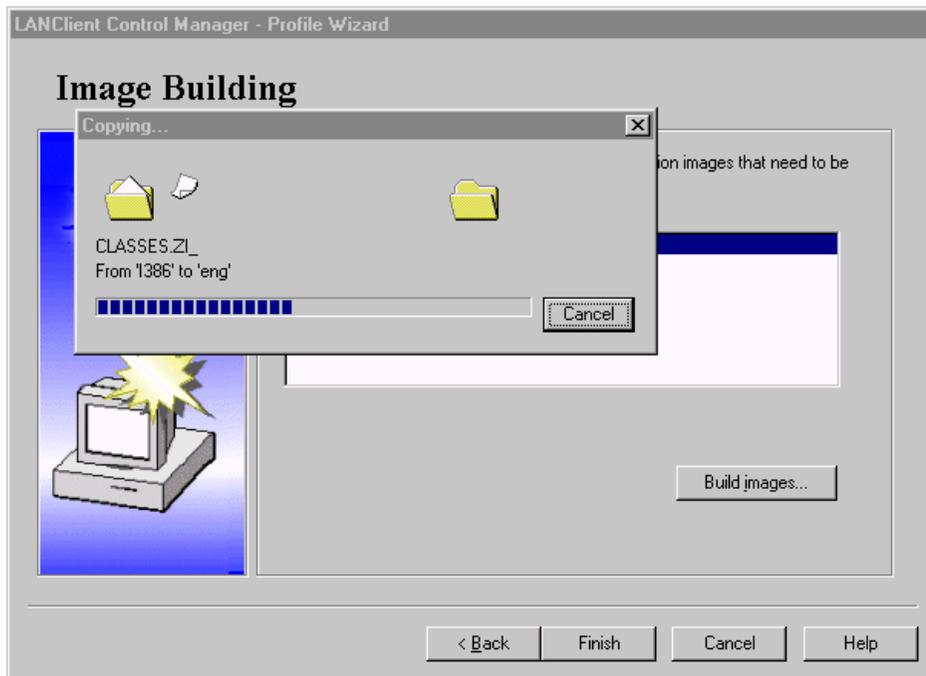
*Figure 134. Copying image files*

Click **OK** when the copying is finished.
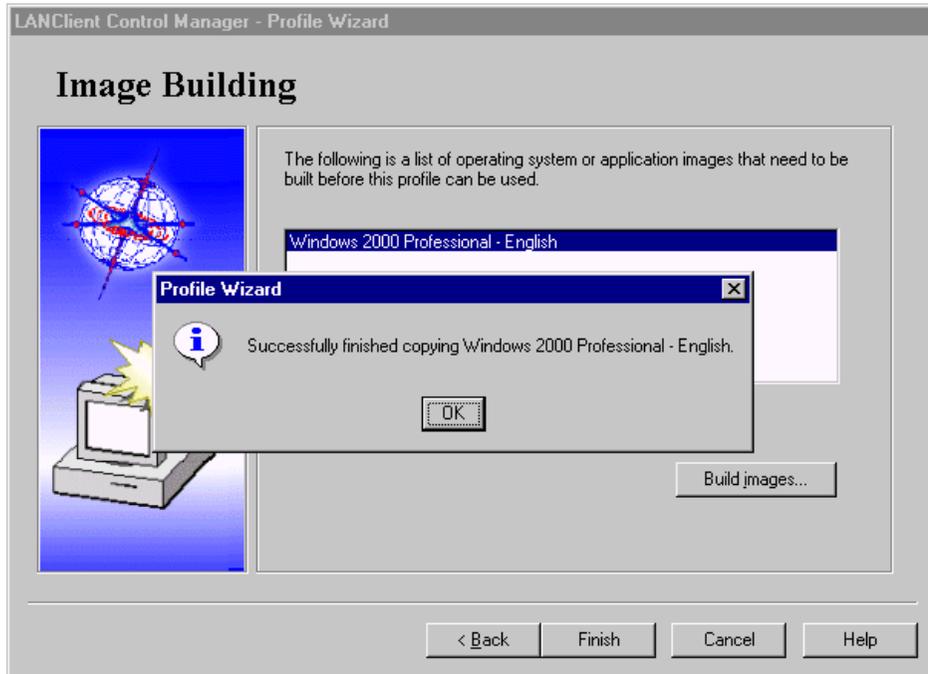
*Figure 135. Finished copying image files*

Now the installation profile is created and can be used to deploy the clients. So, let's step through the deployment process for installing the Windows 2000 Professional using the LCCM.

### 3.1.1.2 Assigning the client to the installation profile

There are mandatory client parameters such as computer name, operating system license key, and computer description, which have to be provided for every client installation. The Client Assignment wizard is a program that asks you for these parameters and fills them into the installation profile before the client is processed. This enables you to perform unattended deployments.

**Note:** You should go through this procedure for every client that needs a parameter initialized.

If the client computer meets the hardware requirements defined by the Windows 2000 Professional operating system (the procedure to determine this is described in 2.2.1, "Use Netfinity Director to determine hardware and software" on page 35), you can start the actual deployment by dragging the client icon to the middle pane of LCCM and dropping it onto the previously created installation profile, as shown in Figure 136. The advantage of using

LCCM and Netfinity Director together is, you can first make sure you have the right hardware, and then use LCCM for the deployment.
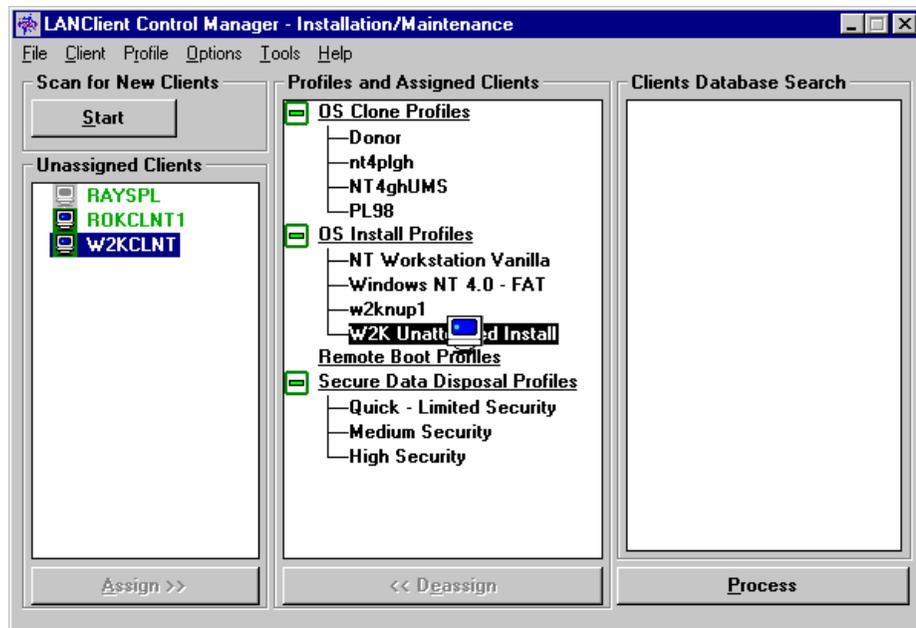


*Figure 136. Starting the assignment wizard*

The Client Assignment starts automatically and presents the welcome window. The client name and the software profile to be deployed on it are shown.
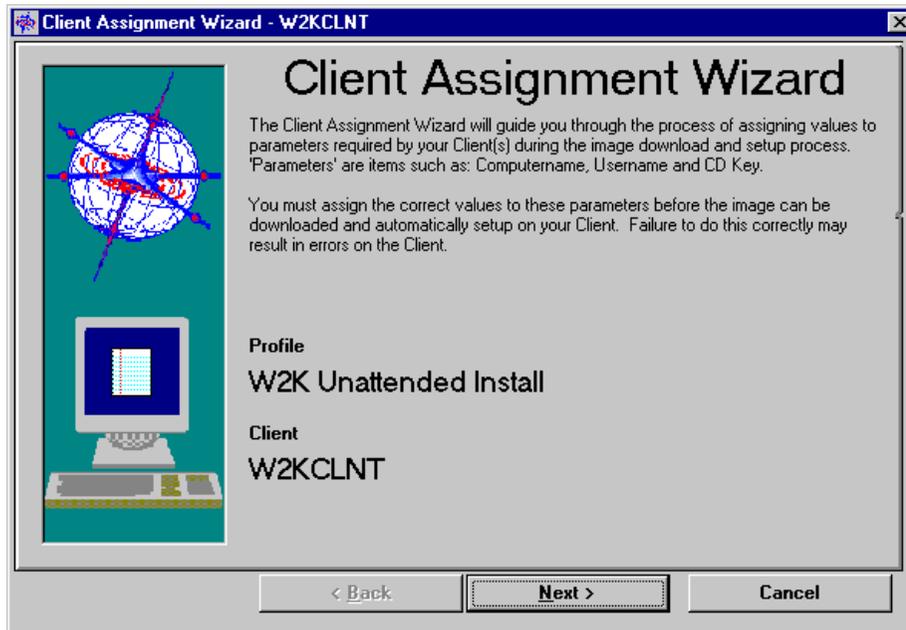
*Figure 137.  Client Assignment Wizard*

The first parameter you should type into the Customized Value field is the name of the registered user for this client.

If there were some default values defined when creating the software profile they would appear under Default Value (a procedure of entering default values and skipping assignment wizard is described later in 3.1.2.2, "Assigning the client using the default values" on page 165).
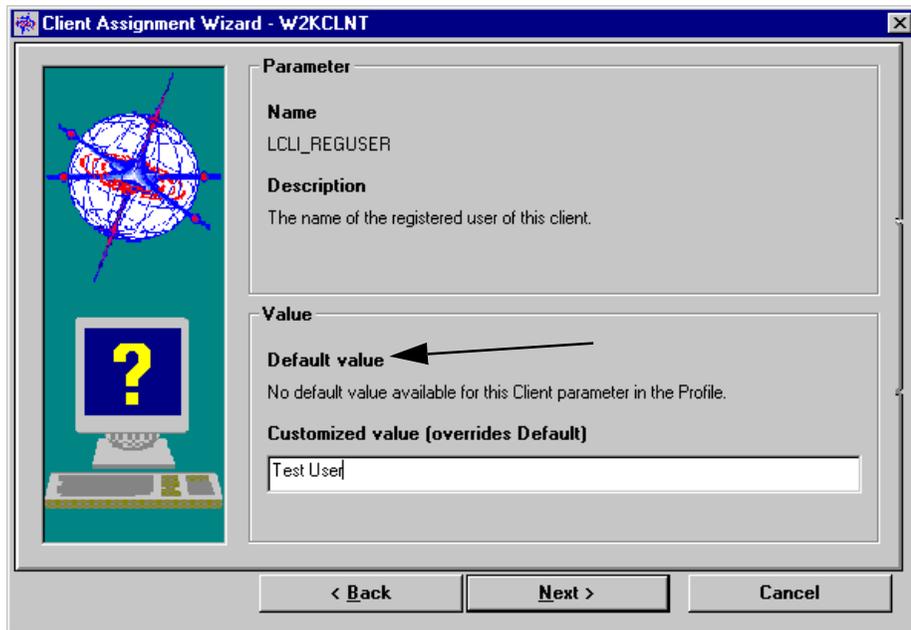
*Figure 138.  Registered user*

Enter the first part of a valid Windows 2000 Professional license key (usually it is written on the backside of the installation CD case). Be careful of the format, which includes a dash as the last character.
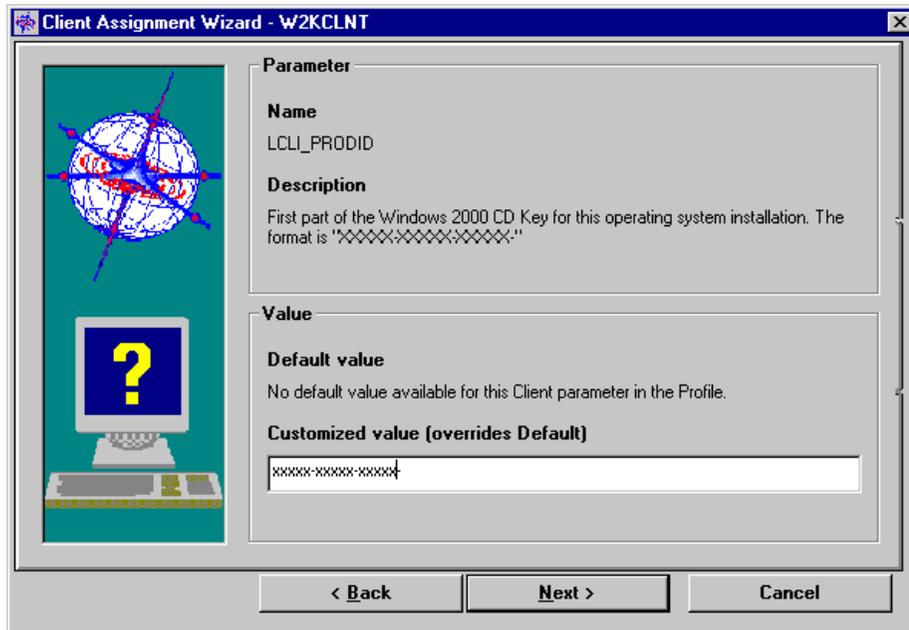
*Figure 139.  First part of the license key*

Type in the remainder of the license key as the second part.
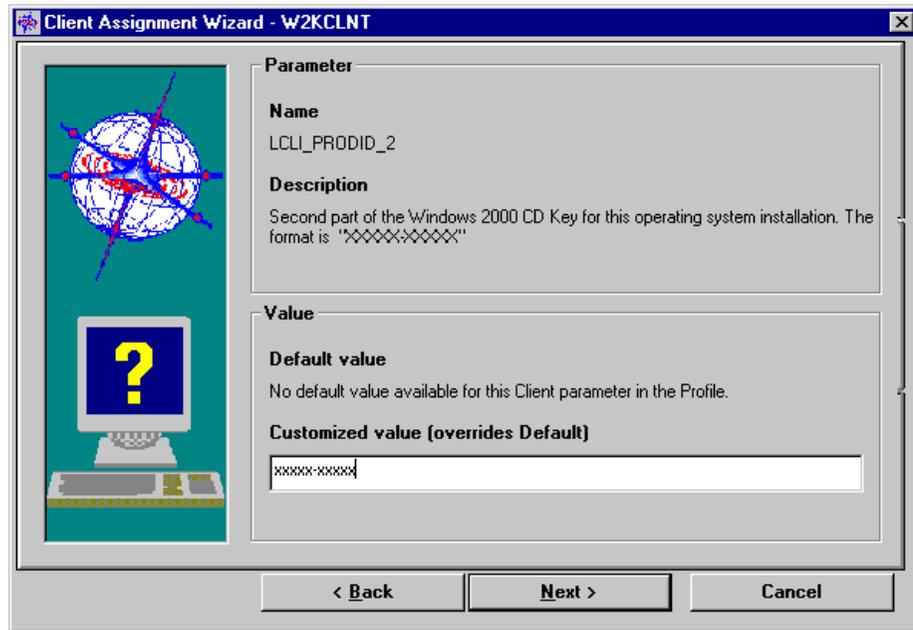
*Figure 140. Second part of the license key*

The default logon user ID should be entered. This is the user ID you will use for the first logon of the client. The wizard is not asking for the password. Your first logon (after deployment) will be with an empty password field, and you will be required to change the password at that time.
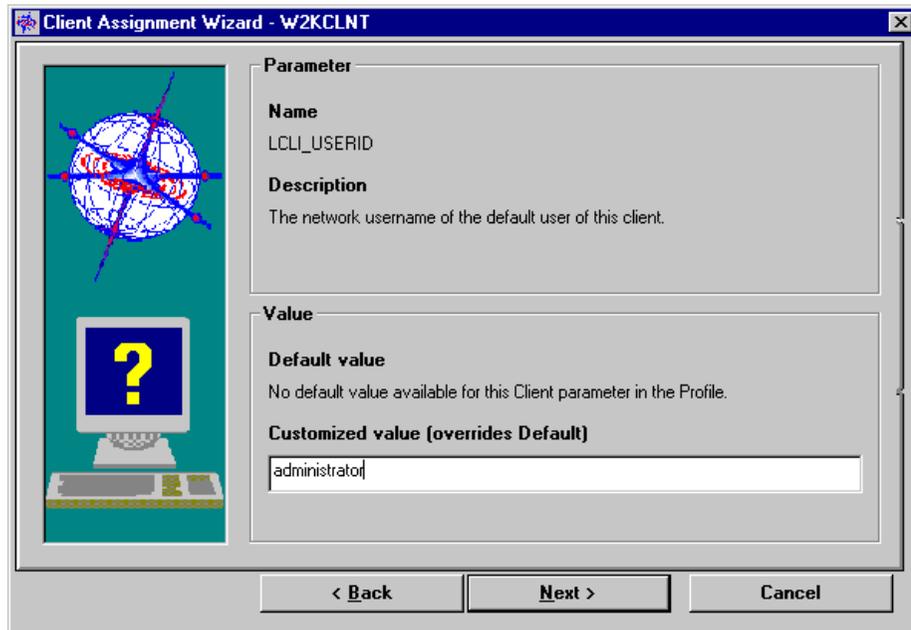
*Figure 141.  Default user ID*

The next parameter that is requested is the description of the client computer. This appears in the Network Identification tab in System Properties when the client is installed. Enter it into the Customized Value field and click **Next**.
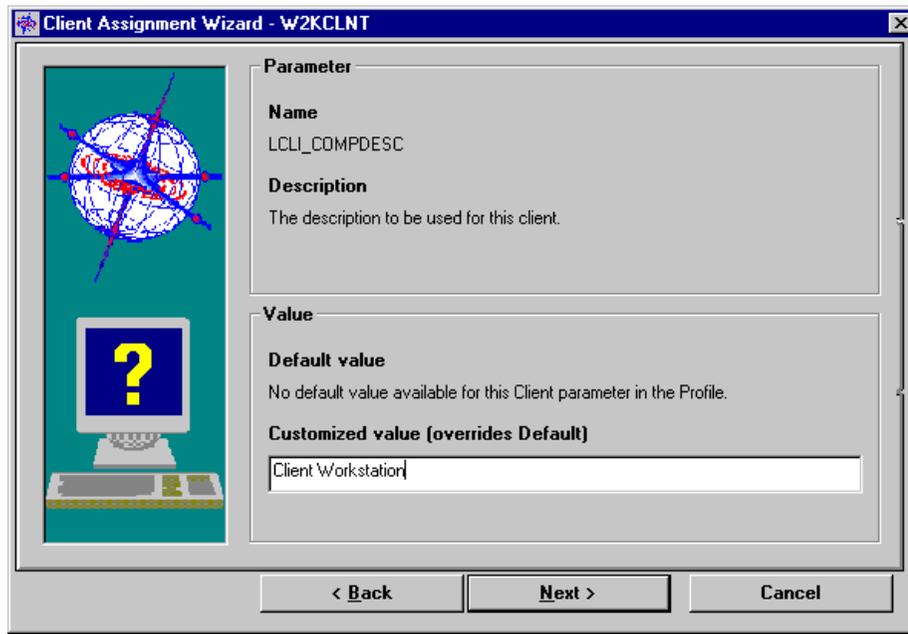
*Figure 142. Computer description*

**Note**: If you chose a static IP configuration with this installation profile (as shown in Figure 127 on page 114) you will be asked to provide a specific IP address for this client. In this profile we selected the dynamic IP configuration.

If you selected the SMA option for this software profile, two additional windows will appear asking you to provide details about the SMA profile name and location. Type in the name of the SMA profile first:
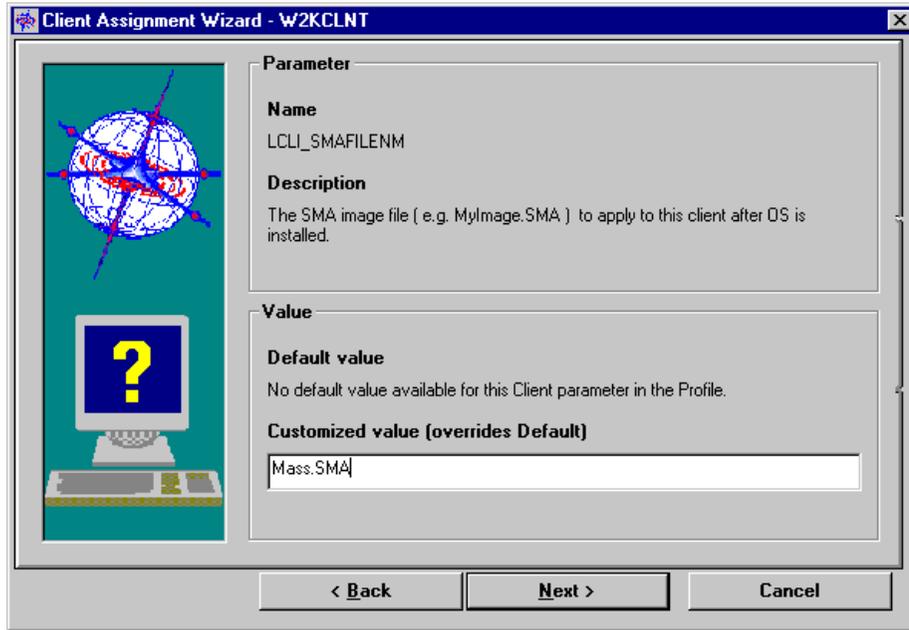
*Figure 143.  SMA profile name*

Next provide the location of the SMA profile. Type in the share name of the remote machine on the network:
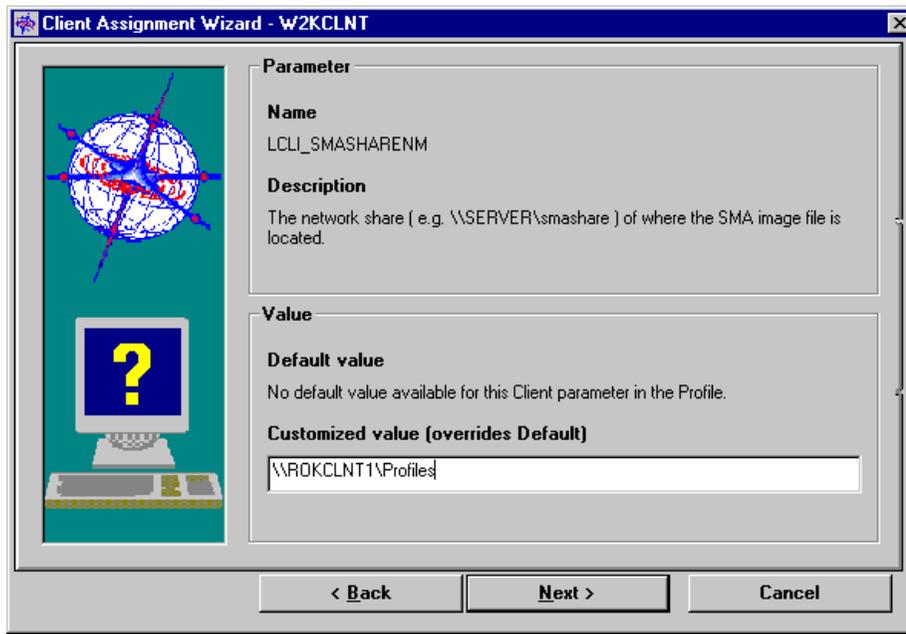
*Figure 144.  SMA profile location*

All the required parameters are now provided and the summary window will appear. If you want to change some of the parameters click the **Back** button to reach the desired window; otherwise click **Finish** to close the wizard.
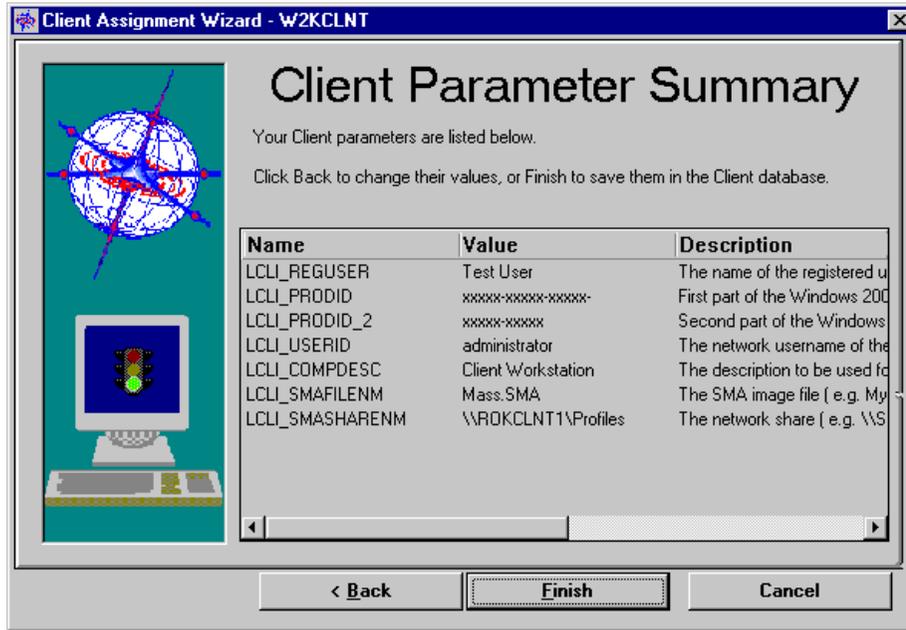
*Figure 145. Client parameter summary*

To start the client installation, click **Process**.
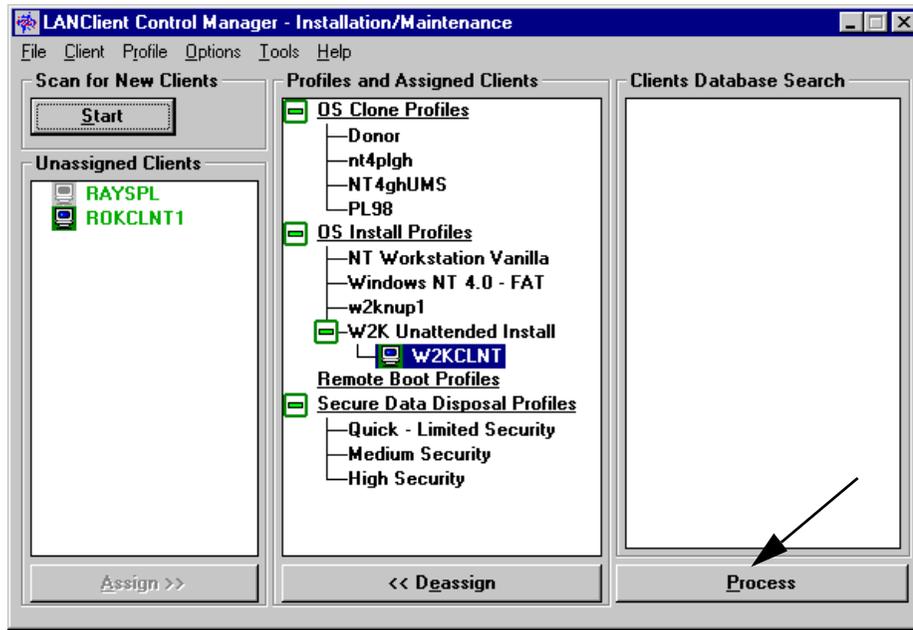
*Figure 146. Starting client deployment*

This wakes up the client and starts the unattended installation of Windows 2000 Professional.

**Note**: If the client is not Wake on LAN-enabled, you have to power it on manually.

The LCCM console tracks the client's status and displays the installation steps in a window similar to the one shown in Figure 147:
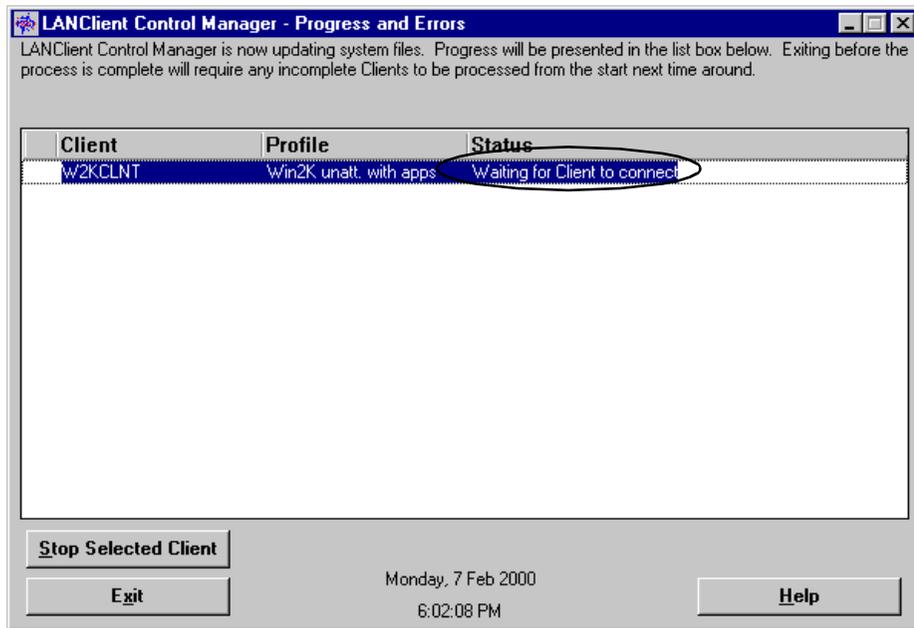
*Figure 147. LCCM - progress and errors*

The client's status line will change through several stages, as in this example:

1. **Waiting for client to connect:** when the client wakes up and boots it will connect to the LCCM server.
2. **Preprocessing the client**: at this stage the hard disk of the client is repartitioned and the client is restarted.
3. **Waiting for client to connect:** client reconnects and the installation files are copied into the \INSTALL directory, created on the client; when finished the client automatically reboots.
4. **Windows 2000 setup stage**: the text-based portion of the setup is carried out, copying the Windows setup files and rebooting the client again.
5. **Windows 2000 is completing GUI setup:** GUI-based installation continues, Convert.exe is automatically executed (if NTFS was chosen) and the installation completes.
6. **Copying down the maintenance image**: the complete client's primary partition will be backed up if the Rapid Restore option was selected during the profile creation.
7. **Resynchronizing client**.
8. **Processing completed successfully**.

If an error occurs during deployment, the client status will show a *red X* with the corresponding error message.

### 3.1.1.3 Adding applications to LCCM using DiffTool

LCCM can be used for installing applications together with the operating system. There are two categories of applications:

- Native, which are already integrated into the LCCM interface (they depend on the target operating system).

- Others, which you can add to the LCCM interface using the DiffTool.

At the time of writing this redbook, there were no native LCCM applications available for the Windows 2000 operating system. Here we will examine the procedure of using DiffTool to add applications to LCCM. As an example, we chose Norton AntiVirus V5.02.04.

DiffTool is a wizard program that runs on a donor computer that can access the LCCM server over the network. When run, it takes a snapshot of the local machine twice: before the application installation and after the installation has finished, and thus creates a delta file, which includes the application itself and all of its settings.

To start the DiffTool from the donor machine, connect to the \LAN$ADM directory on the remote LCCM server using an administrative account. Then double-click the **DiffTool** icon:
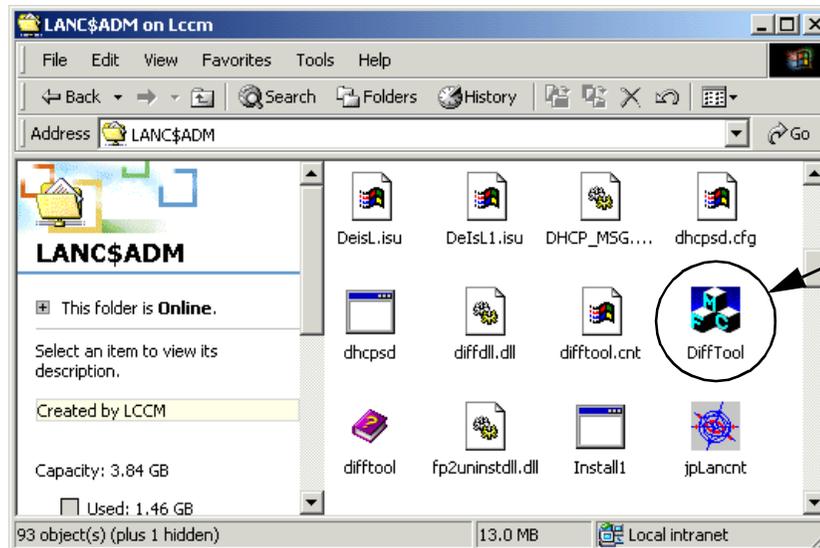


*Figure 148. Running DiffTool*

The DiffTool welcome screen appears:
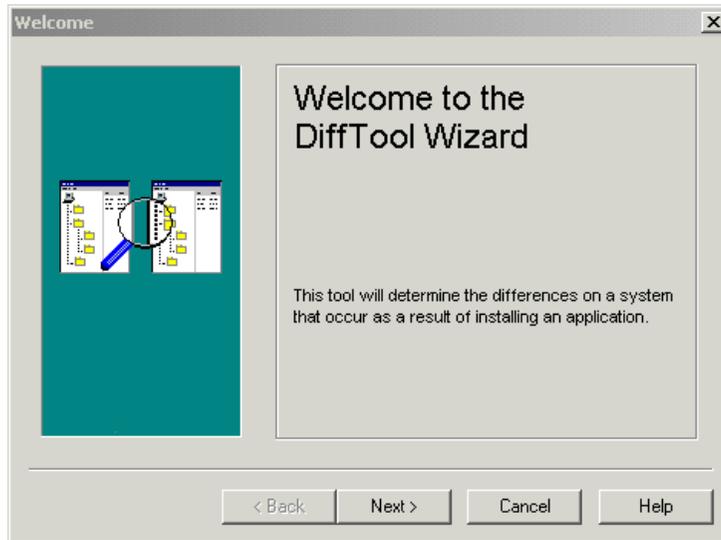
*Figure 149. DiffTool welcome screen*

First you have to specify the name and location of the LCCM server. If you don't know it, click the **Find LCCM Server** button:



*Figure 150. Locate LCCM Server window*

When the server is found, click **Next** and type in the application name that you want to add to the LCCM interface:
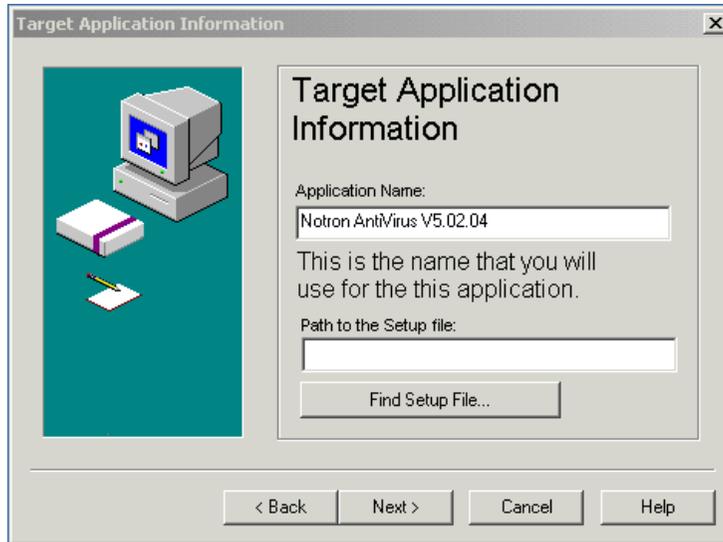


*Figure 151. Target application information window*

Now the location of its setup file has to be entered. If you don't know it, click the **Find Setup File** button and search for the file.
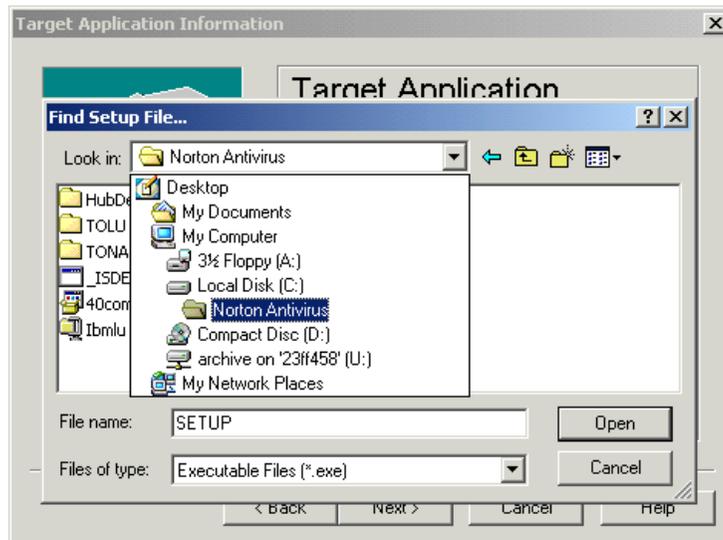


*Figure 152. Finding the application setup file*

When the setup file is found, proceed to the next window by clicking the **Next** button:
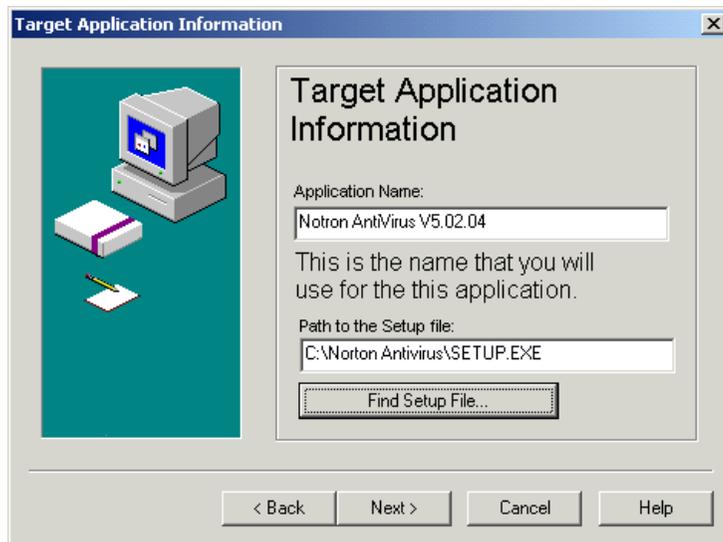


*Figure 153. Application setup file found*

Now you can begin setting up the application. Click the **Start Installation** button:
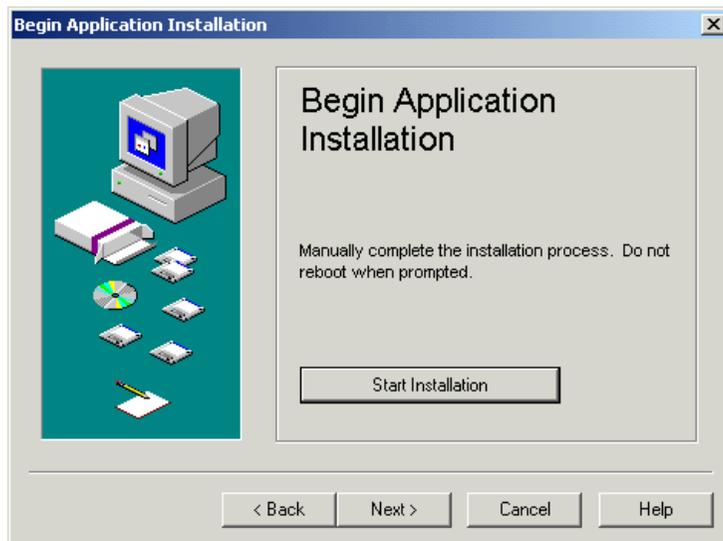


*Figure 154. Begin Application Installation window*

DiffTool will take a snapshot of the system at its current state, that is, without our application installed.
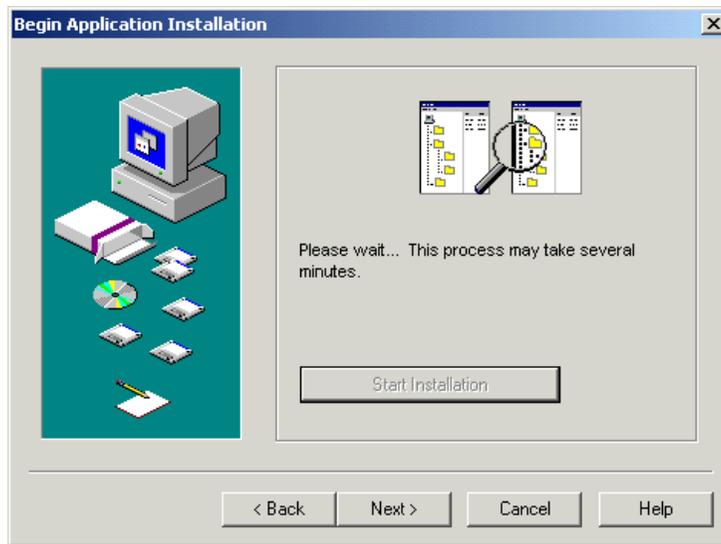


*Figure 155. Taking the snapshot before the application installation*

When it is done, DiffTool starts the application setup file. Then, the Norton AntiVirus welcome screen appears:



*Figure 156. Application installation*

To proceed, confirm the license agreement by clicking the **Yes** button:

Next, select the folder into which the program should be installed:
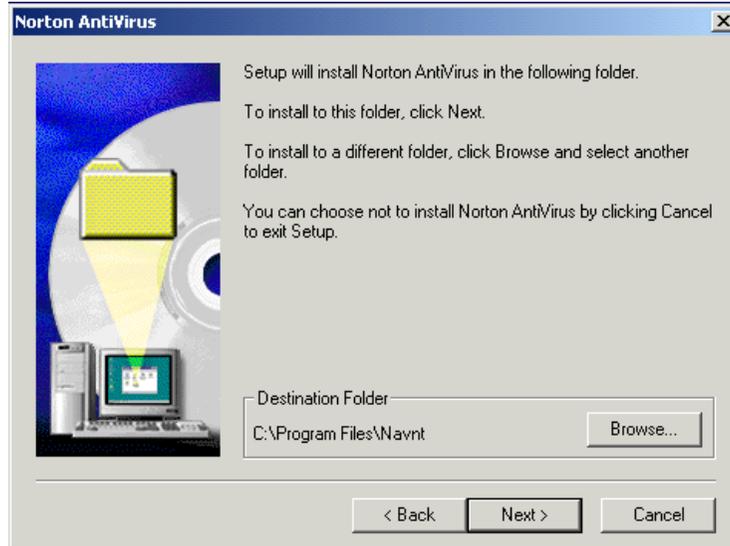


*Figure 157.  Choosing the destination folder*

Next you are asked to define different options for the application, such as scheduled weekly scans and auto-protect virus shield:

*Figure 158. Define AntiVirus options*

The chosen options overview will be shown. To start copying files click **Next**:



*Figure 159. Installation options overview*

Some additional application information is shown, such as where to look for support:

*Figure 160. Application support information*

Norton AntiVirus lets you automatically download the newest virus definition files called LiveUpdate, which can be selected by clicking the **Run LiveUpdate after installation** check box. You can schedule the first virus check of the system immediately after the application is installed; just select the **Scan for viruses after installation** check box.
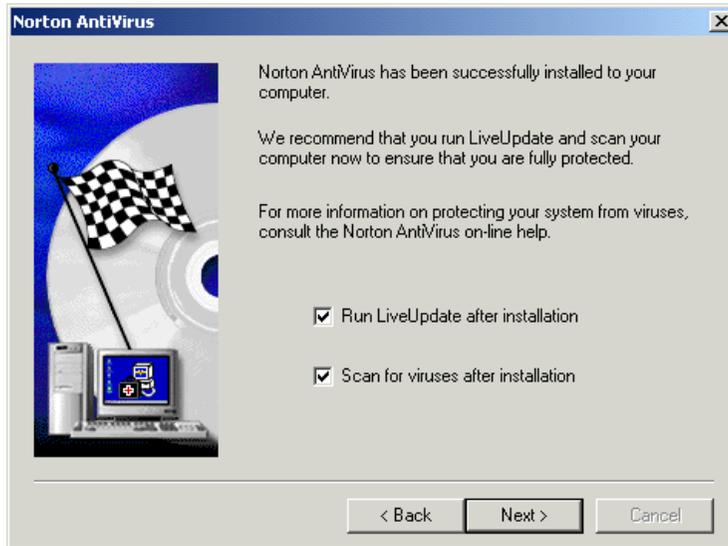
*Figure 161. Post-installation options*

Click **Finish** to complete the application installation:



*Figure 162. Finishing the AntiVirus installation*

**Note**: If the procedure asks to reboot the machine at the end of the installation it is very important to *not* reboot the client. Instead, leave the

application setup procedure by clicking **No, I will restart my computer later** and **Finish,** as shown in the following figure:
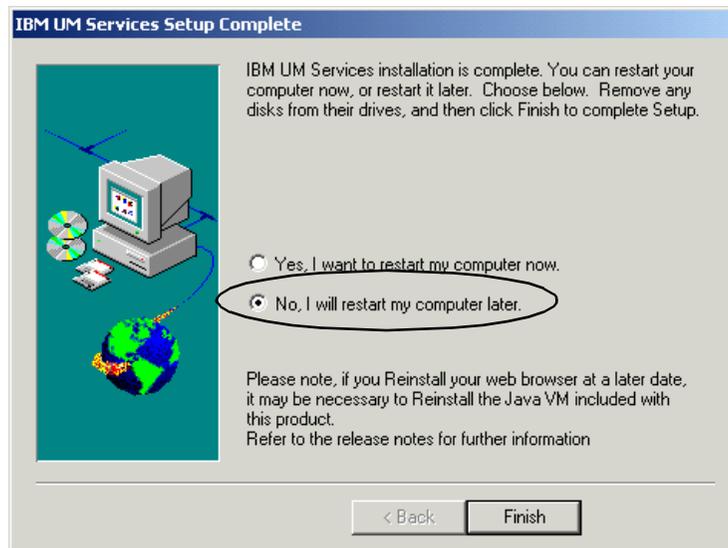


*Figure 163. Application setup complete*

DiffTool still has to take a second snapshot of the client and start it. Click the **Installation Complete** button. This takes several minutes, depending on the size of the installed application.
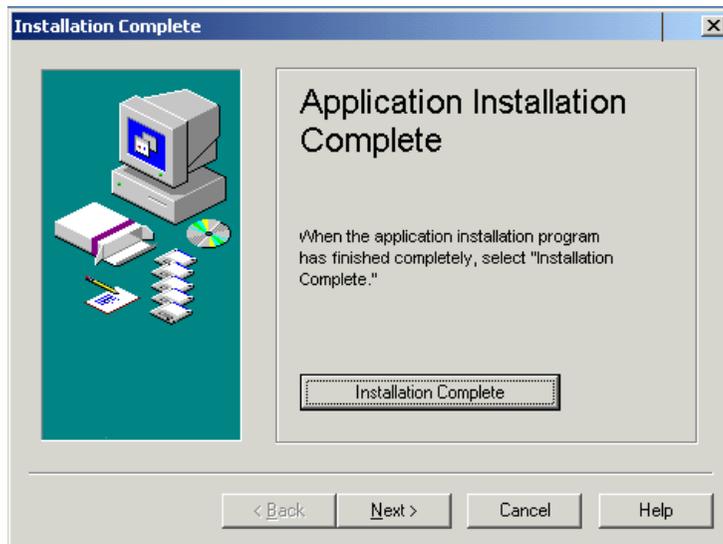
*Figure 164. Taking the snapshot after application installed*

When the DiffTool is finished taking a snapshot of the system, the Summary window will be shown. To end the procedure, click the **Finish** button.
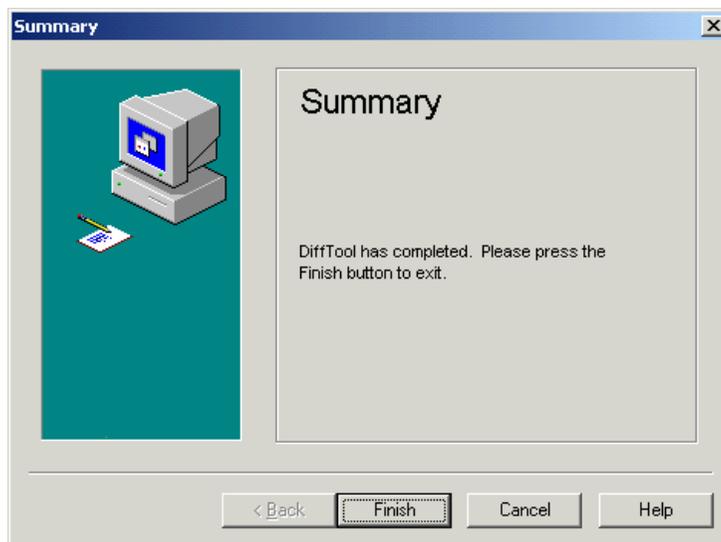


*Figure 165. DiffTool Summary window*

The result of the DiffTool procedure is the creation of a group of files that DiffTool puts into its own directory on the server: \lccm\clntfile\App\Diff.
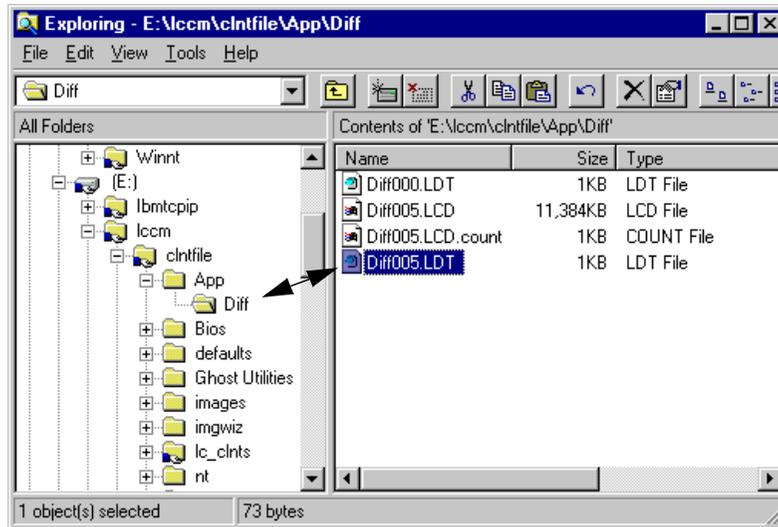


*Figure 166. Files created for the UM Services application by DiffTool*

Diff005.LDT is a description file (a text file) for the application we just added to the LCCM interface. You can edit the ApplicationName line as shown in Figure 167. This is the actual application name shown in the Software Profile wizard.
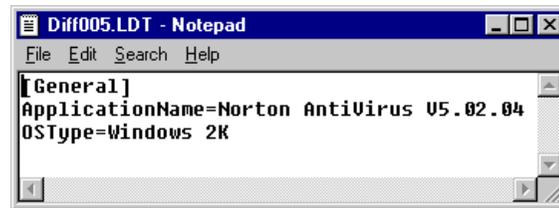


*Figure 167. DiffTool description file*

The Diff005.LCD file is the application image that stores all files and settings of the application itself (delta file), and the Diff005.LDT.count file is a control file similar to Diff005.LDT. With every consecutive run of DiffTool a new set of Diff00x.* files will be created.

Next time you create a software profile using a wizard, the following window for deploying this application together with the operating system will be shown:
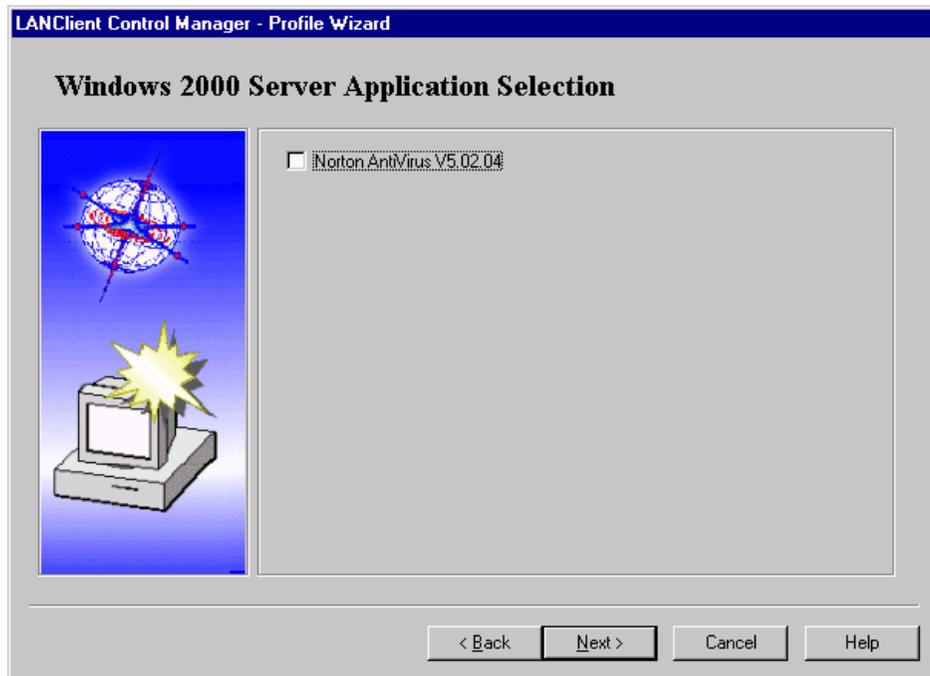
*Figure 168. Installing an application with the operating system*

### 3.1.1.4 Only use the UMS agent on an LCCM-deployed system

It is not necessary to upgrade Internet Explorer on systems where you are only going to install the UMS agent. The following procedure shows you how to install UM Services and Windows NT 4.0 without upgrading Internet Explorer.

When creating and modifying the LCCM profile:

- Use the Profile wizard in the usual way to create a profile that installs Windows NT and UM Services.

- Modify the \LCCM\CLNTFILE\PROFILE\PROFnnn\RUNAPPS.INI file by removing the `Program1=C:\Install\UMS\FILES\MSJAVA86.EXE /Q /R:N` line.

- Renumber the remaining lines in the \LCCM\CLNTFILE\PROFILE\PROFnnn\RUNAPPS.INI file consecutively, starting with 1. Don't forget to change the last line:

```
[Run0]
Program1=C:\Install\UMS\EN\setup.exe -s
Program2=\\M568207B\LANC$$\imgwiz\utils\pchecker.exe _ins0432._mp
Num=2
```

### 3.1.2  Unattended install of Windows 2000 Server on a server

Suppose the client computer has an operating system already installed and the Network boot is only defined in the Automatic Power On Startup Sequence (but not in the Primary Startup Sequence) in the client's CMOS setup. In that case, it is not possible to scan in this client using the normal procedure. If you don't want to modify the boot sequence again, the Wake-up tool (using the Winwake.exe utility) in LCCM can help.

We used this procedure to discover our Netfinity 3000 machine, which already had an operating system installed and didn't have the Network device defined in the Primary Startup Sequence, as shown in Figure 169 on page 149.

*Figure 169. Startup sequence of Netfinity 3000 machine*

In the main LCCM window click **Tools -> Wake Clients**.
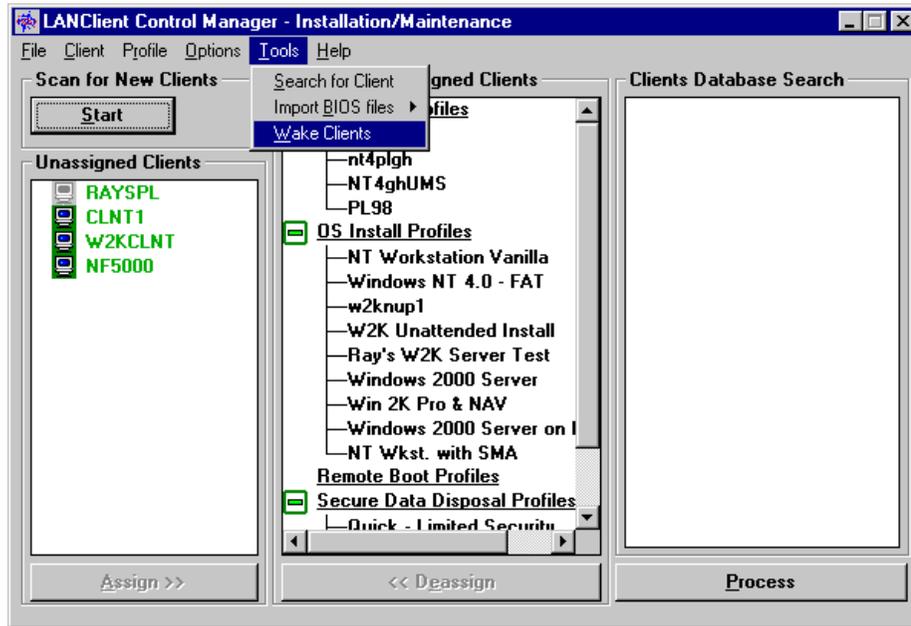
*Figure 170. Waking up the client*

One of the ways to wake up the client (if you don't have physical access to the system) is by providing its MAC address (you will find a discussion on different ways to acquire the client's MAC address in 1.1.1.1, "Asset ID" on page 6). Type the MAC address into the Keyboard field and click **OK**.
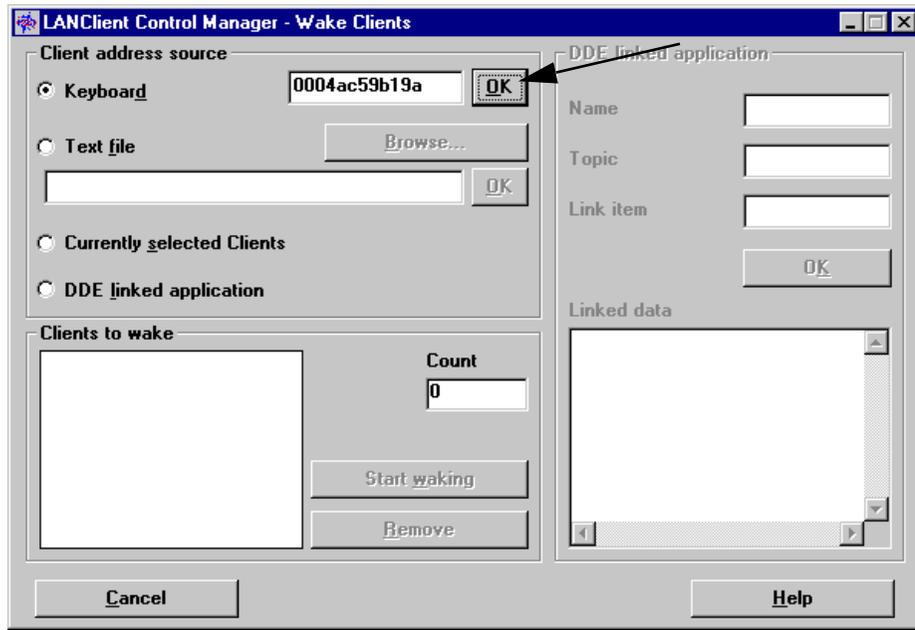
*Figure 171. Entering the client's MAC address*

The address appears under Clients to wake, and by clicking **Start waking**
LCCM will wake the client up.
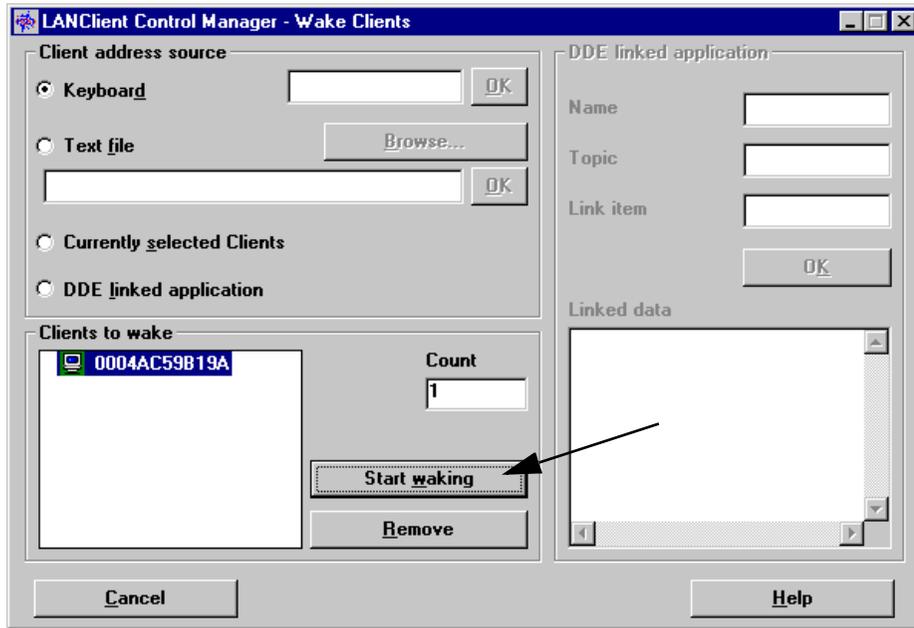
*Figure 172. Starting the Wake-up process*

When the client is up, click the **Cancel** button and in the main LCCM window choose the **Start** button under the Scan for new clients section.
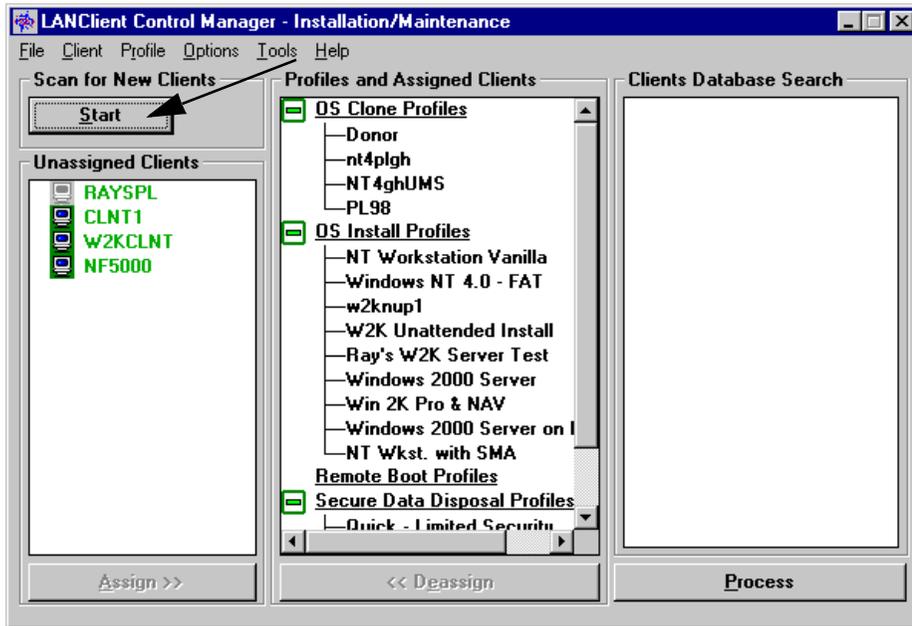
*Figure 173. Starting the new client scan*

The client, which is already powered up, will connect to the LCCM server, pass its attributes such as serial number, machine type, memory quantity, and hard disk size, to the server and shut itself down when finished. It will be added into the client database and its icon will appear in the unassigned Clients pane, as shown in Figure 174 on page 154.
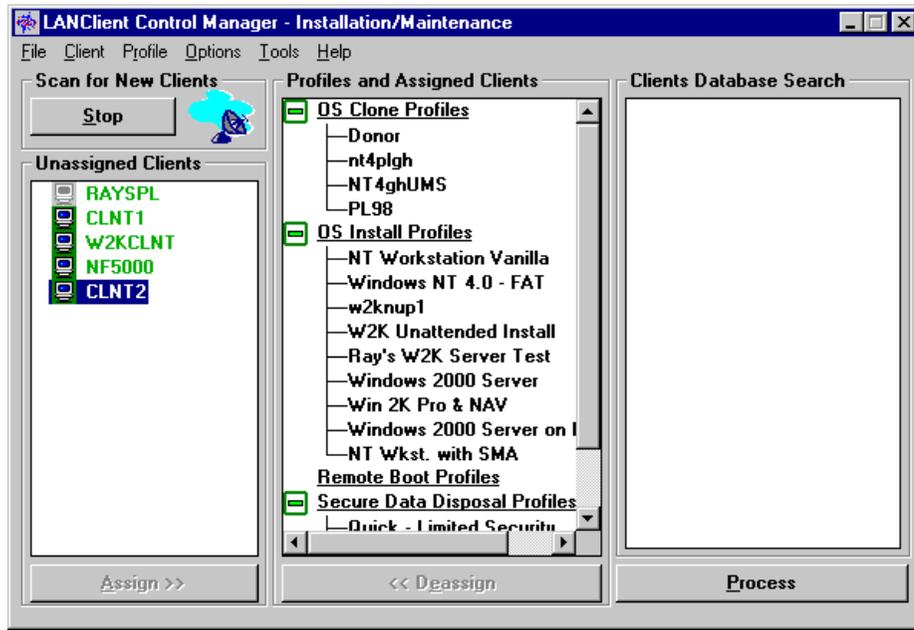
*Figure 174. Client found*

Afterwards you can change the client name to a more descriptive one by double-clicking it and editing the Name field:
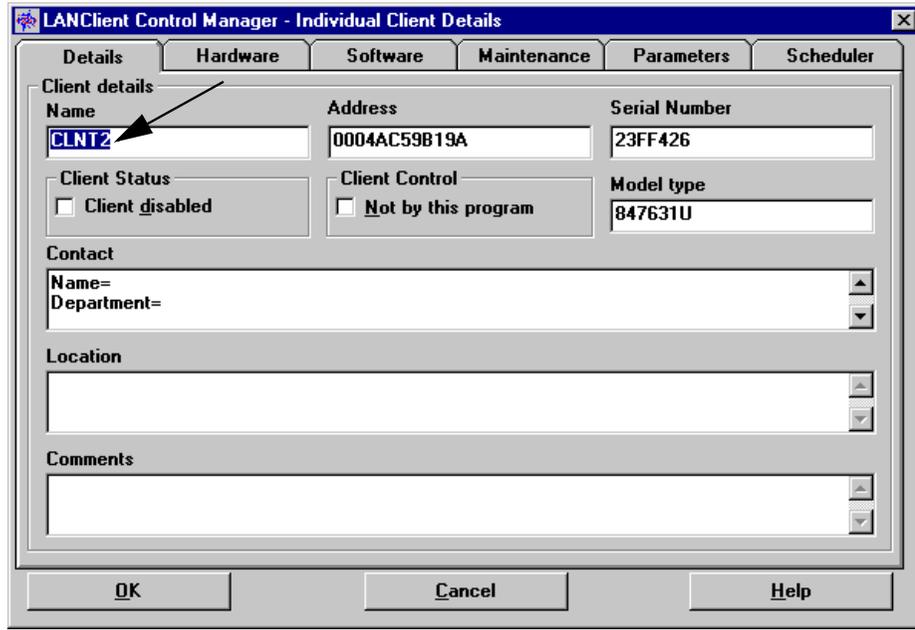
*Figure 175. Individual client details*

Now we have the client in the client database and we can move on to preparing the software profile for Windows 2000 Server unattended install.
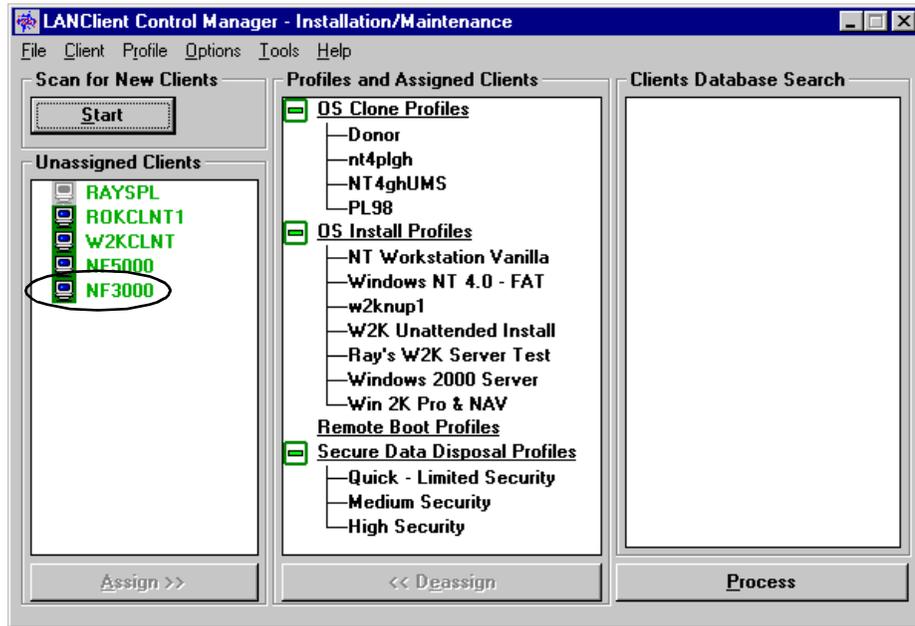
*Figure 176. Client with changed name*

### 3.1.2.1 Creating the software profile with the Profile Wizard

To start creating the profile using the Profile wizard, Click **Profile -> Create new**.
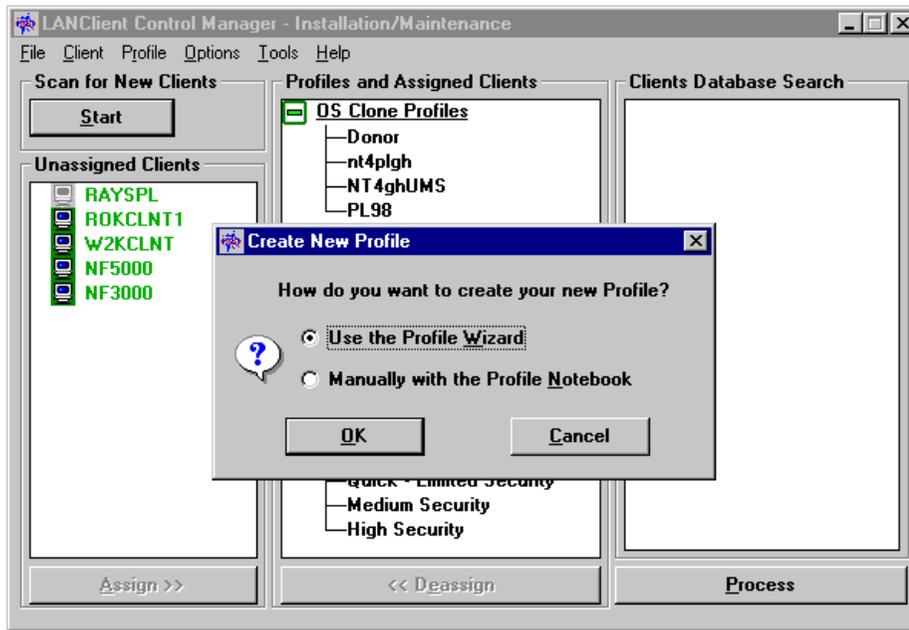
*Figure 177. Starting the profile wizard*

Select the **Unattended install**, and **Do you also want to install applications with this profile** check box, and in the drop-down box, the operating system you wish to install: **Windows 2000 Server**.
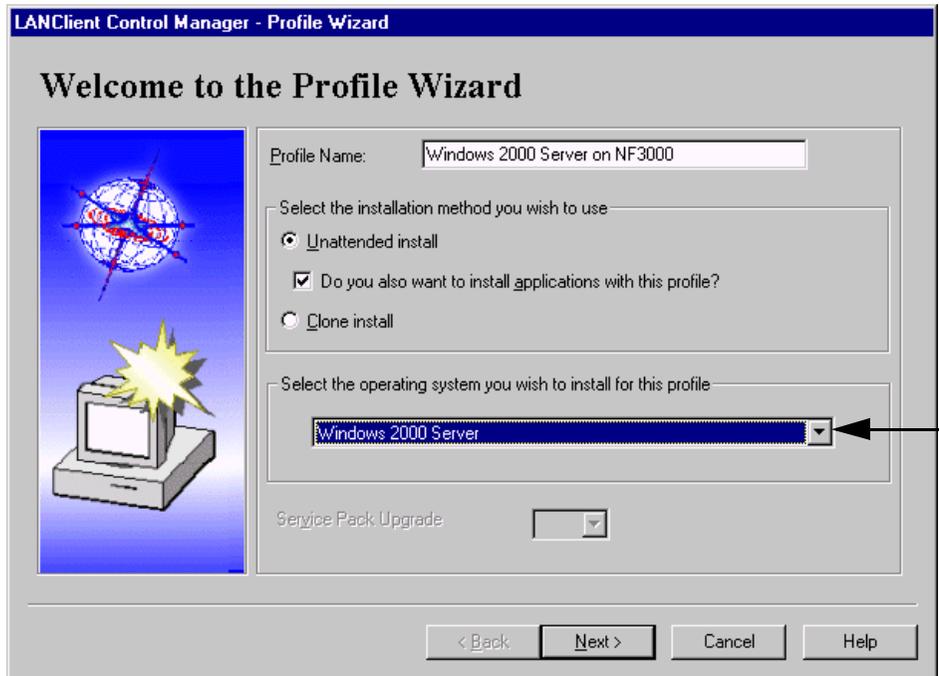
*Figure 178.  Selecting installation options*

After selecting the desired language version for the operating system, the wizard checks the availability of the installation images for the Windows 2000 Server operating system. If they are found in their default location (\LCCM\Clntfile\W2KSRV\eng directory on the LCCM server), the wizard asks you whether you want to use them or build new images.
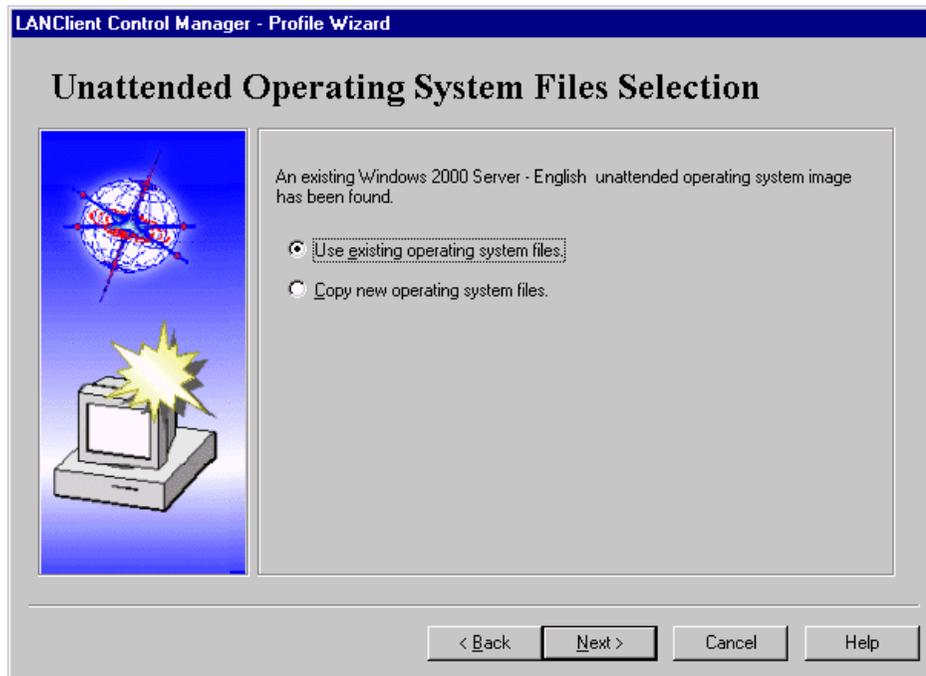
*Figure 179. Installation files - use existing images or build new*

The next window appears asking about the RAID setup. If your server has a RAID adapter installed, click the **Yes, the target clients have RAID adapter installed** check box and provide the file name and location of an existing RAID setup file. For further details please refer to 6.3.1, "Capturing ServeRAID configuration" on page 254. Otherwise, leave the check box blank and click **Next**.
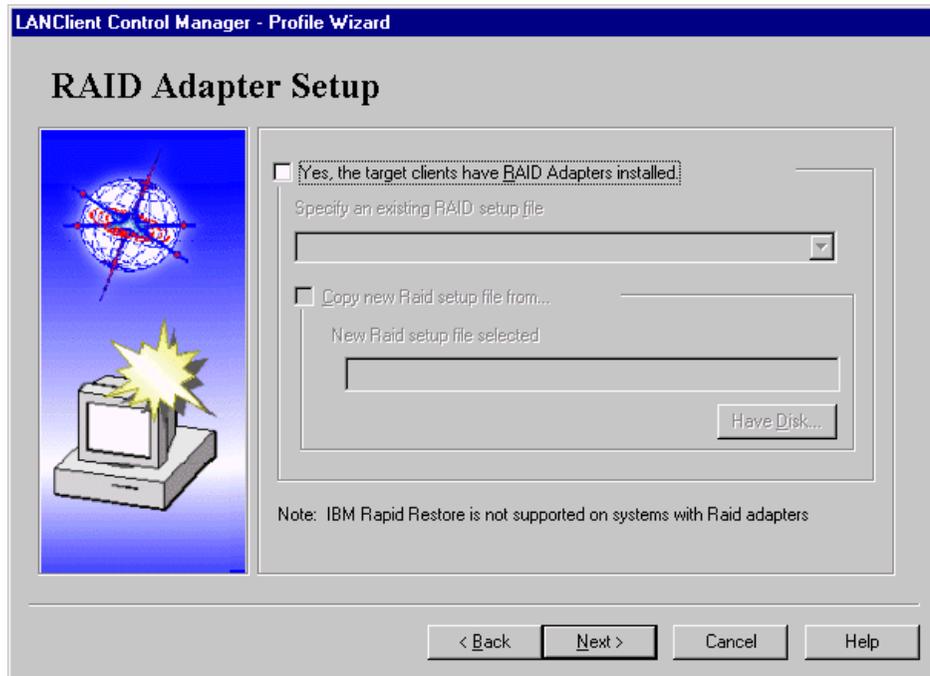
*Figure 180. RAID adapter setup for Windows 2000 Server*

The following steps are identical to the Windows 2000 Professional installation (described in 3.1.1.1, "Creating a software profile using the Profile wizard" on page 102), so we will briefly describe them and then move to the point where this procedure differs from the Windows 2000 Professional procedure.

If you didn't select the RAID setup, the next window will appear asking about the Rapid Restore option. Decide whether you want to create a hidden backup partition or not, and proceed by clicking the **Next** button.

Now you will be asked to specify the size and organization of the client's hard disk. Also, select the file system you wish to use to format the client's partition(s).

Next, provide the company name on the Profile Customization window and select the appropriate time zone for your location on the Regional Settings window.

Now, define the server role in the network and select the Windows 2000 Server licensing method appropriate for your organization:
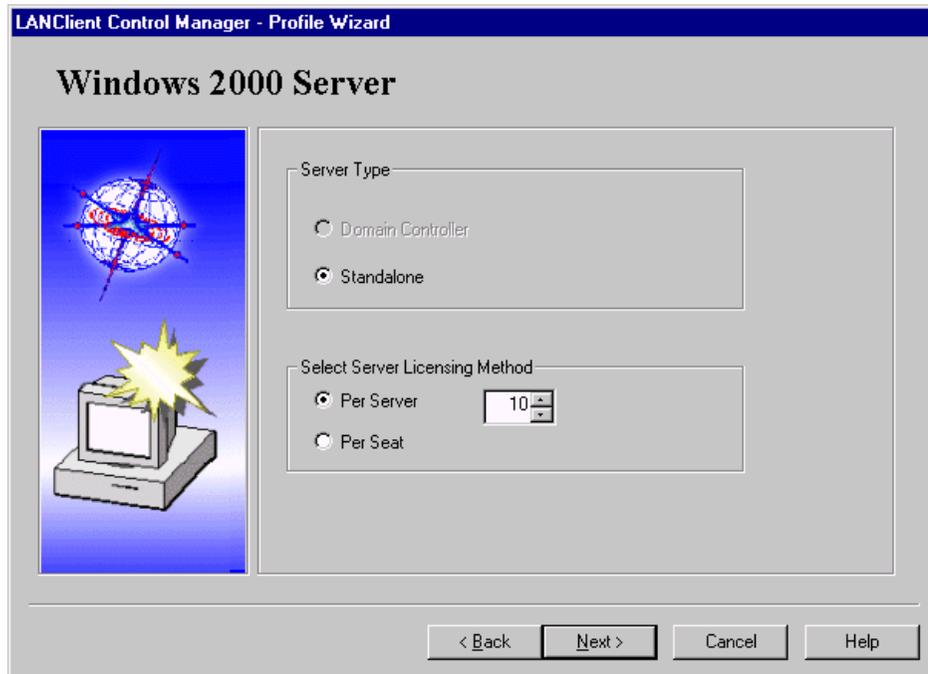
*Figure 181. Licensing method*

You have to define whether this server is part of a workgroup or a domain. If you select a domain, you have to provide the administrator user name and password.
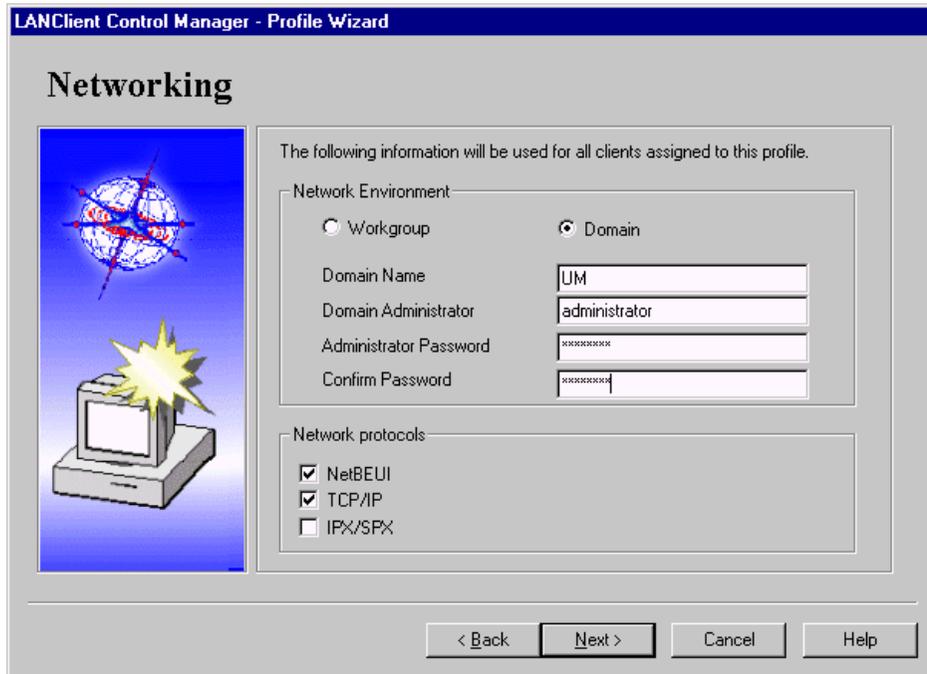
*Figure 182. Networking settings*

If there were some applications (for any Windows 2000 operating system) added to LCCM (using DiffTool) before creating this profile, they will show up in the following window. Just click the check boxes in front of the applications to install them along with the operating system:
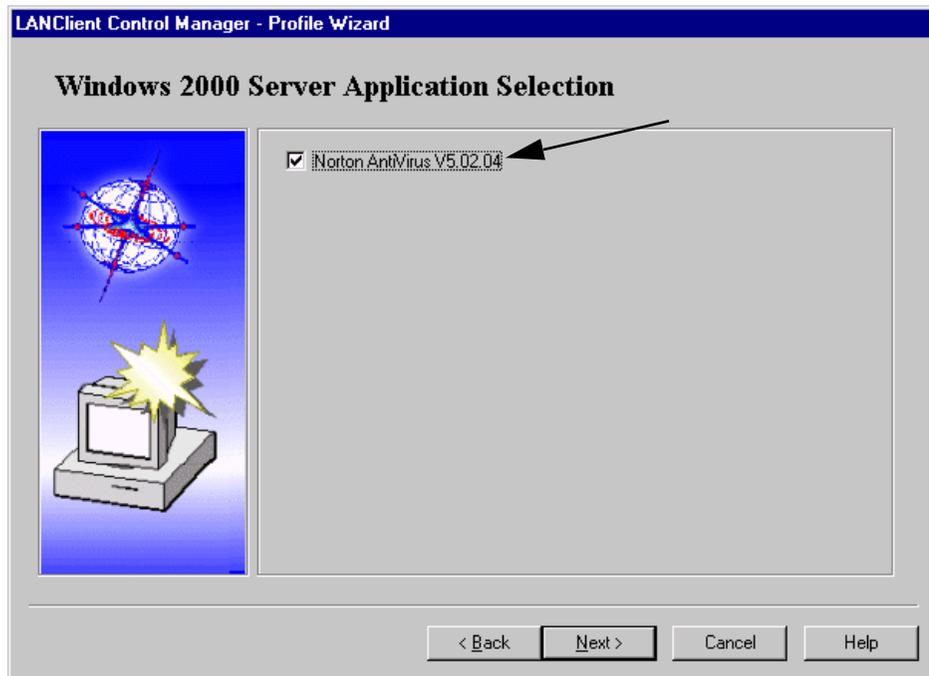
*Figure 183. Application installation*

Finally you are presented with the profile summary:
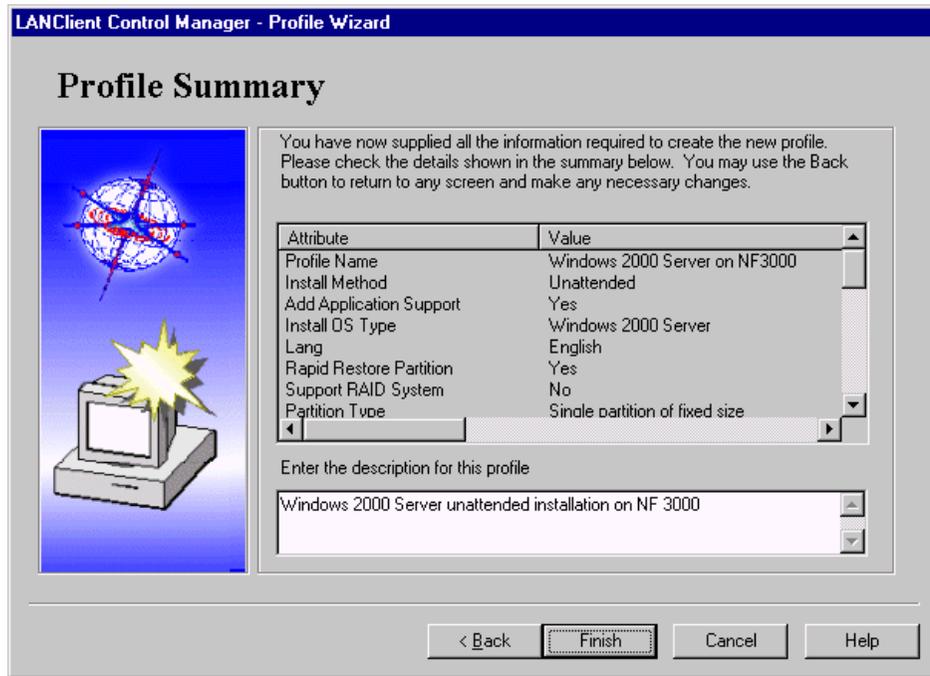
*Figure 184. Profile summary*

Click **Finish** to end the wizard. You are returned to the LCCM main window.
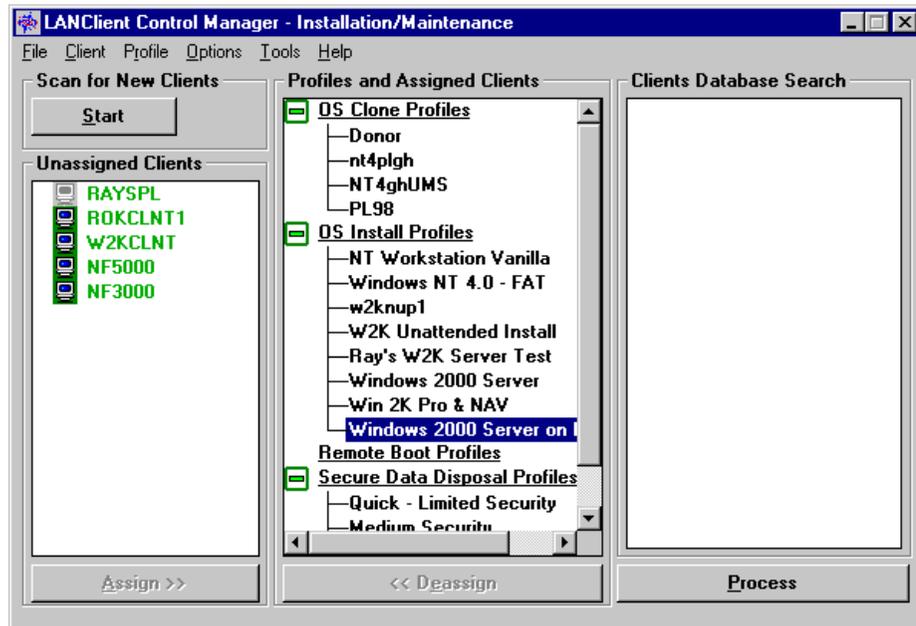
*Figure 185. New profile for Windows 2000 Server*

The next step is to assign the client personalization parameters to this profile.

### 3.1.2.2 Assigning the client using the default values
Instead of using the assignment wizard you can enter the parameters directly into the software profile as default values and disable the assignment wizard to save some time.

**Note:** This does save you some time but it makes every box have the same registered user, user ID and IP address.

Make sure the new profile is selected and choose **Profile -> Configure** from the menu bar.
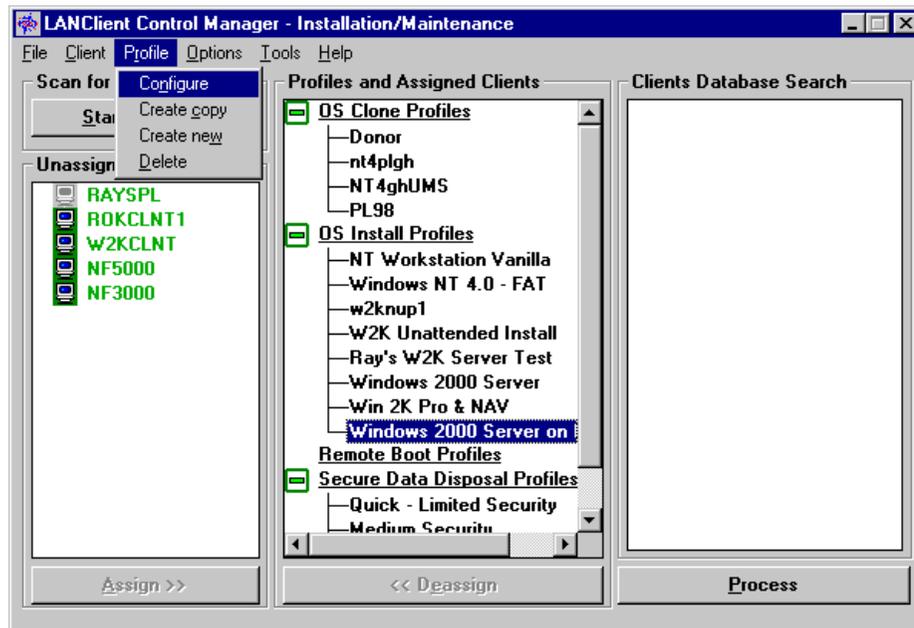
*Figure 186. Modifying profile*

In the Details tab of the Software Profile window deselect the **Enable client assignment wizard** check box.
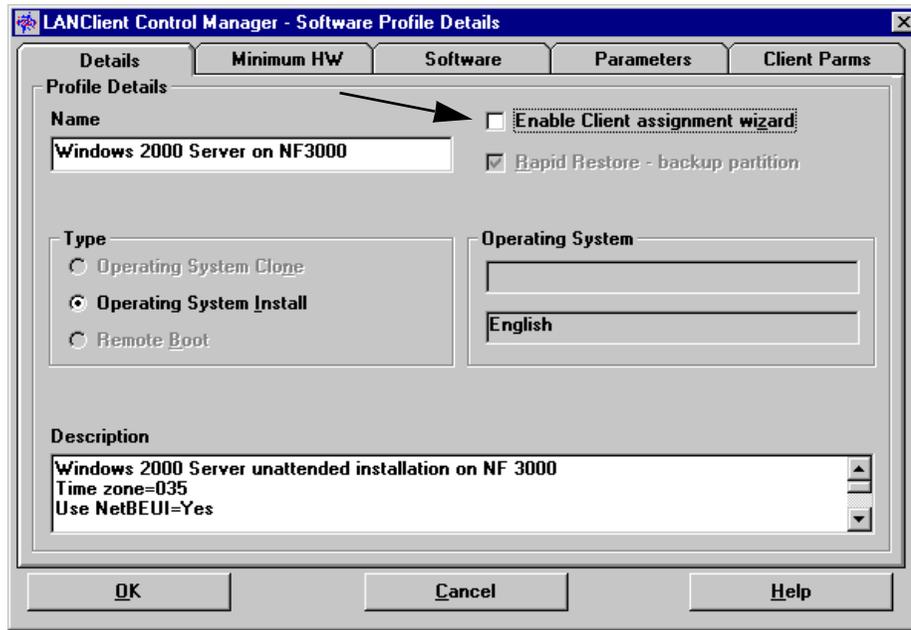
*Figure 187. Software Profile Details*

Click the **Client Parms** tab and enter the following mandatory information:

1. First part of the valid Windows 2000 Server license key, in the field next to LCLI_PRODID.

2. Second part of the valid Windows 2000 Server license key, in the field next to LCLI_PRODID_2.

3. Default logon user ID, in the field next to LCLI_USERID.

4. Client computer description, in the field LCLI_COMPDESC.

When all the information is entered click **OK** to close the window.

.

| LANClient Control Manager - Software Profile Details | | | | ✕ |
|---|---|---|---|---|

| Details | Minimum HW | Software | Parameters | Client Parms |
|---|---|---|---|---|

Parameters to be set individually for each Client assigned to this Profile

Name                Default value                              ◄◄    ►►

| LCLI_REGUSER | | Describe 1 ... |
|---|---|---|
| LCLI_PRODID | XXXXX-XXXXX-XXXXX- | Describe 2 ... |
| LCLI_PRODID_2 | XXXXX-XXXXX | Describe 3 ... |
| LCLI_USERID | Administrator | Describe 4 ... |
| LCLI_COMPDESC | Netfinity 3000 Server | Describe 5 ... |
| LCLI_IPADDR | | Describe 6 ... |
| | | Describe 7 ... |
| | | Describe 8 ... |

| OK | Cancel | Help |
|---|---|---|

*Figure 188.  Software profile details - client parameters*

You will be returned to the main LCCM window. The last step required to initiate the deployment is to click the **Process** button. The client will wake up, connect to the LCCM server and start the installation procedure.
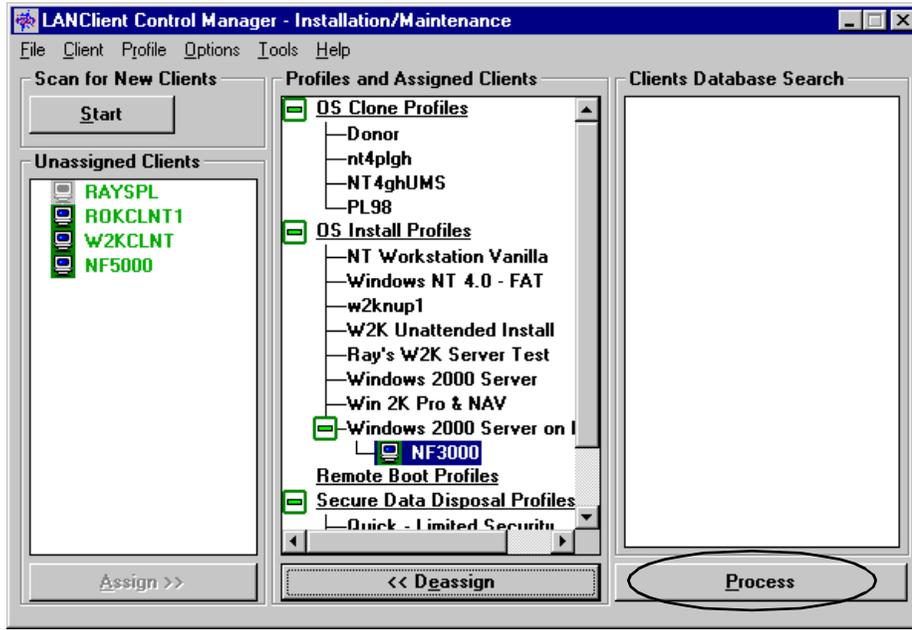
*Figure 189.  Starting the deployment*

Once the client wakes up, connect to the LCCM server and boot the
downloaded boot image. For a complete description of the steps, see Figure
147 on page 134.

### 3.1.3  Rapid Restore

It is possible to make a backup of the client's primary partition using the
LCCM tools. The advantage is that we have a backup image of the clients
machine in a known good state and if by any chance the primary partition
becomes corrupted, it is easy to restore to its original status. Rapid Restore
uses a sector-by-sector backup and restore algorithm, which is independent
of the client file system.

**Note:** The methodology that we used in the rest of this chapter for Rapid
Restore was based upon a beta service pack for LCCM (SP3). Not all of the
functions were enabled in the code that we used. Remember that all
maintenance procedures are client specific, and are run by setting them up in
the Maintenance page of the Client profile. This can be done while the client
remains wherever it is. This includes the unassigned state, when a client is
not assigned to any specific software profile.

### 3.1.3.1 Backing up the primary partition

The Rapid Restore function in LCCM uses the RAVE.EXE utility. When the Rapid Restore option is selected during the Software Profile creation (see Figure 121 on page 108), the RAVE utility will check the available free space on the client's hard disk. The size of the primary partition plus 16 additional sectors (to store Rapid Restore information, maximum 5 MB) of free space is needed to create the hidden backup partition.

If you forgot to select the Rapid Restore option before client deployment and you have the needed free space, you can create a backup of the primary partition using the RAVE.EXE utility by booting the client with a DOS diskette that contains the RAVE program and executing the following command:

```
RAVE /b /i
```

This will back up the primary partition data together with its Master Boot Record in interactive mode, and show the results of the operation. The hidden partition will be named IBM RAVE. To check the partition table, use the command:

```
RAVE /v
```

### 3.1.3.2 Restoring after the partition has failed

In case of a failure, you can do a local restore initiated on the client or a remote restore, started from the LCCM console.

To initiate the restore procedure on the client, boot it with a DOS diskette and execute the `RAVE` command with one of the following switches:

- To do a full restore of the partition, use `RAVE /ALL`
- To restore only the master boot record, use `RAVE /MBR`
- To restore only the data, use `RAVE /DATA`
- If you don't need the backup partition, you can delete it using `RAVE /d`.

The full syntax for the `RAVE` command is shown in the following screen:

```
C:\LCCM\clntfile>rave /?
Rapid Restore v1.0 (LCCM v2.5.1) - (C) Copyright IBM Corporation 1999

Backs up or restores primary boot partition

RAVE [/b|/DATA|/MBR|/ALL|/d|/v|/t] [/i] [/f]
   /b          Backup master boot record and primary partition data
   /DATA       Restore primary partition data only
   /MBR        Restore Master Boot Record only
   /ALL        Restore Master Boot Record and primary partition data
   /d          Delete existing Rapid Restore partition
   /v          View partition table
   /t          Test for existing backup. 1 returned if not found
   /i          Interactive mode (default = non interactive)
   /f          Force backup, deleting any existing backup
```

To prepare to run a restore remotely from the LCCM console, drop the client icon onto the Donor profile, then click **Client -> Configure**:
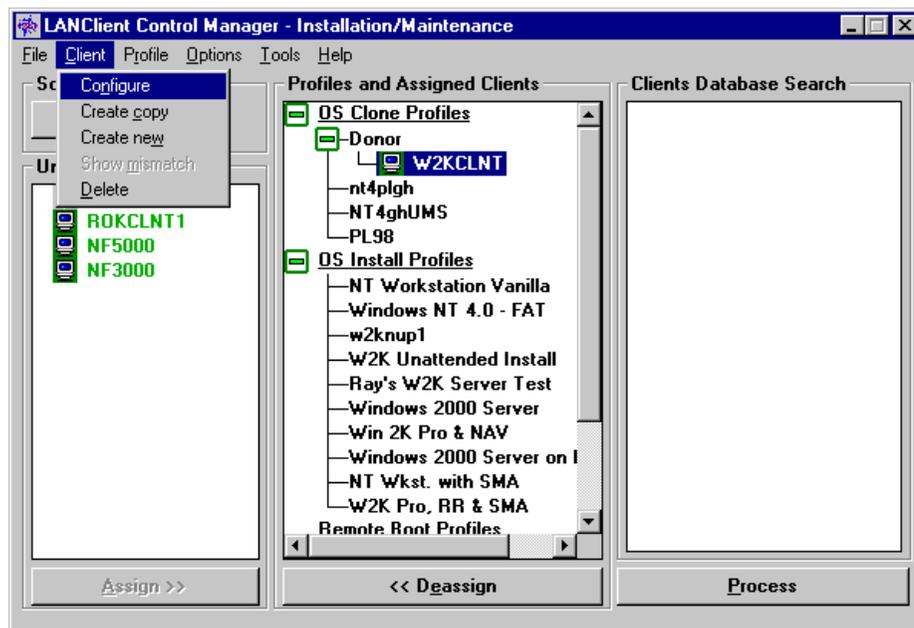


*Figure 190. Configuring the client for remote restore*

On the Maintenance tab, select the **Rapid Restore** check box and choose the **Restore** option. This enables the Restore maintenance file (lcravers.mns). To finish the preparation, click the **OK** button.
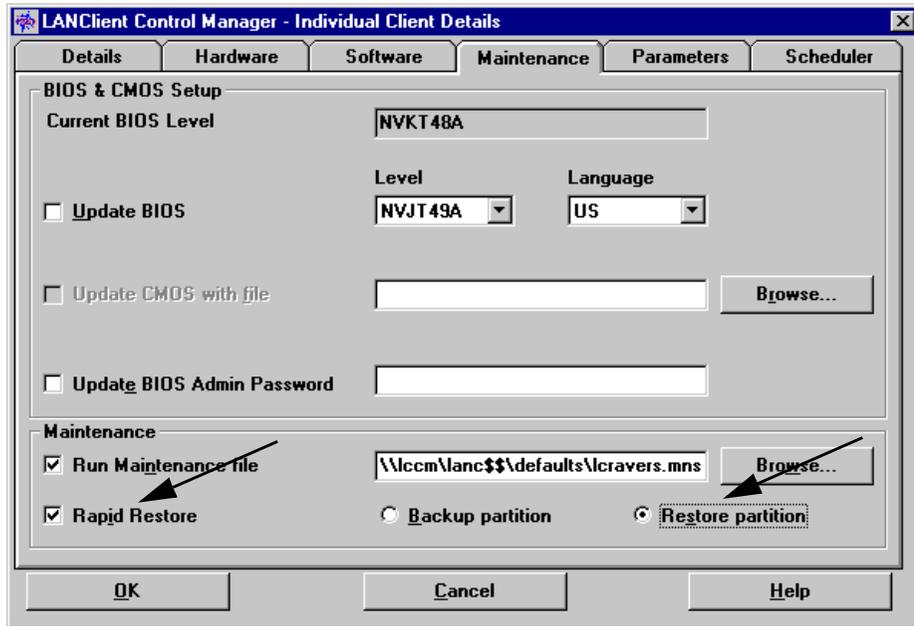
*Figure 191.  Selecting the restore option*

Now process the client by clicking the **Process** button.
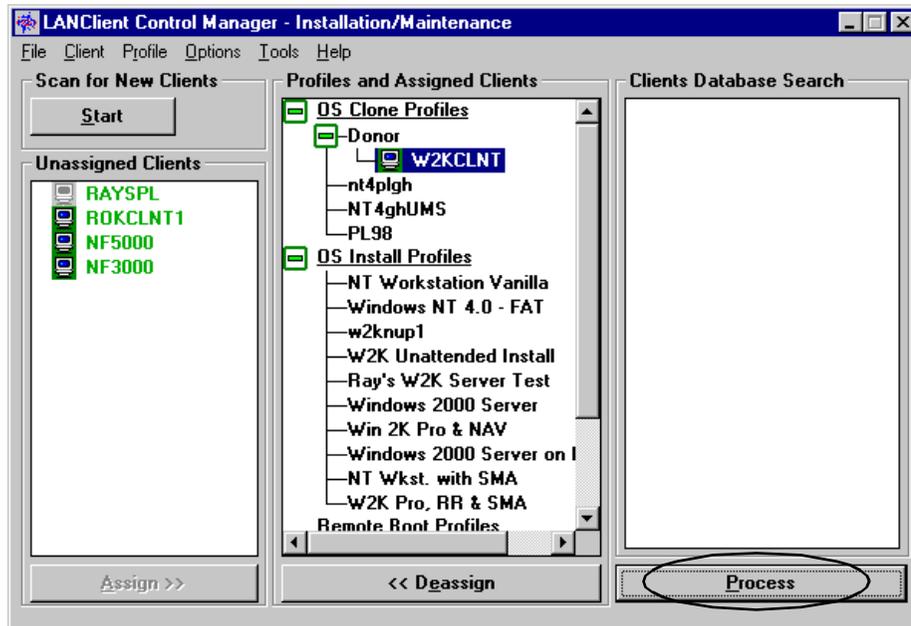
*Figure 192. Starting the remote restore procedure*

The client machine will wake up and connect to the LCCM server. At the client the following screen shows up:

```
Please press CTRL-C to break out of the batch script and get to a command prompt
.
Press any key to continue . . .
```

We don't want to break the batch script, so just continue the boot procedure by pressing any key. The rest of the rapid restore procedure will continue. The client will reboot, reconnect to the LCCM server and restore the primary partition by running the RAVE /DATA /I command.

# Chapter 4. Intelligent application deployment

Today, corporations manage software requirements centrally for many business units in their enterprise. Preloaded images normally include the operating system, drivers and particular applications for specific units. Because different business or location units have different requirements, the preload image pool can become quite intricate and difficult to maintain.

IBM's approach to this problem is to divide the operating system and drivers preload from the actual application preload. The Universal Manageability tool that is used for operating system deployment is called LANClient Control Manager (LCCM) and it is described in Chapter 3, "Unattended Windows 2000 deployment for new systems" on page 101. For the actual application deployment, the Software Delivery Assistant (SDA) can be used to create standard application set images and provide a user-friendly tool to install them. Standard application sets contain mandatory and selectable applications that satisfy different business units. Processing is simplified, labor costs are reduced and the end result is reduced total cost of ownership.

For the latest information about SDA and to download the current version, please go to:

    http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda/

In this chapter we want to show how SDA is used to deploy applications onto IBM client machines running the Windows 2000 family of operating systems.

## 4.1 Software Delivery Assistant

IBM SDA consists of two parts. The SDA-Administrator is a visual tool, used by the person responsible for creating images of applications, needed for specific groups. Groups are based on a user's geographical or business needs. The SDA-Installer (also a visual tool) is used by end users to install software from the newly created images onto their computers. Before the installation, users are asked about the group they belong to and based on the group name, the corresponding image will be selected and applications installed.

### 4.1.1 Installing SDA

SDA has to be installed on the machine where the application images will be created. There are no special requirements for installation except a minimum of 6 MB of available hard disk space for the SDA program and additional space on the machine where the application images are stored.

Both the machines where the images will be created and end users'
machines where applications will be installed can have any of the following
Windows operating systems installed:

- Windows 95
- Windows 98
- Windows NT
- Windows 2000

**Note**: If your company plans to move PCs to the Windows 2000 platform you
don't need to install SDA on the Windows 2000 machine. You can prepare the
application images on any other supported Windows platform and roll them
out later when the clients are deployed with the new operating system.

To start the SDA installation, run the SDA installation file `sdav11.exe` and the
following window appears:
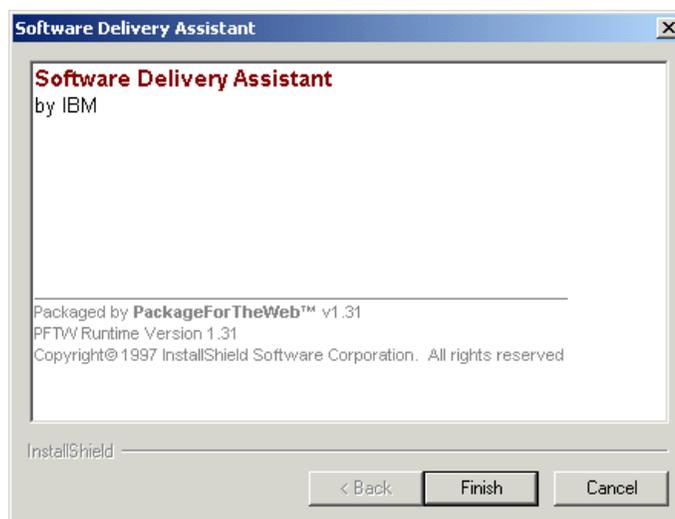


*Figure 193. Starting the SDA installation*

The installation procedure asks you to select the setup language. The
following are available in V1.1:

- Brazilian Portuguese
- Castilian Spanish
- Danish
- Finnish
- French
- German

- Italian
- Japanese
- Norwegian - Bokmal
- Portuguese
- Simplified Chinese
- Swedish
- Traditional Chinese
- US English



*Figure 194. Selecting the setup language*

After choosing the desired language the Welcome window appears. It recommends that you close other programs that may be running. Continue by clicking the **Next** button:

*Figure 195. SDA installation*

Next the Software license agreement window appears. Review the terms and conditions and acknowledge them by clicking the **Yes** button.

SDA is licensed and supported on the following IBM machines:

- All commercial desktops
- All IBM Thinkpads
- All IntelliStation models
- All Aptiva models

You have to have a valid software license to use SDA installer on non-IBM systems.

Next, confirm the SDA default installation folder, which is \Program Files\SDA v11, or choose an alternative. Then proceed by clicking the **Next** button.

*Figure 196.  Choose SDA installation folder*

After the copying is done, finish the installation procedure by clicking the
**Finish** button.



*Figure 197.  SDA installation finished*

Now you can start using SDA. If there is no existing workspace available, you have to create one.

## 4.1.2  SDA-Administrator

A workspace is a file (.SSW) which contains all the required information to build an image. With new SDA installations, there is no existing workspace available. You have to either create a new workspace or import an existing one.

### 4.1.2.1  Creating the workspace

The process of creating a workspace is simplified by using the creation wizard. First, start SDA by clicking **Start -> Programs -> IBM SDA v1.1**.



*Figure 198.  Starting SDA-Administrator*

Select the language for the SDA-Administrator:

*Figure 199. SDA-Administrator language selection*

By default, the wizard starts and guides you through workspace creation and usage. Select **Create a new workspace** and click **OK**.

**Note**: If you don't want to use the wizard, click the **Do not show this window again** check box.
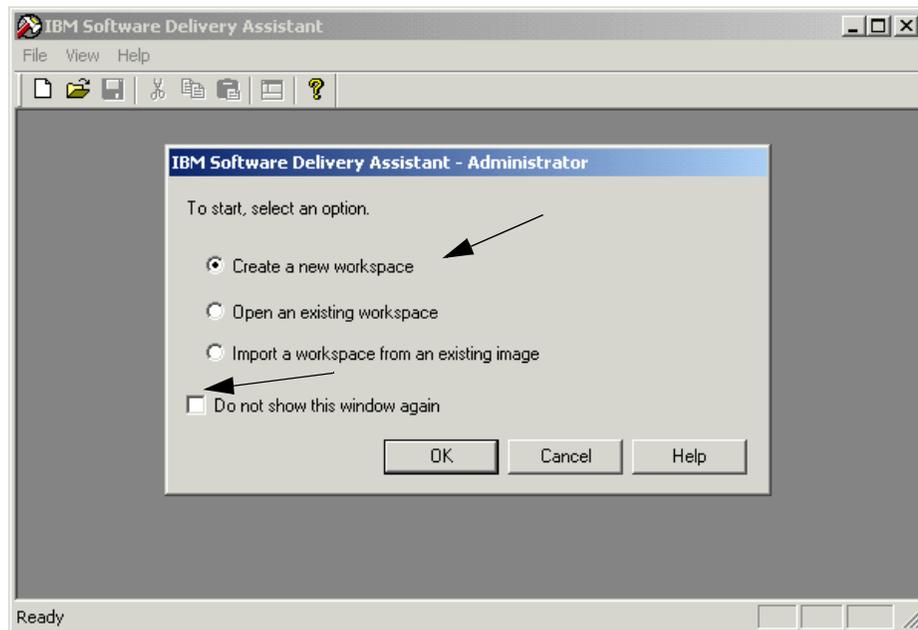


*Figure 200. SDA-Administrator wizard*

First the wizard asks you about the workspace name. This is a descriptive name, not a file name. You will provide a file name when saving the workspace before exiting SDA-Administrator.
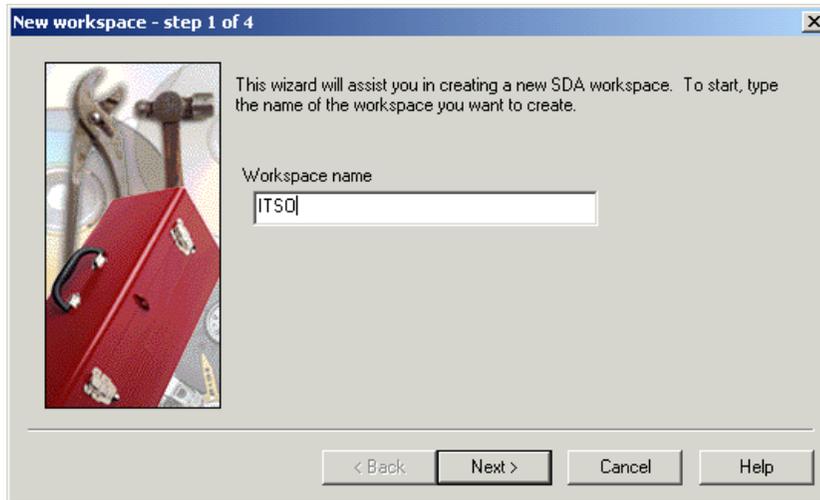


*Figure 201. Workspace name*

In step 2 you should select all the languages this workspace will support. The languages that you select must correspond to the language versions of the operating systems that will support this workspace. You can also add the languages after the workspace has been created.
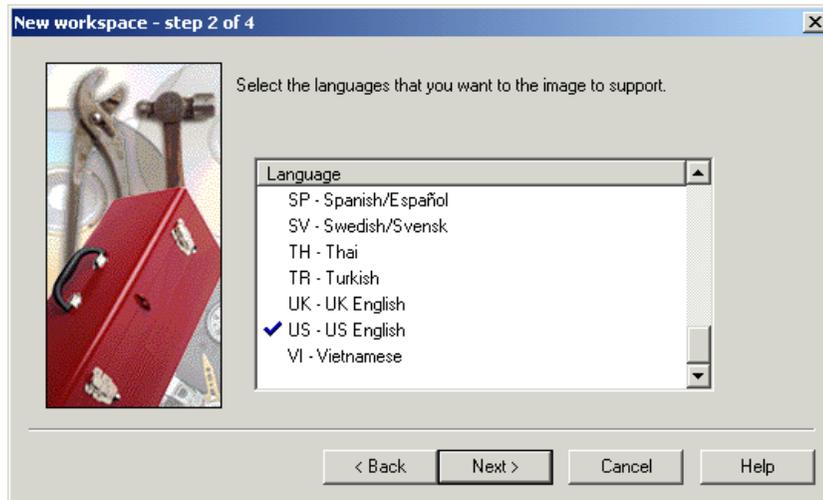
*Figure 202. Selecting supported languages for application images*

In step 3, list the groups that you want the image to support. A group is a set of applications that are specific to an organization, job or discipline in your enterprise. There is a default group called Common, which contains applications that should be installed on all user machines and therefore common to all groups.
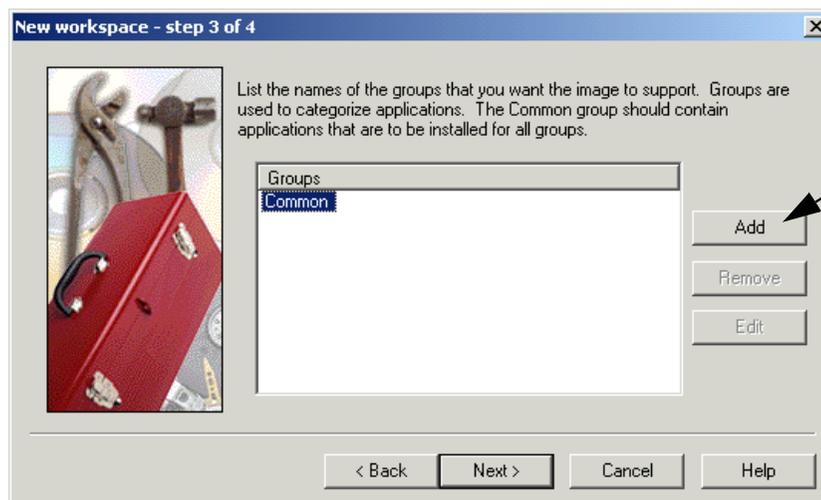


*Figure 203. SDA default group*

In our example, we set up an additional group called Support. It includes specific applications for the support personnel.

To set up an additional group, click the **Add** button and type the name of the new group into the provided text box. Repeat the procedure for each additional group you want to have. When you are finished, proceed to the next step by clicking **Next**.
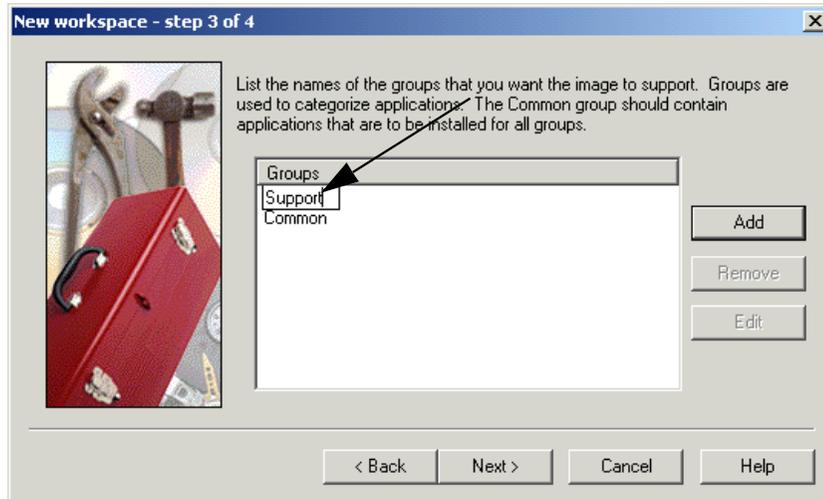


*Figure 204.  Adding SDA groups*

When users start the SDA-Installer for the first time, they will be asked to identify themselves by providing the group they belong to. Based on that information the required applications for that group will be automatically installed. If you want users to provide additional information about themselves (like employee number, building number or location), you can add these user-profile fields in step 4. To add a new field, click the **Add** button:
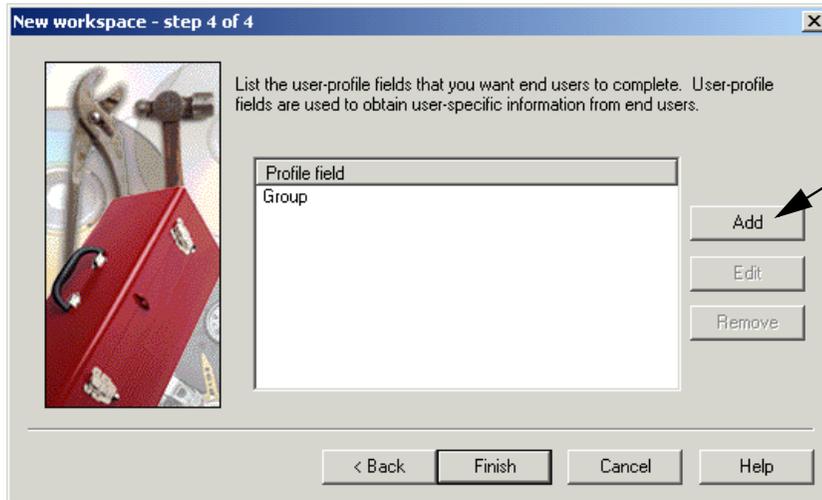
*Figure 205.  User-profile fields*

A new window opens. Type in the name of the field under **Field name**. Click the **Required** check box if it should be mandatory for the user to fill in this field. You also have to provide a valid set of options for the user to choose from. Click the **Add** button and type all the possible options for that field into the provided text box. When you are done, click **OK** -> **Finish**.
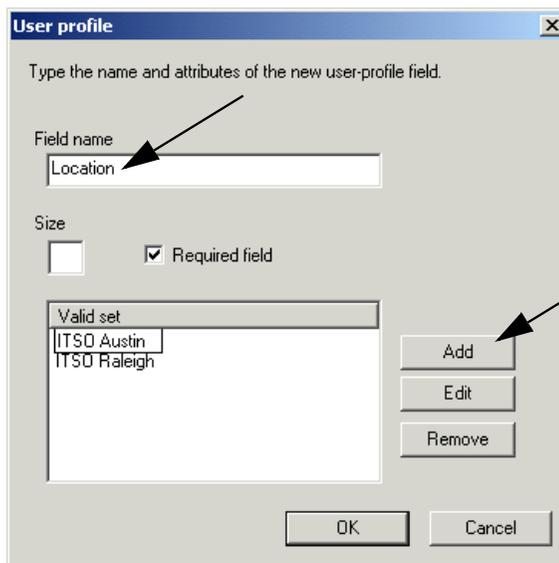


*Figure 206.  Adding additional fields to user profile*

The SDA-Administrator builds and displays the workspace. It is divided into two panes. The left pane displays the structure of the workspace, showing the languages created and all the groups listed within each language. The right pane displays the contents of the item which is highlighted in the left pane. All items can be edited either by right clicking them or using the menu bar on top of the window.
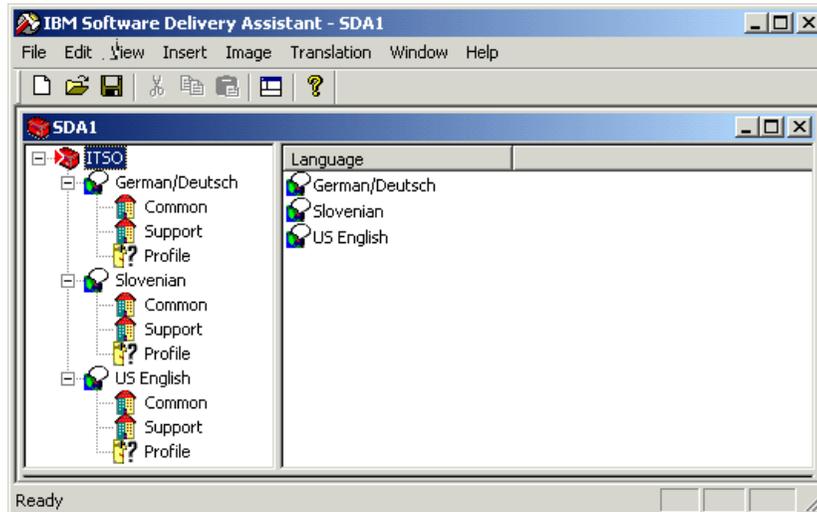


*Figure 207. Workspace created*

If you want to change the workspace after initially creating it, there are two ways to do it. You can use the menu bar on top of the window, or the pop-up menus for particular objects. If you wanted to add another language using the menu bar, just select the workspace (ITSO in our example) and click **Insert -> Language** and then choose the language from the list in the next window:
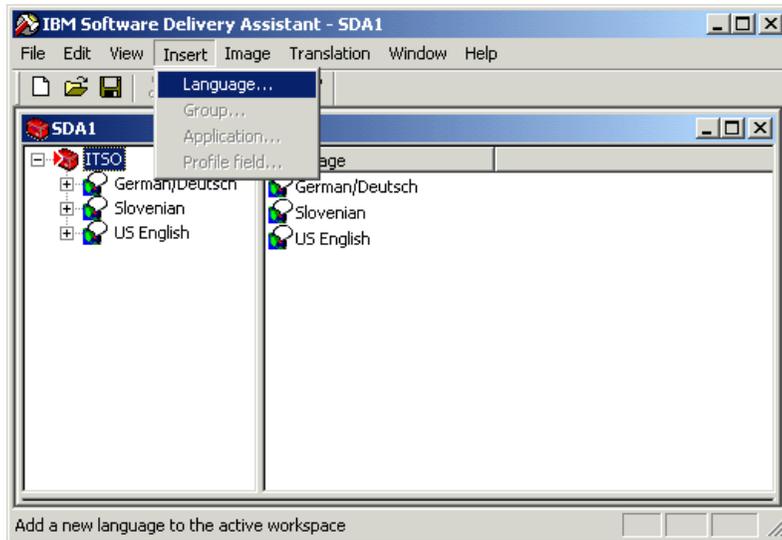
*Figure 208. Creating new language using the menu bar*

We also discovered that we need additional groups for sales personnel. To add this group, right-click the particular language and choose **Insert group**.
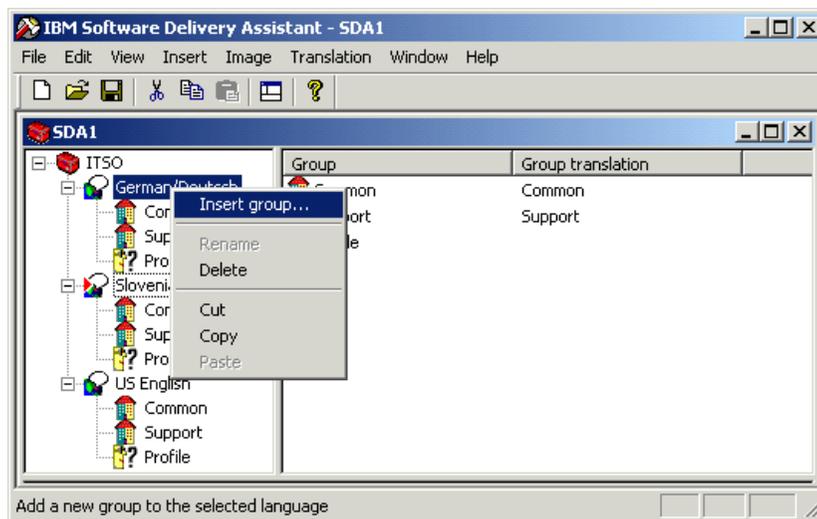


*Figure 209. Adding groups*

A window pops-up asking for the name of the new group. Type in the name and click **OK**.

*Figure 210. Naming the group*

If you need the same group in all languages, you don't need to create it several times. It is easier to copy the existing group to the remaining languages. Drag and drop the group onto selected languages and choose **Copy here** from the pop-up menu.
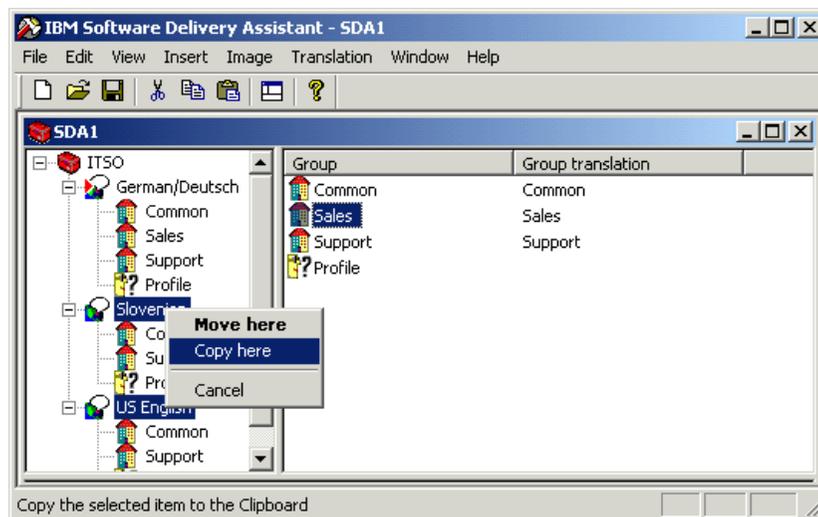


*Figure 211. Copying groups*

When you have created all the needed languages and groups, you can begin inserting applications. Select the group into which you want to insert an application, and click **Insert -> Application** from the menu bar (or, alternatively you could right-click the group and click **Insert Application**):
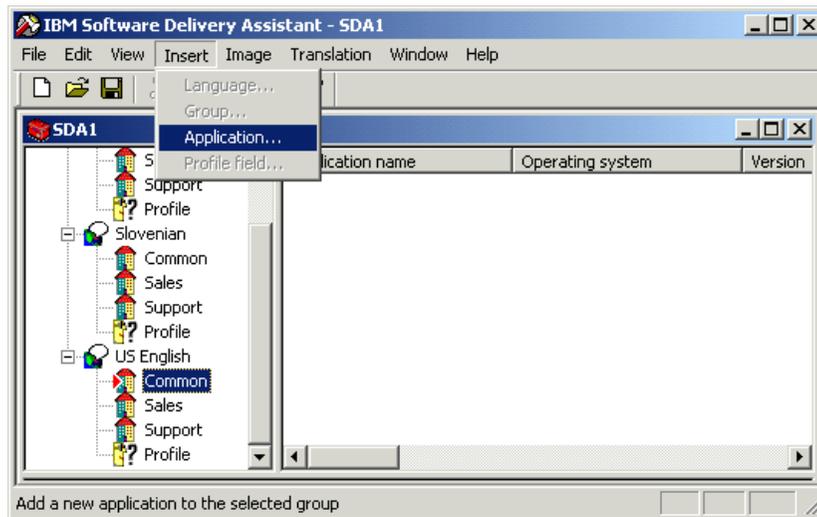
*Figure 212. Inserting applications*

A new window opens to specify the details for this application. On the General tab, enter the following items:

- Name of the application as you want it to appear on the user's machine when the SDA-Installer is started.
- If you wish to change the icon representing this application, click the **Change icon** button and browse to find the *.ICO or other file associated with the icon.
- Finally, select all operating systems in which this application should run. If different versions of this application exist for different operating systems, they have to be added to the workspace separately.
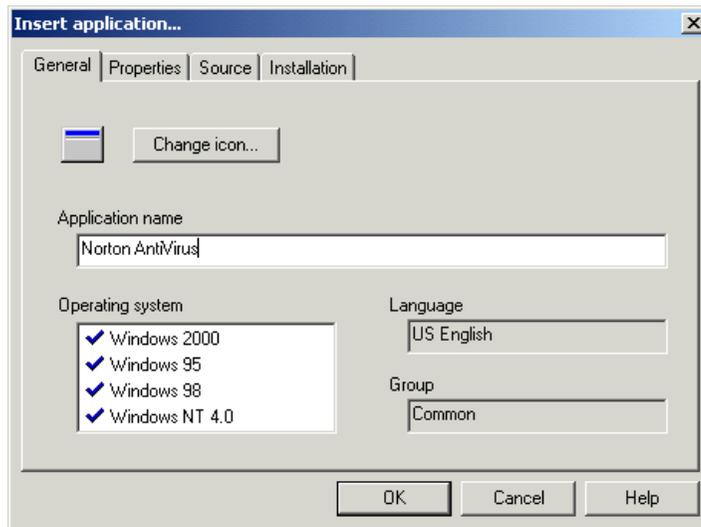
*Figure 213. Insert application - General tab*

Here we changed a standard program icon into a specific one:
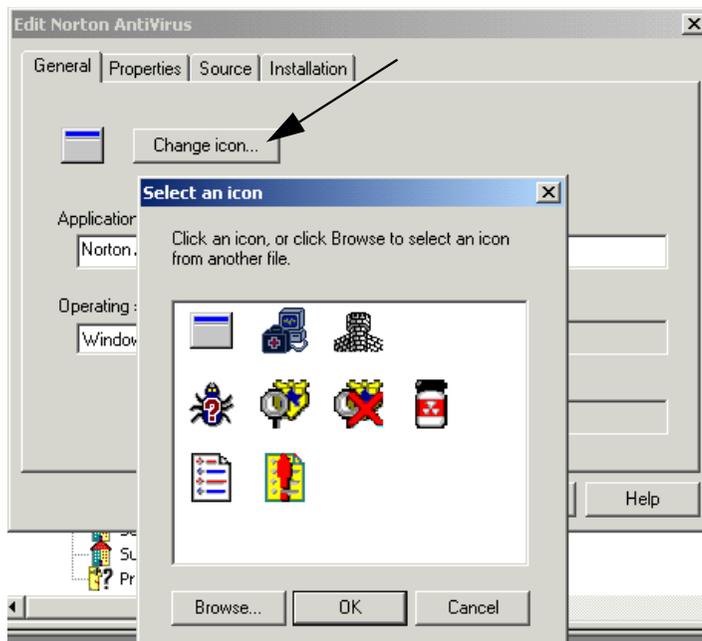


*Figure 214. Changing the application's icon*

In the Properties tab, specify the following information:

- If you want the users to be able to uninstall this application through SDA-Installer, specify its name as it appears in Windows Add/Remove Programs.
- The version of this application.
- The approximate disk space required to install this application (in MB). This number is only shown in SDA-Installer and will not be used by any program to reserve this amount of disk space.
- You can also specify a description of the application that you want to be shown as a banner when the SDA-Installer is run on the end user's machine.
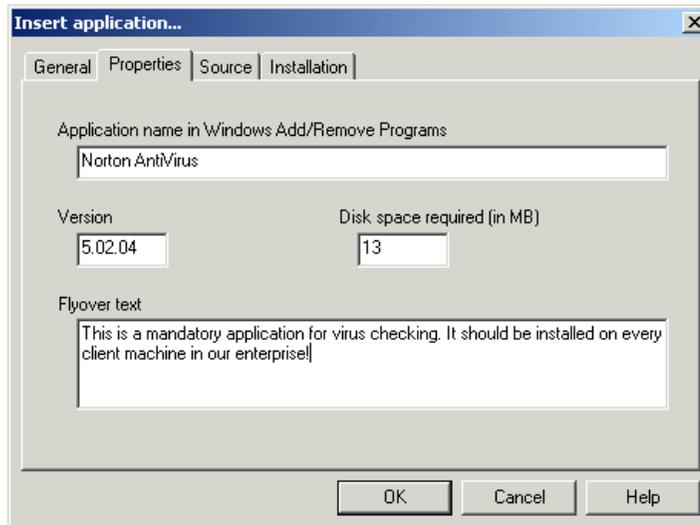


*Figure 215. Insert application - Properties tab*

In the Source tab you have to provide:

- The location of the installation (setup) files. If you don't know where the files are located, click the **Browse** button to find them.
- The name of the installation file. Specify a command for either standard or silent installation including any switches (for example, SETUP.EXE - S).
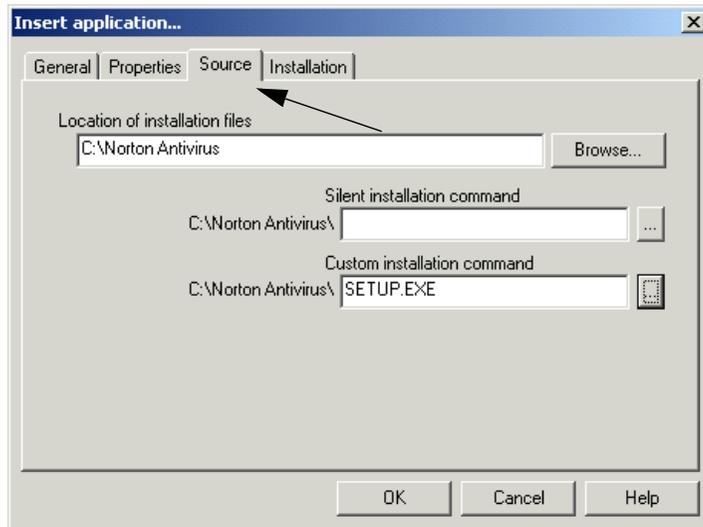
*Figure 216. Insert application - Source tab*

In the Installation tab, you need to specify the following:

- Installation type, which can be Required, Recommended or Optional. Select Required for all important applications that have to be installed during the auto-installation portion of the SDA-Installer. Select Recommended for additional applications where the user can decide whether they need the application. Recommended applications are selected by default in the SDA-Installer window. Use Optional for any additional applications, which are not selected for installation by default.
- The installation sequence has to be selected if you want to install applications which are interdependent (for example, if application B needs to be installed after application A). Priority level 1 is the highest and *Don't care* is the lowest level priority. If several applications are given the same priority level, they will be installed in a random order.
- If a reboot is required for optional applications, click the **Computer restart required** check box to show a prompt for the user to restart the machine after the SDA-Installer has finished installing all the optional applications.
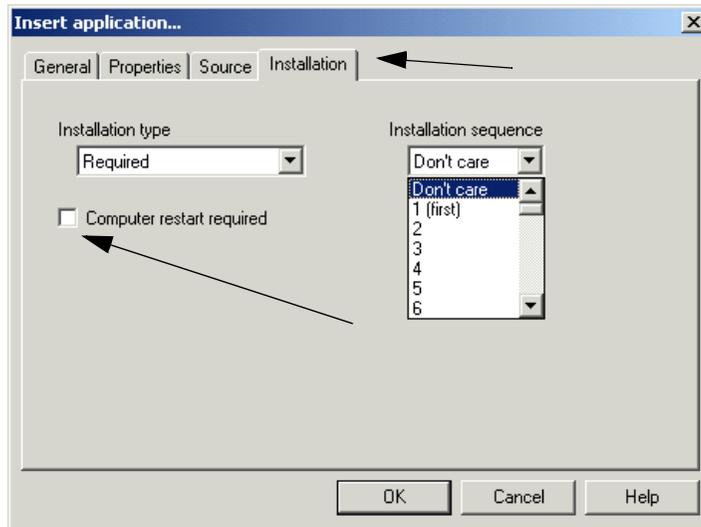
*Figure 217. Insert application - Installation tab*

Click **OK** when you have provided all the required information into the Insert application window. The SDA-Administrator window will open the workspace with the added applications for all selected operating systems. Following is the result of setting up Norton AntiVirus:
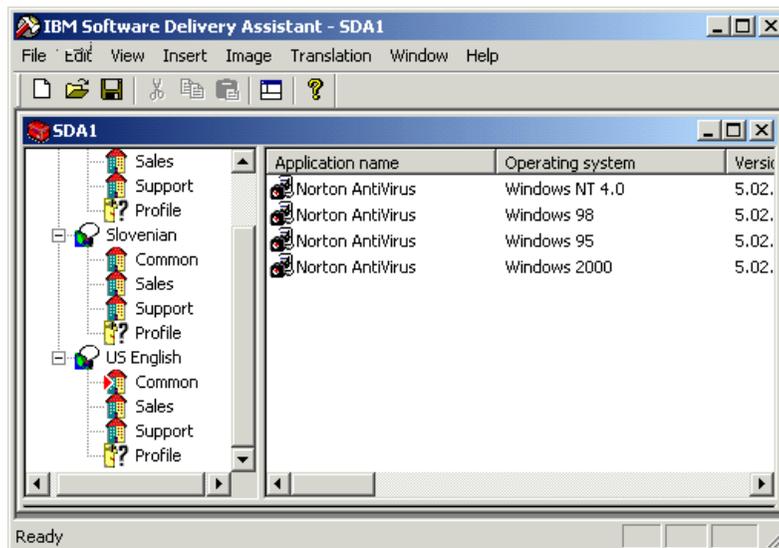


*Figure 218. Newly added application*

Now you can verify that you specified all the required information for this
application by starting **Image -> Preview** from the menu bar. This simulates
the end user's experience with the SDA-Installer.
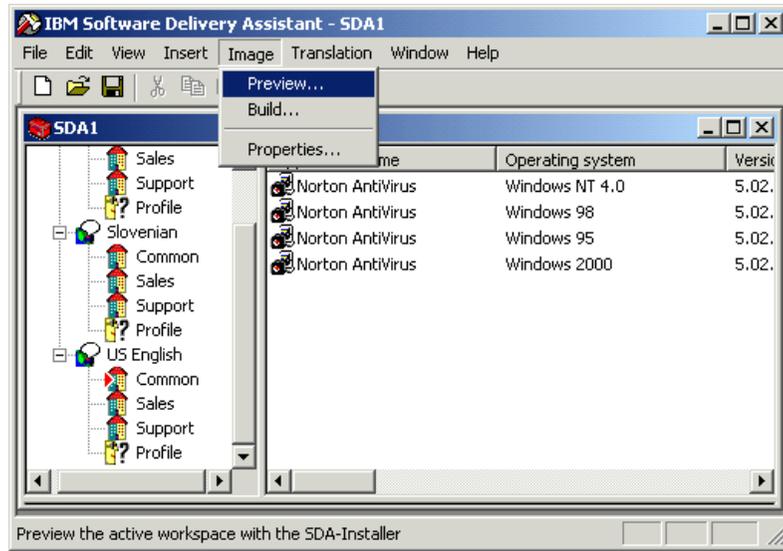


Figure 219.  SDA-Administrator preview

If you have set up several languages, the next window pops up, asking which
language group you want to simulate an image build for:



Figure 220.  Preview language selection

The preview simulates image copying:
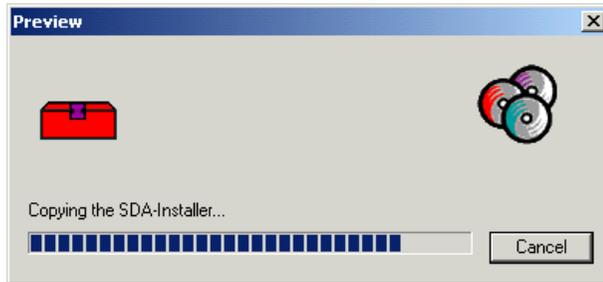
*Figure 221. Simulation*

The SDA-Installer window shows the same thing as if it were started on the end-user machine.



*Figure 222. SDA-Installer preview*

If there were any errors in the preparation, the SDA-Administrator will indicate that. The standard SDA workspace window is shown with a new section in the bottom indicating the status of the last operation:
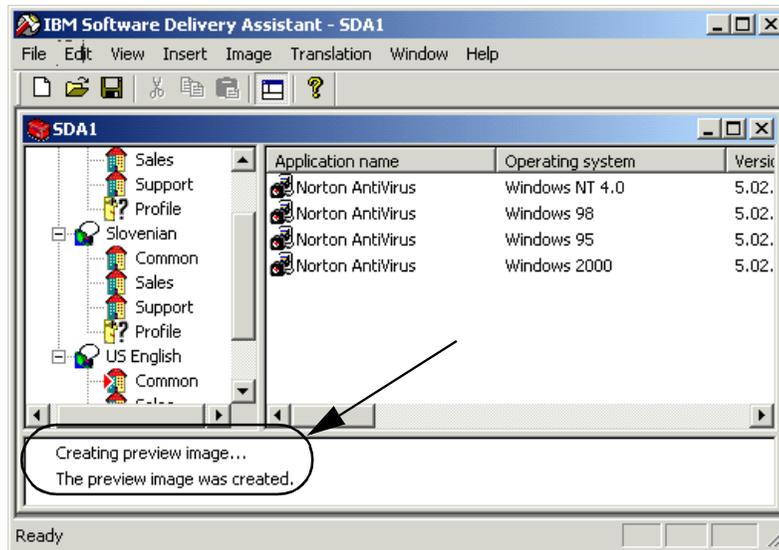


*Figure 223. Last operation status*

The next step is to build the image for this application. Click **Image -> Build** in the menu bar:
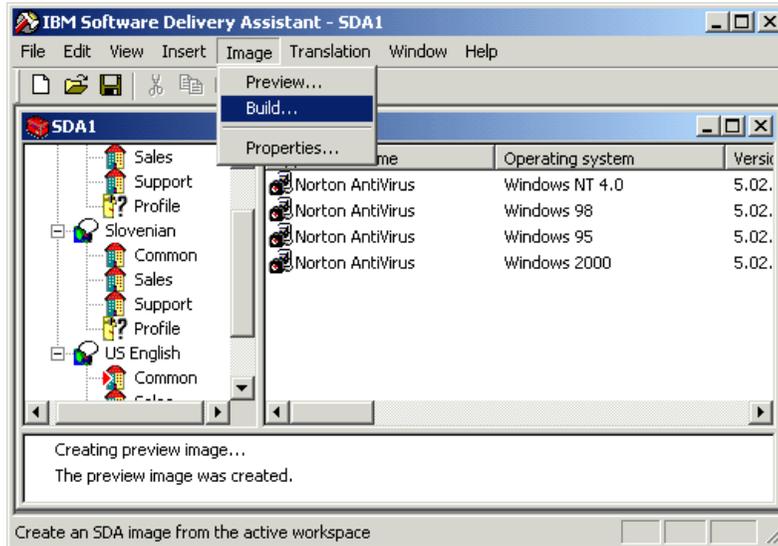
*Figure 224. Initiating the image build*

First, provide the destination location where the image should be copied.
Click **OK** to start copying:
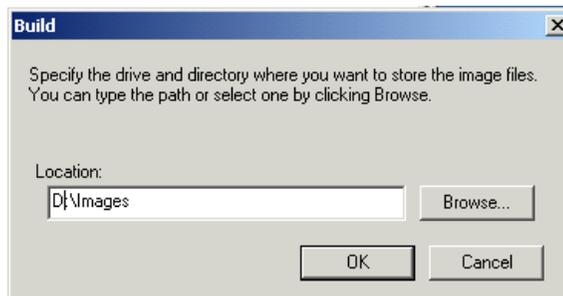


*Figure 225. Selecting the image destination*

The SDA-Installer code gets copied together with the actual application setup
files:
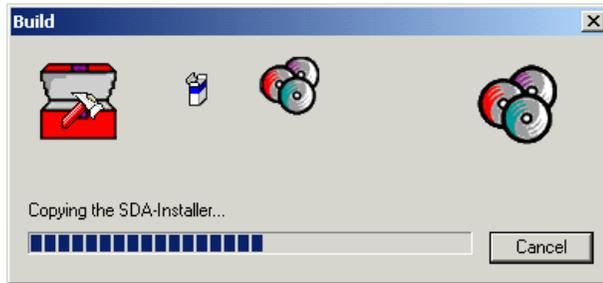
*Figure 226. Copying the files*

When the procedure is finished, SDA notifies you of possible errors or warnings:
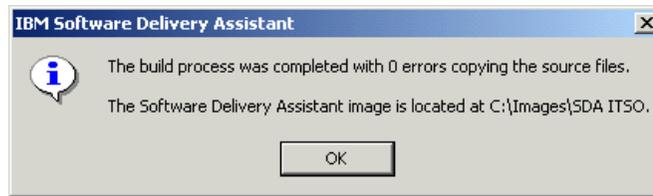


*Figure 227. Build finished*

All of the steps of the image build operation are shown in the bottom part of the SDA-Administrator window. If you click on a particular entry, SDA opens the item in question and gives you the option to edit it:

*Figure 228. SDA build warnings*

In this particular example, no command for the silent install was provided. Since this is not a required entry, only a warning was issued, not an error.
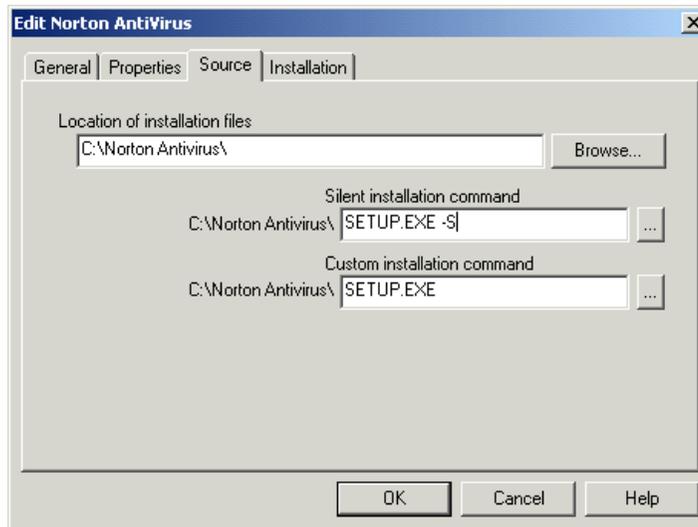


*Figure 229. Reacting to an SDA build warning*

For our example workspace, we added additional applications for different groups:

- For the Sales group we added Lotus SmartSuite Millennium as a recommended application.
- For the Support group we added Universal Manageability Services as a required application.

Here is the final view of the workspace that will be deployed to the client machines of different groups:
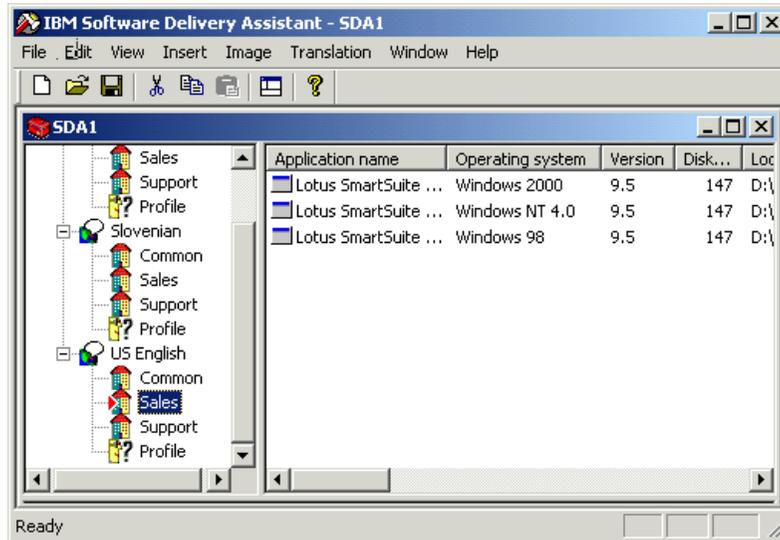


*Figure 230. Example workspace*

When adding an application after the original image has been built, the SDA-Administrator will ask you what you want to do with the original image. You can choose **Replace**, which creates the image for all applications again, or **Update**, which adds only the files for new applications to the existing image. If you want to stop image creation, click **Cancel**:
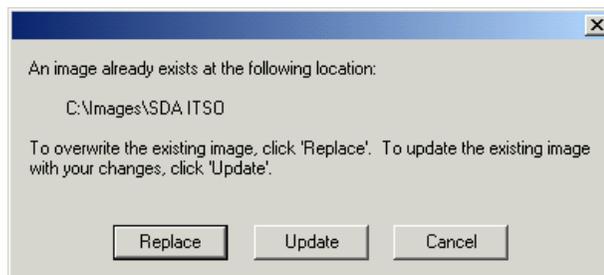


*Figure 231. Workspace image location*

The images were created in the D:\Images\SDA ITSO folder as shown in the next figure:
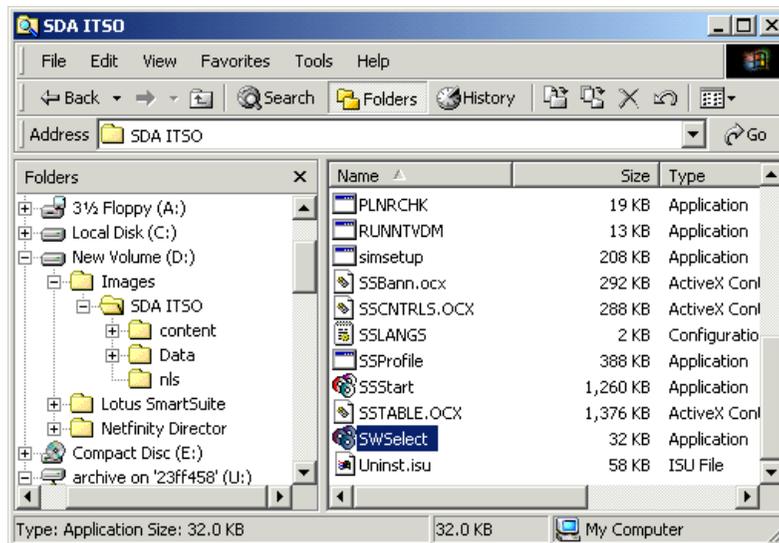


*Figure 232. SDA image folder*

After the images are built, you can download them to the end user's computer. LCCM can be used for distribution (for example, by running a maintenance file at the end of the operating system deployment), or the image can be copied to a CD or ZIP media and transferred to the client machines. Now the client portion of the setup begins, where the SDA-Installer tool is run manually or automatically.

Before closing the SDA-Administrator, the just-created workspace has to be saved. Click **File -> Save** from the menu.

*Figure 233. Saving the workspace*

Provide the SDA workspace file name and location and click **Save**:
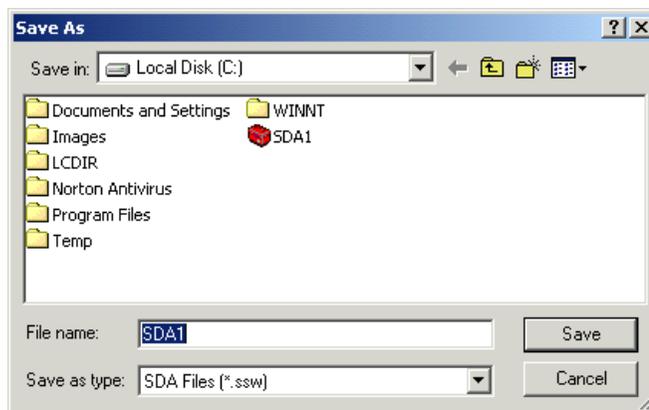


*Figure 234. Defining the workspace file name and location*

### 4.1.2.2 Importing a workspace

If there is an existing workspace created on another SDA-Administrator machine it is possible to import it and modify it according to the end user's group needs. If the new image should include any existing applications from the imported image, the SDA-Administrator will use installation files from the existing image rather than building the images again. Select **Import a**

**workspace from an existing image** option in the SDA wizard or click the
**File -> Import** option from the menu as shown in the next figure:
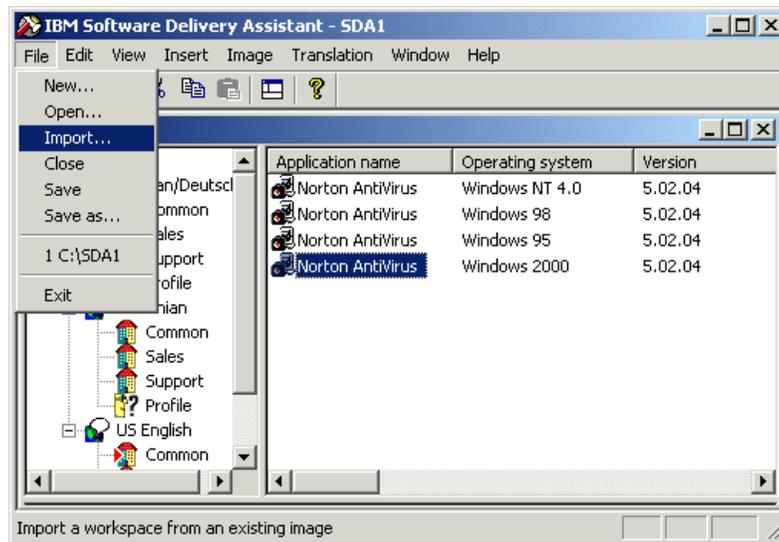


*Figure 235. Starting to import the existing workspace*

You have to provide a new name to modify the existing workspace and the
location of the workspace images:



*Figure 236. Workspace file name and location*

It is also possible to manipulate (move, copy) applications from one
workspace to another. In the following example, we just copied over the UM

Services application from the ITSO to ITSO org workspace without the need to create the application images again:
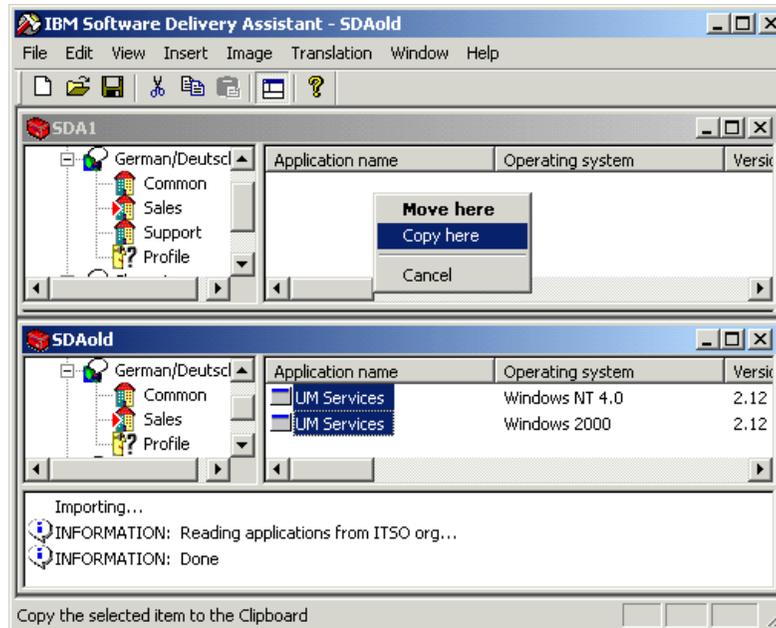


Figure 237. Copying application from one workspace to another

### 4.1.3 SDA-Installer

To start the installation on the user's machine the *SWSelect.exe* file has to be executed. There are several ways to run it:

• Create a shortcut to the file on the user's desktop. In this way, the user can start the installation at his or her own discretion by simply double-clicking the shortcut icon.

  **Note**: It is possible to run the SDA-Installer from a remote network drive, but there is a requirement to share the images folder on the remote machine first and to map that share on the user's machine as a network drive.
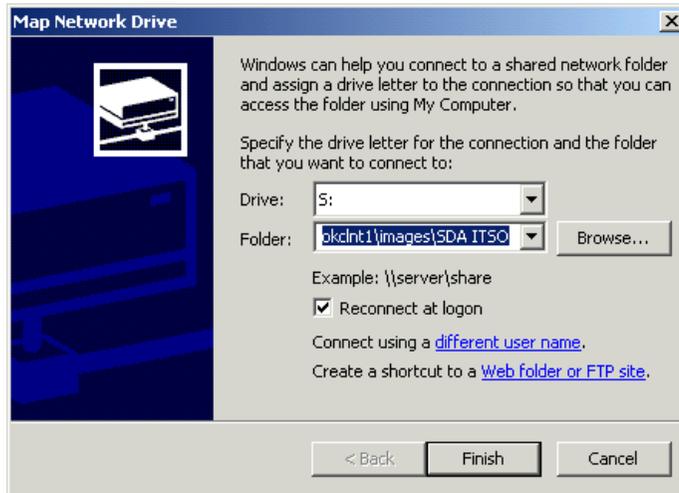
*Figure 238. Mapping a network drive*

In our example, the shortcut points to SWSelect.exe on the S: drive:
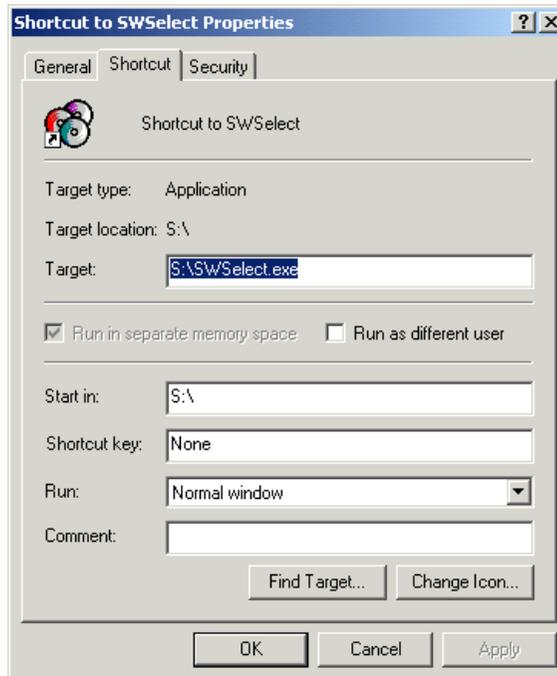


*Figure 239. Shortcut to SWSelect.exe on the mapped drive*

- Create a shortcut to a simple batch file (running SWSelect.exe file only once and then deleting itself) in the Startup folder of the client's machine. This runs the SDA-Installer the first time the machine is started after creating the shortcut.

- Create an entry in the RunOnce registry key of the end user's machine. This will run the SDA-Installer automatically when the machine is run for the first time. In the registry key, HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\RunOnce, create the entry SDA "d:\imagepath\SWSELECT.EXE" as shown in the following figure:
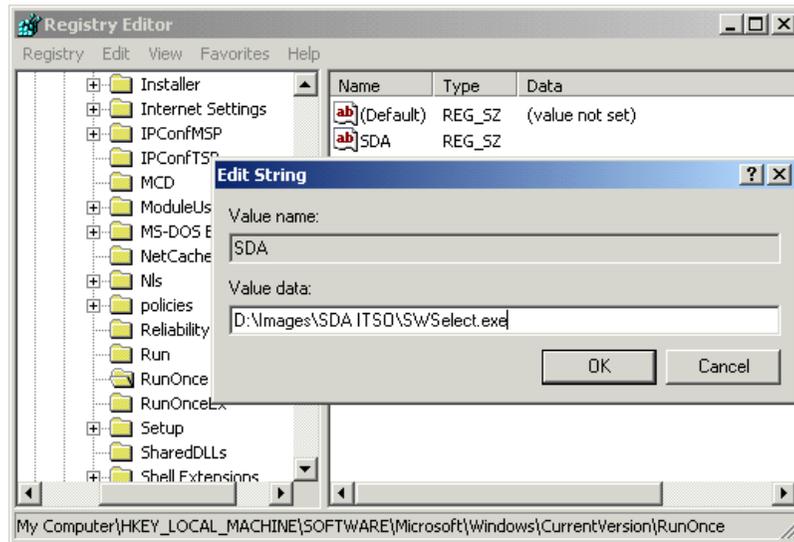


*Figure 240.  Creating a RunOnce entry*

When the SDA-Installer is run for the first time, users are asked to identify themselves as members of one (or several) of the presented groups. This is used as the basis for choosing a required application group to be installed on a particular machine. If you set up additional user-profile fields, they are shown in the user profile window as well (for example, Location):
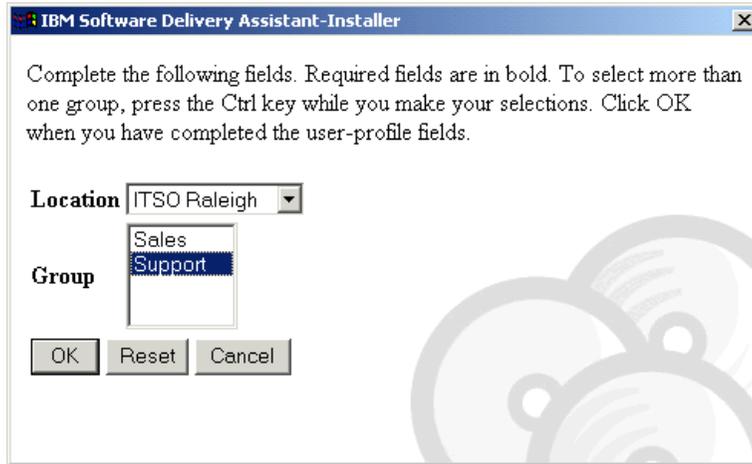
*Figure 241. SDA-Installer: profiling the user*

After selecting the group, all common applications are installed automatically:
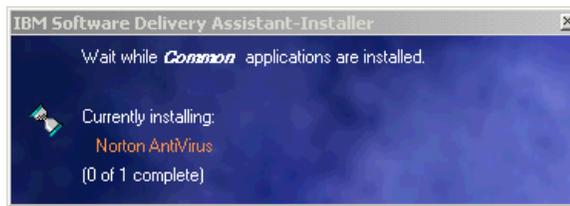


*Figure 242. Installing required applications*

In our example the common application was Norton Antivirus. It was to be installed in the interactive mode, so the user had to select the installation options. To complete the AntiVirus setup just click the **Finish** button:
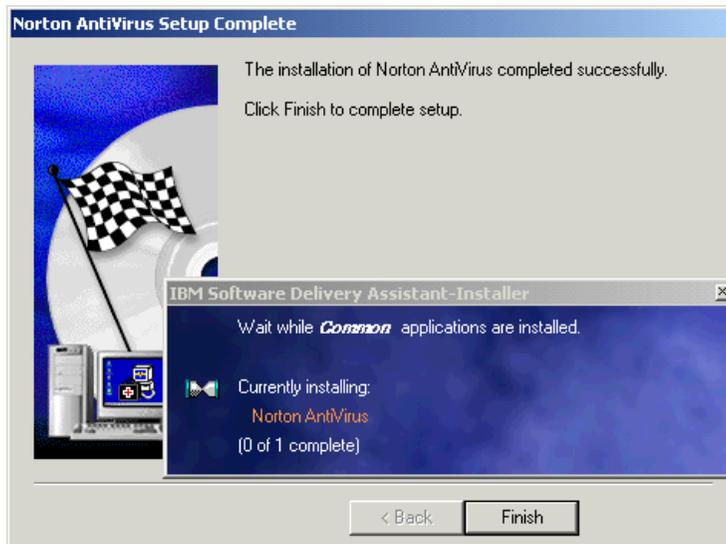
*Figure 243. Installing the common required applications*

Next, all required applications for the chosen group will be installed (for the Support group it was UM Services):



*Figure 244. Installing the required applications for Support group*

When all required applications are installed, the SDA-Installer window opens. In the left pane you can click the operation that you want to perform:

- **Install applications**: They are listed by group order (in our example Sales, Support and Common). Only recommended applications are selected by default.
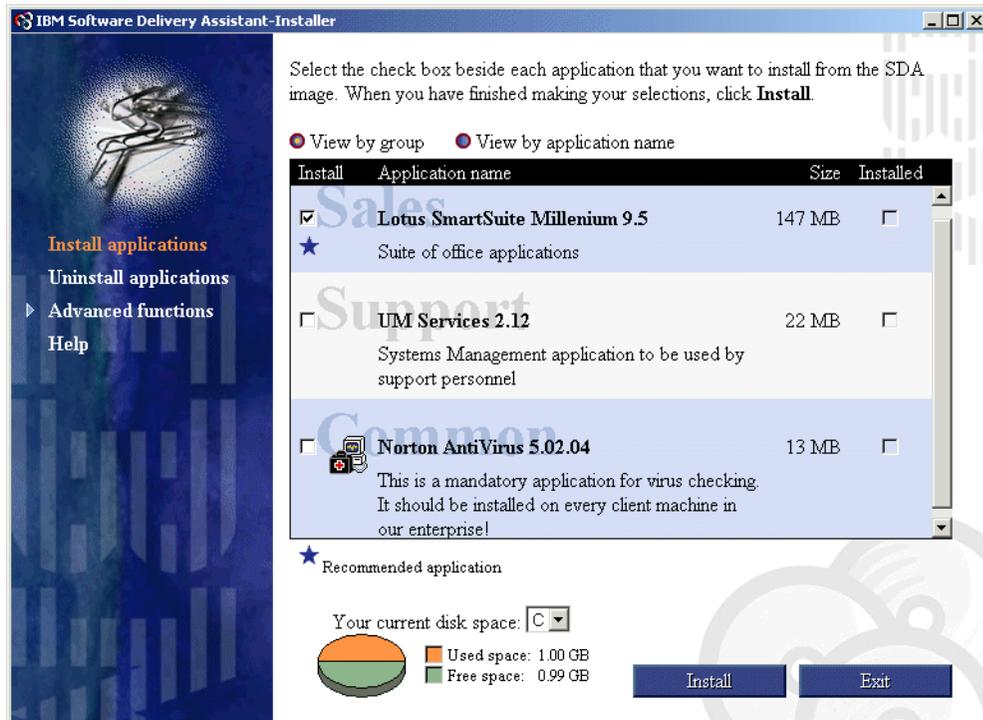
*Figure 245.  SDA-Installer main window*

- **Uninstall the applications**: A list of applications that were installed using the SDA-Installer is shown and you can mark them for uninstall. If a particular application is not on the list, you can click the icon for the Windows Add/Remove utility program to start it from SDA-Installer.

- **Advanced functions - Change settings:** Here you can change the SDA installation image file name and location, the current language of the SDA-Installer text, and the way an application description is shown. You can also enable the custom installation of applications. During a custom installation you can specify certain parameters.
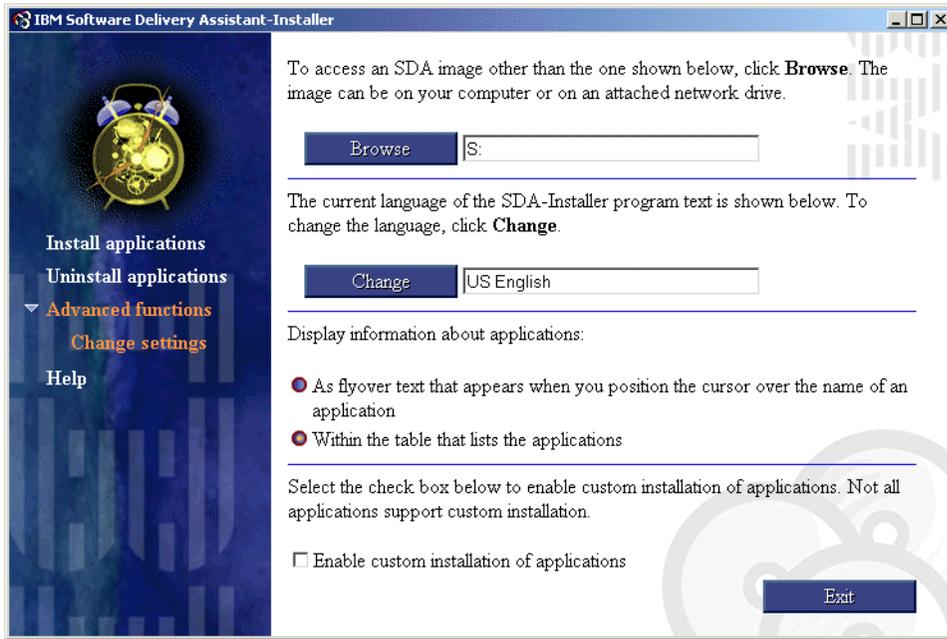
*Figure 246.  Advanced functions - change settings*

    • **Help**: Explanation of SDA-Installer options are provided.

Some of the applications require rebooting the system after installation. When you are finished with the SDA-Installer, click the **Exit** button to close it, then shut down and restart the machine.

# Chapter 5. Moving settings and data files to the new system

One of the most tedious tasks that is undertaken during a traditional rollout of new systems is setting up the user's working environment. Once the operating system has been installed on the target machine, the System Migration Assistant (SMA) tool from IBM can be used to minimize the time needed to capture the existing user's Personality and Connectivity settings as well as a user's created work files and folders, and transfer them to the target machine. In addition, installed applications can be captured and, together with their registry settings, transferred to remote systems.

There are some tools from Microsoft that can be used to do tasks similar to SMA. Such an example is IntelliMirror. However, there are several reasons to select SMA for the above-specified tasks:

- SMA is geared toward companies trying to migrate user settings and data from old hardware systems with older operating systems, to new machines, probably running the latest operating system. IntelliMirror, on the other hand, is primarily a tool to back up and restore data on the same system and to allow roaming users to access the same applications on different machines.
- SMA can be used for migrating user settings from Windows 95/98, Windows NT as well as Windows 2000 operating systems, whereas IntelliMirror can only be used for machines running Windows 2000.
- SMA is a stand-alone tool and needs no external service to run, whereas IntelliMirror needs Active Directory.

You may refer to the *System Migration Assistant Version 2.1 User Guide* for additional details on all the procedures shown in this chapter. This document can be found at:

```
http://www.pc.ibm.com/us/software/sysmgmt/products/sma/
```

## 5.1 System Migration Assistant

SMA uses the idea of a camera, by taking an image of the existing system (the source profile) and then applying the profile on top of the target computer. By creating the sample computer with the specific user environment and needed applications, taking an image of this computer and then applying that image to several target machines, system administrators can save a lot of time and resources when rolling out new machines for departments or companies.

SMA on the target computer can access migration images through the network via mapped drives or the profiles can be put on any convenient storage media such as a CD-ROM or a ZIP drive. It is then used locally on the target machine, where the network bandwidth is of little concern.

SMA can be run as a GUI application in interactive mode or automated in batch mode. When run in batch mode, it gives you the greatest time savings for deploying customized settings and applications to several remote machines at the same time.

SMA has to be installed on both computers: on the source and on the target machine. The first phase has to be run on the source computer before running the second phase on the target computer(s).

We examined procedures for migrating Windows 98 and Windows NT Workstation clients to Windows 2000 Professional. We used System Migration Assistant V2.1 for the examples in this chapter.

## 5.1.1 Requirements for SMA

Before installing System Migration Assistant it is necessary to discuss its prerequisites.

### 5.1.1.1 Minimum computer requirements

The minimum system requirements for running SMA include:

- Pentium class system with at least 4 MB of RAM.

- 5 MB of hard disk space and additional space for output files. This can be anything from a few KB to several hundred MB.

- There are no requirements in terms of the file system used on any particular machine.

SMA can transfer user settings from any Pentium-based machine to selected IBM systems, including PC, IntelliStation, ThinkPad and Netfinity servers. PC, IntelliStation and ThinkPad can be migrated interchangeably while servers can only migrate to other servers.

It is strongly recommended that you log on as a user with administrator rights. SMA requires administrator rights to access Windows registry settings. If SMA is run without administrator rights, the following features can't be retrieved or set in the Windows 2000 operating system:

- Computer name
- Computer description
- DNS configuration

- Shared folders and drives
- TCP/IP configuration
- Workgroup/Domain
- NTFS file permissions

### 5.1.1.2 Supported operating systems

In the scope of this book it is important to clarify the supported operating systems which can be used as the source platform to migrate user settings, data files and applications to a client with the Windows 2000 operating system installed.

*Table 10. SMA - supported operating systems*

| From - To (Migration method) | Windows 2000 Professional (Selective) | Windows 2000 Professional (Mass) | Windows 2000 Server (Selective) | Windows 2000 Server (Mass) |
|---|---|---|---|---|
| Windows 95 | X | | | |
| Windows 98 | X | | | |
| Windows NT 4 Workstation | X | | | |
| Windows NT 4 Server | | | X | |
| Windows 2000 Professional | X | X | | |
| Windows 2000 Server | | | X | X |

**Note**: Selective migration transfers Personality and Connectivity settings and data files. Mass migration transfers applications and registry settings in addition to Personality and Connectivity settings and data files.

## 5.1.2 Installing System Migration Assistant

The installation is very straightforward. In our example the source machine had the C: partition formatted with the FAT file system and D: was formatted with NTFS.

After running setup.exe the following window appeared:

*Figure 247. SMA installation*

By choosing **Next** the License Agreement window appears. After accepting the license agreement the program asks for the installation location:



*Figure 248. Choosing destination location*

After confirming the installation location, the program folder gets created and the following files are copied into it:

```
 Directory of C:\Program Files\IBM\SMA

01/22/2000  02:53p    <DIR>          ..
01/22/2000  02:53p    <DIR>          .
01/22/2000  02:53p    <DIR>          Profiles
01/22/2000  02:53p    <DIR>          support
12/06/1999  05:48p             679 clntmp.bat
04/14/1999  08:03a          53,760 zlib.dll
12/20/1999  02:18p         466,944 smasrc.dll
12/20/1999  02:20p         454,656 smatarg.dll
10/04/1999  12:57p          24,576 CheckVer.exe
12/20/1999  02:25p         188,416 srcbat.exe
09/25/1999  10:26p         332,808 Com32upd.exe
12/20/1999  02:23p       1,601,536 Source.exe
12/20/1999  02:23p         167,936 tarbat.exe
12/20/1999  02:24p         499,712 Target.exe
01/22/2000  02:53p           5,275 Uninst.isu
12/14/1999  09:15a           3,093 tarcommands.txt
12/29/1999  05:15p           9,745 license.txt
12/17/1999  02:59p          10,695 srccommands.txt
```

Here is a list of executable files of interest:

Table 11.  SMA executable files

| Executable file | Description |
|---|---|
| Source.exe | Executes interactive source part of SMA (Windows interface) |
| Target.exe | Executes interactive target part of SMA (Windows interface) |
| Srcbat.exe | Executes batch source part of SMA (command interface) |
| Tarbat.exe | Executes batch target part of SMA (command interface) |

The subfolder SMA\support contains the settings.txt file. The subfolder SMA\PROFILES contains no files.
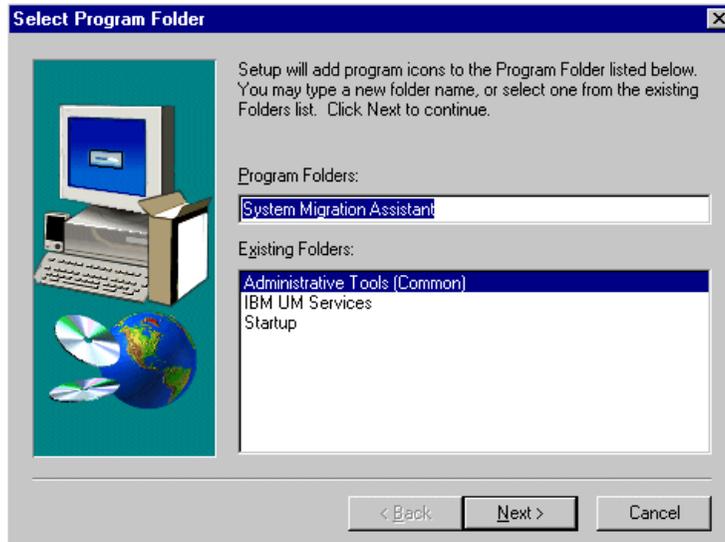
*Figure 249. Creating SMA's program folder*

After copying the program files, the system has to be restarted:
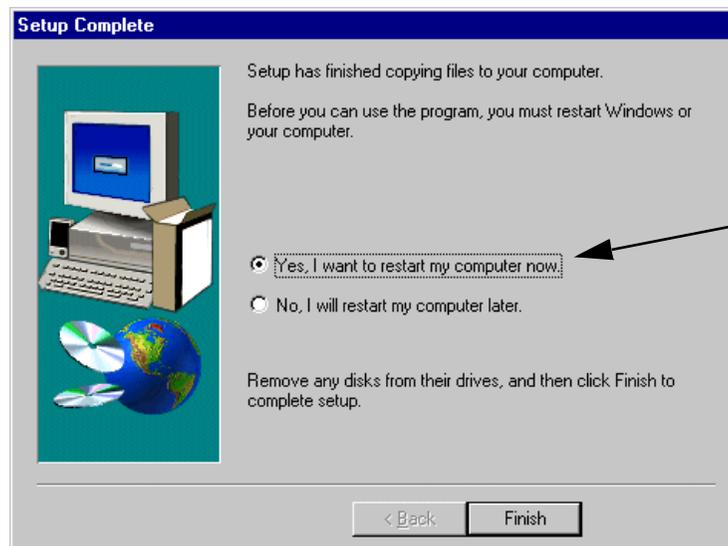


*Figure 250. Completing the installation*

### 5.1.3  Capturing a user environment using Source GUI program

To start the Source SMA GUI program, click **Start -> Programs -> System Migration Assistant -> Source**.

This runs the SOURCE.EXE program in the \Program Files\IBM\SMA folder.
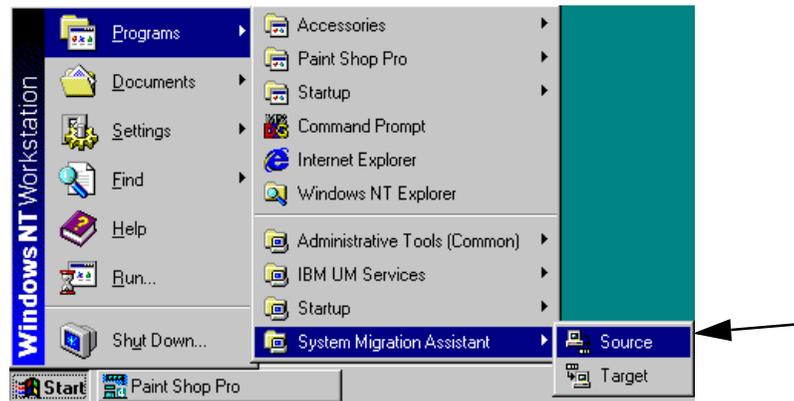


*Figure 251.  Starting the SMA Source GUI program*

To enable the complete capturing of user settings it is recommended that you close all running applications.

**Note:** The migration process can be stopped at any time. Click the **Cancel** button in any window. SMA prompts you to confirm that you wish to terminate the program. If so, click **Yes**.

The first information window appears explaining the SMA source module and migration methods:
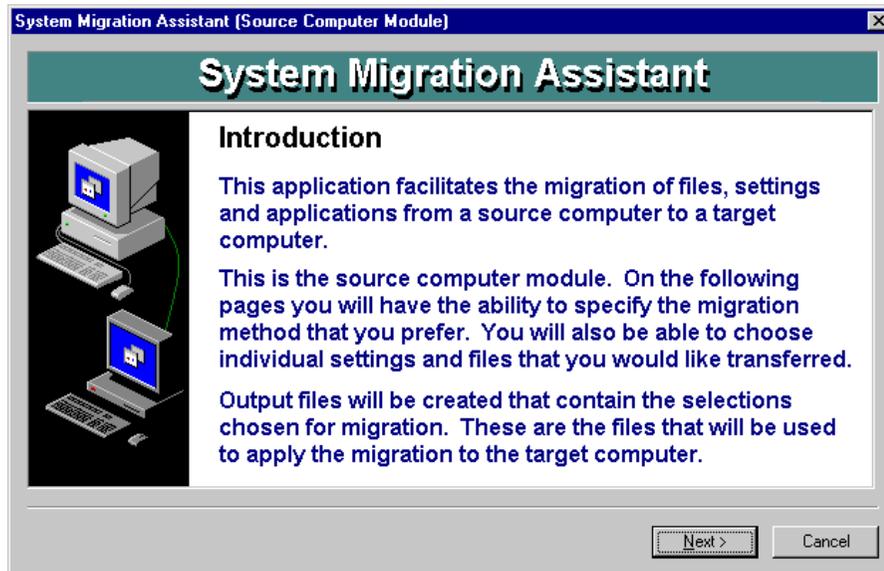
*Figure 252. Source module*
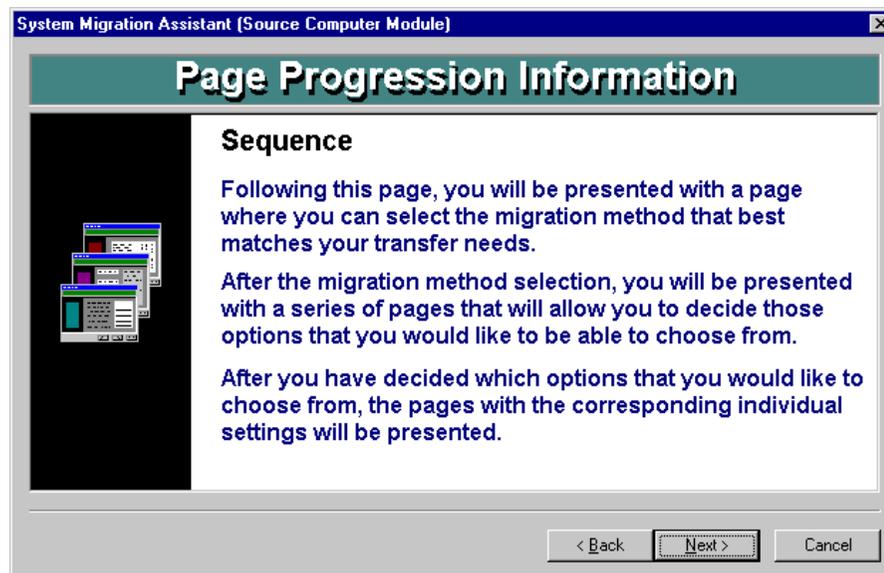


*Figure 253. Different migration methods*

There are two possible migration methods:

1. Selective Migration allows you to migrate Personality and Connectivity settings, user files and folders.

2. Mass Migration replicates user settings, files and folders as well as registry settings and installed applications. This means that it is possible to migrate everything from a source to a target computer with the exception of the operating system.

**Note:** The default behavior of the SMA GUI program is determined in SETTINGS.TXT in the \Program Files\IBM\SMA\Support folder and can be changed. It is possible to transfer the Windows registry settings running Selective Migration as well. However, if you are not careful you can disable or destroy the target registry by migrating the wrong settings.

A sample of this file can be found in Appendix A.1, "SMA GUI program's configuration file" on page 315.
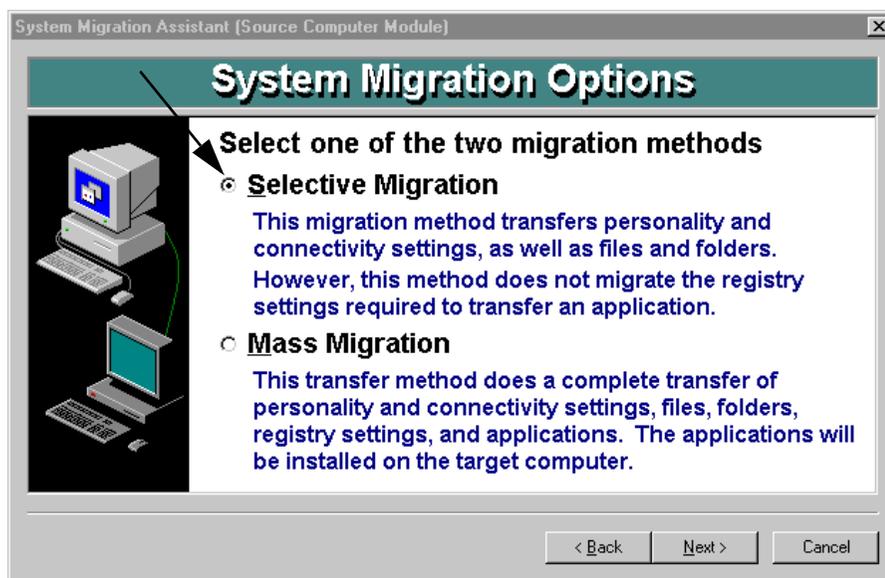


*Figure 254. System Migration Options*

### 5.1.3.1  Selective Migration
In the following steps you can select which settings should be migrated.

If the check box for Personality Settings is ticked, the following settings will be shown:

- Accessibility
- Active Desktop (active state)

- Colors
- Desktop Icons
- Display
- Icon Font
- Internet Browser
- Keyboard
- Mouse
- Pattern
- Printers
- Screen Saver
- Send To Menu
- Shell
- Sound
- Start Menu
- Task Bar
- User Profiles
- Wallpaper
- Window Metrics
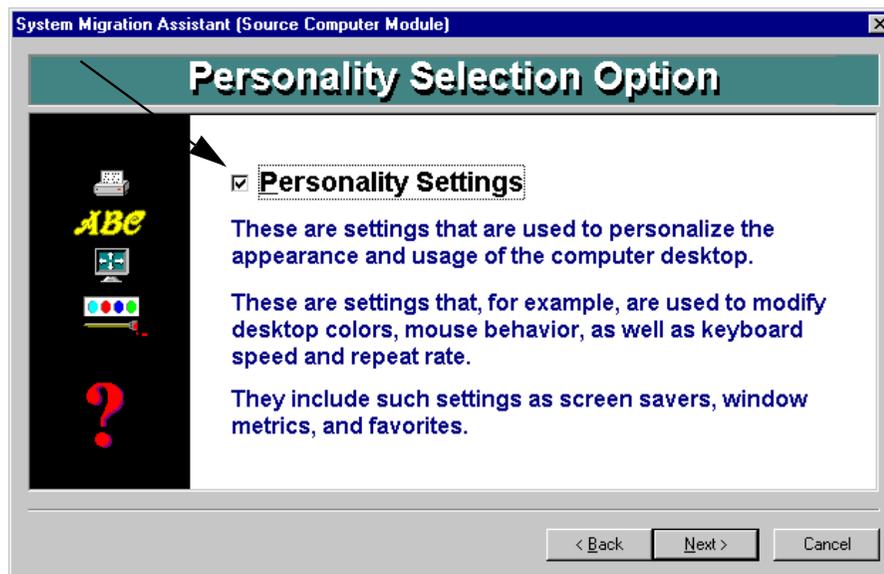


*Figure 255.  Personality selection*

When the check box for **Connectivity Settings** is selected, the following settings are shown:

- Computer Description
- Computer Name

- DNS Configuration
- Domain/Workgroup
- Gateway
- Mapped Drives
- RAS Networking Connections
- Shared Folders and Drives
- TCPIP Configuration
- WINS Configuration
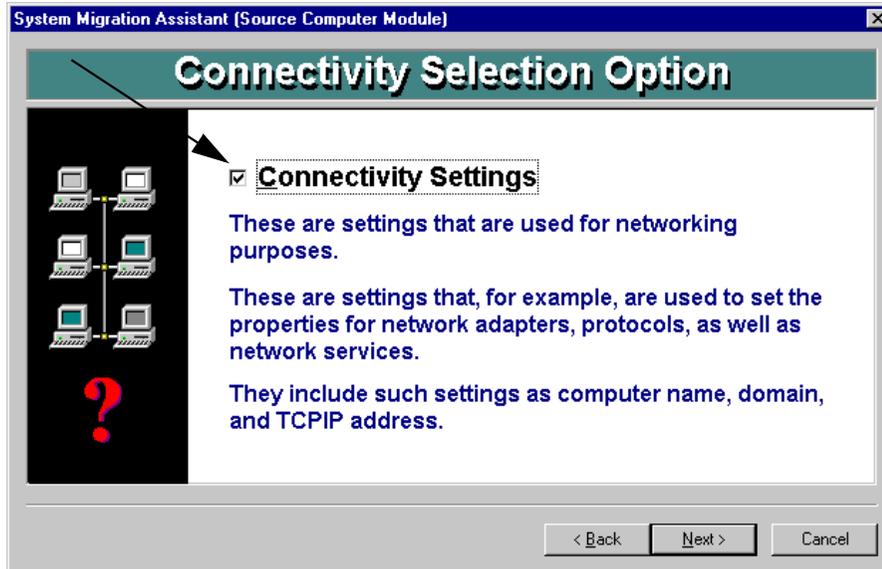


*Figure 256.  Connectivity selection*

In SMA V2.1 there is a new option to migrate some registry entries in the Selective Migration method. If you want the Registry Selection window to show, click the Registry Selection check box as shown in Figure 257 on page 222.
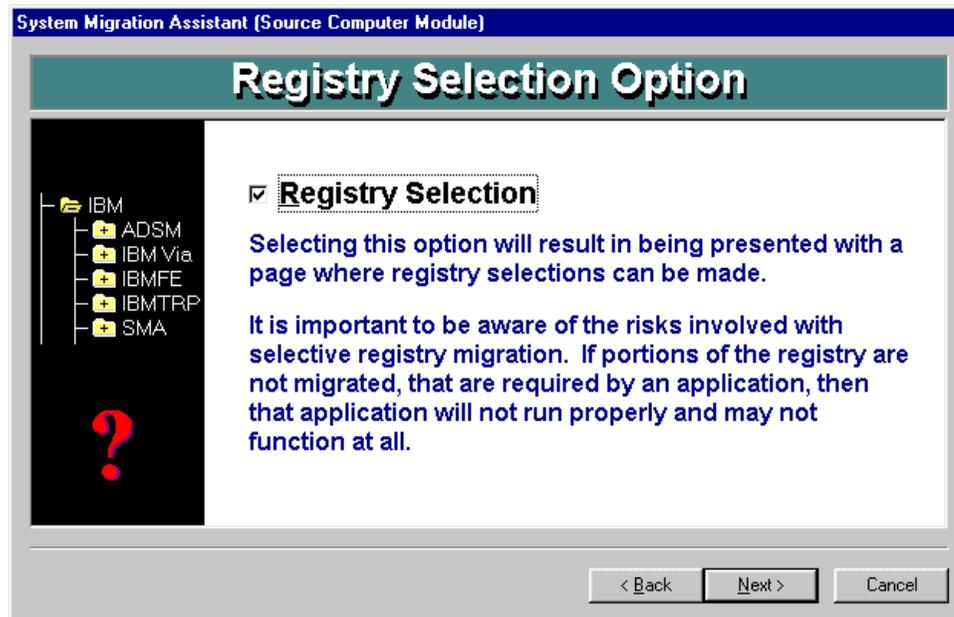
*Figure 257.  Registry selection*

Click **Next** so that you can choose particular file types to be migrated; the tick box for **Extension Selection** has to be clicked:
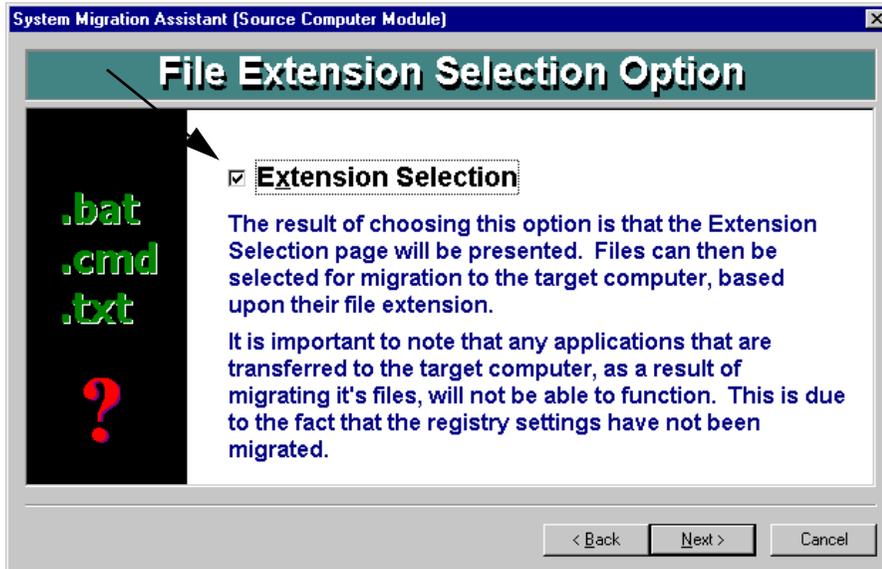
*Figure 258. Option to migrate files based on their name extension*

The next method allows specific files and folders to be directly selected for migration:
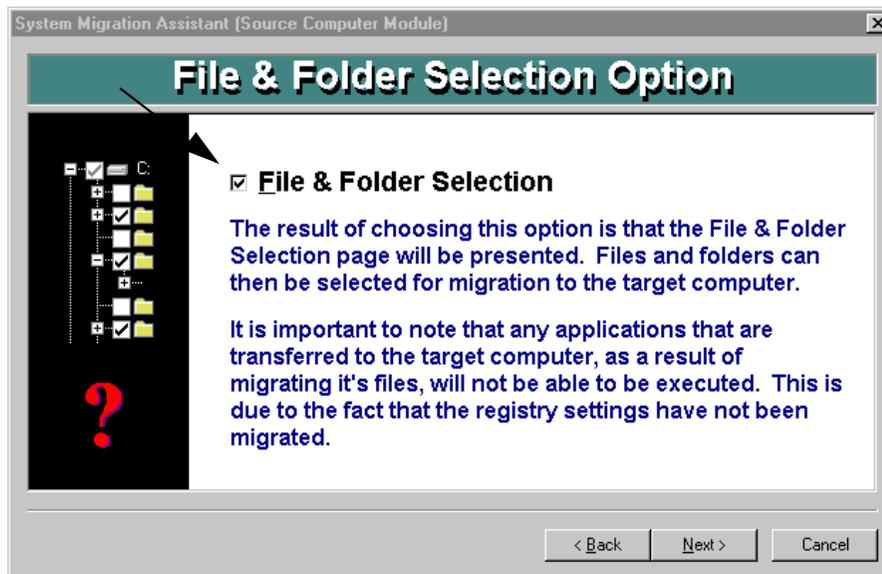


*Figure 259. Option to migrate specific files and folders*

Individual groups of settings can be selected or deselected. If you wish to select all groups, click **Check All**. Click **Clear All** if you don't wish any groups of Personality Settings to be migrated.

The description of a particular settings group will be shown in the bottom part of the window, when that group is selected. In Figure 260 we see the description for Internet Browser, that is, which of its properties will be migrated.
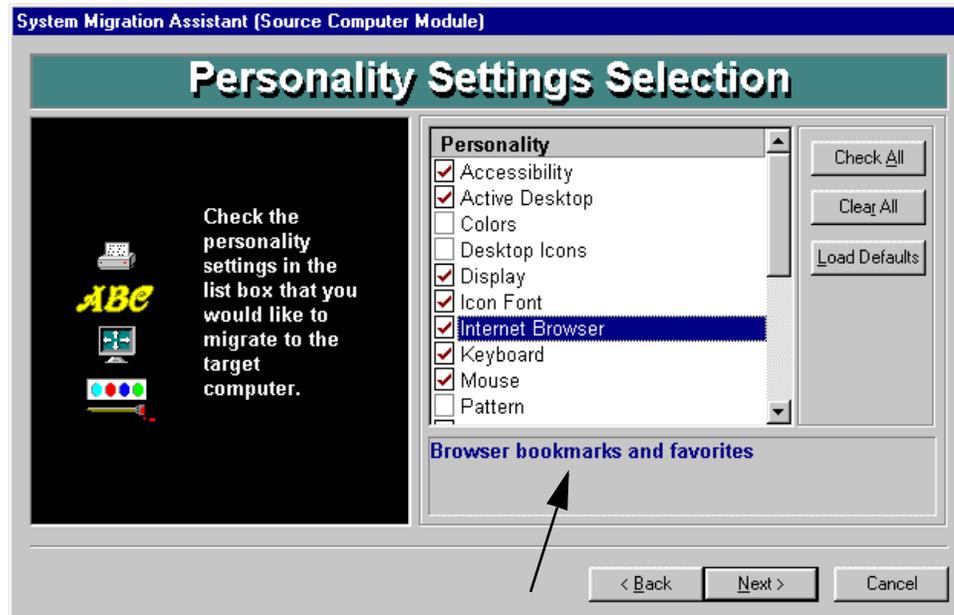


*Figure 260. Selecting individual groups of Personality Settings with description*

Individual groups of Connectivity settings can be selected. If you click the **Load Defaults** button, the items defined in the SETTINGS.TXT configuration file are checked for migration. For further details, see Appendix A.1, "SMA GUI program's configuration file" on page 315.
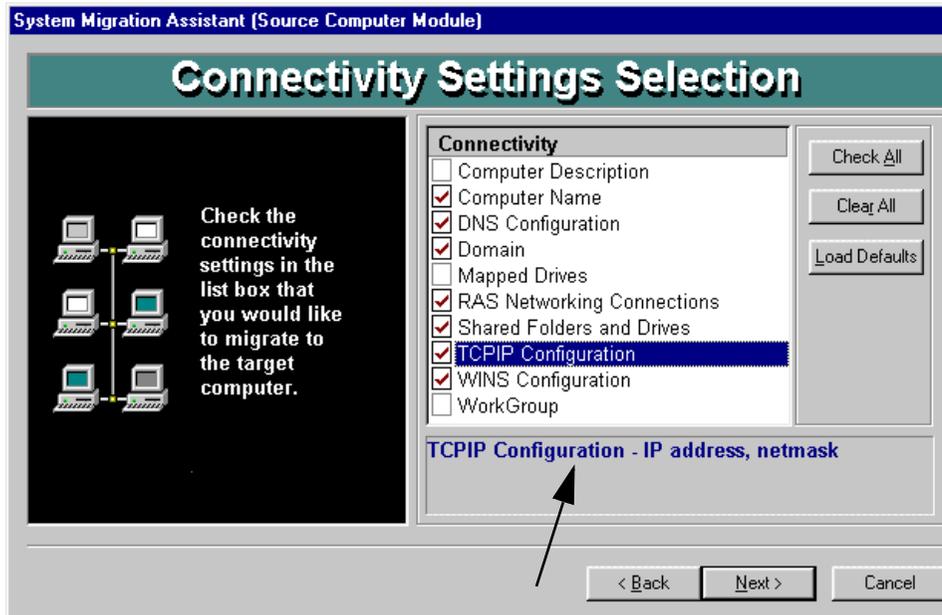
*Figure 261. Selecting individual groups of connectivity settings*

Now you will be able to select some of the registry entries from the HKEY_CURRENT_USER and HKEY_LOCAL_MACHINE hive for migration.

**Note**: You should be careful with this window because if you migrate the wrong entries you might end up with a corrupted target registry and an unusable machine.
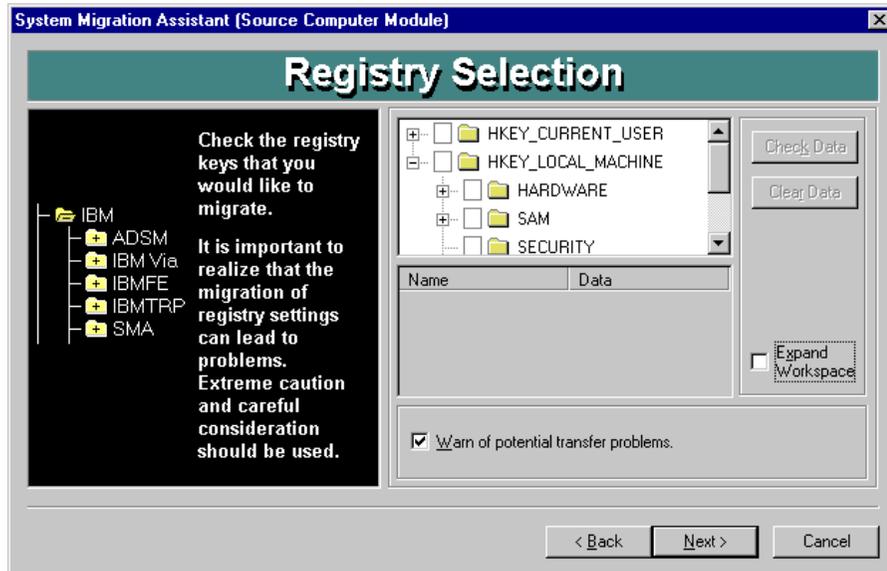
*Figure 262. Selecting registry entries*

If the file and folder option was previously selected, the next window that appears will be the Computer File Scan. Click the **Scan** button and the system will scan the computer and build a list of files, folders and drives.
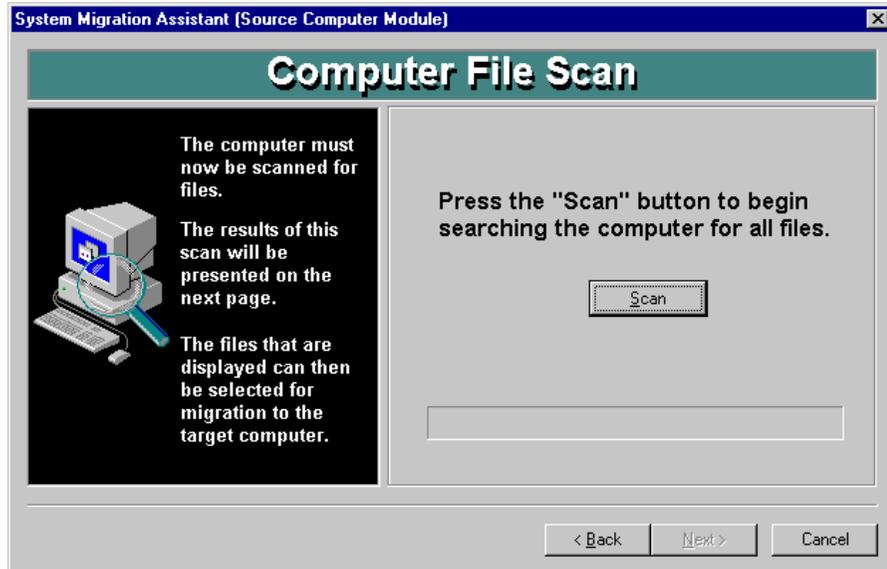
*Figure 263. Starting computer file scan*
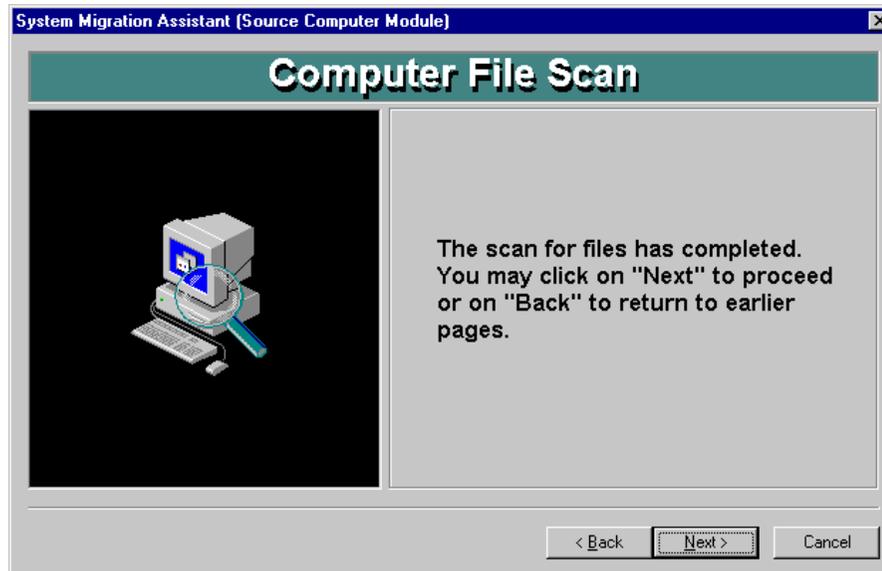


*Figure 264. Computer file scan finished*

When the scan is finished, the program shows a list of found file types, drives and folders on your machine. You can select the particular file types you want to migrate.
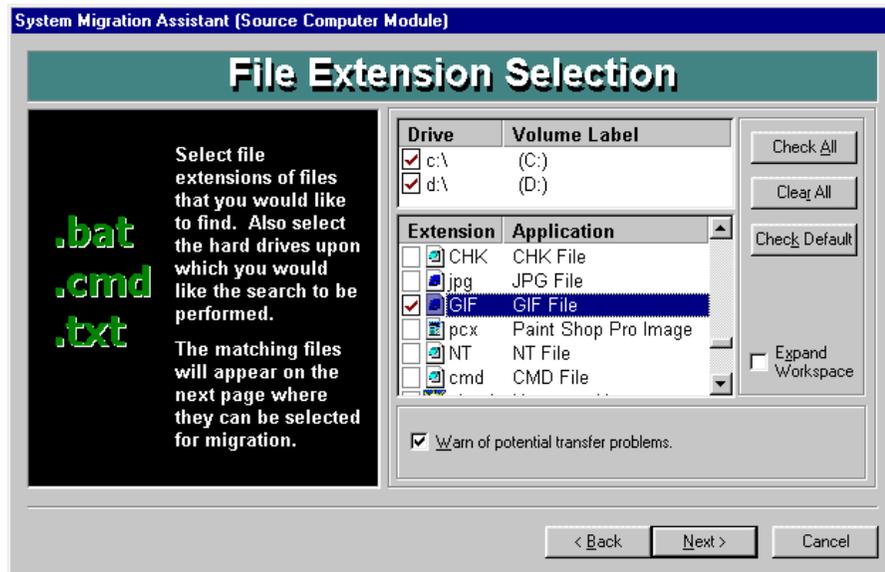


*Figure 265.  Selecting types of files to be migrated*

After the search, the program shows a list of files found of the selected type and you can choose which particular files should be migrated.

Select the **Expand Workspace** check box to expand the found files display.
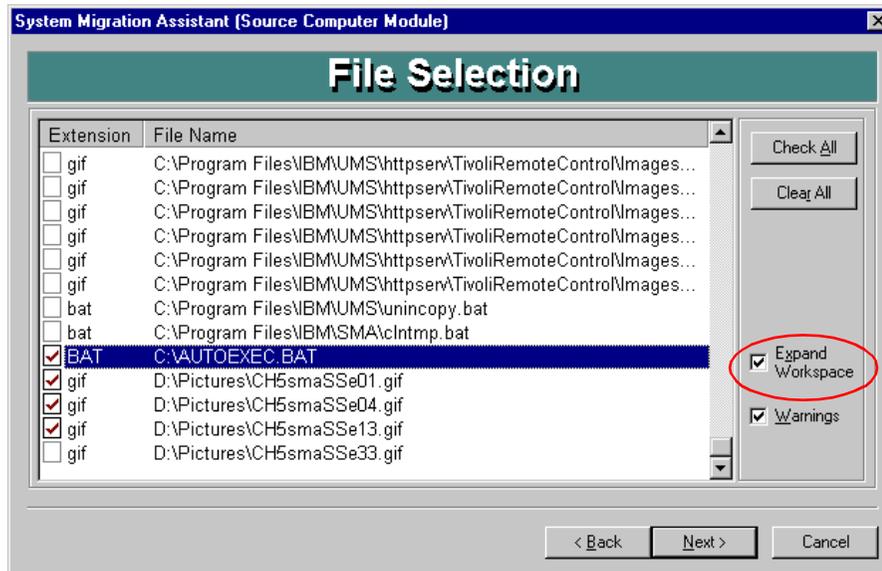
*Figure 266. Expanded display of found files*

Click **Capture NTFS File Settings** if you want to copy the NTFS attributes to the target computer.

When the **Warn of potential transfer problems** check box is selected, the program will warn you that the selected files may cause problems during migration to the new system.

An example of such a warning would be if you select the **AUTOEXEC.BAT** file for migration. As a batch file it contains references to other files and folders that may not be on the referenced location. If that happens, the migrated batch file will produce errors or malfunction.

If the target disk drive does not have enough space available to do the migration you might want to select another target drive. To do this right click it and in the pop-up window click the desired drive letter on the target computer, as shown in Figure 267.
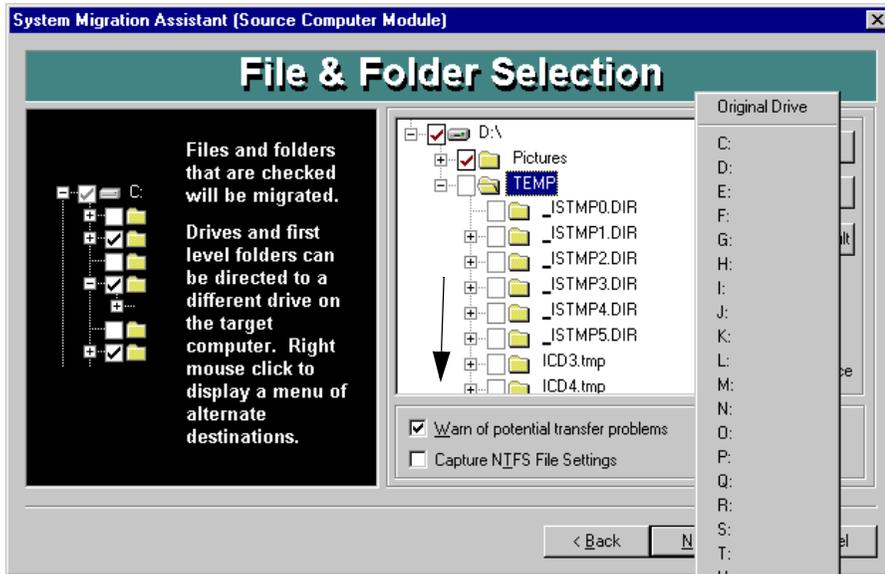
*Figure 267. Choosing a different target drive*

In the next window you define the SMA file name and location. In the bottom text box you can write descriptive text about this migration to distinguish it from other migration profiles.

It is also possible to save the migration profile to an ADSM server. In order to do that, the ADSM (Tivoli Storage Manager) backup client software has to be installed and its node configured. In addition, you have to know your ADSM user ID, ADSM password, and the name of your ADSM server.
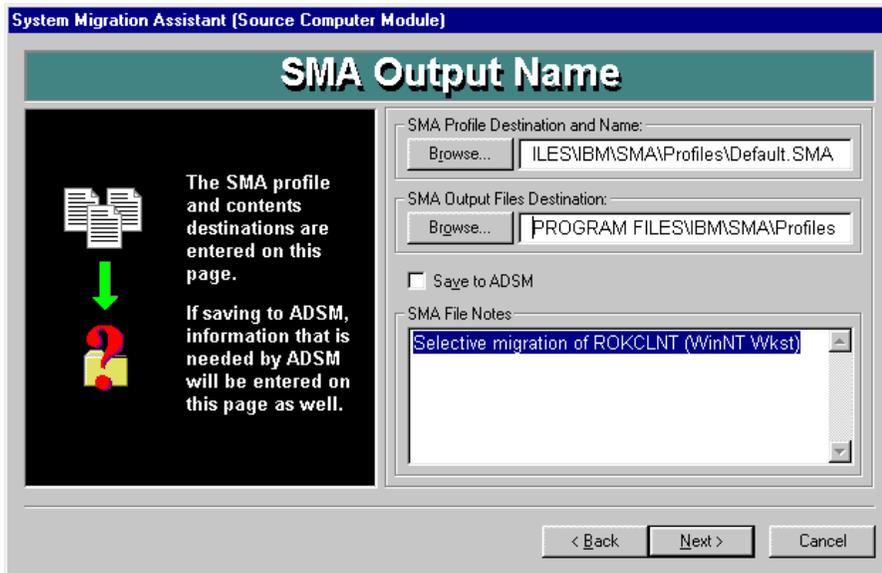
*Figure 268. Selective migration profile name and location*

The last step of this phase is to start the SMA copy process. Click **Start**.
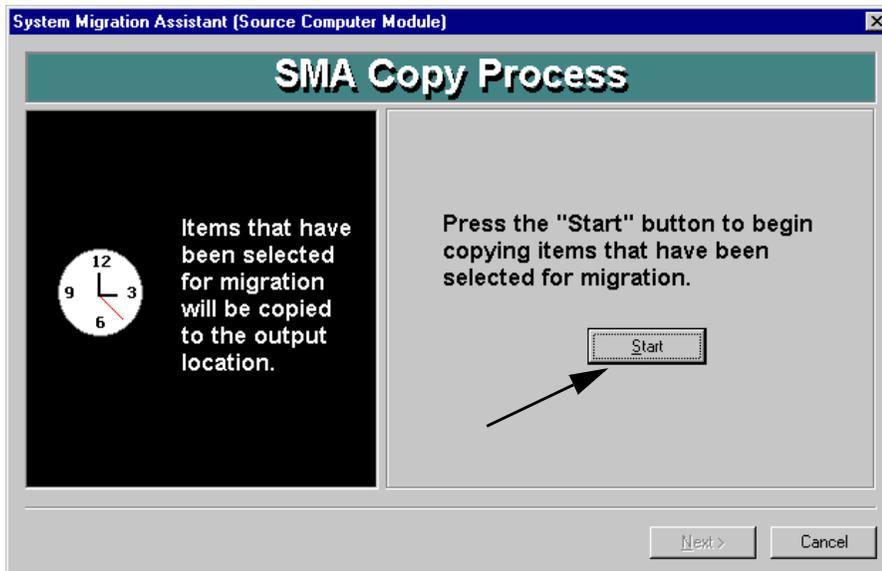


*Figure 269. Start copying process*
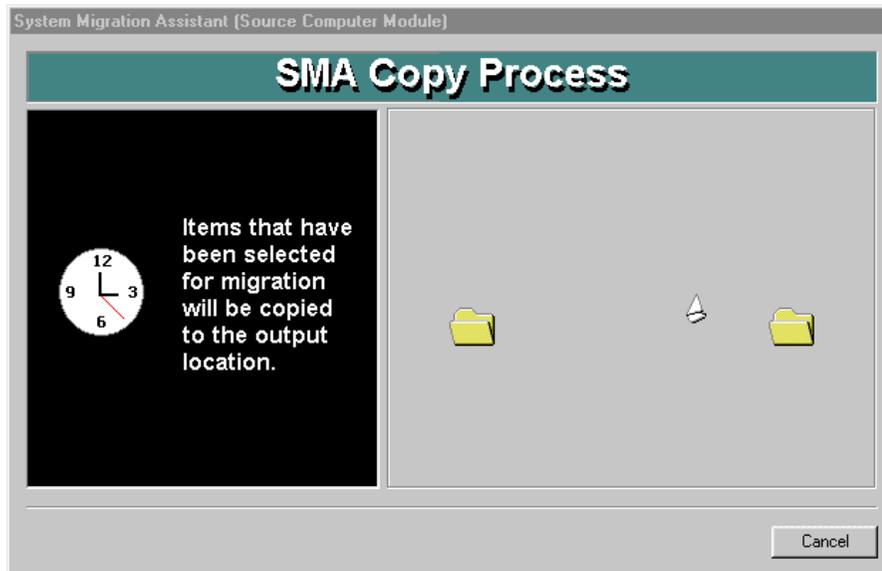
*Figure 270. Copying process*

When the process is finished, click **Next** to view the summary or **Cancel** to exit without viewing the summary.
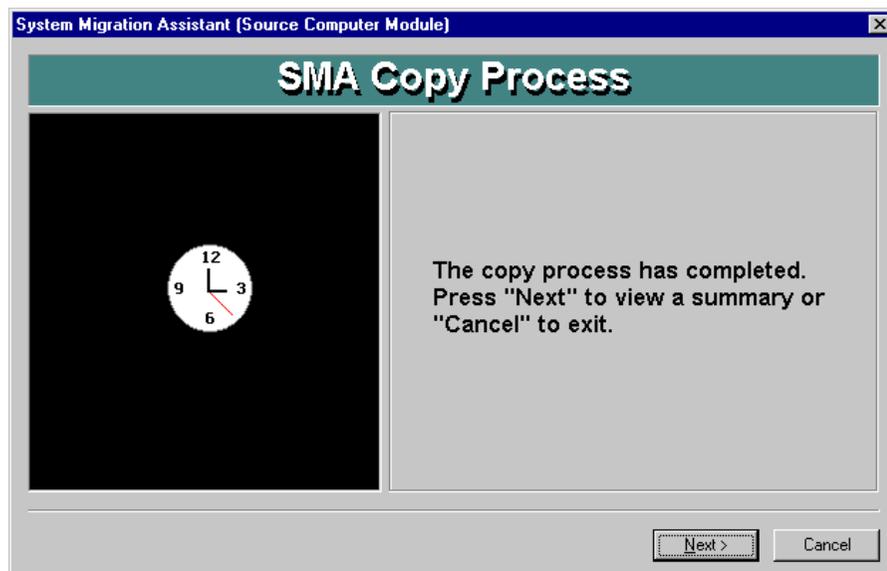


*Figure 271. Finishing copying process*

To end the Selective SMA source phase, click **Exit**.
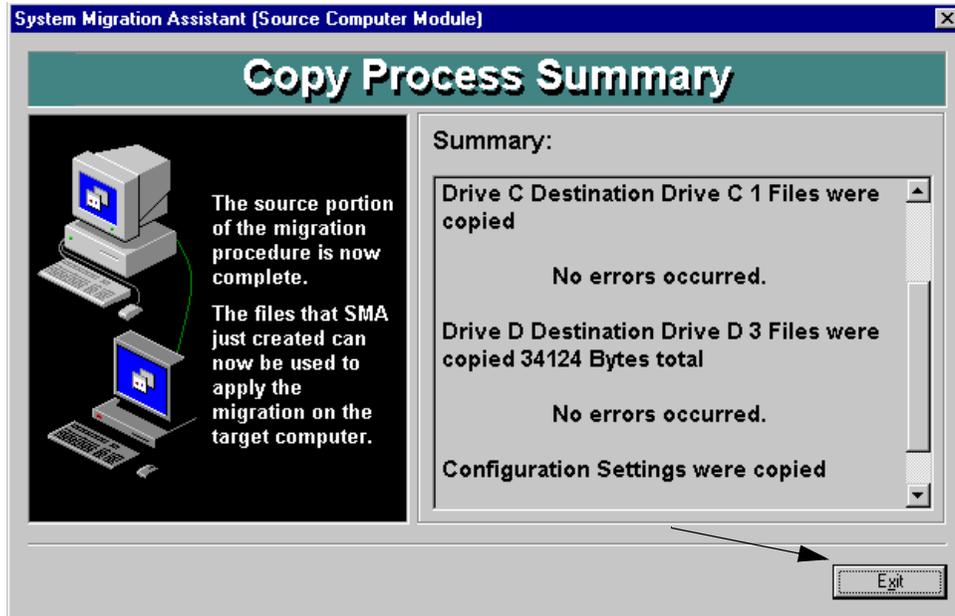


*Figure 272. Selective SMA source summary*

SMA creates the following non-editable migration files in the \Program Files\IBM\SMA\Profiles folder:

- DEFAULT.SMA, which is a main header file (a profile).
- DEFAULT.PRC, which is a profile contents file and stores all the Personality and Connectivity settings that were captured.
- DEFAULT.C01 contains the data files captured from drive C.
- DEFAULT.D01 contains the data files captured from drive D.

At processing time a \Temp directory is used to expand the *.PRC file. When the processing is finished this directory is deleted.

During the migration a *.LOG file is created in the \Program Files\IBM\SMA directory. IBM support asks for that file if you call in for help.

To begin the second phase of the migration process, you need to start the Target part of the SMA (GUI program). See 5.1.4, "Applying captured settings to the target machine" on page 242.

### 5.1.3.2 Mass Migration

If you need to transfer all user settings, installed applications and their registry entries from the target machine, you need to run the Mass Migration.

**Warning**: This is an advanced option that requires the source and target computers to be running the same operating system. The target machine operating system level must be at least equal to or higher than the source computer.

In the scope of our book, the Mass Migration can only be used to migrate Windows 2000 source machines to Windows 2000 target machines.

To start the GUI version of the SMA source module, click **Start -> Programs -> System Migration Assistant -> Source**.
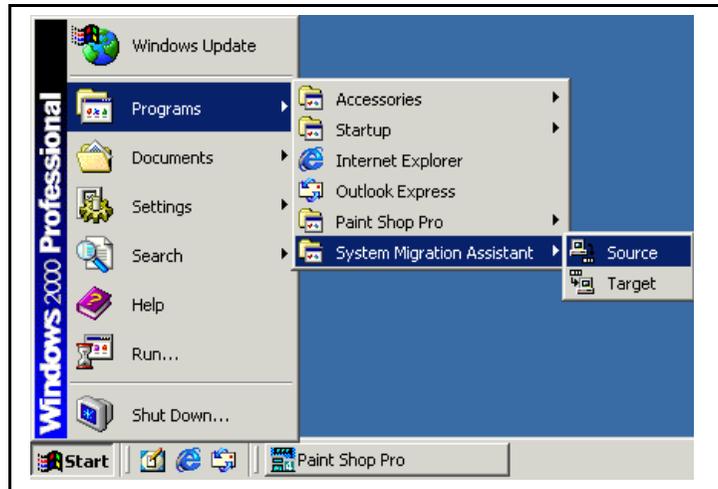


*Figure 273. Starting the SMA source GUI program in Windows 2000*

The next three steps are identical to starting the Selective Migration so please refer to Figures 251, 252, and 253. On the System Migration Option window select **Mass Migration**, as shown in Figure 274.
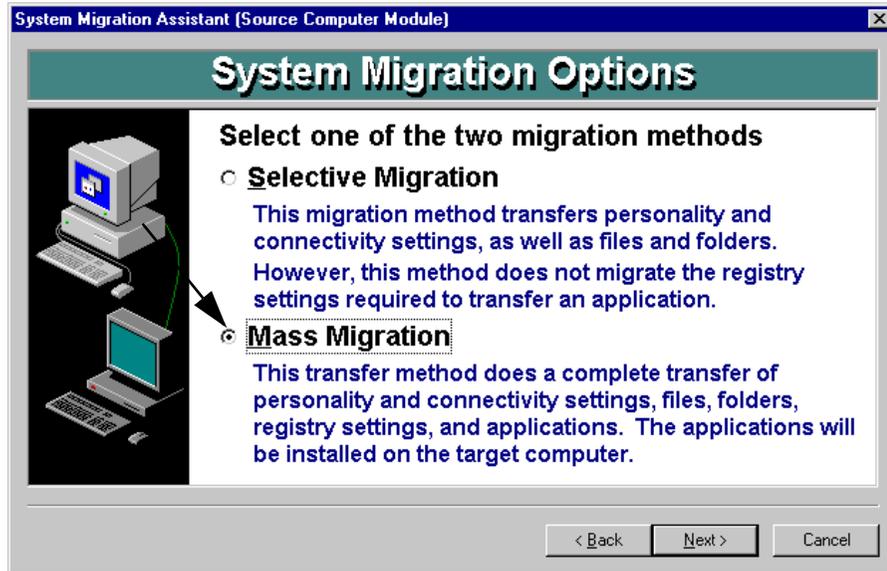
*Figure 274. System Migration Options (selecting Mass Migration)*

If you want to prevent the migration of selected files and folders that could possibly interfere with the successful deployment of the target computer, choose the **File & Folder Selection** check box in the next window:
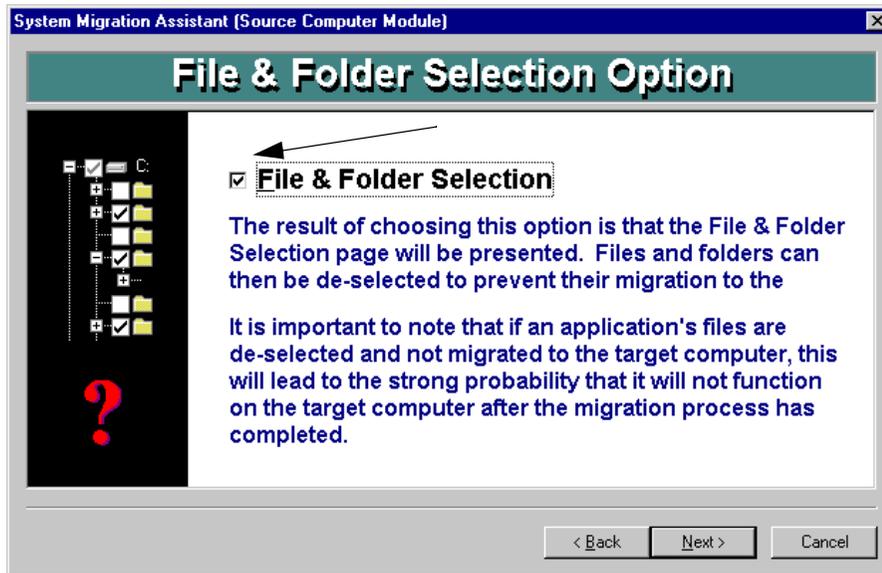
*Figure 275. Preventing migration of selected files and folders*

To start scanning the computer for files and folders, click the **Scan** button:
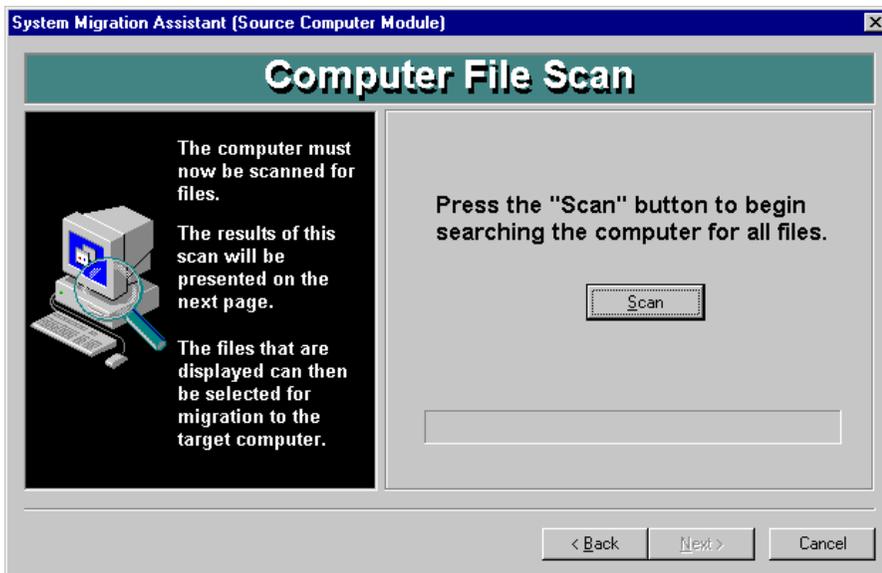


*Figure 276. Starting computer file scan*

With the next window SMA informs you that the scan is completed:
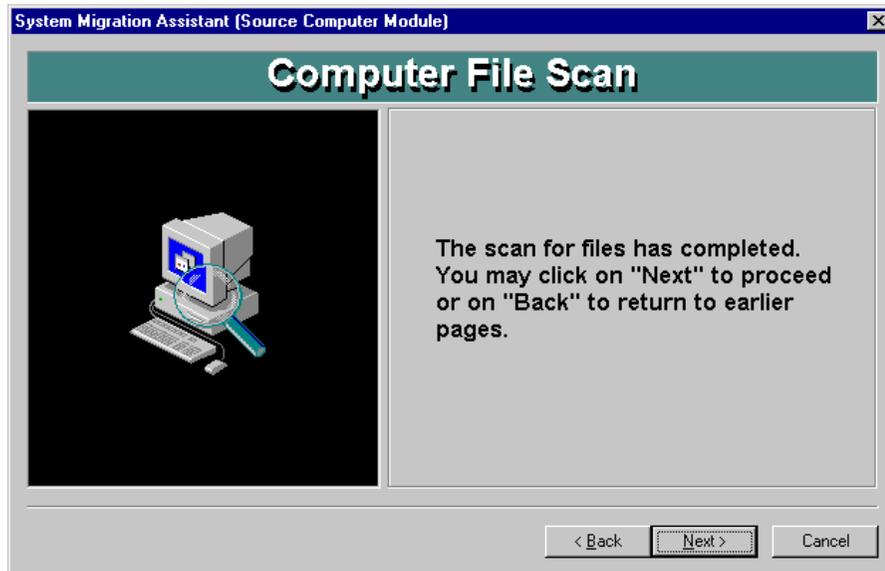
*Figure 277. Computer file scan completed*

You are then presented with a drive tree structure to deselect some of the files and folders. Click **+** to expand disk drives and folders and clear the check box in front of the files or folders that you don't want to migrate.

**Note:** If the target disk drive does not have enough space available to do the migration you might want to select another target drive. To do this right-click it and in the pop-up window click the desired drive letter of the target computer.
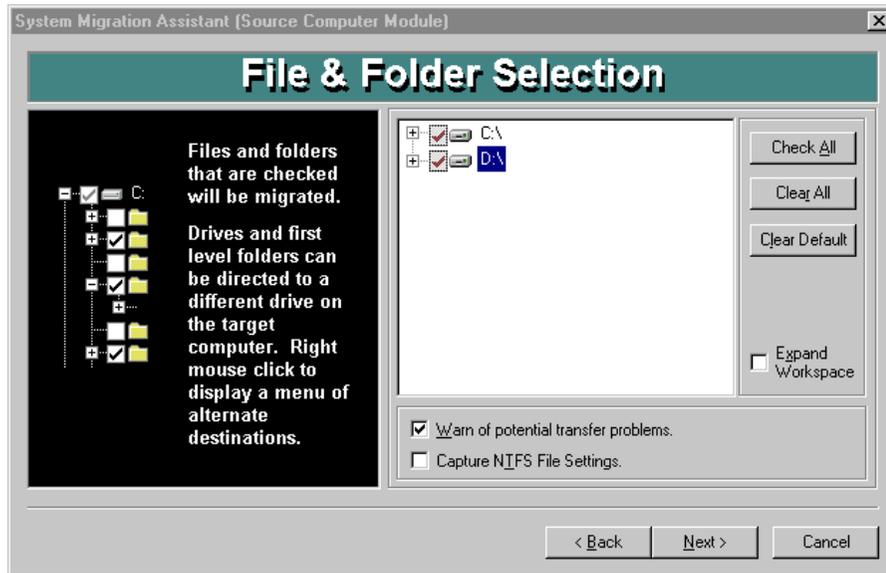
*Figure 278. De-selecting files and folders*

In the next window you will be able to define the SMA profile name and location. In the SMA File Notes box you can insert a profile description.
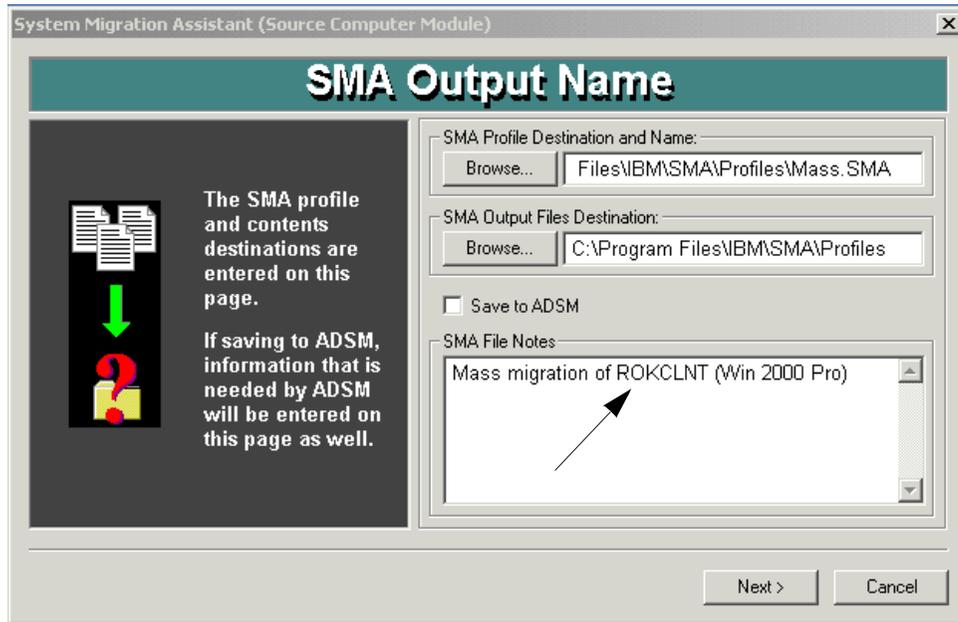
*Figure 279. Mass migration profile name and location*

Finally, start the SMA copying process by clicking the **Start** button.
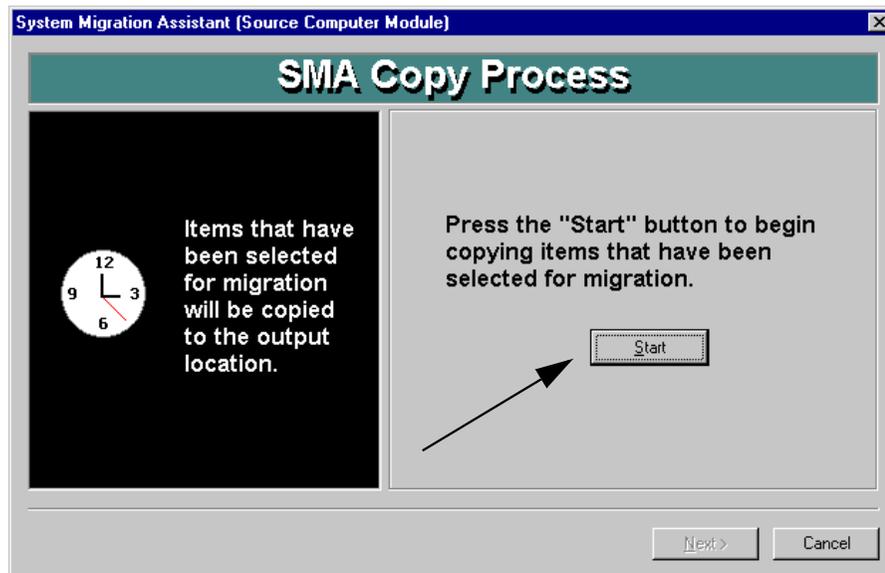


*Figure 280. Start copying process*

The copying might take anywhere from a few seconds to several minutes:
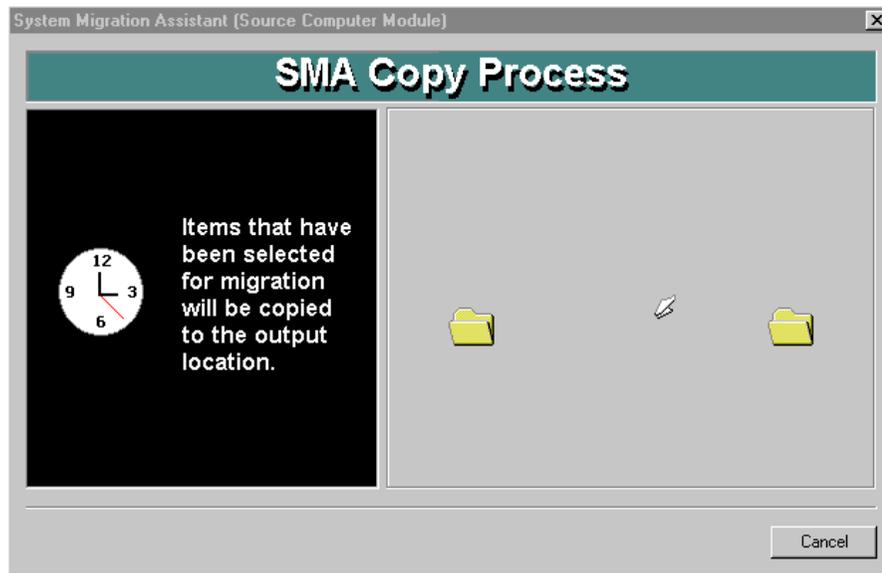


*Figure 281. SMA copying files and folders*

When the process is finished click **Next** to view the summary or **Cancel** to exit without showing the summary.
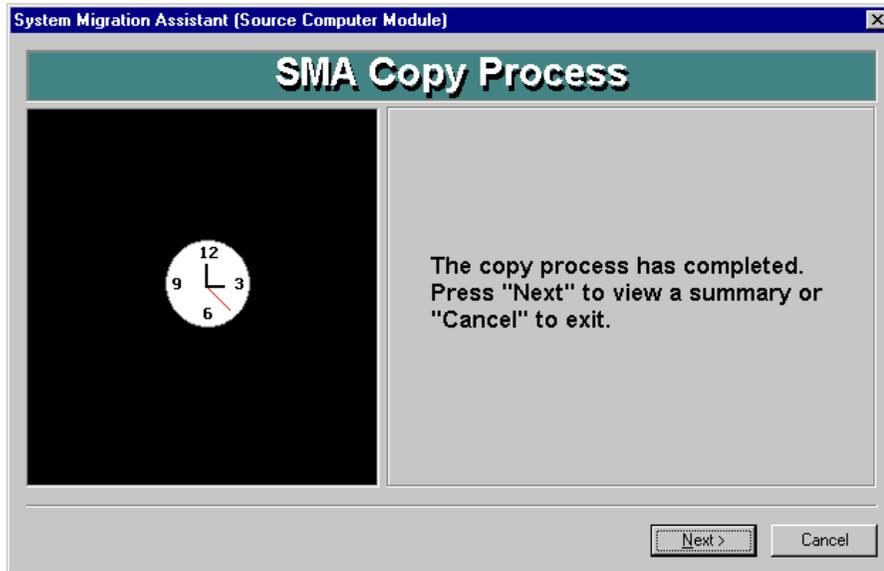
*Figure 282.  Finishing the copying process*

To end the mass SMA source process, click **Exit**.
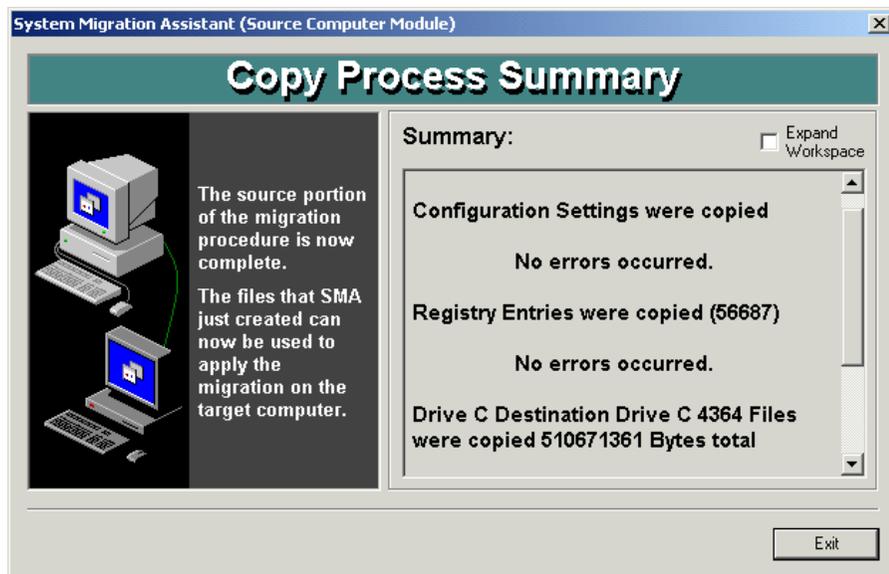


*Figure 283.  Mass SMA source summary*

### 5.1.4 Applying captured settings to the target machine

The second phase of migration has to be done on the computer where the captured settings should be applied (target computer). To start the target SMA GUI program click **Start -> Programs -> System Migration Assistant -> Target**.

This action will run the TARGET.EXE program in the \Program Files\IBM\SMA folder.
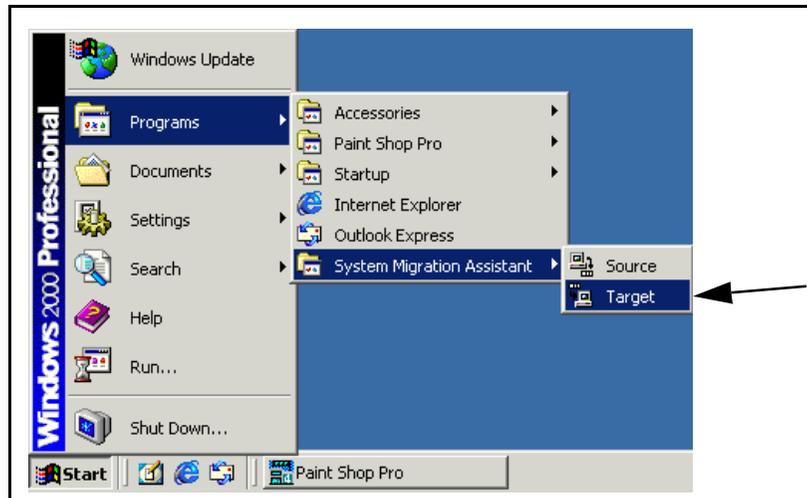


*Figure 284.  Starting the SMA GUI target part*

To enable the SMA target program to have full access to all files it is recommended that you close all running applications:
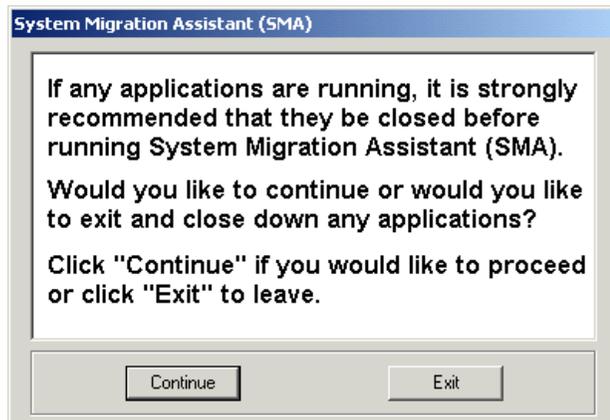
*Figure 285. Closing running applications*

An information window appears explaining the SMA target module:
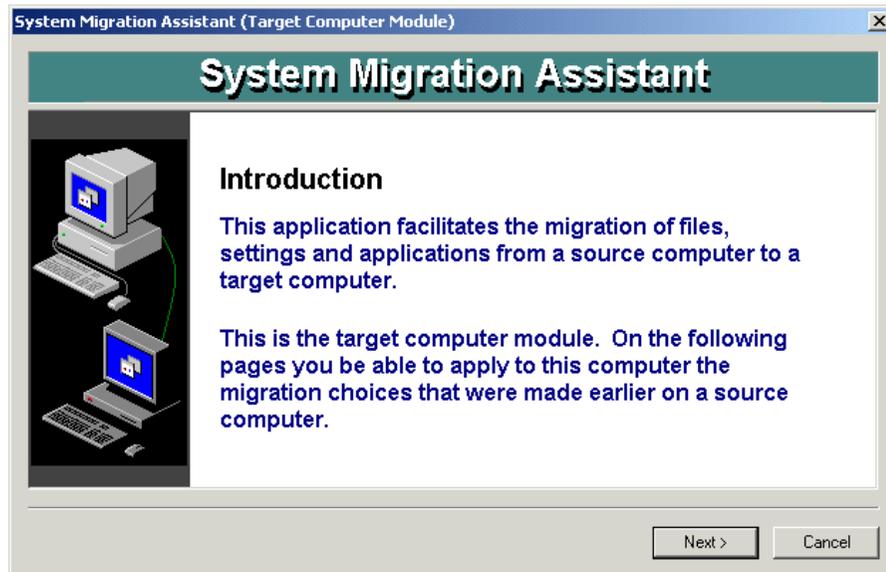


*Figure 286. Target module*
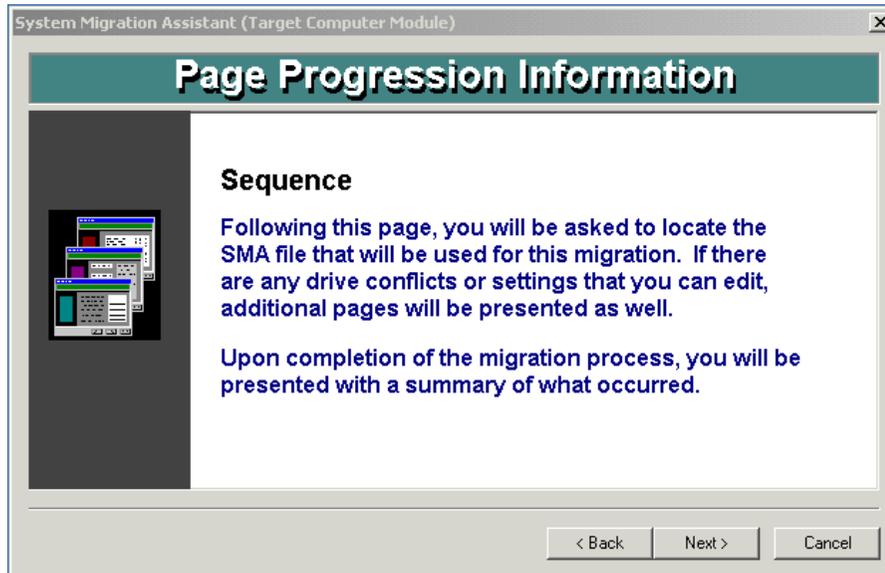
*Figure 287. Page Progression Information*

In the next window you have to select the location and the name of the SMA profile you previously created with the source module. The profile can be available on the target computer, can be copied to a CD-ROM or reside on another computer on the network. Use the **Browse** button to locate the desired profile. DEFAULT.SMA is the default file name chosen by the source module.

In our example, the profile is located in the SMA folder on the source machine and will be accessed over the network as shown in Figure 288.
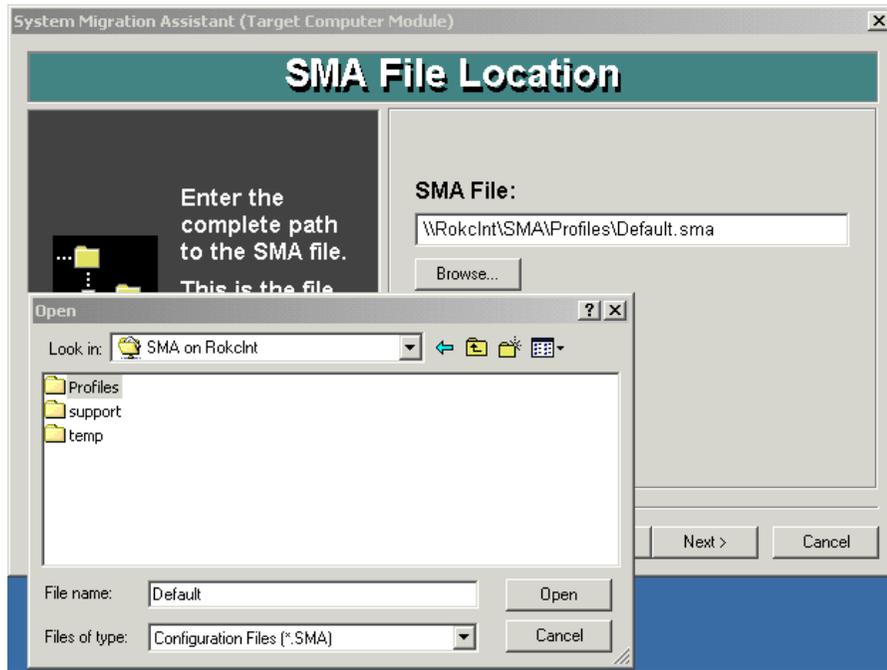
*Figure 288. Choosing the SMA profile name and location*

In the next window you can verify that the chosen profile is the correct one by reading the comments for this selection:
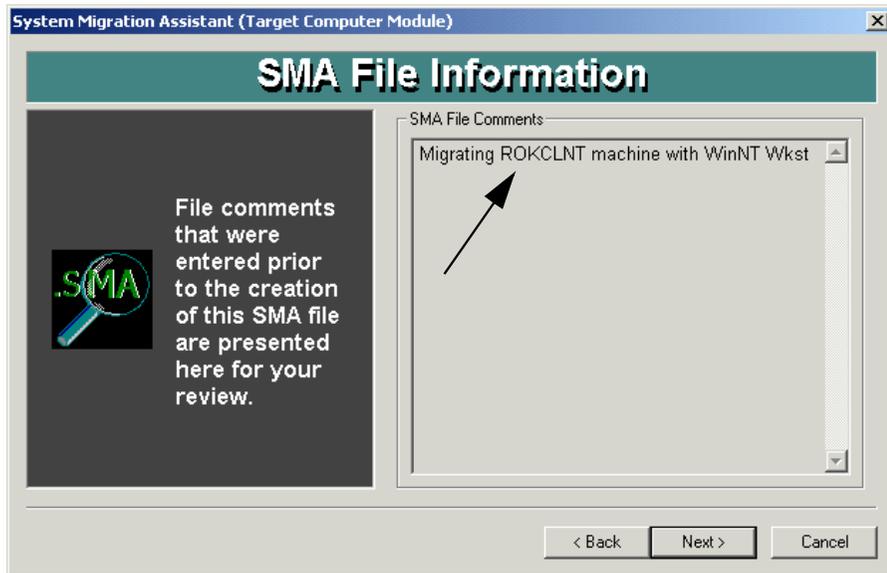
*Figure 289. SMA migration profile comments*

If you wish to modify some of the settings that will be applied to the target machine, click the **Edit the SMA file** check box as shown in Figure 290.
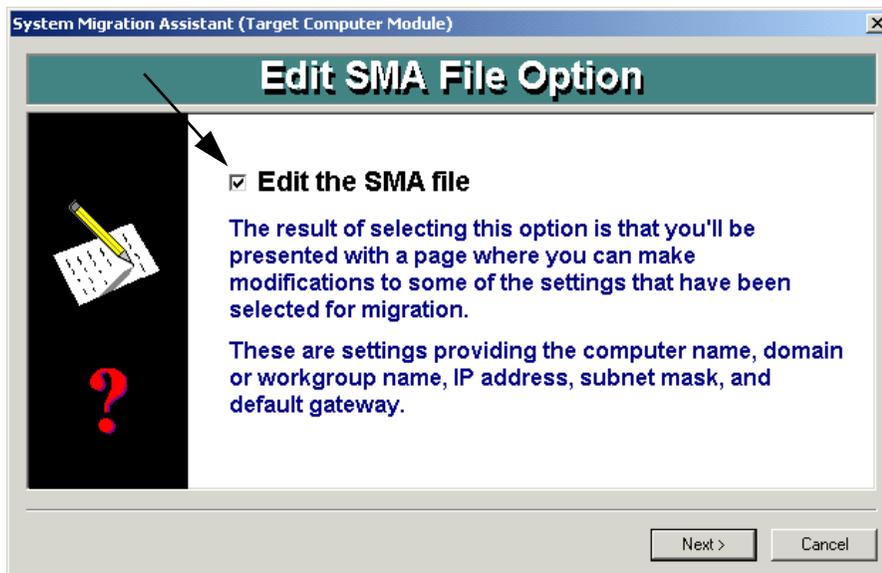


*Figure 290. Modifying the SMA settings*

Settings that can be modified are:

- Computer Name (has to be unique to the network)
- Network Domain or Workgroup to which the target computer belongs
- IP Address (has to be unique on the network)
- Subnet Mask
- Default Gateway
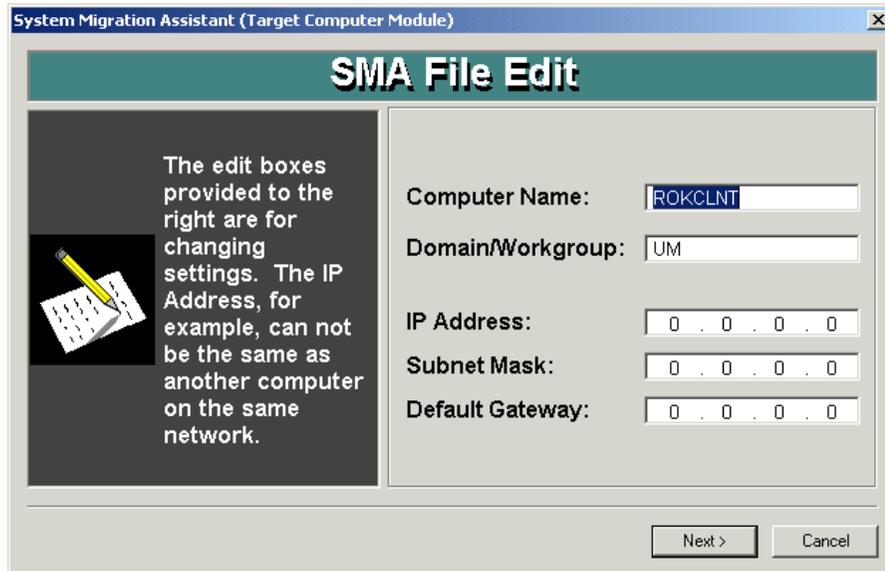


*Figure 291. Customizing the target computer settings*

To start the migration process, click **Yes**.
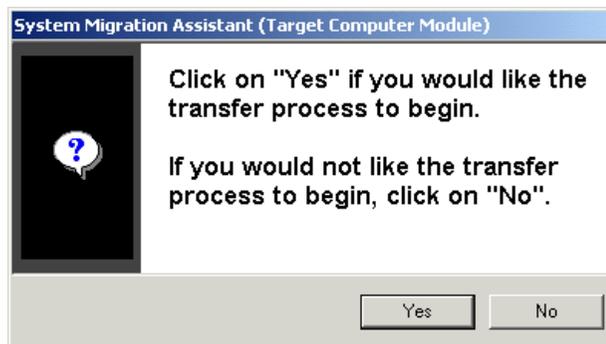


*Figure 292. Confirming to start the migration process*

When the process is finished, you can view the summary by clicking **Next** or exit the program without the summary by choosing **Cancel**.



*Figure 293. Completing the migration process*

Summary includes:

- Source and destination drive
- Number of files migrated
- Report on errors that occurred
- Configuration settings migrated
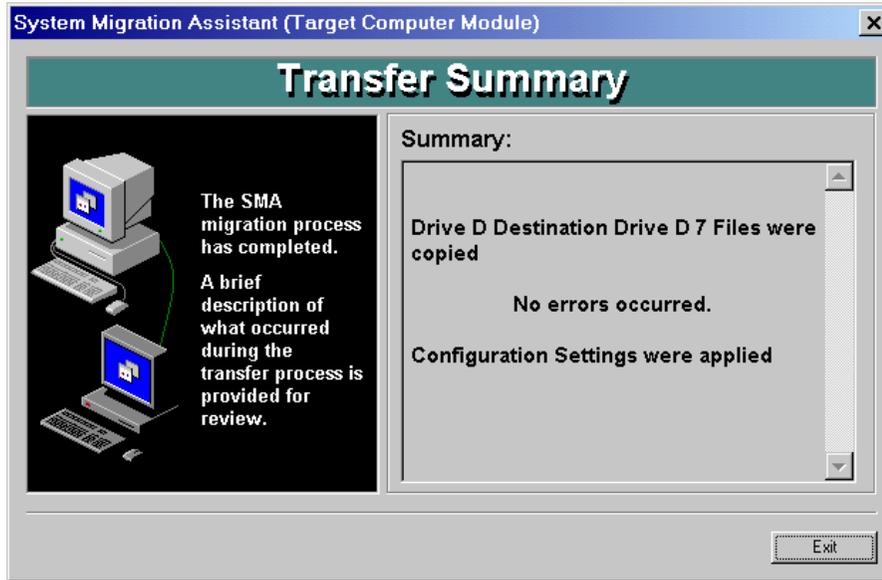
*Figure 294. Migration summary*

At the end of the transfer, an information window prompts you to reboot the machine.

## 5.1.5  Unattended migration using SMA batch procedure

For large rollouts, system administrators can further minimize the time needed for user environment migration by running them unattended. As indicated earlier, there are two phases of migration: the source phase, done by SRCBAT.EXE, and the target phase, which uses the TARBAT.EXE program.

### 5.1.5.1  SRCBAT.EXE

SRCBAT.EXE can be executed from a command prompt or run within a batch program. Since it runs without user intervention, it is necessary to create a command file where you will be able to specify all important decisions already known from interactive programs (such as Selective or Mass Migration, output file location, Personality and Connectivity settings, specific files to migrate, and registry settings to migrate).

During the installation, a command file template called SRCCOMMANDS.TXT is placed in the main SMA folder, which you can modify and use for migration. There is a modified command file in Appendix A.2, "Command file for SRCBAT.EXE" on page 323.

The syntax for command line usage is:

```
SRCBAT /c command file /o location
```

where `/c` defines the fully qualified location and name of the command file you created (if no location is specified, it must reside in the same location as SRCBAT.EXE file) and `/o` defines the location where output files (SMA profile) are placed.

**Note**: A good practice before running SRCBAT and TARBAT from a command prompt is to update the environment variable Path in the system properties on the Windows machine. Append the SMA installation folder (\Program Files\IBM\SMA) and its subfolder Profiles to it and you will avoid common problems like this:

```
c:\progra~1\IBM\SMA>srcbat /c srccommands.txt/o C:\progra~1\IBM\SMA\profiles

A complete path for the profile must be provided.
SMA has encountered at least one error and is terminating.
```

The following is an example of the successful execution of SRCBAT from a command prompt:

```
C:\Program Files\IBM\SMA>srcbat /c srccommands.txt /o c:\progra~1\ibm\sma\profil
es\batch.sma
SrcBat has completed.


Configuration Settings were copied

        No errors occurred.
```

If you want to run SRCBAT fully automated you can write a simple batch file and start the source part simply by executing it. Here is an example of such a batch file:

```
REM This is a sample batch file for automated run of SRCBAT
C:
CD \Progra~1\IBM\SMA
SRCBAT /c c:\Progra~1\IBM\SMA\SRCCOMMANDS.TXT /o C:\Progra~1\IBM\SMA\Profiles
```

### 5.1.5.2 TARBAT.EXE

The target part of the migration will be done by running the TARBAT.EXE program from the command prompt or using a batch program. The valid syntax is:

```
TARBAT /f .sma file /c command file
```

where `/f` defines the location and name of the previously created migration profile (you can use any profile created using an interactive or batch procedure) and `/c` defines the command file name and location.

Here the command file is much shorter and only includes the User_Exit command (which gives you the possibility to run another program when migration is finished), which is a command to specify the ADSM server to be used as a migration source, and commands for communication settings. This makes sense because settings such as computer name and TCP/IP address have to be unique for the new machine.

During the installation, a command file template called TARCOMMANDS.TXT is placed in the main SMA folder, which you can modify and use for migration. There is a modified command file in Appendix A.3, "Command file for TARBAT.EXE" on page 331.

An example of a successful execution of TARBAT from a command prompt follows:

```
C:\Program Files\IBM\SMA>tarbat /f c:\progra~1\ibm\sma\profiles\batch.sma /c
progra~1\ibm\sma\tarcommands.txt
TarBat has completed.


Configuration Settings were applied
```

TARBAT can be run within a simple batch file:

```
REM This is a sample batch file for automated run of TARBAT
C:
CD \Progra~1\IBM\SMA
TARBAT /f C:\Progra~1\IBM\SMA\Profiles\Batch.sma /c C:\Progra~1\IBM\SMA\tarcommands.txt
```

By scheduling the execution time of such a batch file the migration can be carried out completely unattended during off-peak hours.

# Chapter 6. Installing Netfinity Servers with UM deployment tools

Remotely configuring systems is usually associated with distributing software to client systems. However, IBM has a number of tools to allow the remote configuration of both hardware and software on Netfinity servers. Time-consuming tasks associated with Windows 2000 deployment such as determining hardware compatibility, setting up the Advanced System Management adapter, configuring the ServeRAID RAID controller, and installing the operating system can be automated through the simple point-and-click environment provided by IBM Universal Manageability tools.

## 6.1 Our environment

The examples in this chapter were performed on a Netfinity 5000 (8659) with BIOS 1.15 acting as the target machine and an IBM 300PL (6862) with BIOS 48 which performed the duties of the LCCM server. The Netfinity 5000 ran Windows 2000 Server. All of the drivers for the Netfinity Server were part of the base operating system with the exception of the Advanced System Management (ASM) device driver Version 1.11. The ASM used BIOS and firmware V2.11 and the ServeRAID adapter ran 3.6 firmware. The IBM 300PL was running Windows NT 4.0, Service Pack 6a and LCCM 2.5.1 with Service Pack 3. The device drivers for the IBM 300PL were from the V2.1 Ready To Configure CD. The systems were connected via an IBM 8222 10Mbps Ethernet hub using the IBM 300PL onboard Etherjet adapter and a PCI 10/100 WOL Etherjet adapter in the Netfinity 5000.

## 6.2 Analysis of systems for installation

Determining what servers are hardware compatible with Windows 2000 Server can be a daunting task, especially when you are faced with multiple servers of various types at remote locations. The data gathering and remote execution capabilities of Netfinity Director can be leveraged to acquire the information needed to make the proper migration decisions. The same techniques used with IBM desktop systems can be applied to the Netfinity Server line. Please refer to 2.2, "Analysis of systems for upgrade" on page 35 for further details.

## 6.3 LCCM profile creation prerequisites

There are a pair of tasks that must be completed before a Windows 2000 Server image can be generated for LANClient Control Manager (LCCM).

First, if the IBM ServeRAID controller is being used as one of the host bus adapters the required RAID configuration must be captured to a file. This will allow the remote setup of the controller. The second concern deals with configuration of the Advanced System Management adapter (ASM). A setup file must be created to instruct ASM how it is to be configured.

### 6.3.1  Capturing ServeRAID configuration

Capturing the ServeRAID configuration to a file can be accomplished using the `IPSSEND.EXE` command line utility. This executable is distributed as part of the IBM ServeRAID Command Line Program Diskette or the ServeRAID Support CD-ROM. Either media image can be downloaded from `http://www.pc.ibm.com/support` under the Netfinity Server section.

Open a Windows NT 4.0 command prompt and execute `IPSSEND BACKUP 1 A:\5000CFG.IPS NOPROMPT`. This command requests a backup of the configuration for ServeRAID adapter 1 to the file A:\5000CFG.IPS without requiring user intervention. Once it has completed you will be returned to a command prompt.

```
C:\>IPSSEND BACKUP 1 A:\5000CFG.IPS NOPROMPT

Found 1 IBM ServeRAID Controller(s).
Back Up Configuration has been initiated for controller 1...
Command Completed Successfully.

C:\>
```

Copy the file to a share point for distribution via LCCM. The typical location for the file is on the LCCM server in the %LCCM INSTALLATION DIRECTORY%\CLNTFILE\RAID directory. The ServeRAID configuration is typically updated during an operating system installation profile. An example of integrating this file into a profile is provided in 6.4, "Creating a Windows 2000 Server unattended installation via LCCM" on page 257.

### 6.3.2  Configuring the Advanced System Management adapter

The Advanced System Management (ASM) adapter can be configured during the normal execution of an LCCM profile. The process consists of the LCCM utility SERVPROC.EXE reading settings from a text file (.INI) specified by the user and converting them to a format (.PKT) that can be sent to the ASM. The utility SENDSLIM.EXE is then called to transfer the configuration to the ASM itself. An example of the service processor configuration .INI can be found in the file %LCCM INSTALLATION DIRECTORY%\CLNTFILE\DEFAULTS\SERVPROC.INI . This process can be

used with both the PCI and ISA versions of the Advanced System Management adapter.

To remotely configure the ASM using LCCM you must start by modifying the SERVPROC.INI file to meet your needs. All of the relevant configuration settings are remarks contained within the example file. To enable a setting, unremark the relevant line and make the desired modifications to the parameter. In this case you are enabling modem auto-answer for serial port 1.

```
[Modem] ; 4.1
[Modem Software Config]; 4.1.1
; Dial-In Activated = 0 ; 0=deactivates, 1=activates
; Dial-Out Table Retry Delay = 60 ; Number of seconds before dial-out numbers are
retried
; Dial-Out Table Retry Limit = 0 ; Number of times the table will be retried ie. a
value of 0 will table call all the dial-out table entries once
; Dial-Out Number Retry Delay = 10; Number of seconds before trying the next number in
the  table
; Dial-In Tamper Delay = 0; Number of minutes before allowing the next remote login to
occur
[Port Info]; 4.1.2
[Port 1]; 4.1.2.1
; Baud = 47; Baud rate = (Data+1)*2400. Hence 47 is equivalent to 115.2K baud
; Parity = 0; 0=None, 1=Odd, 3=Even, 5=Mark, 7=Space
; Stop Bits = 0; 0=1, 1=2 or 1.5
; Modem Initialization = " " ; Init string for modem. Max 127 characters.
; Port Select = 1; 0=disabled, 1=enabled
; Modem Caller ID = " "; Caller ID information. Max 31 characters.
; Modem Escape Guard Time = 100; Length of time before and after escape string is issued
to modem. Measured in 10ms intervals.
; Modem Escape = "+++"; String used to return modem to command mode. Max 15 characters.
; Modem Dial Prefix = "ATDT"; String used before number is dialled. Max 15 characters.
; Modem Dial Postfix = "^M"; String used after number dialled to tell modem to start
dialling. Max 15 characters.
Modem Auto Answer = "ATS0=2"; String used to tell modem to answer phone when it rings.
Max 15 characters.
; Modem Auto Answer Stop = "ATS0=0"; String used to tell modem to stop answering phone.
Max 15 characters.
; Modem Query = "AT"; String used to find out if modem attached. Max 15 characters.
; Modem Hang-up = "ATH0"; String used to hang-up modem after a session is finished. Max
15 characters.
```

Save the configuration file to a shared directory, preferably to %LCCM INSTALLATION DIRECTORY%\CLNTFILE\DEFAULTS. The file must reside in a shared directory since LCCM uses a Universal Naming Convention (UNC) name to access the file. Assigning the new settings to a target is accomplished from the LANClient Control Manager Individual Client Details window. From the LANClient Control Manager Installation/Maintenance window highlight the desired target system and click **Client -> Configure**.
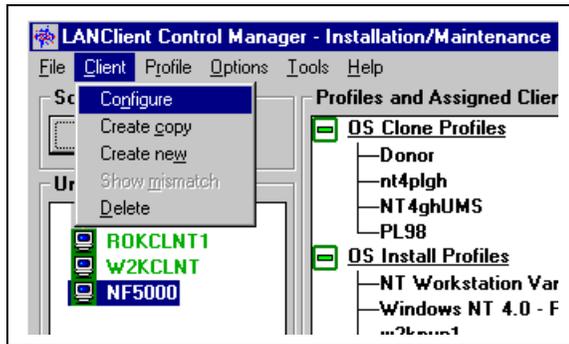
*Figure 295.  Opening the Individual Client Details*

The LANClient Control Manager Individual Client Details window appears. Selecting the **Hardware** tab displays the Service Processor configuration section in the lower half of the window. To set the configuration file to be used, click **Browse** and navigate to the location of the .INI file (in this case, C:\LCCM\CLNTFILE\DEFAULTS\5OOOPROC.INI), and click **Open**. Notice that the path name on the local drive is automatically converted to the UNC share path. To activate the Service Processor update, check the **Enable configuration** check box. The Type of Service Processor used by the target system will be determined during the scan process. Click **OK**.
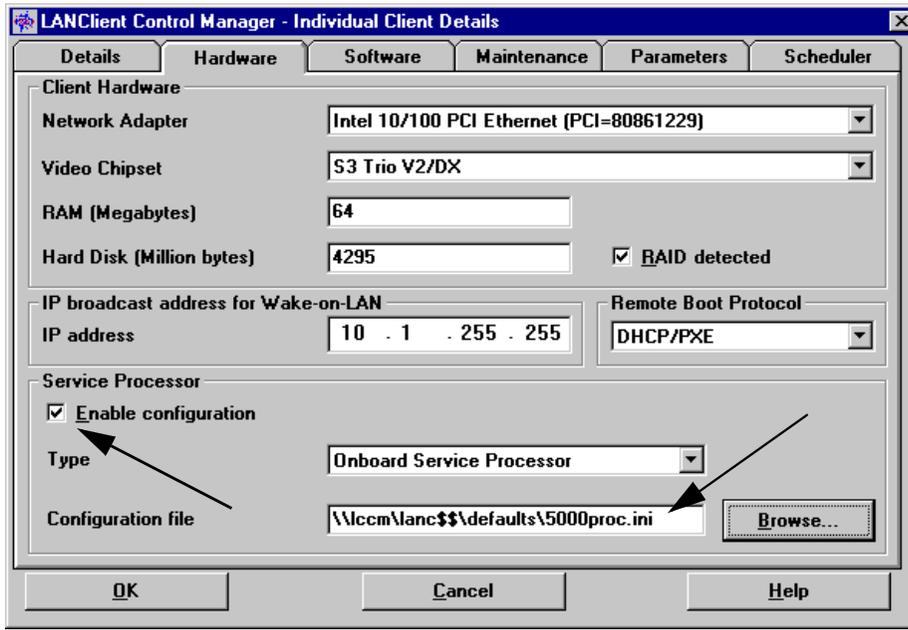
*Figure 296. Selecting the Service Processor configuration file*

> The Service Processor configuration will be updated during execution of the next profile assigned to the target system.

## 6.4 Creating a Windows 2000 Server unattended installation via LCCM

> At the LANClient Control Manager Installation and Maintenance window, click **Profile** and select **Create new** from the pull-down menu.



*Figure 297. Creating a new WIndows 2000 Server profile*

> When the Create New Profile window appears choose the **Use the Profile Wizard** radio button and click **OK**.

*Figure 298. Selecting the LCCM wizard to create the Windows 2000 Server profile*

A welcome window for the LANClient Control Manager Profile Wizard will be presented. Enter a name for the profile, select the **Unattended install** radio button, and choose **Windows 2000 Server** from the operating system drop-down menu. Click **Next.**



*Figure 299. Setting installation details for the WIndows 2000 Server profile*

Select the appropriate language from the drop-down menu and click **Next**.
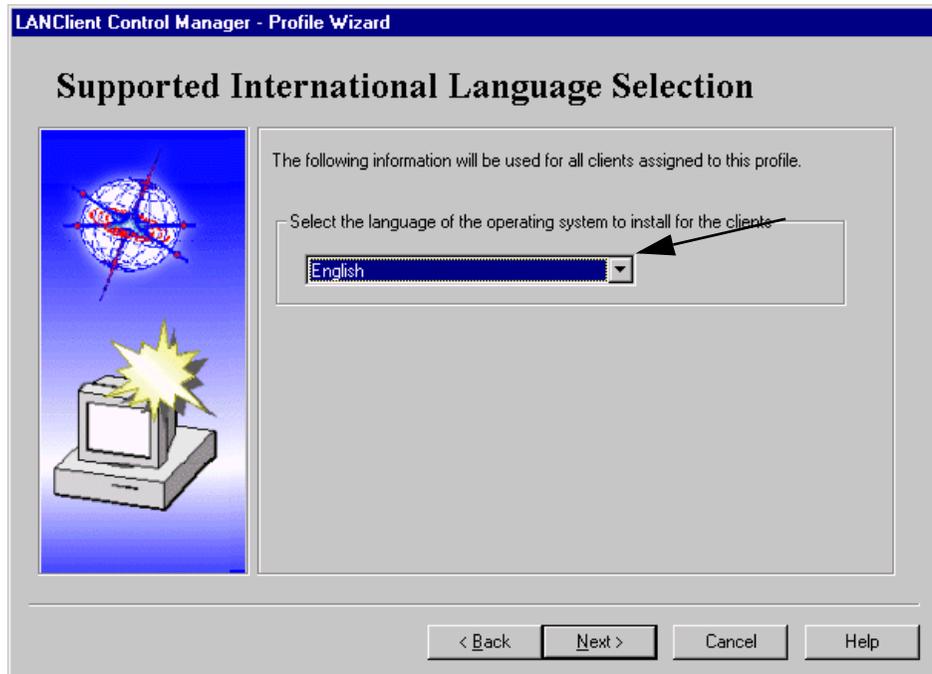
*Figure 300. Selecting a language for the Windows 2000 Server profile*

Check the **Yes, the target clients have RAID adapters installed** check box. You are then requested to provide a RAID setup file. Check the **Copy new RAID setup file from...** check box and choose **Have Disk**. Navigate to the location of the RAID configuration file. For this example it is C:\LCCM\CLNTFILE\RAID\5000CFG.IPS, and click **Open**. Notice that the path name on the local drive is automatically converted to the UNC share path. Click **Next**. For details on how to create the RAID setup file please refer to 6.3.1, "Capturing ServeRAID configuration" on page 254.
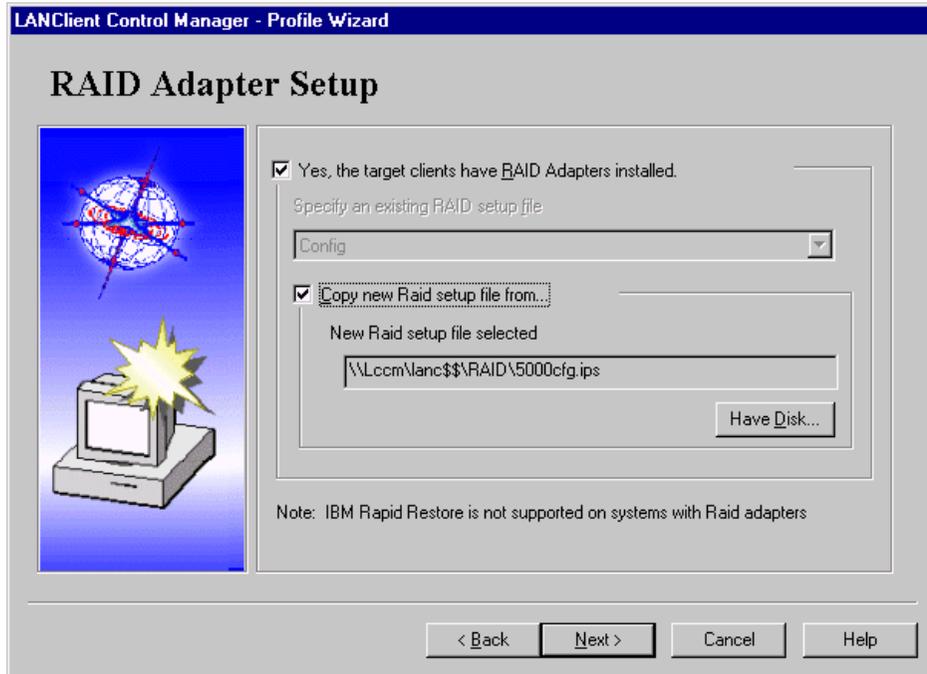
*Figure 301. Configuring the ServeRAID for the Windows 2000 Server profile*

The next window will ask for partitioning information. Click **First partition of fixed size, second partition using remaining allowed space**. Enter `4096` in the Size of fixed partition (C:) field. For the Select the file system format to use for your partitions section, choose the **NTFS** button and click **Next**.
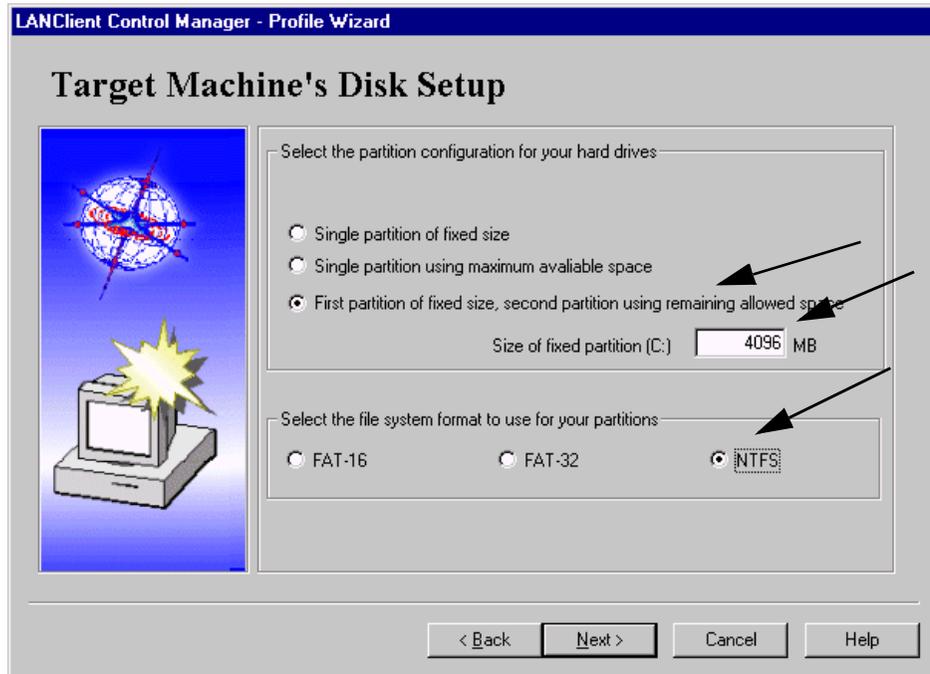
*Figure 302. Choosing a partition and file system scheme for the server profile*

We are now asked for Profile Customization information. Enter a name in the Company Name field and provide the Windows 2000 Server CD key. Click **Next** to continue.
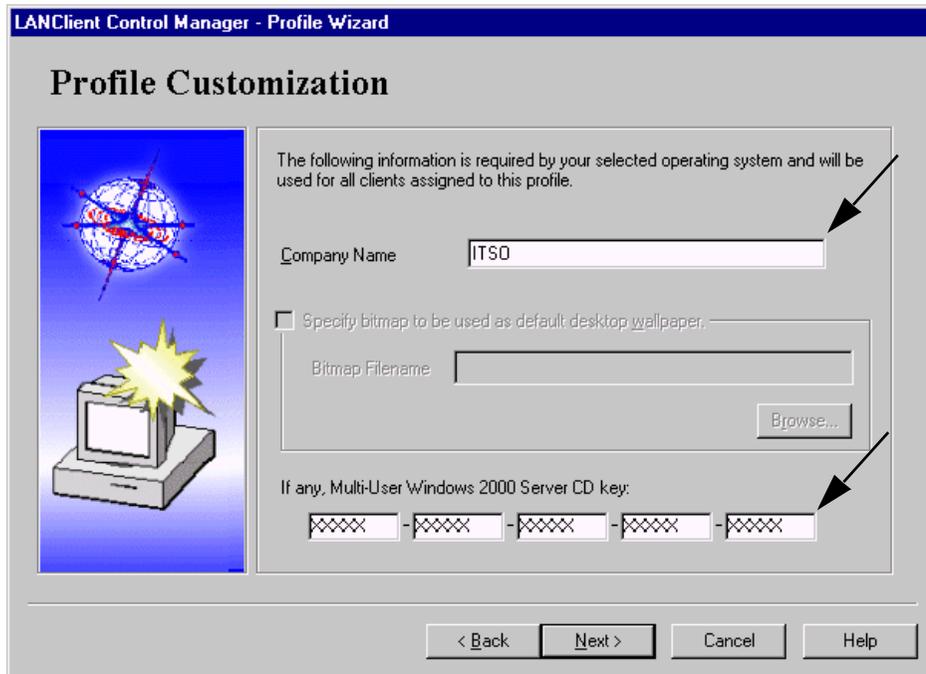
*Figure 303. Providing Profile Customization information for the server profile*

Select the appropriate time zone from the drop-down menu and choose **Next**.

**LANClient Control Manager - Profile Wizard**

## Regional Settings

The following information will be used for all clients assigned to this profile.

Select the Timezone to use for the client operating system

(GMT-05:00) Eastern: Eastern Time (US & Canada)

< Back     Next >     Cancel     Help
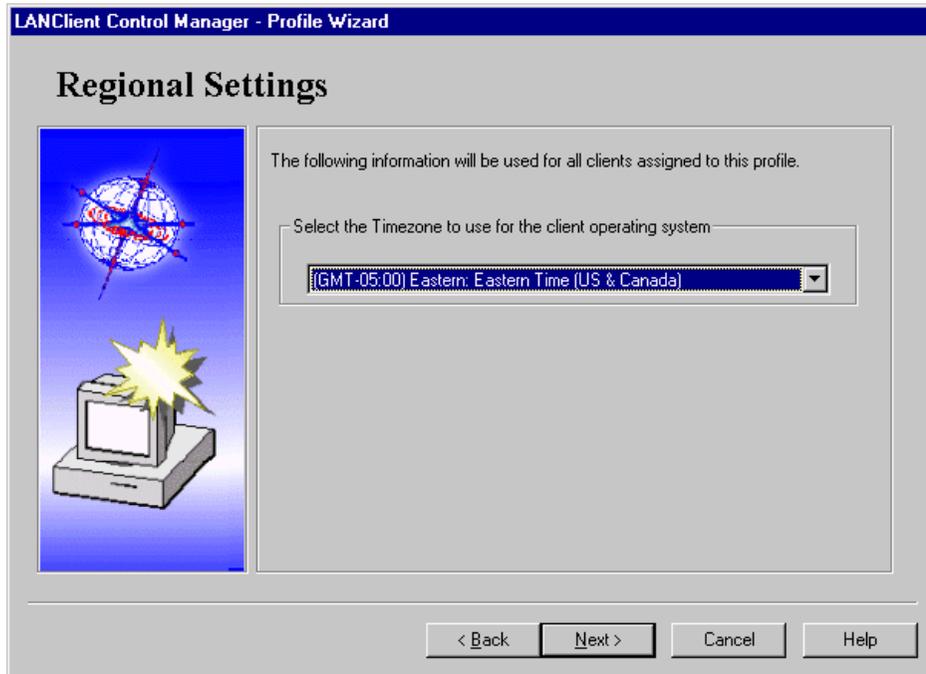
*Figure 304. Setting the time zone for the server profile*

Click the radio button for the desired server type, in this case **Stand Alone,** then specify the Server Licensing Method. For this example **Per Seat** should be selected. Continue by clicking **Next**.
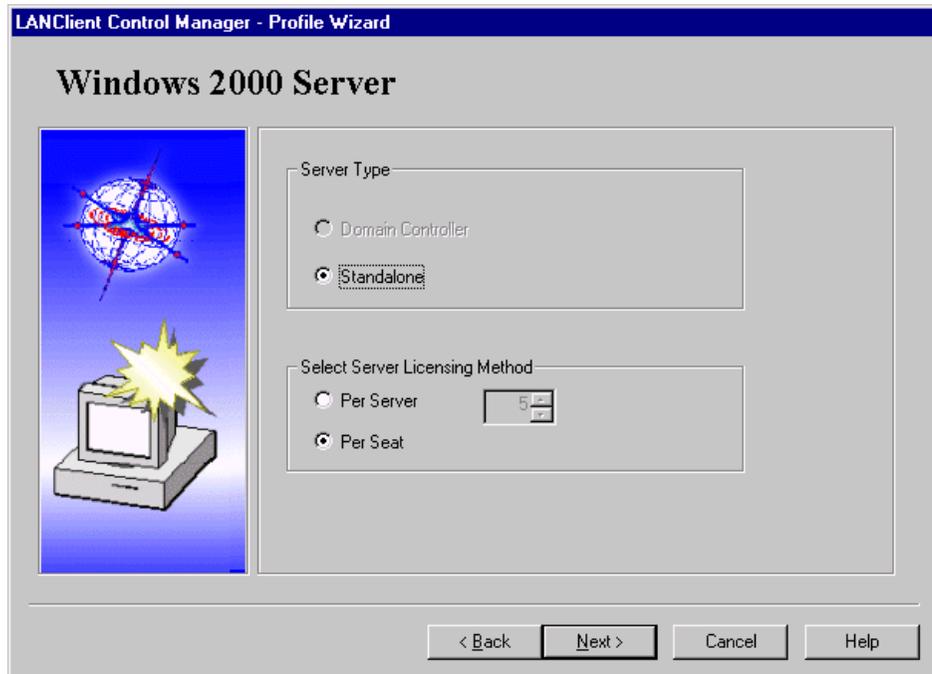
*Figure 305. Choosing server configuration information for the server profile*

For the Network Environment section select the proper domain model and provide the requested supplemental information. In the Network protocols section choose the desired protocol. This example will use TCP/IP; therefore click the **TCP/IP** radio button then click **Next**.
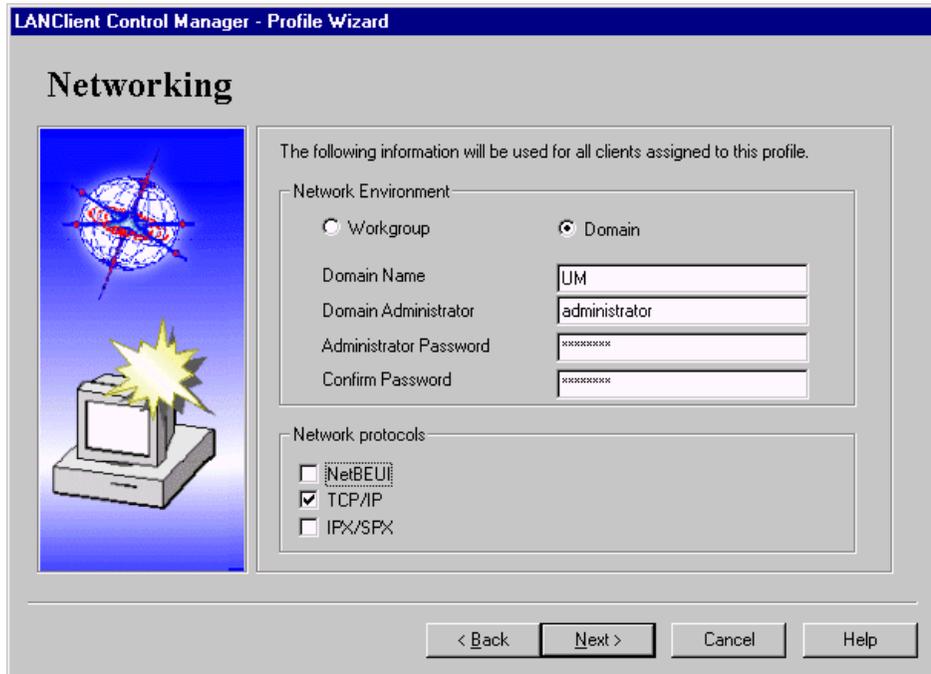
*Figure 306. Configuring Networking for the server profile*

Since we selected TCP/IP for the target's protocol we are now requested to provide the necessary settings. Click the **Configure TCP/IP settings manually** radio button and enter the appropriate Subnet Mask and Default gateway for the target machine. Choose **Next** when finished.
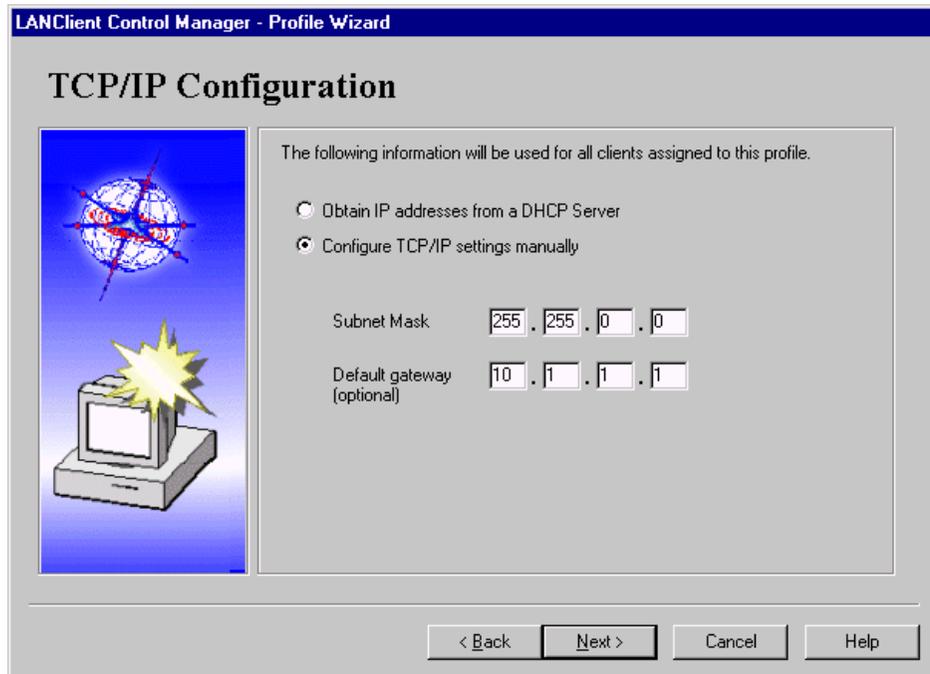
*Figure 307.  Configuring TCP/IP protocol settings for the server profile*

We are now asked for the DNS and WINS settings. To enter the information, enable the resolution type by clicking on the associated check box and filling in the requested fields. Click **Next** when complete.
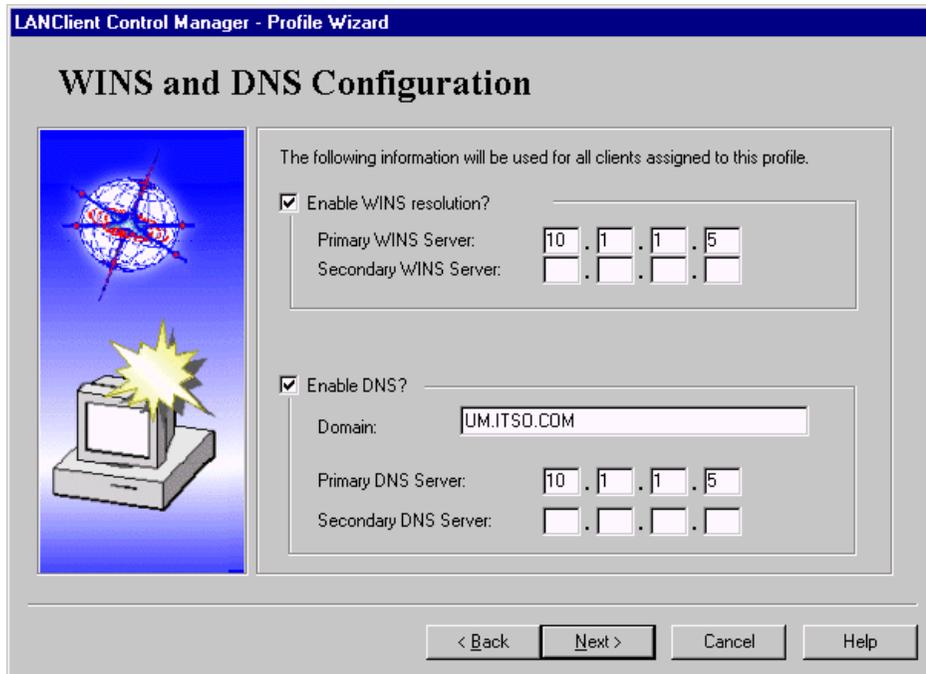
*Figure 308.  Setting WINS and DNS Configuration for the server profile*

A Profile Summary will now be displayed listing your configuration choices for review. At this time a description of the profile can be entered in the field provided. Click **Next** when satisfied with the settings.
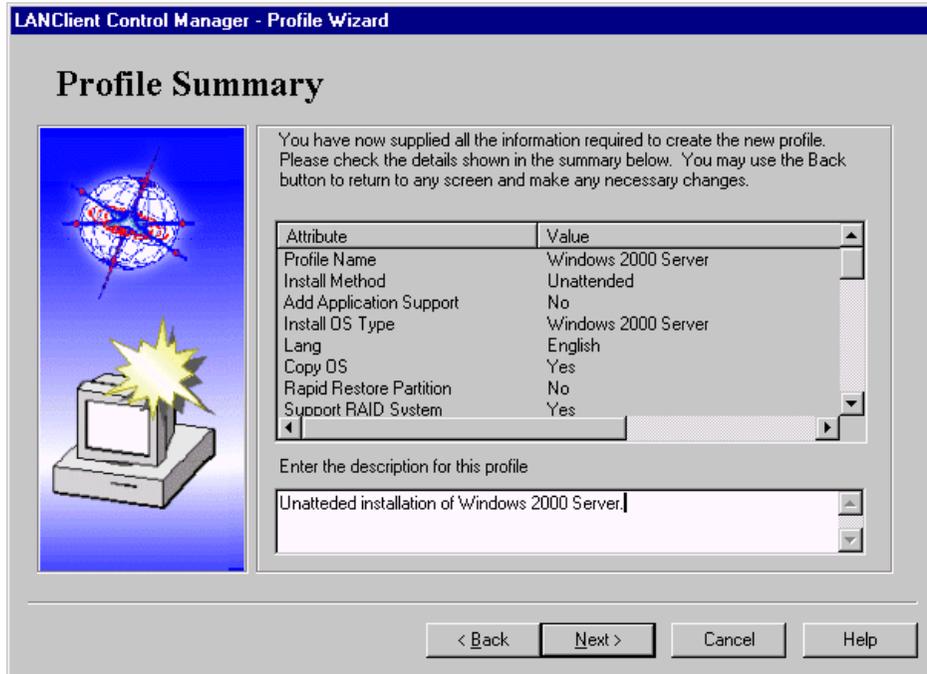
*Figure 309.  Profile Summary for the Windows 2000 Server profile*

If this is the first time a Windows 2000 Server profile has been created you are prompted to build a Windows 2000 Server image. You will not need to repeat this step for future profiles of the same type.

Click **Build images**.

*Figure 310. Creating a Windows 2000 Server operating system image*

A window will appear asking if you are ready to build the image. Place the installation media for the application in a drive if required and click **Yes**.
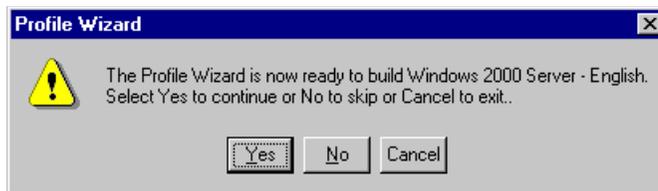


*Figure 311. Confirming if the image is ready to be built*

Navigate to the location of the setup files for the software, highlight the setup executable, and click **Open**.

*Figure 312. Selecting the setup executable*

LANClient Control Manager will copy the software installation files to a share point on the LCCM Server. Repeat the build process until all the software packages have images built. Click **Finish**.
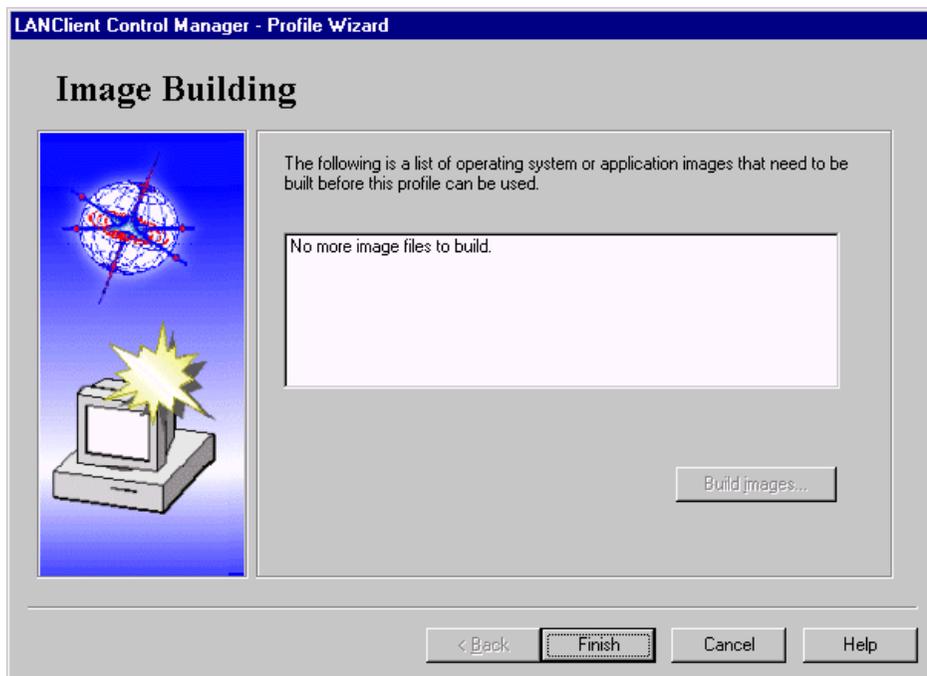


*Figure 313. Completion of building images for the Windows 2000 Server profile*

You are now returned to the LANClient Control Manager Installation and Maintenance window. Under Profiles and Assigned Clients the new image will appear. A target system can now be assigned to the profile.
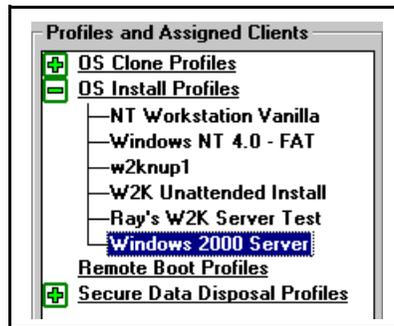


*Figure 314. The Windows 2000 Server profile*

For further information on assigning clients to a profile please refer to 3.1.1.2, "Assigning the client to the installation profile" on page 122. Additional details about LANClient Control Manager can be found in Chapter 3., "Unattended Windows 2000 deployment for new systems" on page 101, the Redbook *Using LCCM Functions with Servers and Workstations,* SG24-5292, and the LCCM product documentation available at:

`http://www.pc.ibm.com/us/desktop/lccm/.`

# Chapter 7.  Using UM Deployment Tools on non-IBM clients

In this chapter we show you how to use the UM tools on non-IBM systems. For testing these we used the following non-IBM systems:

- Dell OptiPlex GX1
- HP Vectra VLI8

On the Dell system we ran Windows NT Workstation 4.0 with SP6a and on the HP system we ran Windows 98 and Windows NT Workstation 4.0 with SP6a.

## 7.1  LANClient Control Manager (LCCM) on non-IBM systems

The LANClient Control Manager server ran on IBM and non-IBM systems. In the version we used in the book (beta of V2.5.1 Service Pack 3, February 2000), deployment to IBM systems (PC 300, ThinkPad, IntelliStation and Netfinity Server) is supported. It is important that the systems use NIC with WOL support, which corresponds to the WMI 1.1 standard.

For further information and for the latest version of LCCM and its Service Pack you should visit the following Web site:

`http://www.pc.ibm.com/us/desktop/lccm/`

## 7.2  Netfinity Director on non-IBM systems

Netfinity Director and the UM Services (as the Netfinity Director Agent) run on non-IBM systems. For Netfinity Director and its client, you need additional licenses for non-IBM systems. For the price and availability of the licenses contact your local IBM sales representative.

We show you how to check the non-IBM system for Windows 2000 readiness. For that we installed Netfinity Director on an IBM 300PL running Windows NT Server and UM Services on two non-IBM systems (Dell and HP). After rescanning from the Netfinity Manager Console, the systems were visible in the console window.

Then we started the test for Windows 2000 readiness. We used the static group, Systems not Windows 2000 ready, for this test. How to create this group is described in 2.2.1.1, "How to use Netfinity Director to gather inventory" on page 36. This group has all the values for Windows 2000 Pro readiness set to their maximums. All systems that didn't reach these values

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are not Windows 2000 ready from the hardware perspective. The HP system in this group is shown in Figure 315. Now we check the inventory of the system to see why it is in this group. For example, we can see if the system doesn't have enough memory to run Windows 2000. After installing additional memory, the system is removed from this group.
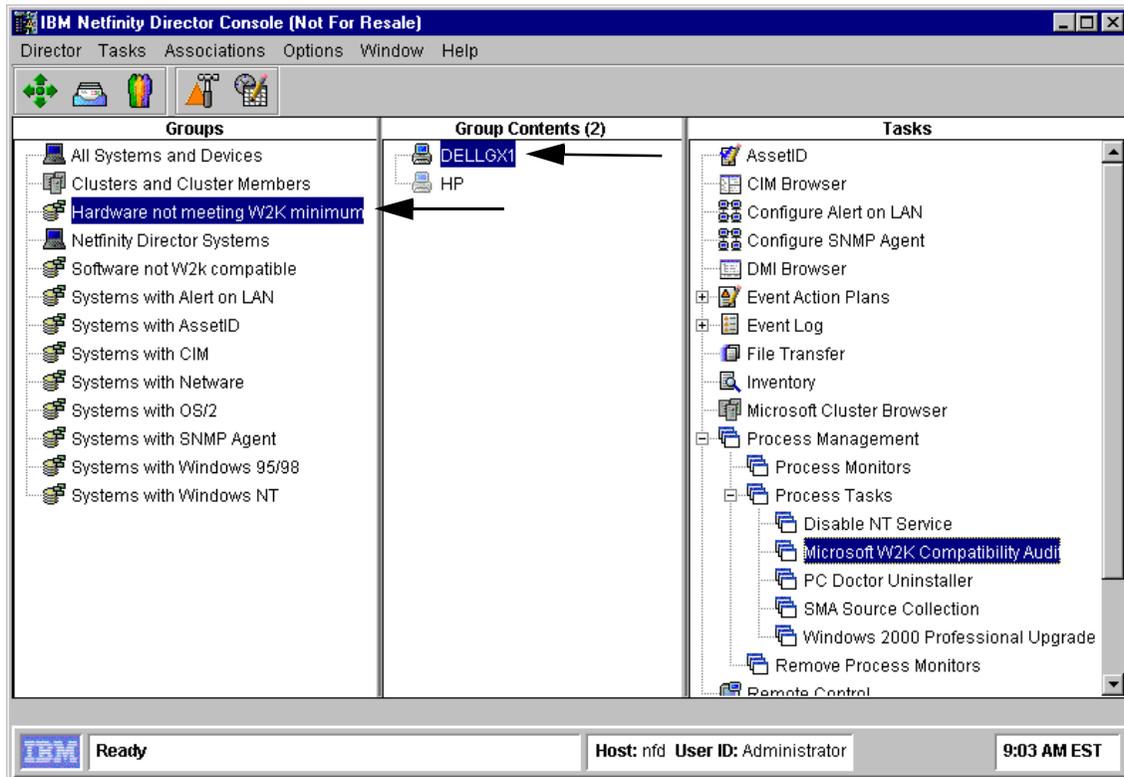


*Figure 315.  Netfinity Director*

We can see the system information of the non-IBM systems by double-clicking the system. A window opens with the system information for the selected system. You can see this for the Dell system in the following window:
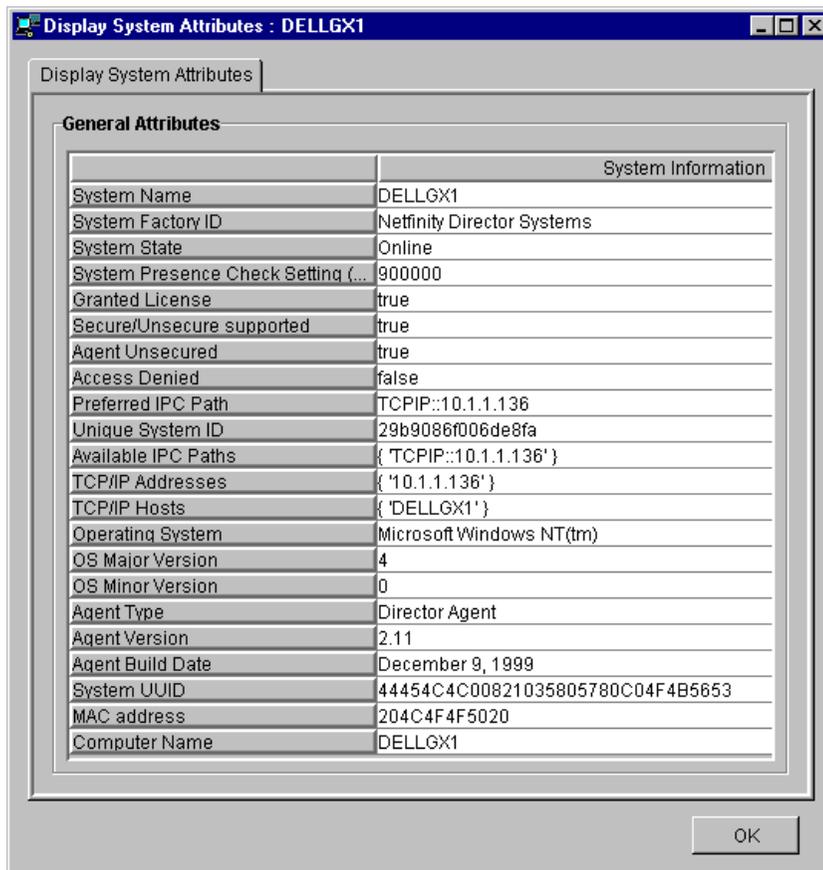
*Figure 316. System Information Dell GX1*

Now we check if there is software installed on the system that is not Windows 2000 ready. For this we use the Process Manager in Netfinity Director, where we had created tasks to check out our systems. How you create and install these tasks is described in 2.2.1, "Use Netfinity Director to determine hardware and software" on page 35.

We selected in the Netfinity Director console the **Process Management -> Process Task -> Microsoft W2K compatibility audit** task. This task uses the Microsoft /checkupgradeonly option from the Windows 2000 winnt32.exe command in this task (check for details in 2.2.1.3, "Netfinity Director and Microsoft's Analysis tool" on page 60). We dragged this task and dropped it on the HP Vectra system in the middle pane. A process task window shows the task and the result (Figure 317).
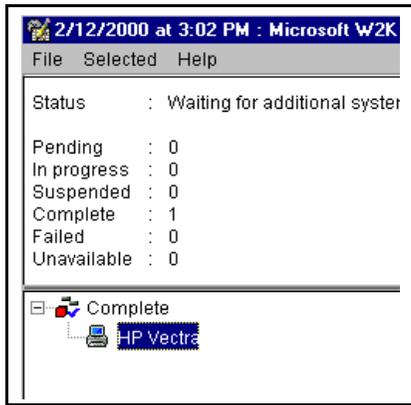
*Figure 317.  Process task window*

Our W2K compatibility task creates a log file with the results from the check. You can see a piece of the log file for the HP system containing the results of the check:

```
Hardware
--------
This section of the report describes hardware compatibility issues.


Incompatible Hardware

The following hardware may not support Windows 2000 without
additional files.  Please see the Microsoft Windows 2000 Hardware
Compatibility List at
http://www.microsoft.com/windows2000/compatible/ for a list of
compatible hardware. (Some of the following entries might be software
that is registered as hardware.)

    Sound, video and game controllers
       Crystal SoundFusion(tm) Game Device
       Crystal SoundFusion(tm) Joystick

You can continue with the upgrade, but the hardware may not work
until you supply the additional files.

Software Incompatible with Windows 2000
---------------------------------------
This section lists information about programs that are incompatible
with Windows 2000. Before upgrading, evaluate how important these
programs are to you.

Software That Does Not Support Windows 2000
```

You can see in this log file what the HP system must be to make it Windows 2000 ready. You can use Netfinity Director to access the system and change, delete or update drivers and programs.

This shows that you can use Netfinity Director on non-IBM systems to check for the readiness of these systems for Windows 2000. Netfinity Director supports all systems on which a UM Services agent (part of Netfinity Director) is installed.

## 7.3  SMA on non-IBM systems

You can use the System Migration Assistant to port settings stored on non-IBM systems, such as personal or connecting information and registry settings, to IBM systems. You can't migrate a non-IBM system with the version of SMA that we used.

In this section we show how you should set up SMA to port the settings from an HP Vectra running Windows 98 to the IBM 300PL system running Windows 2000 Professional.

We installed the SMA source on the HP Vectra running Windows 98. Information about the install process of SMA can be found in 5.1.2, "Installing System Migration Assistant" on page 213. When started, we selected the Selective Deployment. With this setting we can bring the selected personal and connection settings, files, folders and registry entries from the source system to the target system. A description of the selective migration can be found in 5.1.3.1, "Selective Migration" on page 219.
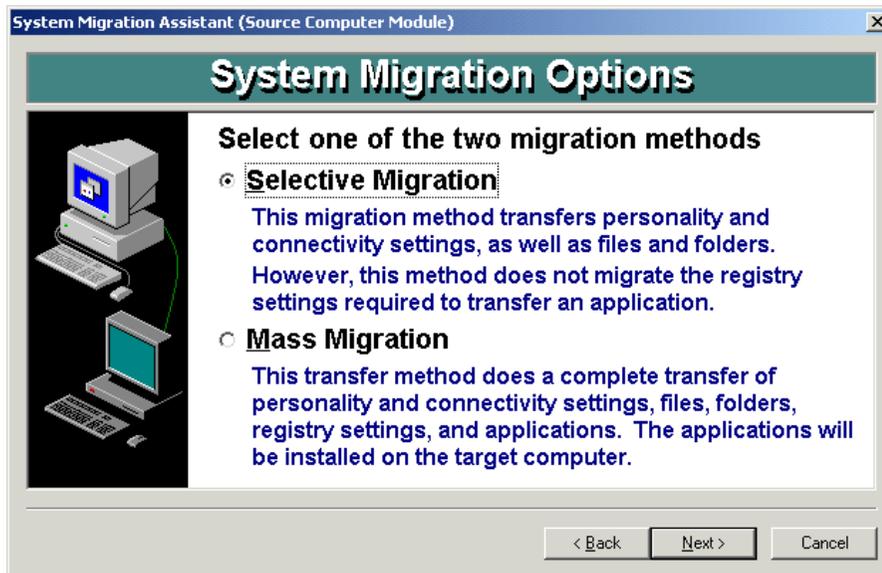
*Figure 318. Migration method selection*

**Note:** Mass Migration is supported only at the same operating system level.

A description of Mass Migration can be found in 5.1.3.2, "Mass Migration" on page 234.

Now you must select the check boxes in the next window. Only the selected features will be migrated. In Figure 319 on page 279 you see for example, the selection for the personality settings. In our example, we also selected the Connectivity settings and the files and folders selection.

Two additional features that you can select are the registry selection and the extension selection. With the extension selection, you can select files from a type to migrate. For example, if you have a lot of *.doc files in different folders, you can select all of these files with a single click. For a detailed description see 5.1.3.1, "Selective Migration" on page 219.
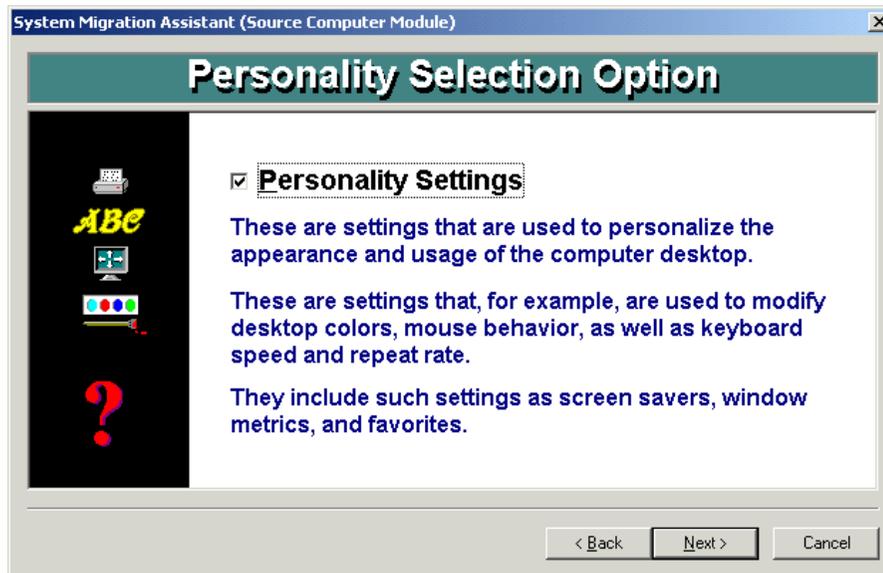
*Figure 319.  Select the settings you will migrate*

When your selection is finished, the following window (Figure 320) appears:
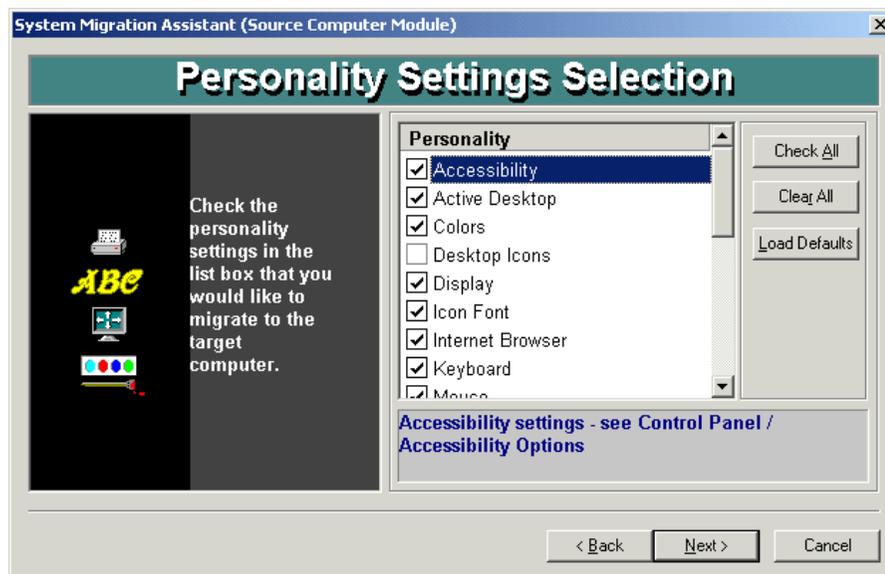


*Figure 320.  Personality selection*

In the Personality settings selection window select all of the settings that you want to migrate. After this, click **Next** and make the selection for the Connectivity settings. What you should do to make all the necessary settings for these selections is also described in 5.1.3.1, "Selective Migration" on page 219.

After clicking **Next** you see the scan window. This window appears because you selected the files and folder option. This function scans the complete system and shows the results in a window. Select the files and the folder you want to bring to the new system. You will get an error message when you select executable files in the Selective Migration, because Selective Migration doesn't support transferring settings for programs. The message is shown below:
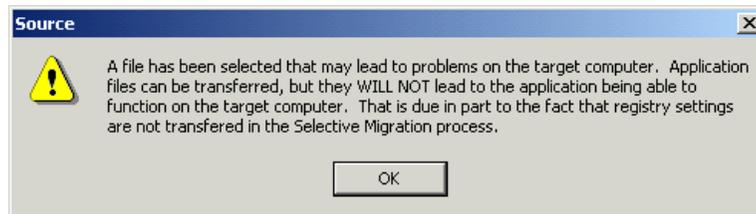


*Figure 321. Warning about migrating \*.exe files*

After selecting the files and folder, click **Next**. Select the SMA file and profile destination (in our example we left the standard settings; see Figure 322), click **Next** and select **Start** to begin the copying process for the selected settings.
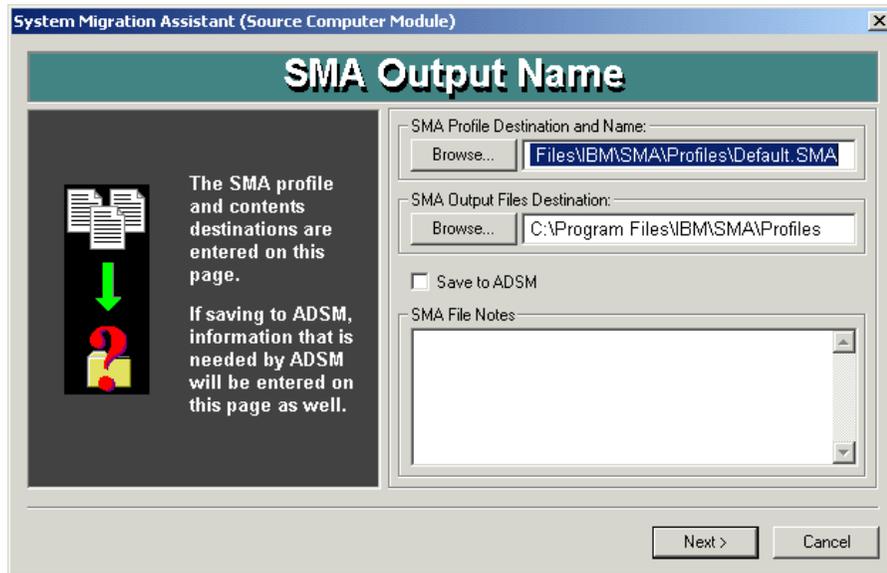
*Figure 322. Selecting profile and output destination*

When the copy process finishes you will see a summary window. This is shown in Figure 323 on page 282. In this window you can check the results. You can also see the destination where the files were copied.
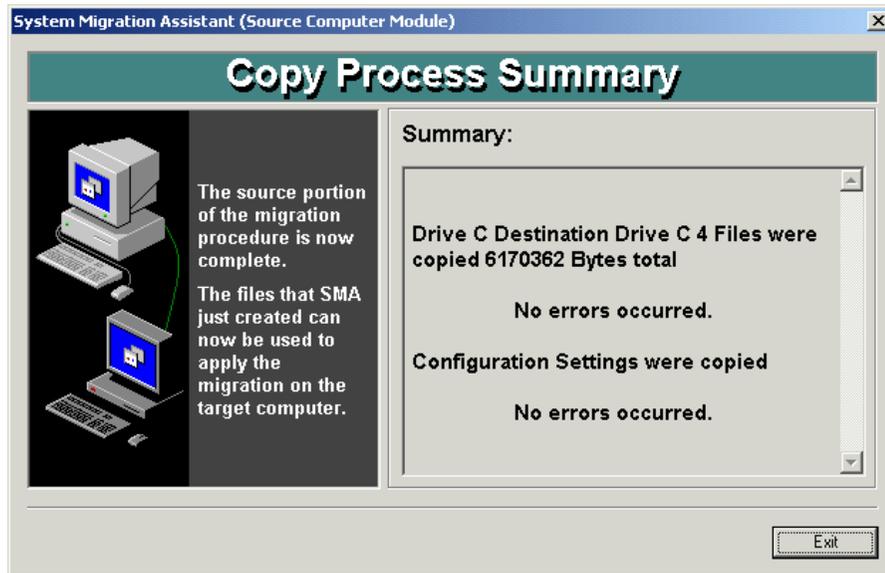
*Figure 323. Summary window source system*

With this action the work on the source system is done. You can also perform all these actions with the command line tool srcbat.exe. Details on srcbat.exe can be found in 5.1.5.1, "SRCBAT.EXE" on page 249.

Now we can change the target system. In our example, the target system is an IBM 300PL. On the 300PL we installed Windows 2000 Pro using the LCCM server. Now we want to bring our settings to this system.

We installed SMA on the IBM 300PL and started the target part of SMA by clicking **Start -> Programs -> System Migration Assistant -> Target**. There you must specify the *.sma file which contains the data for the migration (in our example we used default.sma). This file can be local, on the LAN (mapped network drive) or on a CD-ROM.
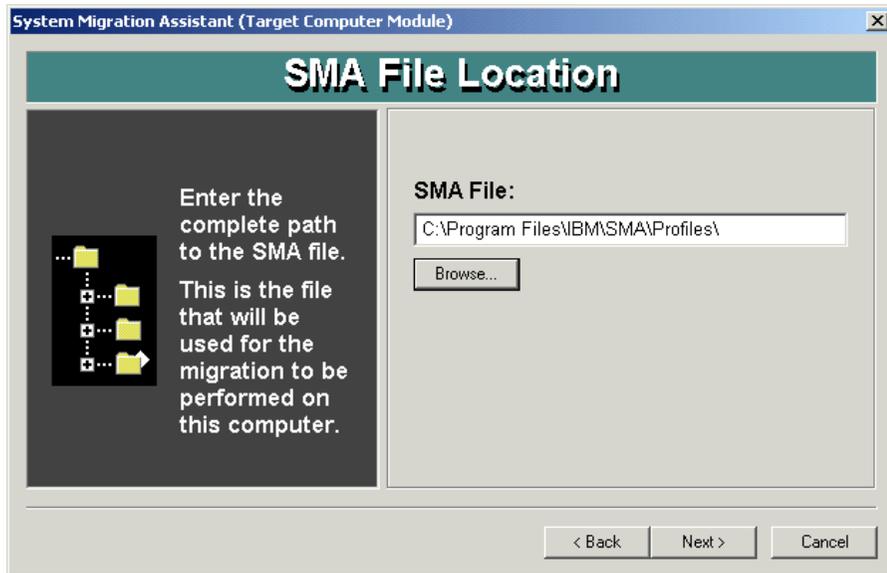
*Figure 324. SMA file location*

When you have selected the SMA data file, click **Next.** You will see a window where you are asked if you want to change the SMA File options, such as the computer name, the IP settings, and domain. You should select **Edit the SMA file** to make the changes as shown in Figure 325.
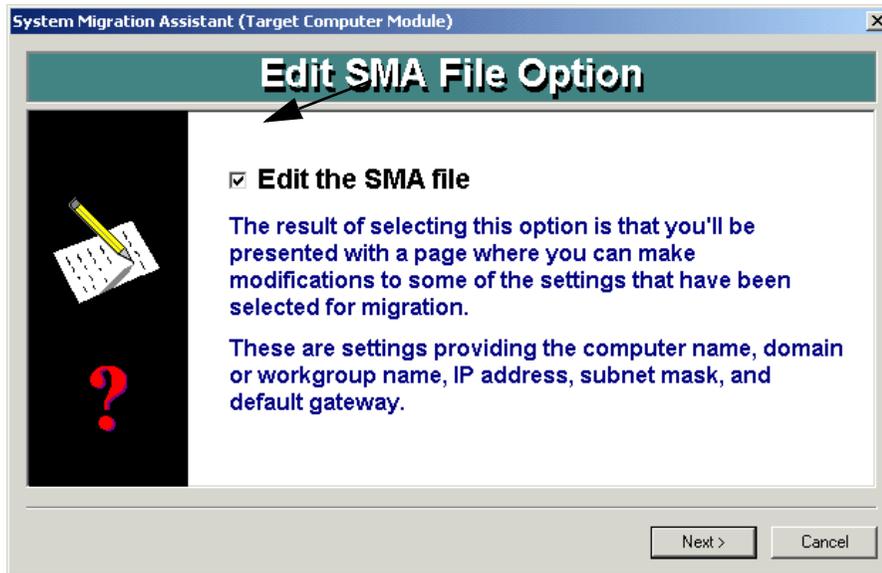
*Figure 325. Selection to edit the SMA file*

You can change the computer name, domain, and IP settings which are in the SMA file. For detailed information about the settings, the editing of the *.sma file and the procedures for running on the target system, see 5.1.4, "Applying captured settings to the target machine" on page 242.

In our example, the source system has the name HP Vectra and the IP address is 10.1.1.133 in the workgroup UM. We changed the name to 300PL, the IP address to 10.1.1.134 and the domain to WTRNTDM. When we finished the changes we clicked **Next**. A window appeared (Figure 326). You should select **Yes** to start the transfer process.
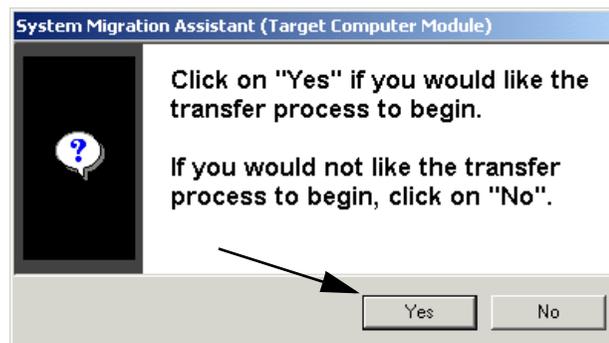


*Figure 326. Start transfer process*

When the transfer is finished you get a message that shows you the status of the transfer. After that you get a message to reboot your system. This is necessary to make the new settings active.

After rebooting you can check if the settings have been transferred and are active in the new system. We first checked the files and folders which were transferred in our example. We found the files and folders available on the new system. Also the network connection that was set on the old system was available on the new one.

You can see how you can use SMA on non-IBM systems to bring all of the necessary settings from these systems to IBM systems. When using SMA on IBM and non-IBM systems there are no changes on the source system. For details about the settings and the procedures for using SMA see 5.1, "System Migration Assistant" on page 211.

With SMA you have a tool that gives you great support for the migration of systems and helps you to reduce the TCO in your company. For updates and further information about new features and supported systems see the following Web site or ask your local IBM sales representative for help:

```
http://www.pc.ibm.com/us/software/sysmgmt/products/sma/
```

## 7.4  SDA on non-IBM systems

The Software Delivery Assistant can be run on IBM and non-IBM systems. You can use SDA on systems running the Windows operating system (Windows 98, Windows NT and Windows 2000). For example, you can prepare your applications on Windows NT to be delivered to Windows 2000. You can run the SDA-Administrator on all systems. The SDA-Installer that we used in this book was only used on IBM systems.

The detailed description of the Software Delivery Assistant can be found in 4.1, "Software Delivery Assistant" on page 175.

In this section, we show how to prepare an HP system running Windows NT4 to deliver to the Administrator Group in Netfinity Director and the SysMgt client group, UMS V2.12. In the common group we deliver Norton AntiVirus V5.02.04 for all systems. The target system for the clients is an IBM 300PL running Windows 2000 Professional. For the SysMgt client group it is a Netfinity 3000.

First start the SDA installation. Information about the installation process can be found in 4.1.1, "Installing SDA" on page 175. The SDA program can be downloaded from the Internet at:

http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda/index.html

When starting SDA you will be asked about the workspace. The first time SDA is started you should create a new workspace. Select **Create new workspace** (shown in Figure 327) and click **OK**.
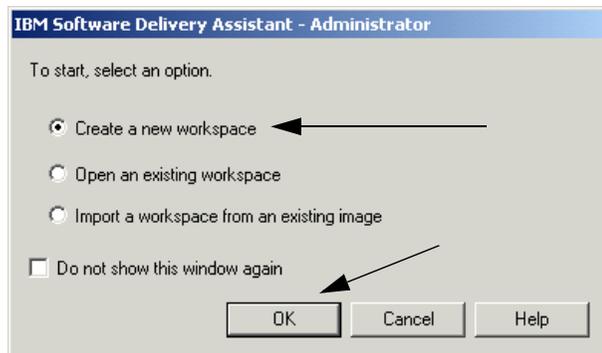


*Figure 327. SDA workspace selection*

Then type the workspace name in the entry field on the next screen. The workspace name should be in context with the application or group. This will be helpful for administration. After you enter the name click **Next** to continue the creation of the workspace. In our example we called the workspace, Our Company Workspace. Details on how you should create a workspace in the SDA-Administrator program can be found in 4.1.2, "SDA-Administrator" on page 180.

When you are finished, the settings for the main workspace windows will be opened, as shown in Figure 328.
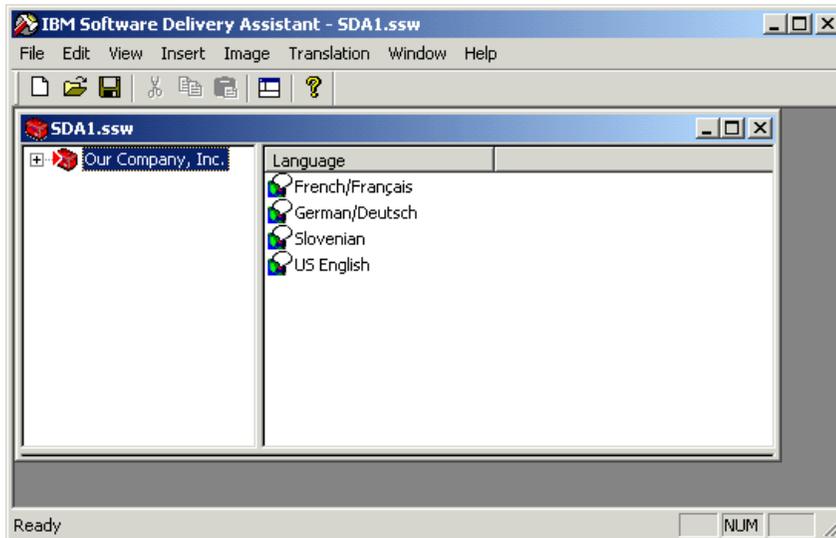
*Figure 328. SDA-Administrator main window*

Here you can prepare all the applications you want to deliver to the systems in your company. How you prepare the applications is also described in 4.1.2, "SDA-Administrator" on page 180.

After selecting all of the applications to build the image, you can port the image to the systems where you want to install the applications. In the version we used for the book (beta of SDA V1.1 from February 2000) the SDA-Installer was only supported on IBM systems. Please check the Web site below for updates. Information on how you should use the SDA-Installer can be found in 4.1.3, "SDA-Installer" on page 204.

You should see that are there no differences in using SDA on IBM or non-IBM systems. For further information about supported systems and for upgrades please check the following Web site or ask your local IBM sales representative:

http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda/index.html

# Chapter 8. Support

In this chapter we show you all the ways to get support for the Universal Manageability tools that we used in this book.

A central point for information about the Universal Manageability tools and for downloading these tools and getting support can be found at the following Web site:

`http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products.html`

Here you can find links to all the Universal Manageability tools as shown in Figure 329:



*Figure 329. Central link point for Universal Manageability tools*

Another good place to access e-support for UM tools is the following Web site:

`http://www.pc.ibm.com/ww/solutions/enterprise/support/index.html`

Here you have access to the e-support UM forum described in the next section and the e-mail support described in 8.2, "e-mail support for Universal Manageability tools" on page 294. The Web site looks similar to Figure 330:
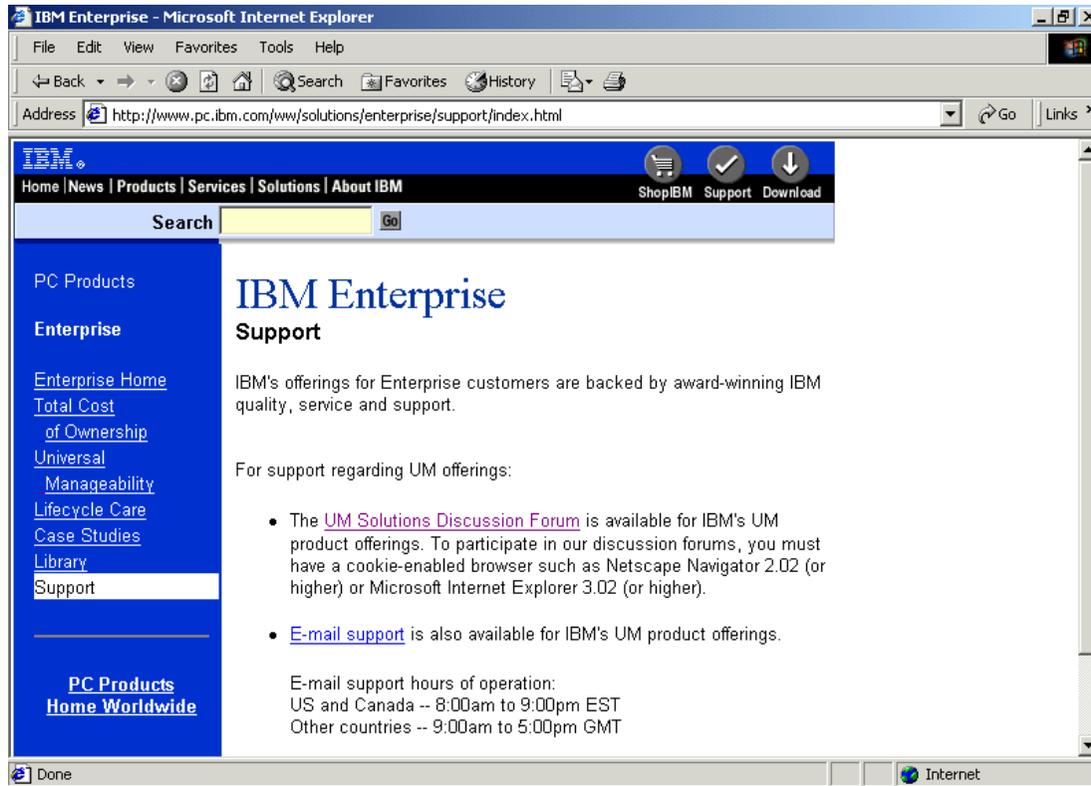


*Figure 330. Access point for e-support for UM tools*

## 8.1  e-forum support for Universal Manageability tools

For e-support for all parts of the Universal Manageability tools you should use the IBM UM Solution discussion forum. To connect to the support forum, go to the following location:

`http://www6b.pc.ibm.com:8080/~ums`

or click **UM Solution Discussion Forum** when you are at:

`http://www.pc.ibm.com/ww/solutions/enterprise/support/index.html`

as shown in Figure 330 on page 290. This will bring up Figure 331:
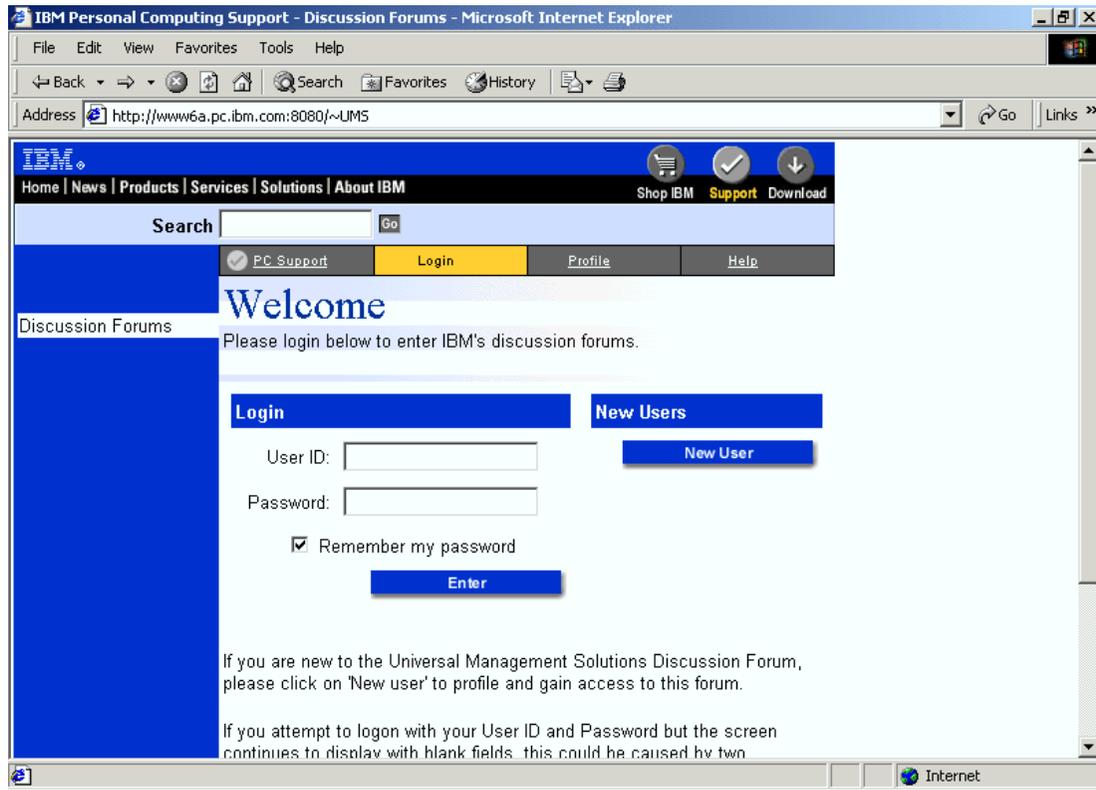
*Figure 331. Welcome screen for UM support forum*

If this is your first time on this site, you must create a new user account. To do that click **New User.** Now the following window appears:
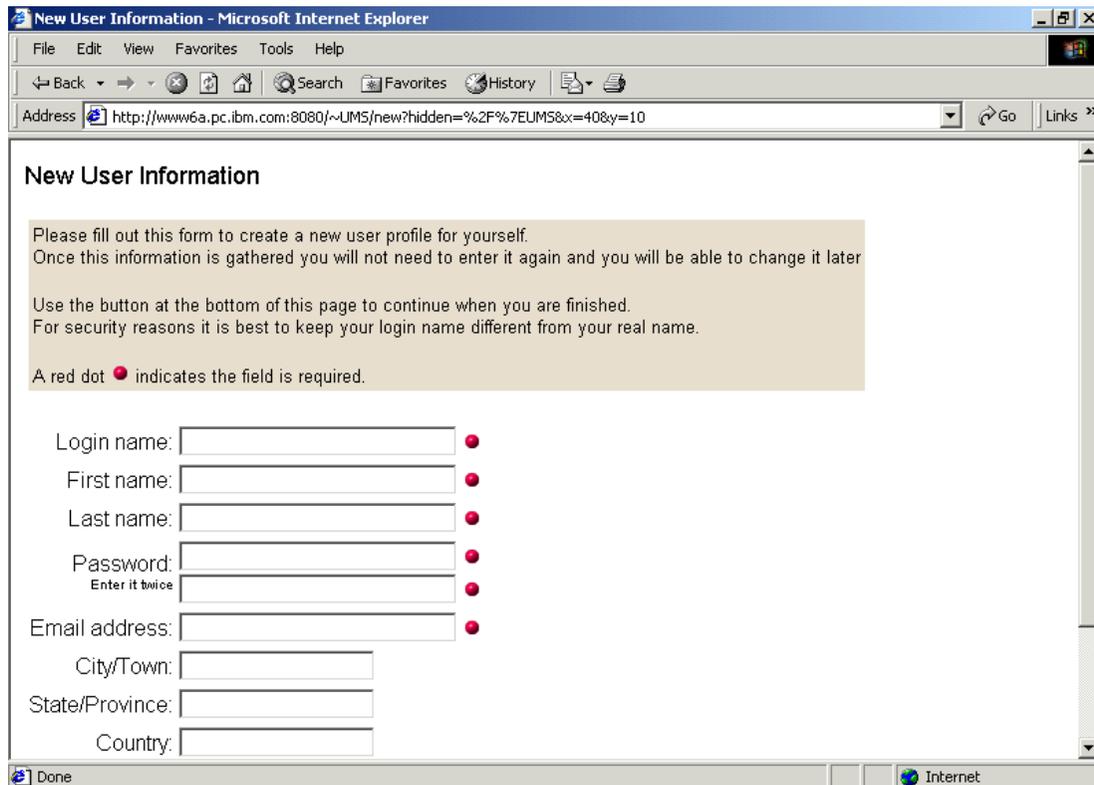
*Figure 332. Creating a new user account for UM support forum*

After filling out the fields (the fields marked with a red dot are required fields) you come back to the window shown in Figure 331 on page 291. Type in your user name and password. If you select **Remember My Password** you will never be asked for it again (but you need to remember it in case your browser has problems or you have to go to another system to access the site). Since this is a security issue, you should only select that option if you are the only one who uses the system. Now you will see the following window:
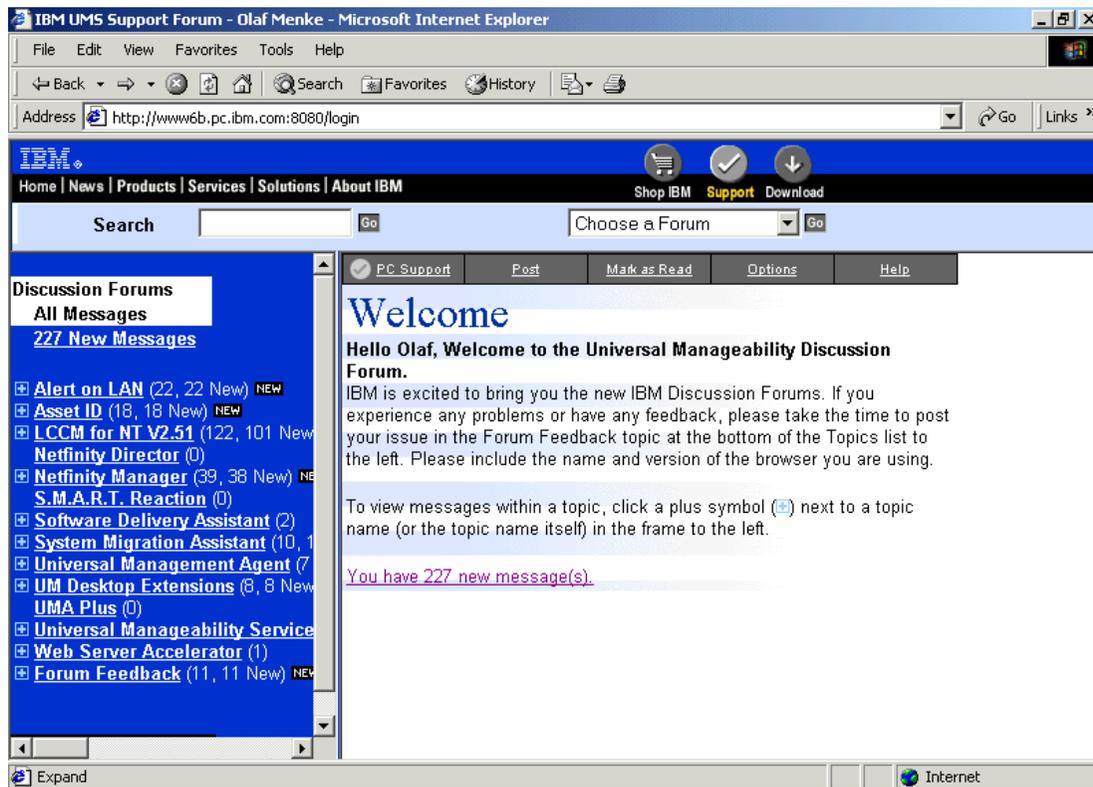
*Figure 333.  Start screen for the user in the UM support forum*

At the top of the left pane you will see any new messages since your last logon. Below the messages are the categories for the messages (such as LCCM, Netfinity Director, Netfinity Manager and Universal Manageability Services). When you click an entry in the left pane the contents will be shown in the right pane.

At the top of the right pane you see a toolbar that contains the following items:

- PC Support
- Post
- Mark as Read
- Options
- Help

If you want to insert your own problems or answers in this forum, you should first select the category and if you want to answer the corresponding file, then click **Post**. In the right pane a window will open:
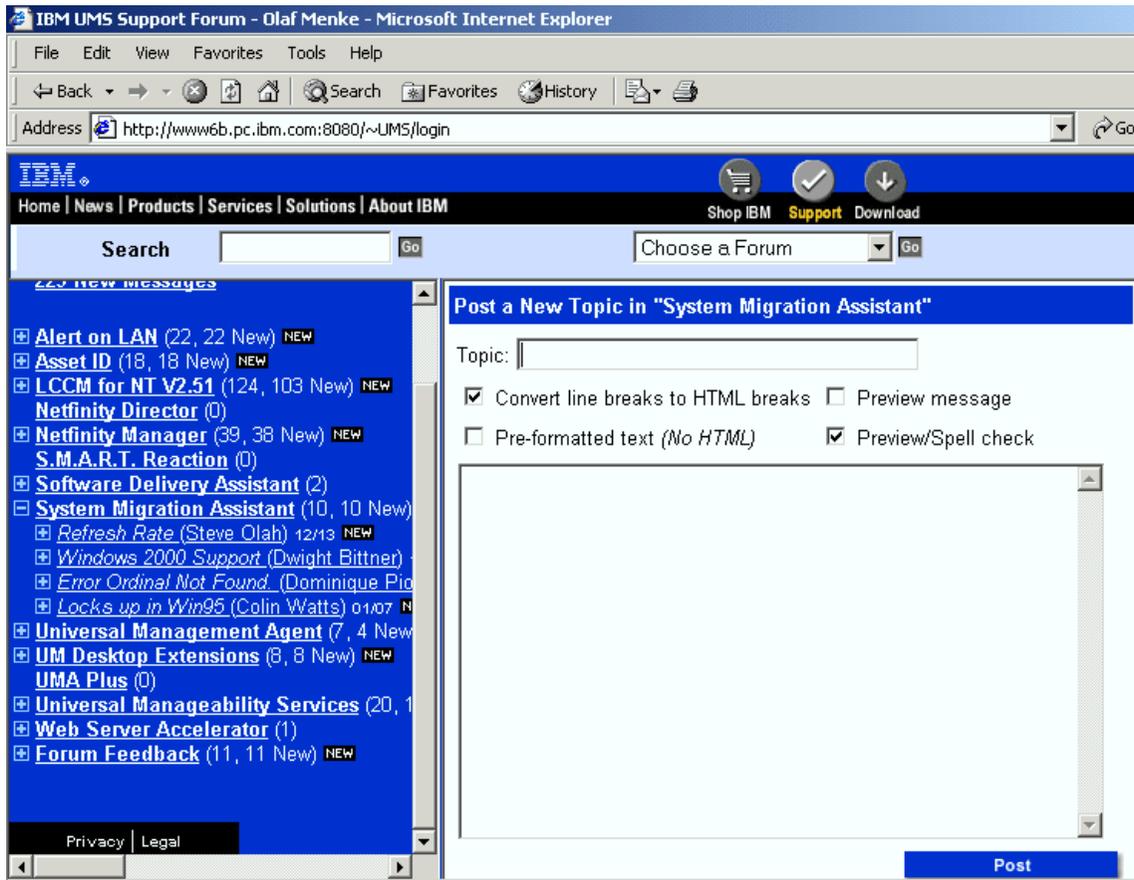
*Figure 334. Post a new message to the support forum*

Fill out the topic field corresponding to your problem and describe the problem in the window below. When you have finished your editing, click **Post** in the upper right corner. This will bring your message into the support page. You should check regularly for answers to your problem.

## 8.2 e-mail support for Universal Manageability tools

To get access to e-mail support for UM tools, go to the following address:

```
http://www.pc.ibm.com/us/desktop/lccm/esupport.html
```

or open the Enterprise Support window shown in Figure 330 on page 290 at the following location:

```
http://www.pc.ibm.com/ww/solutions/enterprise/support/index.htm
```

If you access the e-mail support item, it opens the following window:
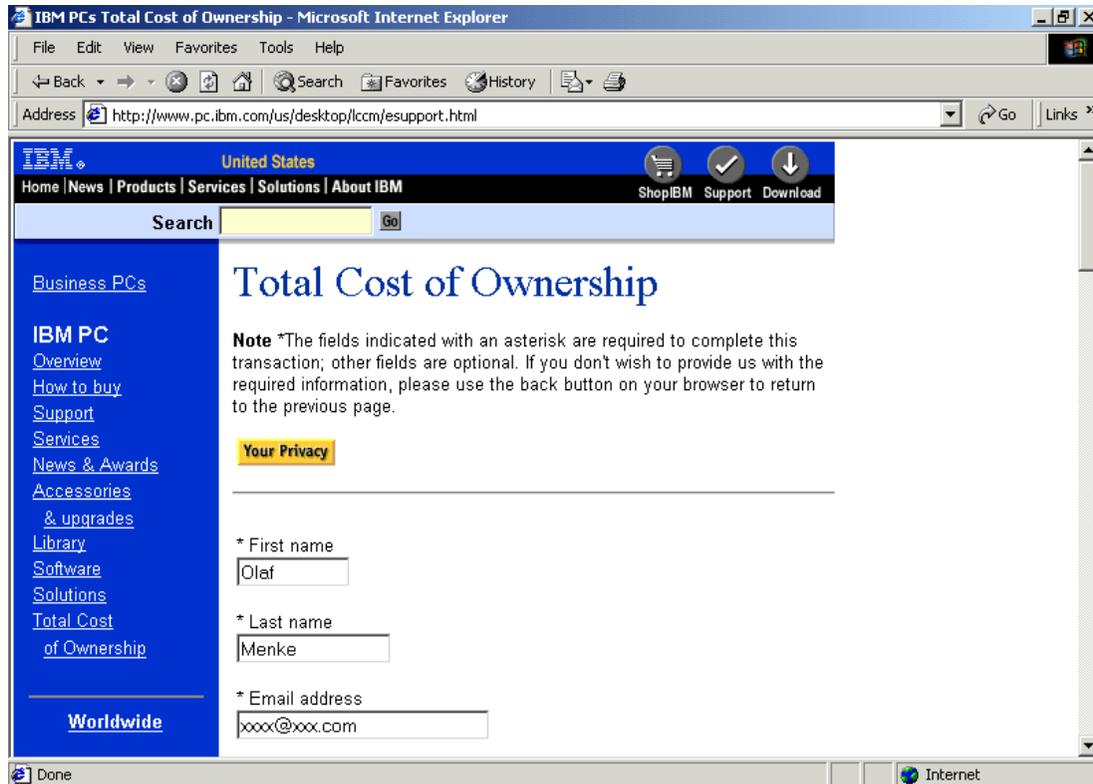


*Figure 335. E-mail support form (1 of 6)*

Please fill out the form completely (shown in Figure 335 on page 295 to Figure 340 on page 300), A detailed description about your problem will help to solve the problem quicker. You will get the information back within one business day.
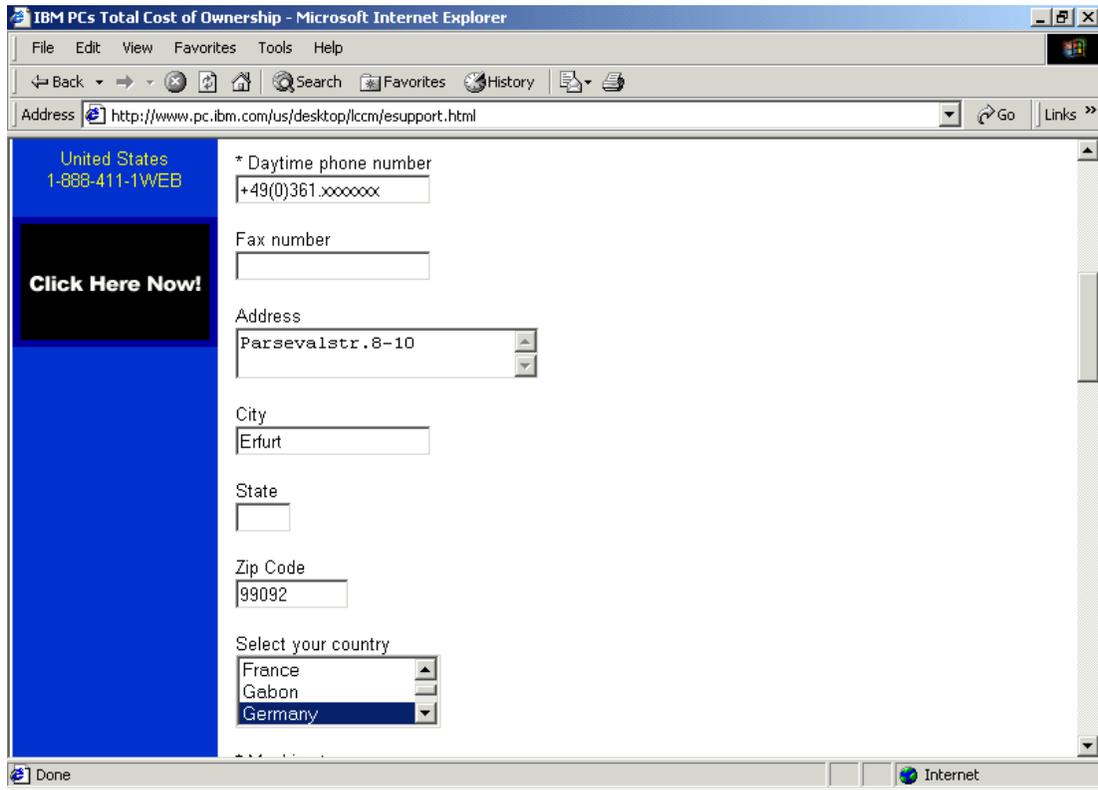
*Figure 336. E-mail support form (2 of 6)*
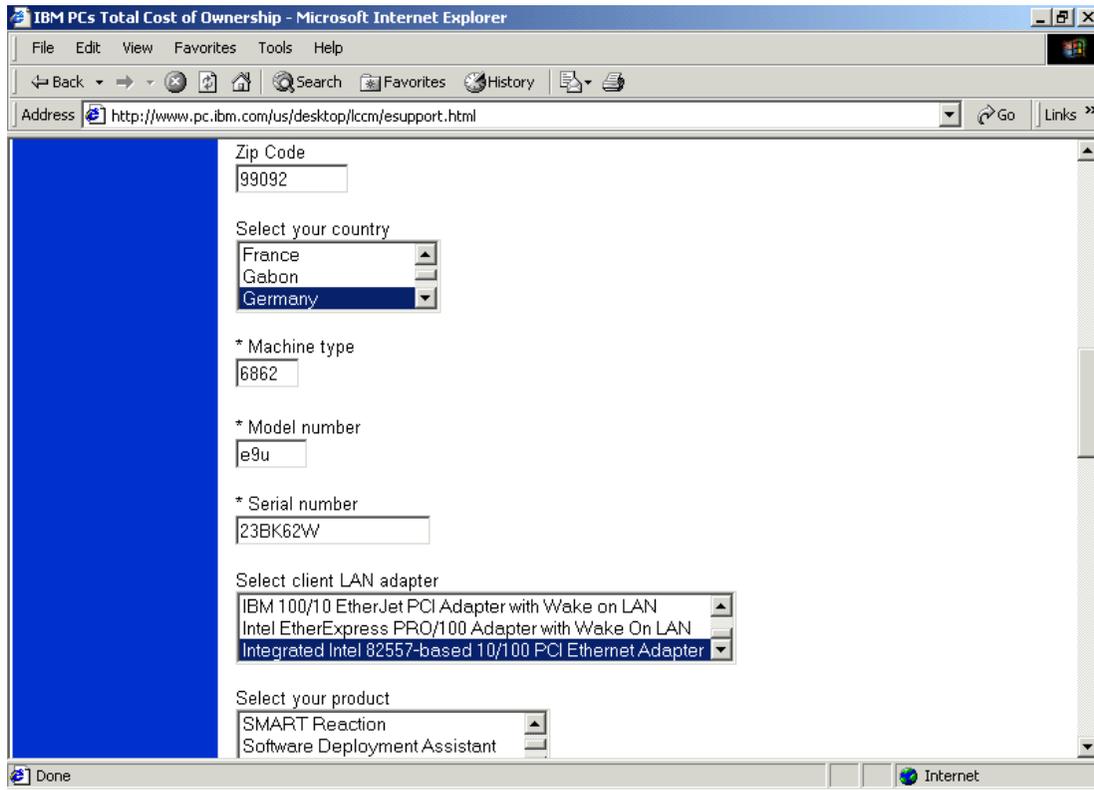
*Figure 337.  E-mail support form (3 of 6)*
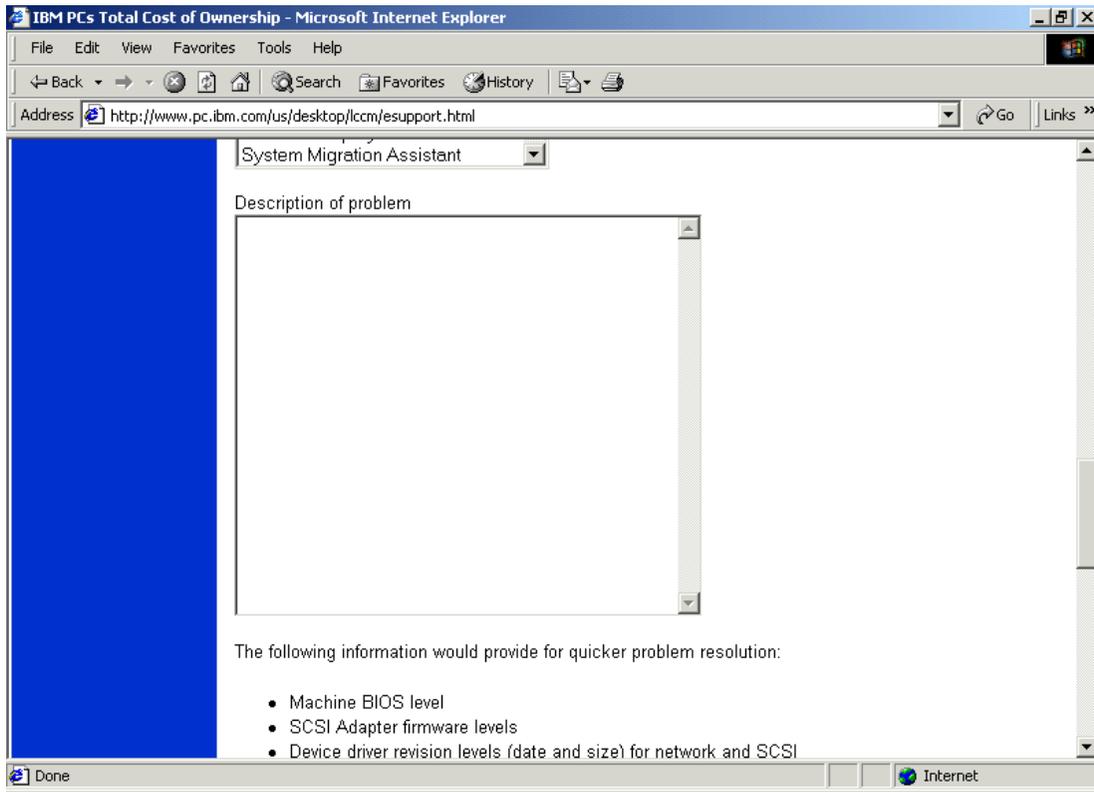
*Figure 338. E-mail support form (4 of 6)*
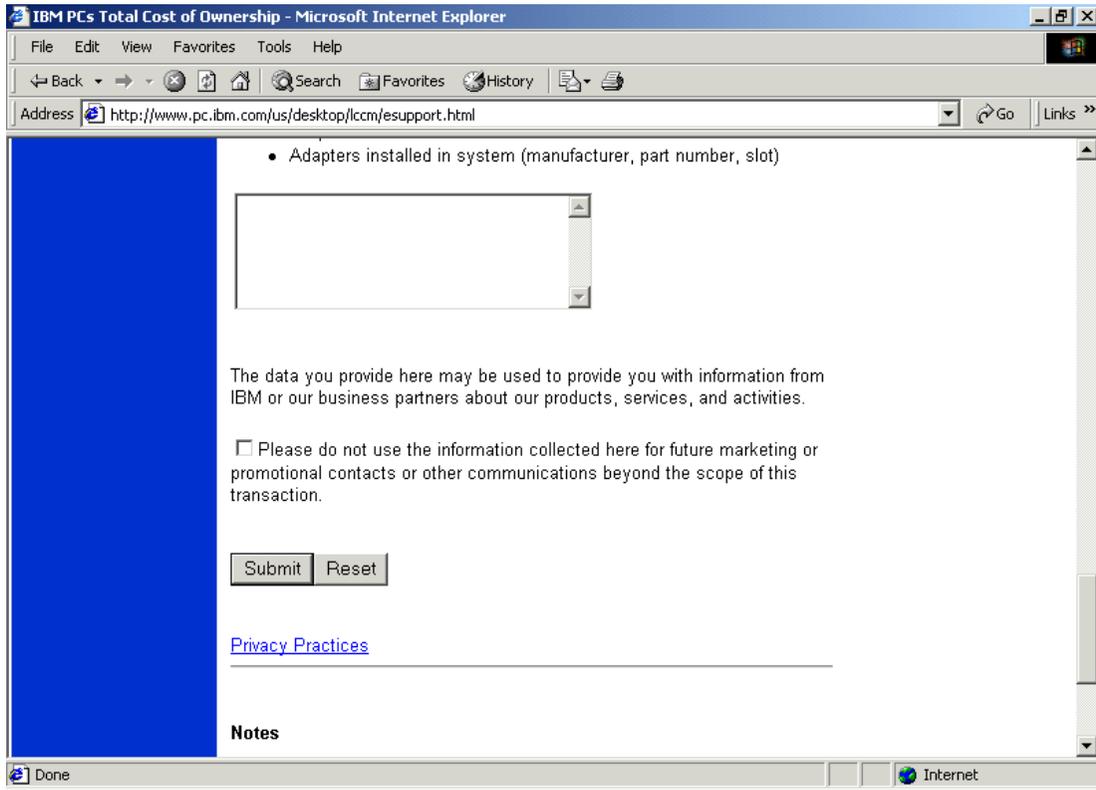
*Figure 339.  E-mail support form (5 of 6)*
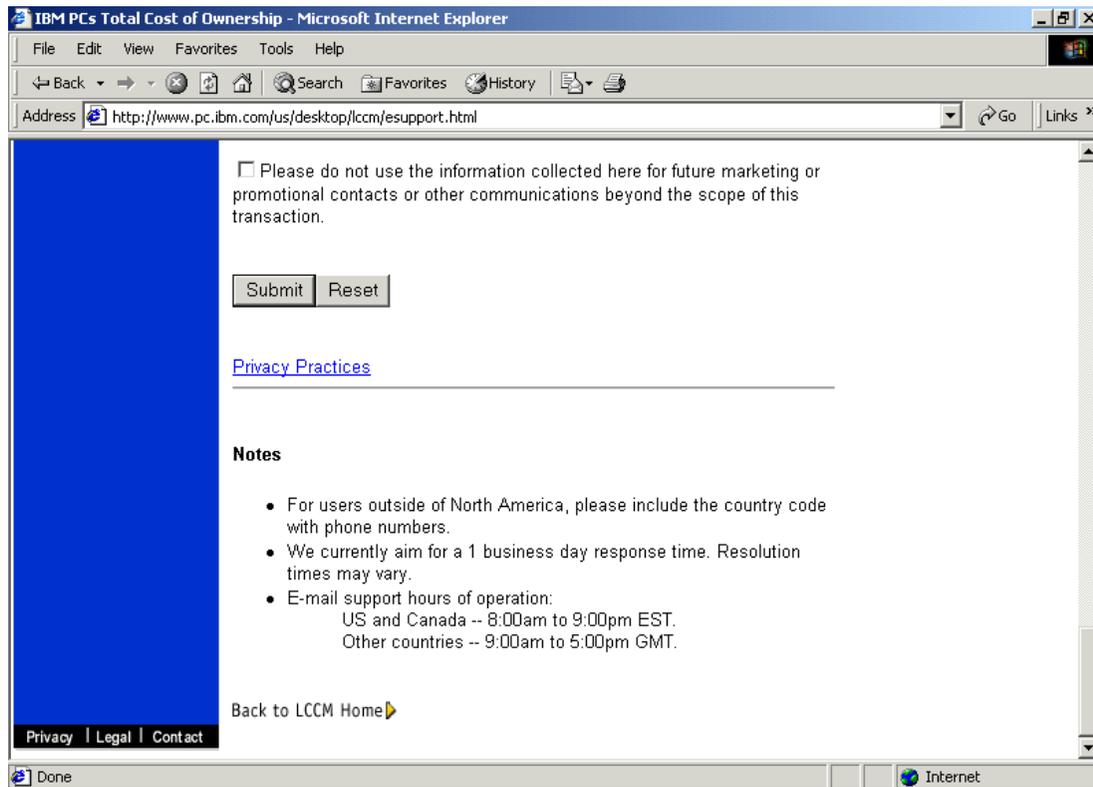
*Figure 340. E-mail support form (6 of 6)*

## 8.3 FAQs and other information

For all UM tools you can find different FAQ sites or other information. The UM tools also have good online help integrated into their programs, which can help you to learn how to use the tools and help you solve problems by yourself.

You can also find some links to FAQs and additional help sites for the UM tools at the following Web sites:

* LCCM - FAQ, hints and tips

  `http://www.pc.ibm.com/us/desktop/lccm/hints.html`

* Netfinity Director - Library

  `http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/nfdir/library.html`

* SDA - e-mail/e-forum

```
http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda/down
load.html
```

- SMA - User Guide

```
http://www.pc.ibm.com/us/software/sysmgmt/products/sma/
```

## 8.4  How can you find the UM tools

List of URLs for downloads of the UM tools:

- LCCM:

```
http://www.pc.ibm.com/us/desktop/lccm/
```

- SMA:

```
http://www.pc.ibm.com/us/software/sysmgmt/products/sma/
```

- SDA:

```
http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda
/index.html
```

- Netfinity Director:

   ask your IBM sales representative for the CD, which will be delivered with new Netfinity server systems

- Netfinity Director Client (UM Services):

```
http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/nfd
ir/index.html
```

- Netfinity Director desktop extensions:

```
http://www.pc.ibm.com/ww/software/sysmgmt/products/ums/extensions.html
```

- Netfinity Director server extension:

```
http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/nfd
ir/serv_ext.html
```

Additional Universal Manageability tools can be found on the following Web site:

```
http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products.html
```

## 8.5  Phone support

Below is a worldwide Help Center phone list. The list is from February 2000. For updates to this list, please check the following Web site:

```
http://www.pc.ibm.com/support?page=YAST-3P2QYL
```

*Table 12.  Help Center phone list (as of February 2000)*

| Country | Language | Customer Number | Hours of Operation |
|---------|----------|-----------------|--------------------|
| Argentina | Spanish | 11-4717-4357 | 9 a.m. - 6 p.m. M-F |
| Australia | English | 131426 | 9 a.m. - 9 p.m. AEST - 7 days/week |
| Austria | German | 1-54658-5075 | 9 a.m. - 6 p.m. M-F |
| Belgium | Dutch<br>French | 02-717-2504<br>02-717-2503 | 9 a.m. - 6 p.m. M-F |
| Brazil | Portuguese | 55-11-889-8986 | 8 a.m. - 10 p.m. - Mo-F |
| Canada | English<br>French | 1-800-565-3344<br>1-800-565-3344 | 24 hours/day - 7 days/week<br>24 hours/day - 7 days/week |
| Chile | Spanish | 800-203300 | 9 a.m. - 6 p.m. M-F |
| China | Mandarin | 800-810-1818 | 8:30 a.m. - 5 p.m. M-F |
| Colombia | Spanish | 9-800-18811623--2300 | 8 a.m. - 10 p.m. M-F<br>8 a.m. - 4 p.m. Saturday |
| Denmark | Danish | 03-525-6905 | 9 a.m. - 6 p.m. M-F |
| Ecuador | Spanish | 2-565-130 | 8:30 a.m. - 6 p.m. M-F |
| Finland | Finnish | 9-22-931805 | 9 a.m. - 6 p.m. M-F |
| France | French | 01-6932-4003 | 9 a.m. - 6 p.m. M-F |
| Germany | German | 069-6654-9040 | 9 a.m. - 6 p.m. M-F |
| Hong Kong | Cantonese | 2825-7799 | 9 a.m. - 5 p.m. - M-F |
| Ireland | English | 01-8159207 | 9 a.m. - 6 p.m. M-F |
| Italy | Italian | 02-482-75003 | 9 a.m. - 6 p.m. M-F |
| Japan | Japanese | 0120-141-666 | 10 a.m. - 6 p.m. - 7 days/week |
| Luxembourg | French | 298-977-5060 | 9 a.m. - 6 p.m. M-F |
| Mexico | Spanish | 01-800-426-1000<br>387-5991 | 8 a.m. - 8 p.m. M-F |
| Netherlands | Dutch | 020-504-0531 | 6 a.m. - 6 p.m. M-F |
| Norway | Norwegian | 2-305-3203 | 6 a.m. - 6 p.m. M-F |
| Peru | Spanish | 349-0050 | 8:30 a.m. - 8:30 p.m. M-F |

| Country | Language | Customer Number | Hours of Operation |
|---------|----------|-----------------|--------------------|
| Portugal | Portuguese | 01-791-5147 | 9 a.m. - 6 p.m. M-F |
| Spain | Spanish | 091-662-427 | 9 a.m. - 6 p.m. M-F |
| Sweden | Swedish | 08-632-0063 | 9 a.m. - 6 p.m. M-F |
| Switzerland | German French Italian | 01-212-1810 022-310-0418 091-971-0523 | 9 a.m. - 6 p.m. M-F |
| Taiwan | Mandarin | 886-2-2725-9799 | 24 hours/day 7 days/week |
| UK | English | 01475-555555 | 9 a.m. - 6 p.m. M-F |
| United States | English | 1-800-772-2227 | 24 hours/day - 7 days/week |
| Venezuela | Spanish | 800-426-72 | 8 a.m. - 5 p.m. M-F |

## 8.6 Preparing for a support call or access to e-support

When you want to start a support call, you should be prepared to have answers available for questions from the support team. To help you to have all the necessary information available, we have created the following templates for each of the UM tools we used, with examples for filling out the templates.

## 8.6.1 Preparing for LCCM support

Before starting the LCCM support call you should have all of the following information available:

*Table 13. Necessary information for LCCM support*

| Requested Information | Example | Information |
|-----------------------|---------|-------------|
| Your company name | IBM ITSO | |
| Your phone number | (919)301-xxxx | |
| Your e-mail address | xxxx@de.ibm.com | |
| Your access PIN (if req'd) | | |
| **LCCM Server** | | |
| Model type and submodel | 300PL (6862-R1U) | |
| BIOS revision | NVKT44AUS | |
| NIC/FRU | TR 16/4 PCI WOL | |

| Requested Information | Example | Information |
|---|---|---|
| NIC driver version | IBMTRP.SYS 5.22.03.055 (10/19/99) | |
| NIC firmware level | | |
| NOS and SP | Windows NT 4 Server SP6a | |
| Version of LCCM | LCCM 2.5.1 SP3 | |
| **LCCM Client** | | |
| Model type and submodel | 300PL (6862-R1U) | |
| BIOS rev. | NVKT44AUS | |
| NIC/FRU | TR 16/4 PCI | |
| NIC firmware level | | |
| RPL or PXE/DHCP | PXE/DHCP | |
| DHCP server local or remote | local | |
| What software/OS is being pushed? | Windows 2000 | |
| What feature of LCCM is being used? | Wizard | |
| What method is being used? | unattended installation of Windows 2000 pro | |
| How is it configured (for example, share point or unattendet.txt)? | | |
| **Network Topology** | | |
| How are the server and client connected? | 10 Mbps Ethernet via cat5 cable through a CISCO1700 switch | |
| If you used routers, are the boot ports open and directed broadcasts being forwarded? | | |

After filling out the list above, prepare a complete problem description. You should have read the integrated help information, the FAQ and all of the user's guides before starting the support call.

## 8.6.2 Preparing for SMA Support

For the SMA support call you should have all the following information available:

*Table 14. Necessary information for SMA support*

|  | **Example** | **Information** |
|---|---|---|
| Your company name | IBM ITSO | |
| Your phone number | (919)301-xxxx | |
| Your e-mail address | xxxx@de.ibm.com | |
| Your access PIN (if req'd) | | |
| **SMA Source** | | |
| Model type and submodel | IBM 300PL (6862-R1U) | |
| BIOS revision | NVKT44AUS | |
| NOS and SP | Windows NT4 SP6a | |
| NIC / FRU | TR 16/4 PCI WOL | |
| NIC driver revision | IBMTRP.SYS 5.22.03.050 (10/08/99) | |
| NIC firmware version | | |
| SMA version | 2.1 | |
| Selected method for SMA | Selective Migration | |
| Selected settings | Personality, connectivity | |
| **SMA Target system** | | |
| Model type and sub model | IBM 300PL | |
| BIOS revision | NVKT44AUS | |
| NOS and SP | Windows 2000 | |
| NIC/FRU | TR 16/4 PCI | |
| NIC driver version | IBMTRP.SYS 5.22.03.050 (10/08/99) | |

| | Example | Information |
|---|---|---|
| NIC firmware version | | |

You should also read the user guide and online help before you start the call. If you can't find the necessary information, have all the details from the list above and a detailed problem description available.

### 8.6.3  Preparing for SDA Support

For the SDA support call you should have all of the following information available:

*Table 15.  Necessary information for SDA support*

| Required information | Example | Information |
|---|---|---|
| Your company name | IBM ITSO | |
| Your phone number | (919)301-xxxx | |
| Your e-mail address | xxxx@de.ibm.com | |
| Your access PIN (i req.) | | |
| **SDA Administrator system** | | |
| Model type and submodel | Netfinity 3000(8476-31U) | |
| BIOS revision | NTKT14.0 (21.08.98) | |
| NOS and SP | Windows 2000 | |
| NIC/FRU | TR 16/4 PCI WOL | |
| NIC driver/revision | IBMTRP.SYS 5.22.03.050 (10/08/99) | |
| NIC firmware version | | |
| SDA version | 1.1 | |
| Selected software for deploying | Norton Antivirus Netfinity Director | |
| Installation method | optional/recommended | |
| When silent, are the files for the silent installation available? | | |
| **SDA Installer system** | | |

| Required information | Example | Information |
|---|---|---|
| Model type and submodel | IBM300 PL (6862-R1U) | |
| BIOS revision | NVKT44AUS | |
| NIC/FRU | TR 16/4 PCI WOL | |
| NIC driver/revision | IBMTRP.SYS 5.22.03.050 (10/08/99) | |
| NIC firmware version | | |
| NOS and SP | Windows 2000 | |
| Do you use a share point or have you copied the SDA install folder to the target system? | Share Point | |
| When using a share point which network topology is used? | TR | |
| Are there routers or switches in the network between the SDA Administrator and target system? | no | |
| How are these configured? | | |

Before you start the call you should have read the online help and the FAQ sites about the product. Have all the information in the above table available. This will help the support team to find a solution for your problem.

### 8.6.4 Preparing for Netfinity Director support

For Netfinity Director support you should have all of the following information available. This will help the support team to give you a quick solution.

*Table 16. Necessary information for Netfinity Director support*

| Required information | Example | Information |
|---|---|---|
| Your company name | ITSO Raleigh | |
| Your phone number | (919)301 4540 | |
| Your e-mail address | | |
| Your access PIN (if req'd) | | |

| Required information | Example | Information |
|---|---|---|
| **Netfinity Director Server system** | | |
| Model type and submodel | Netfinity 3000 (8476-31U) | |
| BIOS revision | NTKT14.0 (21.08.98) | |
| NIC/FRU | TR 16/4 | |
| NIC driver/revision | IBMTRP.SYS 5.22.03.055 (10/19/99) | |
| NIC firmware version | | |
| NOS and SP | Windows 2000 (build 2195) | |
| Netfinity Director version | 2.11 | |
| Database installed for Netfinity Director | Standard (director.mdb) | |
| Database version | | |
| Features selected for Netfinity Director during installation? | SNMP support, Remote Web access | |
| Are there server or desktop extensions installed? | yes | |
| Which version of the extensions are installed? | Server extension version 1.0 | |
| List of installed extensions with version[a] | *Advanced system Management support (V2.1) *Capacity Manager (V6.0) *Cluster Administrator (V1.1) *Raid (V1.0) | |
| **Netfinity Director console system** | | |
| Model type and submodel | Netfinity 3000(8476-31U) | |
| BIOS revision | NTKT14.0 (21.08.98) | |
| NIC/FRU | TR 16/4 PCI | |
| NIC driver/revision | IBMTRP.SYS 5.22.03.055 (10/19/99) | |

| Required information | Example | Information |
|---|---|---|
| NIC firmware version | | |
| NOS and SP | Windows 2000 Server (Build 2195) | |
| Netfinity Director Console version | 2.11 | |
| **Netfinity Director client system** | | |
| Model type and submodel | IBM 300PL (6862-R1U) | |
| BIOS revision | NVKT44AUS | |
| NIC/FRU | TR 16/4 | |
| NIC driver/revision | IBMTRP.SYS 5.22.03.055 (10/19/99) | |
| NIC firmware version | | |
| NOS and SP | Windows 2000 Pro (2195) | |
| Netfinity Director Client version[b] | 2.11 | |
| **Network topology** | | |
| Which type of network connects the Netfinity Director Server, console and client? | Token ring, 16Mbit | |
| Are there any routers and switches in the Network? | no | |

a. Can be found when selecting **Help -> Product Information** running the Netfinity Director console.

b. Can be checked by **Start -> Program -> IBM UM Services Help** here in the point **UM Services -> Overview -> About**

The Netfinity Manager gives you a lot of system management tools in one central place. To help the support people, have all the information requested in the above tables available. This will help the support team to give you the best support.

# Chapter 9. Troubleshooting

While creating the examples in this book we realized that there would be a need to examine the difficulties we had and to share our solutions for them. The following sections present our experiences in a Frequently Asked Questions (FAQ) format for each application.

## 9.1 LANClient Control Manager

How do I configure the $OEM$ directory for a WIndows 2000 LCCM profile created by the wizard?

When the LCCM Profile wizard creates an unattended installation profile it makes a common distribution point for the installation files. Since these files can be used by multiple profiles, LCCM stores the individual profile custom settings, such as the $OEM$ directory, in the profile's home directory and not at the distribution share point. These settings are stored in a series of PROFXXX directories under %LCCM INSTALLTION DRIVE%\clntfile\profile\, where XXX is the number of the profile. The first profile created will be PROF000 and each new wizard-generated profile will increment the number by one. If you want to modify the $OEM$ directory, simply find the appropriate profile number and make the desired changes to the OEM directory under that PROFXXX. The changes will take effect for the next client processed.

How can I modify the answer file for an LCCM wizard-generated Windows 2000 unattended install?

The answer file is stored in the home directory of the profile. This directory is located under %LCCM INSTALLTION DRIVE%\clntfile\profile\ and is named PROFXXX, where XXX is the number of the profile. The first profile created will be PROF000 and each new wizard-generated profile will increment the number by one. The answer file itself is named PROFXXX.LCA.

When I assign a client to a profile it does not Wake on LAN.

Under certain circumstances when the machine is improperly shut down Wake on LAN does not realize that the machine is powered off. To correct this problem remove power from the machine until the network interface card link LED goes out. Once power is restored the machine should wake normally.

After installing Windows 2000 the system will no longer Wake on LAN.

With certain BIOS levels there are issues with ACPI support that cause Wake on LAN not to function after Windows 2000 is installed. Disabling ACPI support in the BIOS under Power Management can be used as a work around until a resolution can be obtained from IBM support. Please refer to Chapter 8, "Support" on page 289 for information about contacting IBM for assistance.

## 9.2 System Migration Assistant

When I run SRCBAT.EXE I receive a file in use error even though the file name for the profile is unique.

This error will occur if either the output location specified on the command line does not match the one indicated in the SRCCOMMANDS.TXT file or if full drive letter path names are not used for the output location, profile name, and SRCCOMMANDS.TXT file. To execute the application over a network a mapped drive must be used. UNC path names are not valid for SMA.

The command line `C:\Progra~1\IBM\SMA\SRCBAT.EXE /C C:\Progra~1\IBM\SMA\SRCCOMMANDS.TXT /O C:\TEMP\` coupled with the SRCCOMMANDS.TXT entries presented in the Figure 341 illustrate the proper command line syntax for SMA.

```
;==================================================
;OUTPUT LOCATION
;
; Usage:
;Place, after the equal sign, the
;location that is to be used for the
;output files destination.  This will
;be ignored if ADSM is being used in
;which case the output files will go
;to the ADSM server.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;==================================================
[Output_Location]
OutputLocation=C:\TEMP\
;==================================================
;
;
;
;
;==================================================
;PROFILE NAME
;
; Usage:
;Place the name of the profile after
;the equal sign.  This is the name
;that will be used for the profile
;unless another one was specified on
;the command line.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;==================================================
[Profile_Name]
ProfileName=C:\TEMP\SETTINGS.SMA
;==================================================
```

*Figure 341.  SRCCOMMANDS.TXT*

Can I use SMA 2.0 command files with SMA 2.1?

> No, there are differences between the versions that can cause problems when restoring the settings. It is suggested that the profiles be generated again for SMA 2.1 using the new command files.

Can I upgrade to SMA version 2.1 without first uninstalling SMA 2.0?

> No, SMA 2.0 must be removed from the system before SMA 2.1 is installed.

When I perform a mass migration from Windows NT to Windows 2000 I end up with a blank desktop and an unusable machine. What am I doing wrong?

SMA 2.1 is not capable of performing a mass migration across platforms. Mass migrations can only be performed between similar machines with the same operating system.

## 9.3 Software Delivery Assistant

How can I reinstall the required applications or select another group using SDA Installer if I have already run it successfully?

The hidden file SDAPROF.INI in the root directory of the system and the registry key HKEY_CURRENT_USER\Software\IBM\SS must be deleted to allow the applications for any group to be installed or reinstalled.

Can I use UNC path names with SDA?

SDA must have a mapped network drive for the application to run properly.

## 9.4 Netfinity Director and Universal Manageability Services

When I assign a system to a process task and execute it I receive a status stating that *Command "COMMAND" targeting SYSTEM has completed with Other Error[-1]*

Typically this will occur when the login account specified in the process task does not have adequate permission to complete the action. This is usually seen when a command is called using a UNC path name.

I have upgraded to Windows 2000 from Windows 98 on my client and in the process uninstalled and reinstalled UM Services. Netfinity Director now indicates that the machine is offline even after a presence check.

This situation will happen under both Windows 98 and Windows NT 4.0. When UM Services is uninstalled and then reinstalled a new unique ID for the system is generated. The old system icon should be deleted and a new discovery run so that the machine is now associated with its new ID.

When I am setting the criteria for a new Dynamic Group the only way I can get the correct AND/OR groupings is by adding criteria in a particular order. Is there a better way to do this?

The Selected Criteria for a Dynamic Group can be dragged and dropped to any Boolean function folder; therefore, criteria can be added in any order desired and organized as required.

# Appendix A. SMA customization files

This appendix contains copies of the SMA V2.1 customization files so that you can review them before you have the product.

## A.1 SMA GUI program's configuration file

This is a configuration file for SMA's GUI program. The configuration commands within determine its default behavior. It is a text file and can be edited with a standard text editor program (such as Notepad). By changing a particular parameter the default setting of that part of the SMA procedure will be changed. Setting a **1** next to a parameter will check that setting's check box in the SMA GUI program when the user clicks **Load Defaults** button.

Each parameter is described in its section of the file under the heading Description. The file is divided into three sections:

1. Mass and Selective Migration
2. Selective Migration only
3. Mass Migration only

The migration method is again noted with each command next to its description.

SETTINGS.TXT has to be located in the \Program Files\IBM\SMA\Support directory.

```
;++++++++++++++++++++++++++++++++++++++++++++++
;
;        S E T T I N G S . T X T
;
;++++++++++++++++++++++++++++++++++++++++++++++
;
; SETTINGS FILE FOR GUI VERSION OF
; SYSTEM MIGRATION ASSISTANT (SMA)
;
; Description:
;        This file is where default behavior
;        for the GUI version of SMA can be
;        set.
;
; Note: SMA is not case sensitive with any
;        of the text appearing within this
;        file.
;
```

```
;          For example: C:\DOCUMENTS\FILE.TXT
;                   is treated the same as
;                   c:\documents\file.txt
;
;+++++++++++++++++++++++++++++++++++++++++++++
;
;*********************************************
; MASS AND SELECTIVE MIGRTION SETTINGS
;*********************************************
;
;=========================================
;           WARNING EXTENSIONS
;
; Description:
;          These are extensions that will
;          generate a warning message when
;          the warning message option has been
;          selected and the user selects
;          a file for migration that has the
;          same extension as one of those
;          listed below.  Place an extension,
;          preceded with the ".", in the list
;          after "Warnings_Start" and before
;          "Warnings_End".
;
; BOTH SELECTIVE AND MASS MIGRATION
;=========================================
[Warnings_Start]
.com
.dll
.drv
.exe
.lib
.sys
.vxd
[Warnings_End]
;=========================================
;
;=========================================
;           USER EXIT
;
; Description:
;          Provide the name of the command file
;          that is to be executed upon finishing
;          the SMA migration process.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
```

```
;===========================================
[User_Exit]
UserExit=
;===========================================
;
;*******************************************
; SELECTIVE MIGRATION SETTINGS
;*******************************************
;
;===========================================
;           INCLUSION EXTENSIONS
;
; Description:
;         Place an extension, preceded
;         with the ".", in the list
;         after "Inclusion_Extension_Start"
;         and before "Inclusion_Extension_End"
;         in order to have that extension
;         checked when "Load Defaults"
;         is clicked.  In addition, on
;         the extension selection page,
;         the extensions in the list that
;         match these extensions will be
;         checked by default. The directory
;         tree will also, by default,
;         check all files that match these
;         extensions.
;
;         For example: .txt
;
; SELECTIVE MIGRATION ONLY!
;===========================================
[Inclusion_Extension_Start]
.000
doc
txt
[Inclusion_Extension_End]
;===========================================
;
;===========================================
;           INCLUSION FILES
;
; Description:
;         Place a file name, with its
;         complete path, in the list after
;         "Inclusion_File_Start" and before
;         "Inclusion_File_End" in order to
```

```
;           have that file checked when
;           "Load Defaults" is clicked.
;
;           For example: c:\important.txt
;
; SELECTIVE MIGRATION ONLY!
;==========================================
[Inclusion_File_Start]
[Inclusion_File_End]
;==========================================
;
;==========================================
;             INCLUSION FOLDERS
;
; Description:
;           Place a folder name, with its
;           complete path, in the list after
;           "Inclusion_Folder_Start" and before
;           "Inclusion_Folder_End" in order to
;           have that folders and all of it's
;           files and subdirectories checked
;           when "Load Defaults" is clicked
;           and when first entering the File &
;           Folder Selection page.
;
;           For example: c:\important\mydocs
;
; SELECTIVE MIGRATION ONLY!
;==========================================
[Inclusion_Folder_Start]
[Inclusion_Folder_End]
;==========================================
;
;==========================================
;             PERSONALITY SETTINGS
;
; Description:
;           Place a 1 next to the settings that
;           are to be checked.  Place a 0 next
;           to the settings that are not to be
;           checked.  These choices will take
;           effect when first entering the
;           "Settings" page and when the
;           "Load Defaults" button is clicked on
;           the "Settings" page.
;
;           The order in which these settings
```

```
;            appear below must not be changed nor
;            should any of them be removed.
;
; SELECTIVE MIGRATION ONLY!
;==========================================
[Personality_Start]
accessibility=1
activedesktop=1
colors=0
desktopicons=0
display=1
iconfont=1
internetbrowser=1
keyboard=1
mouse=1
pattern=0
printers=1
screensaver=1
sendto=1
shell=1
sound=1
startmenu=1
taskbar=1
userprofiles=1
wallpaper=0
windowmetrics=0
[Personality_End]
;==========================================
;
;==========================================
;            CONNECTIVITY SETTINGS
;
; Description:
;            Place a 1 next to the settings that
;            are to be checked.  Place a 0 next
;            to the settings that are not to be
;            checked.  These choices will take
;            effect when first entering the
;            "Settings" page and when the
;            "Load Defaults" button is clicked on
;            the "Settings" page.
;
;            The order in which these settings
;            appear below must not be changed nor
;            should any of them be removed.
;
; SELECTIVE MIGRATION ONLY!
```

```
;==========================================
[Connectivity_Start]
computerdescription=0
computername=1
dnsconfiguration=1
domain=1
mappeddrives=0
rasnetworking=1
sharedfolders=1
tcpipconfiguration=1
winsconfiguration=1
workgroup=0
[Connectivity_End]
;==========================================
;
;==========================================
;            FILTERED EXTENSIONS
;
; Description:
;        These are extensions that will not
;        appear on the "Extension Selection"
;        page.  However, files with these
;        extensions will still appear within
;        the directory and file selection
;        page, where they can still be
;        selected for transfer.
;
; SELECTIVE MIGRATION ONLY!
;==========================================
[Filter_Start]
[Filter_End]
;==========================================
;
;==========================================
;            EXTENSION SELECTION
;                PAGE DRIVES
;
; Note:
;        Place a drive, with the ":\",
;        after the "Drives_Start" and
;        before the "Drives_End" in
;        order to have that drive
;        checked when "Load Defaults"
;        is clicked on the Extension
;        Selection Page.
;
;        For example: C:\
```

```
;
; SELECTIVE MIGRATION ONLY!
;==========================================
[Drives_Start]
[Drives_End]
;==========================================
;
;==========================================
;           REGISTRY SELECTION
;
; Note:
;         Place a registry key, after the
;         "Registry_Start" and before the
;         "Registry_End" in order to have that
;         registry key migrated.
;
;         WARNING:
;
;         The migration of registry keys can
;         lead to unpredictible behavior.
;         Extreme caution and careful
;         consideration should be exercised
;         before adding any registry keys to
;         this migration list.
;
; SELECTIVE MIGRATION ONLY!
;==========================================
[Registry_Start]
[Registry_End]
;==========================================
;
;******************************************
;          MASS MIGRATION SETTINGS
;******************************************
;
;==========================================
;           EXCLUSION EXTENSIONS
;
; Description:
;         Place an extension, preceded
;         with the ".", in the list
;         after "Exclusion_Extension_Start"
;         and before "Exclusion_Extension_End"
;         in order to have that extension
;         unchecked when "Check Defaults"
;         is clicked.  The directory
;         tree will also, by default,
```

```
;           uncheck all files that match these
;           extensions.
;
;           For example: .txt
;
; MASS MIGRATION ONLY!
;=========================================
[Exclusion_Extension_Start]
[Exclusion_Extension_End]
;=========================================
;
;=========================================
;               EXCLUSION FILES
;
; Description:
;           Place a file name, with its
;           complete path, in the list after
;           "Inclusion_File_Start" and before
;           "Inclusion_File_End" in order to
;           have that file checked when
;           "Check Defaults" is clicked.
;
;           For example: c:\sample.txt
;
; MASS MIGRATION ONLY!
;=========================================
[Exclusion_File_Start]
[Exclusion_File_End]
;=========================================
;
;=========================================
;               EXCLUSION FOLDERS
;
; Description:
;           Place a folder name, with its
;           complete path, in the list after
;           "Exclusion_Folder_Start" and before
;           "Exclusion_Folder_End" in order to
;           have that folder and all of it's
;           files and subdirectories checked
;           when "Check Defaults" is clicked
;           and when first entering the File &
;           Folder Selection page.
;
;           For example: c:\sample\info
;
; MASS MIGRATION ONLY!
```

```
;==============================================
[Exclusion_Folder_Start]
[Exclusion_Folder_End]
```

## A.2  Command file for SRCBAT.EXE

```
;+++++++++++++++++++++++++++++++++++++++++++++++++++
;
;          S R C C O M M A N D S . T X T
;
;+++++++++++++++++++++++++++++++++++++++++++++++++++
;
; THIS IS THE COMMAND FILE FOR THE SOURCE
; PORTION OF THE BATCH MODE VERSION OF
; SYSTEM MIGRATION ASSISTANT (SMA)
;
; Important: The semicolon is used within
;            this file to let SMA know to
;            ignore any text that follows.
;            All comments should be preceded
;            by a semicolon.  All text that
;            SMA expects to examine must not
;            be preceded by a semicolon.
;
; Note: SMA is not case sensitive with any
;       of the text appearing within this
;       file.
;
;       For example: C:\DOCUMENTS\FILE.TXT
;                is treated the same as
;                c:\documents\file.txt
;
;+++++++++++++++++++++++++++++++++++++++++++++++++++
;
;*************************************************
; MASS AND SELECTIVE MIGRTION SETTINGS
;*************************************************
;
;================================================
;          TRANSFER MODE
;
; Usage:
;        After the equal sign, provide the
;        type of migration that is to be
;        performed.  There are two
;        possible choices and they are
```

```
;           Selective and Mass.
;===============================================
[Transfer_Mode]
TransferMode=Selective
;===============================================
;
;===============================================
;             OUTPUT LOCATION
;
; Usage:
;           Place, after the equal sign, the
;           location that is to be used for the
;           output files destination.  This will
;           be ignored if ADSM is being used in
;           which case the output files will go
;           to the ADSM server.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;===============================================
[Output_Location]
OutputLocation=C:\PROGRA~1\IBM\SMA\Profiles
;===============================================
;
;===============================================
;             PROFILE NAME
;
; Usage:
;           Place the name of the profile after
;           the equal sign.  This is the name
;           that will be used for the profile
;           unless another one was specified on
;           the command line.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;===============================================
[Profile_Name]
ProfileName=C:\PROGRA~1\IBM\SMA\Profiles\Batch.sma
;===============================================
;
;===============================================
;             CAPTURE NTFS ATTRIBUTES
;
; Usage:
;           If NTFS file attributes should be
;           captured for migration then
;           Capture_NTFS_Attributes should equal
;           1, otherwise it should be equal to 0.
```

```
;
;          Note: Capturing NTFS attributes takes
;                significantly more time than
;                when they are not captured.
;
;==================================================
[CAPTURE_NTFS_ATTRIBUTES]
Capture_NTFS_Attributes=0
;==================================================
;
;==================================================
;          ADSM
;
; Usage:
;          This is where it is indicated whether
;          or not ADSM will be used.  If ADSM is
;          being used, then Using_ADSM should be
;          equal to 1, otherwise it should be
;          equal to 0.  Each field that is
;          needed should have a valid value or
;          else SMA will abort and exit.
;
;==================================================
[ADSM_Start]
Using_ADSM=0
NodeID=
Password=
ADSM_Server=
[ADSM_End]
;==================================================
;
;==================================================
;          USER EXIT
;
; Usage:
;          Provide the name of the command file
;          that is to be executed upon finishing
;          the SMA migration process.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;==================================================
[User_Exit]
UserExit=
;==================================================
;
;**************************************************
;          SELECTIVE MIGRATION SETTINGS
```

```
;*********************************************
;
;===============================================
;           PERSONALITY SETTINGS
;
; Usage:
;         Place a 1 next to the settings that
;         are to be migrated.  Place a 0 next
;         to the settings that are not to be
;         migrated.
;
; SELECTIVE MIGRATION ONLY!
;===============================================
[Personality_Start]
accessibility=1
activedesktop=1
colors=1
desktopicons=1
display=1
iconfont=1
internetbrowser=1
keyboard=1
mouse=1
pattern=1
printers=0
screensaver=1
sendtomenu=1
shell=1
sound=1
startmenu=1
taskbar=1
userprofiles=1
wallpaper=1
windowmetrics=1
[Personality_End]
;===============================================
;
;===============================================
;           CONNECTIVITY SETTINGS
;
; Usage:
;         Place a 1 next to the settings that
;         are to be migrated.  Place a 0 next
;         to the settings that are not to be
;         migrated.
;
; SELECTIVE MIGRATION ONLY!
```

```
;================================================
[Connectivity_Start]
computerdescription=1
computername=1
dnsconfiguration=1
mappeddrives=1
rasnetworking=1
sharedfolders=1
tcpipconfiguration=1
winsconfiguration=1
workgroup=1
domain=1
[Connectivity_End]
;================================================
;
;================================================
;            INCLUSION EXTENSIONS
;
; Usage:
;         Place an extension, preceded
;         with the ".", in the list
;         after "Inclusion_Extension_Start"
;         and before "Inclusion_Extension_End"
;         in order to have all files that match
;         that extension transferred.
;
;         For example: .txt
;
; SELECTIVE MIGRATION ONLY!
;================================================
[Inclusion_Extension_Start]
[Inclusion_Extension_End]
;================================================
;
;================================================
;            INCLUSION FILES
;
; Usage:
;         Place a file name, with its
;         complete path, in the list after
;         "Inclusion_File_Start" and before
;         "Inclusion_File_End" in order to
;         have that file checked when
;         "Load Defaults" is clicked.
;
;         For example: c:\important.txt
;
```

```
; SELECTIVE MIGRATION ONLY!
;=================================================
[Inclusion_File_Start]
[Inclusion_File_End]
;=================================================
;
;
;
;
;=================================================
;            SELECTIVE EXCLUSION FILES
;
; Usage:
;         Place a file name, with its
;         complete path, in the list after
;         "Selective_Exclusion_File_Start" and
;         before "Selective_Exclusion_File_End"
;         in order to have that file excluded
;         from transfer.
;
;         For example: c:\sample.txt
;
; SELECTIVE MIGRATION ONLY!
;=================================================
[Selective_Exclusion_File_Start]
[Selective_Exclusion_File_End]
;=================================================
;
;=================================================
;            INCLUSION FOLDERS
;
; Usage:
;         Place a folder name, with its
;         complete path, in the list after
;         "Inclusion_Folder_Start" and before
;         "Inclusion_Folder_End" in order to
;         have that folder and all of it's
;         files and subdirectories transferred.
;
;         For example: c:\important\mydocs
;
; SELECTIVE MIGRATION ONLY!
;=================================================
[Inclusion_Folder_Start]
[Inclusion_Folder_End]
;=================================================
;
```

```
;===================================================
;              SELECTIVE EXCLUSION FOLDERS
;
; Usage:
;          Place a folder name, with its complete
;          path, after
;          "Selective_Exclusion_Folder_Start"
;          and before "Selective_Exclusion_Folder_End"
;          in order to have that folder and all
;          of it's files and subdirectories
;          excluded from transfer.
;
;          For example: c:\dir1\olddocs
;
; SELECTIVE MIGRATION ONLY!
;===================================================
[Selective_Exclusion_Folder_Start]
[Selective_Exclusion_Folder_End]
;===================================================
;
;===================================================
;               INCLUSION DRIVES
;
; Usage:
;          Place a drive letter, followed by a
;          colon, after "Inclusion_Drive_Start"
;          and before "Inclusion_Drive_End" in
;          order to have the drive included
;          for transfer.
;
;          For example: d:
;
; SELECTIVE MIGRATION ONLY!
;===================================================
[Inclusion_Drive_Start]
[Inclusion_Drive_End]
;===================================================
;
;===================================================
;               REGISTRY SELECTION
;
; Usage:
;          Place a registry key, after the
;          "Registry_Start" and before the
;          "Registry_End" in order to have that
;          registry key migrated.
;
```

```
;          WARNING:
;
;          The migration of registry keys can
;          lead to unpredictible behavior.
;          EXTREME caution and careful
;          consideration should be exercised
;          before adding any registry keys to
;          this migration list.
;
; SELECTIVE MIGRATION ONLY!
;================================================
[Registry_Start]
[Registry_End]
;================================================
;
;************************************************
;          MASS MIGRATION SETTINGS
;************************************************
;
;================================================
;          EXCLUSION FILES
;
; Usage:
;          Place a file name, with its
;          complete path, in the list after
;          "Exclusion_File_Start" and before
;          "Exclusion_File_End" in order to
;          have that file excluded from
;          transfer.
;
;          For example: c:\sample.txt
;
; MASS MIGRATION ONLY!
;================================================
[Exclusion_File_Start]
[Exclusion_File_End]
;================================================
;
;================================================
;          EXCLUSION FOLDERS
;
; Usage:
;          Place a folder name, with its
;          complete path, after
;          "Exclusion_Folder_Start" and
;          before "Exclusion_Folder_End" in
;          order to have that folder and all
```

```
;           of it's files and subdirectories
;           excluded from transfer.
;
;           For example: c:\dir1\olddocs
;
; MASS MIGRATION ONLY!
;=================================================
[Exclusion_Folder_Start]
[Exclusion_Folder_End]
;=================================================
;
;=================================================
;            EXCLUSION DRIVES
;
; Usage:
;           Place a drive letter, followed by a
;           colon, after "Exclusion_Drive_Start"
;           and before "Exclusion_Drive_End" in
;           order to have the drive excluded
;           from transfer.
;
;           For example: d:
;
; MASS MIGRATION ONLY!
;=================================================
[Exclusion_Drive_Start]
[Exclusion_Drive_End]
;=================================================
```

## A.3  Command file for TARBAT.EXE

```
;++++++++++++++++++++++++++++++++++++++++++++
;
;           T A R C O M M A N D S . T X T
;
;++++++++++++++++++++++++++++++++++++++++++++
;
; THIS IS THE COMMAND FILE FOR THE TARGET
; PORTION OF THE BATCH MODE VERSION OF
; SYSTEM MIGRATION ASSISTANT (SMA)
;
; Note: SMA is not case sensitive with any
;         of the text appearing within this
;         file.
;
;         For example: C:\DOCUMENTS\FILE.TXT
```

```
;                is treated the same as
;                c:\documents\file.txt
;
;+++++++++++++++++++++++++++++++++++++++++++++
;
;*********************************************
; MASS AND SELECTIVE MIGRTION SETTINGS
;*********************************************
;
;===========================================
;           TCPIP
;
; Description:
;           Provide the new TCP/IP
;           address to be used on
;           the target computer to use.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;===========================================
[TCPIP]
TCPIP=10.1.1.130
;===========================================
;
;===========================================
;           SUBNET
;
; Description:
;           Provide the new subnet
;           address to be used on
;           the target computer to use.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;===========================================
[SUBNET]
SUBNET=255.255.0.0
;===========================================
;
;===========================================
;           GATEWAY
;
; Description:
;           Provide the new gateway
;           address to be used on
;           the target computer to use.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;===========================================
```

```
[GATEWAY]
GATEWAY=10.1.1.4
;==========================================
;
;==========================================
;          COMPUTER NAME
;
; Description:
;          Provide the new name to be used
;          on the target computer.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;==========================================
[Computer_Name]
Computer_Name=SMA2K
;==========================================
;
;==========================================
;          DOMAIN/WORKGROUP NAME
;
; Description:
;          Provide the new domain or
;          workgroupname to beused on the
;          target computer.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;==========================================
[Domain_Workgroup]
Domain_Workgroup=UM
;==========================================
;
;==========================================
;          USER EXIT
;
; Description:
;          Provide the name of the command file
;          that is to be executed upon finishing
;          the SMA migration process.
;
; BOTH SELECTIVE AND MASS MIGRATIONS!
;==========================================
[User_Exit]
UserExit=
;==========================================
;
;==========================================
;          ADSM
```

```
;
; Description:
;         This is where it is indicated whether
;         or not ADSM will be used.  Each field
;         that is needed should have a valid
;         value or else SMA will fail.  These
;         fields will be ignored if they are
;         not needed.
;
;=========================================
[ADSM_Start]
NodeID=
Password=
ADSM_Server=
[ADSM_End]
```

# Appendix B. Scripts for the Windows 2000 upgrade example

The scripts contained in this appendix are part of the Windows 2000 Professional upgrade via Netfinity Director example described in 2.4.1, "Unattended upgrade to Windows 2000 Professional" on page 86. All programs were tested using Windows Scripting Host Version 5.1.

## B.1 BOOST.VBS

This script is the first part of a three-part process. BOOST.VBS is used to seed the Startup folder of the target system with PREUPGRD.VBS, set the autologon registry entries, and reboot the system.

```
' This script is part one of a three part process with files PREUPGRD.VBS and W2KUPGRD.VBS that
' remotely uninstalls Universal Management Services and starts the Windows 2000 Professional Unattended'
' install on Windows 98 SE and Windows NT 4.0 Workstation, Service Pack 6a.  This script is to be
' distributed to remote machines using a Netfinity Manager Task Process.

' Set up the required objects
Dim WSHShell,FSO
Set WSHShell = WScript.CreateObject("WScript.Shell")
Set FSO = CreateObject("Scripting.FileSystemObject")
Set WSHEnvironment = WSHShell.Environment

' Check what operating system is running on the target machine, set the sysdir variable, and run the
' appropriate subroutine
If (WSHEnvironment("OS")="Windows_NT") Then
  sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%")
  Call NT()
Else
  sysdir = WSHShell.ExpandEnvironmentStrings("%windir%")
  Call W98()
End If
WScript.Quit

' Subroutine for Windows NT 4.0 Operating System
Sub NT()
  ' Copy the file needed for rebooting Windows NT
  FSO.Copyfile "\\23ff458\Archive\W2KPro\Scripts\SHUTDOWN.EXE", sysdir + "\"

 ' Create the Autologon entries to be used with the Startup Folder process
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\AutoAdminLogon", 1
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultPassword",
"password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultUserName",
"administrator"

 ' Copy PREUPGRD.VBS to the Startup Folder
  FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\PREUPGRD.VBS", sysdir + "\Profiles\Administrator\Start
Menu\Programs\Startup\"

  ' Reboot the system
  WSHShell.Run "SHUTDOWN /L /R /T:0 /Y /C",0

End Sub

' Subroutine for Windows 98 Second Edition Operating System
Sub W98()
  ' Copy the file needed for AutoLogon under Windows 98
  FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\TWEAKUI.CPL", sysdir + "\system\"

  ' Create the Autologon entries to be used with the Startup Folder process
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\AutoAdminLogon", 1
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultPassword",
"password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultUserName",
"administrator"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\RunServicesOnce\Tweak UI",
"RUNDLL32.EXE TWEAKUI.CPL,TweakLogon"
```

```
 ' Copy PREUPGRD.VBS to the Startup Folder
 FSO.CopyFile "\\23ff458\Archive\W2KPro\Scripts\PREUPGRD.VBS", sysdir + "\startm~1\Programs\StartUp\"

 ' Reboot the system
 WSHShell.Run "rundll32 shell32.dll,SHExitWindowsEx 2",0
End Sub
```

## B.2  PREUPGRD.VBS

PREUPGRD.VBS is the second of the three scripts. This one is executed from the Startup folder of the target machine. It will uninstall Universal Management Services, create a RunOnce entry for W2KUPGRD.VBS, set up autologon, and reboot the system.

```
' This script is part two of a three part process with files BOOST.VBS and W2KUPGRD.VBS that remotely
' uninstalls Universal Management Services and starts the Windows 2000 Professional Unattended install
' on Windows 98 SE and Windows NT 4.0 Workstation, Service Pack 6a.  This script is to be distributed to
' remote machines using a Netfiniy Manager Task Process.


' Set up the required objects
Dim WSHShell, FSO
Set WSHShell = WScript.CreateObject("WScript.Shell")
Set FSO = CreateObject("Scripting.FileSystemObject")
Set WSHEnvironment = WSHShell.Environment


' Check what operating system is running on the target machine, set the sysdir variable,and run the
' appropriate subroutine
If (WSHEnvironment("OS")="Windows_NT") Then
  sysdir = WSHShell.ExpandEnvironmentStrings("%SystemRoot%")
  Call NT()
Else
  sysdir = WSHShell.ExpandEnvironmentStrings("%windir%")
  Call W98()
End If
WScript.Quit


' Subroutine for Windows NT 4.0 Operating System
Sub NT()
  ' Create the Autologon entries to be used with the Runonce
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\AutoAdminLogon", 1
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultPassword",
"password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultUserName",
"administrator"

  ' Running the command to uninstall Universal Management Services
  WSHShell.Run "%COMSPEC% /C %SystemRoot%\uninsums.exe /u",0

  ' Call the subroutine wait which delays reboot until the uninstallation finishes
  Call Wait()

  ' Add the Runonce entry for W2KUPGRD.VBS
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Runonce\W2KUPGRD", "CSCRIPT
\\23ff458\Archive\W2KPro\Scripts\W2KUPGRD.VBS"

  ' Reboot the machine
  WSHShell.Run "SHUTDOWN /L /R /T:0 /Y",0

  ' Delete the Startup Folder process
  FSO.DeleteFile(sysdir + "\Profiles\Administrator\Start Menu\Programs\Startup\PREUPGRD.VBS")
End Sub

' Subroutine for Windows 98 Second Edition Operating System
Sub W98()
  ' Create the Autologon entries to be used with the Runonce
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\AutoAdminLogon", 1
```

```
.   WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultPassword",
"password"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultUserName",
"administrator"
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\RunServicesOnce\Tweak UI",
"RUNDLL32.EXE TWEAKUI.CPL,TweakLogon"

  ' Add the Runonce entry for W2KUPGRD.VBS
  WSHShell.RegWrite "HKLM\Software\Microsoft\Windows\CurrentVersion\Runonce\W2KUPGRD", sysdir +
"\COMMAND\CSCRIPT \\23ff458\Archive\W2KPro\Scripts\W2KUPGRD.VBS"

  ' Run the command to uninstall Universal Management Services
  WSHShell.Run "%COMSPEC% /C %windir%\uninsums.exe /u",0

  ' Call the subroutine wait which delays reboot until the uninstallation finishes
  Call Wait()

  ' Reboot the machine
  WSHShell.Run "rundll32 shell32.dll,SHExitWindowsEx 2",0

  ' Delete the Startup Folder process
  FSO.DeleteFile(sysdir + "\startm~1\Programs\StartUp\PREUPGRD.VBS")
End Sub

' Subroutine that waits for the uninstallation of UMS to complete.
Sub Wait()
  If (FSO.FileExists(sysdir + "\uninsums.exe")) Then
    WScript.Sleep 30000
    Call Wait
  End If
End Sub
```

## B.3  W2KUPGRD.VBS

The final script of the trio is W2KUPGRD.VBS. This Visual Basic script will
delete all the temporary files needed in previous parts of the process and
start the Windows 2000 Professional unattended upgrade install.

```vbscript
' This script is part three of a three part process with file BOOST.VBS and PREUPGRD.VBS that remotely
' uninstalls  Universal ManagementServices and starts the Windows 2000 Professional Unattended install
' on Windows 98 SE and Windows NT 4.0 Workstation,Service Pack 6a.

' Set up the required objects
Dim WSHShell,WSHNetwork,FSO
Set WSHShell = WScript.CreateObject("WScript.Shell")
Set WSHNetwork = WScript.CreateObject("WScript.Network")
Set FSO = CreateObject("Scripting.FileSystemObject")
Set WSHEnvironment = WSHShell.Environment

' Map Windows 2000 Professional sharepoint
WSHNetwork.MapNetworkDrive "Z:", "\\23ff458\archive"

' Check what operating system is running on the target machine and run the appropriate subroutine

If (WSHEnvironment("OS")="Windows_NT") Then
  Call NT()
Else
  Call W98()
End If
WScript.Quit

' Subroutine for Windows NT 4.0 Operating System
Sub NT()
  ' Remove the AutoLogon Registry Entries
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\AutoAdminLogon")
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultPassword")
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon\DefaultUserName")

  ' Remove the Windows NT Shutdown utility
  FSO.DeleteFile(WshShell.ExpandEnvironmentStrings("%SystemRoot%" + "\SHUTDOWN.EXE"))

  ' Run the Windows 2000 Professional upgrade
  WINNTCMD = WSHShell.Run("%COMSPEC% /C Z:\W2KPro\I386\WINNT32
/UNATTEND:Z:\W2KPro\Scripts\NT4UPGRD.TXT",1,TRUE)
End Sub

' Subroutine for Windows 98 Second Edition Operating System
Sub W98()
  ' Remove the AutoLogon Registry Entries
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\AutoAdminLogon")
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultPassword")
  WSHShell.RegDelete("HKLM\Software\Microsoft\Windows\CurrentVersion\Winlogon\DefaultUserName")

  ' Remove the Windows 98 AutoLogon utility
  FSO.DeleteFile(WshShell.ExpandEnvironmentStrings("%WinDir%" + "\system\TWEAKUI.CPL"))

  ' Run the Windows 2000 Professional Upgrade
  WIN98CMD = WSHShell.Run("%COMSPEC% /C Z:\W2KPro\I386\WINNT32
/UNATTEND:Z:\W2KPro\Scripts\W98UPGRD.TXT",1,TRUE)
End Sub
```

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# Appendix D. Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

## D.1 IBM Redbooks

For information on ordering these publications see "How to get IBM Redbooks" on page 347.

- *Netfinity Director - Integration and Tools, SG24-5389*
- *Using LCCM Functions with Servers and Workstations,* SG24-5292
- *Tivoli IT Director Automation*, SG24-5295
- *Integration Examples for Tivoli IT Director: A First Look*, SG24-5207

## D.2 IBM Redbooks collections

Redbooks are also available on the following CD-ROMs. Click the CD-ROMs button at http://www.redbooks.ibm.com/ for information about all the CD-ROMs offered, updates and formats.

| CD-ROM Title | Collection Kit Number |
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| System/390 Redbooks Collection | SK2T-2177 |
| Networking and Systems Management Redbooks Collection | SK2T-6022 |
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| Lotus Redbooks Collection | SK2T-8039 |
| Tivoli Redbooks Collection | SK2T-8044 |
| AS/400 Redbooks Collection | SK2T-2849 |
| Netfinity Hardware and Software Redbooks Collection | SK2T-8046 |
| RS/6000 Redbooks Collection (BkMgr) | SK2T-8040 |
| RS/6000 Redbooks Collection (PDF Format) | SK2T-8043 |
| Application Development Redbooks Collection | SK2T-8037 |
| IBM Enterprise Storage and Systems Management Solutions | SK3T-3694 |

## D.3 Referenced Web sites

These Web sites are also relevant as further information sources:

- http://www.pc.ibm.com/ww/assetid/systems.html
- http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/index.html

- http://www.microsoft.com/technet/download/default.asp

- http://www.glbs.com/Default.htm

- http://www.microsoft.com/technet/win2000

- http://www.microsoft.com/windows2000/compatible

- http://www.pc.ibm.com/support?page=YAST-3P2QYL

- http://www.pc.ibm.com/ww/solutions/enterprise/support/index.htm

- http://www.pc.ibm.com/us/desktop/lccm/hints.html

- http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/nfdir/library.html

- http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products/sda/down

- http://www.pc.ibm.com/ww/solutions/enterprise/sysmgmt/products.html

- http://www6b.pc.ibm.com:8080/~ums

- http://www.pc.ibm.com/us/desktop/lccm/esupport.html

- http://www.pc.ibm.com/ww/solutions/enterprise/support/index.html

- http://www.pc.ibm.com/ww/software/sysmgmt/products/ums/extensions.html

- http://www.elink.ibmlink.ibm.com/pbl/pbl

## How to get IBM Redbooks

This section explains how both customers and IBM employees can find out about IBM Redbooks, redpieces, and CD-ROMs. A form for ordering books and CD-ROMs by fax or e-mail is also provided.

- **Redbooks Web Site** http://www.redbooks.ibm.com/

  Search for, view, download, or order hardcopy/CD-ROM Redbooks from the Redbooks Web site. Also read redpieces and download additional materials (code samples or diskette/CD-ROM images) from this Redbooks site.

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