LCCM Version 2.5.1 for Windows NT Server 4.0

Training and Procedures Guide

NOTE

Before using this information and the product it supports, be sure to read the information in Appendix E. ‘Notices and Trademarks’

FIRST EDITION (January 1999)

Table of Contents

About This User's Guide

Introduction

This guide is to help you become more familiar with IBM's LCCM Version 2.5.1. Procedures and training exercises are included in the guide to help explain the product.

Although one of the features of LCCM is to distribute software to client computers across a LAN, the terms and conditions of the IBM International Program License Agreement for LCCM do not grant any license to install, copy, or use any application software or operating system software not provided with LCCM. This includes, but is not limited to, Microsoft Windows 3.1, Windows 95, Windows 95 OSR2, Windows 98, Windows NT and DOS. Always ensure that you have obtained suitable licenses for any software you intend to use with LCCM.

This guide is organized as follows:

- Chapter 1, "Overview and Concepts of LCCM," contains an introductory overview of the purpose and features of LCCM. The various concepts relevant to LCCM are also discussed. It is important to understand the information discussed in this chapter to take full advantage of LCCM.
- Chapter 2, "Installing LCCM," contains instructions on how to install, start, and exit from LCCM. Also included are instructions on how to run LCCM from another computer and how to uninstall the program.
- Chapter 3, "Working with the Interface," provides a graphical view of each screen provided by LCCM and a description of each field.
- Chapter 4, "Procedures," provides step-by-step procedures to accomplish the tasks associated with LCCM.
- Chapter 5, "Training Exercises," provides step-by-step instructions to familiarize users with LCCM's new Wizard features. These exercises are recommended for all LCCM users.
- Appendix A, "Assistance," contains information on LCCM's Support Form and Users Forum.
- Appendix B, "Utilities Provided with LCCM," contains instructions on how to use the utilities supplied with LCCM.
- Appendix C, "Error Messages," lists all the error messages generated by LCCM.
- Appendix D, "Example User-Created Batch Files," contains examples and instructions for manually creating batch files within LCCM. These examples are only recommended for experienced LCCM users.
- Appendix E, "Notices and Trademarks," contains information on all relevant Notices and Trademarks for LCCM.

Who Should Read This Guide

This guide is intended to help network administrators understand the concepts and procedures of LCCM. Training exercises are provided to help administrators use the product.

To effectively use this guide, you should have an extensive knowledge of your LAN environment and Windows NT 4.0 Server.

How To Use This Guide

You can use this guide as a source of general information, to help you understand the features, capabilities, interface, and concepts of LCCM before installing the program. You can also use this information to assess the technical skills required to implement, use, and maintain the program.

For training, this guide is most effective when used in the following order:

1. Review Chapter 1, "Overview and Concepts of LCCM" to become familiar with the overall concepts and capabilities of LCCM. This chapter will also help you become familiar with new terminology.
2. Download the LCCM program from the World Wide Web.
3. Use Chapter 2, "Installing LCCM" to ensure your server software meets the minimum requirements, including having Remoteboot Services installed.

   Note: Tips for installing Remoteboot Services are provided on the World Wide Web at http://www.pc.ibm.com/us/desktop/lccm/index.html

4. Then, install the program and start it.
5. While the program is running, read through Chapter 3, "Working with the Interface" and use the program to open each notebook and select each page as you read about it in this guide. This will help to familiarize you with the interface.
6. You can start using LCCM to manage client computers by using the information in Chapter 4 "Procedures".

Terminology Changes From Version 2.0

The following Version 2.0 terminology has changed in Version 2.5.1 as follows:

LCCM Version 2.0	LCCM Version 2.5.1
Hybrid Remoteboot Profile	Operating System Clone Profile
Hybrid-NT Remoteboot Profile	Operating System Unattended Profile
Standard Remoteboot Profile	Remoteboot Profile

Chapter 1. Overview and Concepts of LCCM

Overview

LCCM provides you with tools to simplify configuring your computer and deploying your choice of Windows operating system and applications. Once a client computer is added to the LCCM database, you can remotely install, maintain, and update software on the client computers. Key features include:

- Automated search for new clients on the LAN
- Operating system and application program initial installation through the LAN
- Controlled client computer startup through standard Remoteboot or LCCM's enhanced Hybrid Remoteboot function.
- Ability to update the BIOS or CMOS settings over the LAN

If you have Netfinity Manager installed on your LCCM server and Netfinity Services running on the client computer, LCCM can also:

- Remotely restart (reboot) a client computer that is already turned on in order to process changes to client software
- Remotely turn off (power-down) and turn on a client computer

The ability of Netfinity to turn off a client computer is directly related to the version of Netfinity and the operating system installed on the client computer. The power-down capability of Netfinity is currently limited to client computers running Windows 95, Windows 95 OSR2 and Windows 98.

Note: LCCM Version 2.5.1 can recognize, link to, and control clients on directly-attached LAN segments using the Remote Program Load (RPL) environment or across routers using the Dynamic Host Configuration Protocol/Pre-Boot Execution Environment (DHCP/PXE). DHCP/PXE is the preferred protocol. LCCM version 2.5.1 will support both PXE 1.0 and PXE 2.0.

Since the LCCM/DHCP/PXE code on the LCCM server has been upgraded to support PXE2.0 Clients, existing IBM 16/4 Token Ring PCI Adapter 2 with Wake-on-LAN network cards must be flashed with the latest level of micro code in order to continue working with the new level of code within the LCCM server. The latest micro code can be downloaded from web site http://www.networking.ibm.com/support .

Changes in Version 2.5.1

Version 2.5.1 of LCCM has been enhanced to include the following new features:

LCCM Usability Enhancements

LCCM now includes the following new wizard features that automate the creation of scripts and profiles:

The Profile Wizard

Profile Wizard (see, Using Profile Wizard) will enable you to easily generate a working LCCM 'Profile'. The purpose of the Profile Wizard is to create a profile that contains the various configuration files that are necessary to enable the LCCM server to successfully install a specified operating system, and to configure the client specific hardware and the user specific parameters onto an identical client. This involves leading you through a series of screens that ask you in plain language to enter or select the various options that are necessary to create a valid working LCCM 'Profile'.

CloneIt Agent Wizard

CloneIt Agent Wizard (see, Using CloneIt Agent Wizard) is a program, which runs on a specified donor client, with a particular software configuration that you wish to use as a clone. The purpose of the CloneIt Agent is to do all the necessary processing on the client to create a workable LCCM profile and an associated compressed clone image and subsequently push both the profile and image onto the LCCM server. The clone profile can then be used to clone the client onto other similar clients. Any client that is assigned to a clone profile must have the identical hardware configuration as the original donor computer. The CloneIt Agent supports Windows 95, Windows 95 OSR2 and Windows 98 Operating Systems only.

DiffTool Wizard

DiffTool Wizard (see, Using DiffTool Wizard) is a fully integrated wizard program which runs on a donor computer connected to an LCCM server that can capture an image of the installation files of a software application on the donor computer. This image of the software application or applications can be included in an LCCM profile during an unattended install as an additional application or applications.

Client Assignment Wizard

Client Assignment Wizard (see, Using Client Assignment Wizard) is a program that asks you to fill in a series of client parameters for a particular client when it is being assigned to an LCCM profile. The purpose of the Client Assignment Wizard is to ensure that any mandatory client parameters are filled in before the client is processed. If the parameter values are not correctly entered, then the client will fail when it is being processed.

Network Card Selection

LCCM Version 2.5.1 has removed the necessity for each Operating System Install profile to be set up for one specific network card only. Using Profile Wizard (see, Using Profile Wizard), LCCM will automatically select **Any Adapter** as the assignment choice for your network card in your profile. Any client assigned to that profile will automatically have the associated network drives configured during client processing. This means that one software profile can be used for several computers even if they all have different network cards.

It is recommended that LCCM 2.5.1 be used with supported network cards only (See Prerequisites).

Multi-Homing

LCCM will function on a multi-homing server provided the following steps are taken during installation:

1. Two network cards must be placed in the server, each with an IP address and, each placed on a separate LAN.

   For example:

   Ethernet card = 192.92.92.4

Token Ring card = 192.93.92.4

2. During the installation of LCCM select both DHCP and RPL.
3. When asked for the scope of IP addresses for DHCP, set a scope for each LAN. The gateway should be the IP address of the card on that LAN.

   For example:

   Ethernet Scope = 192.92.92.10 to 192.92.92.40

   Gateway 192.93.92.4

   Token Ring Scope = 192.93.92.10 to 192.93.92.40

   Gateway 192.93.92.4

Rapid Restore (Known good state Partition Backup/Recovery)

Rapid Restore is a backup/recovery mechanism that allows the backup of the active (boot) partition, when it is in a known good state, to a hidden partition on the local (client system) hard drive for restoration. Rapid Restore will use a sector-by-sector backup and restore algorithm, which is independent of the client file system type. A Rapid Restore backup will be enabled on the successful completion of an LCCM client install (if it is selected in that particular LCCM profile) or it can be run as a maintenance utility from Client Notebook. The Rapid Restore mechanism can be initiated from a DOS boot disk. Alternatively, a network boot disk with Rapid Restore function can be loaded from the LCCM server. For more information on Rapid Restore see, RAVE.EXE (Using with a DOS Startup Diskette) . Intended uses include recovery from software errors that cause file corruption and classroom training image restorations.

Secure Data Disposal

The Secure Data Disposal tools are a set of utilities for performing a low-level hard disk erase of all hard drives on a client for secure disposal or re-deployment of systems. The Secure Data Disposal Tools will detect all your drives and partitions (even hidden partitions) and erase all your customer data and files so they cannot be reconstructed.

FAT 32 Support

Fat 32 creates and formats partitions between 2GB and 8GB using a standard version of IBM's DOS7 with extra utilities for FAT32 support.

FAT32 partitions are supported by either Windows 95 OSR2 or 98 and support partitions greater than 2GB. Windows NT 4 and Windows 95 cannot use FAT32 and their partitions are limited to a maximum of 2GB using LCCM.

Note: Clone Install supports FAT32 for Windows 95 OSR2 and Windows 98 only. Unattended Install does not include FAT32 support in this version of LCCM.

Specified Operating Environments

The specified operating environments for LCCM 2.5.1 are those supported by IBM's compatibility tests for a variety of hardware and software combinations. The test results are accessible from the World Wide Web at http://www.pc.ibm.com/us/desktop/lccm/index.html. This Web Page will be updated as additional test cases are completed. LCCM 2.5.1 now supports servers as LCCM client computers.

IMPORTANT: Before using LCCM 2.5.1 check the compatibility test results and browse the rest of the LCCM Web Site for additional information and tips concerning the installation and use of LCCM.

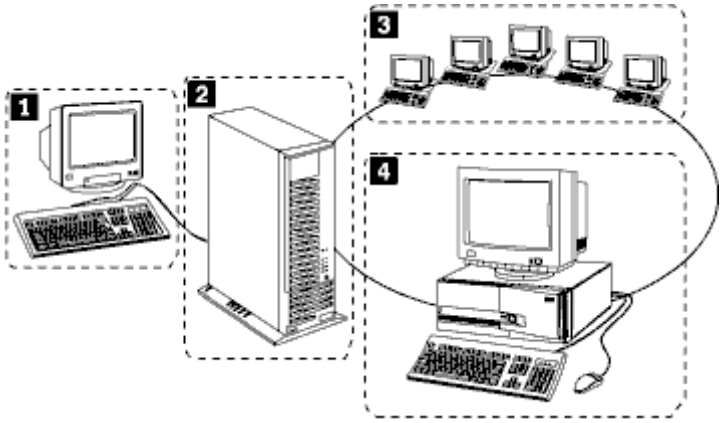
LCCM Hardware Configuration

This section shows examples of the various hardware configurations for using LCCM in RPL and DHCP/PXE environments.

Note: DHCP/PXE is recommended over RPL. DHCP/PXE, however, can run concurrently with RPL.

RPL Environment

The following illustration shows the typical LCCM RPL environment. Routers are not supported in this environment. All client computers configured for the RPL protocol must be on the same LAN segment as the LCCM server.



- Server console – A keyboard and monitor attached to the server can be used to run LCCM from the server (optional).
- Server – The LCCM program is typically installed here.
- Client computers – These are computers connected to the LAN. All client computers to be managed by LCCM must be enabled to support Remote Program Load (RPL).
- Administrator console – A computer on the LAN on which LCCM is installed other than the server that can be used to run LCCM (optional).

DHCP/PXE Environment

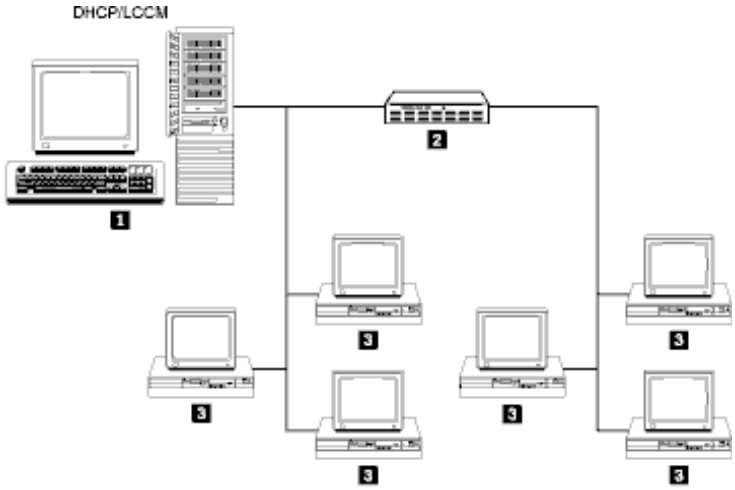
The following illustrations show examples of how you can implement LCCM in a DHCP/PXE environment. In each example, the Internet Protocol (IP) router must support the BOOTP Relay Agent function.

Microsoft's DHCP Service

If Microsoft's DHCP Service is used instead of the IBM DHCP Service supplied with LCCM, it must be configured for "PXE Client Option 60" before use with LCCM.

DHCP/PXE Example 1

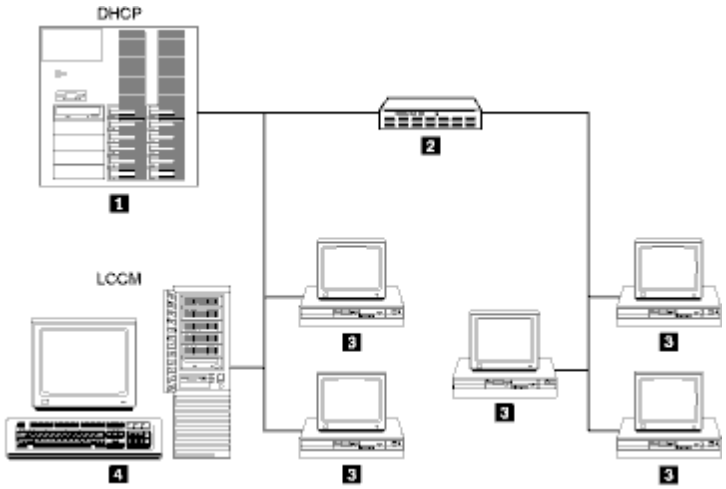
The DHCP server, LCCM server, and LCCM console are on the same system. The client computers boot and connect either locally (through the local network segment) or through one or more IP routers.



1. DHCP server, LCCM server, and LCCM console on same system.
2. IP router (one or more).
3. PXE client computers.

DHCP/PXE Example 2

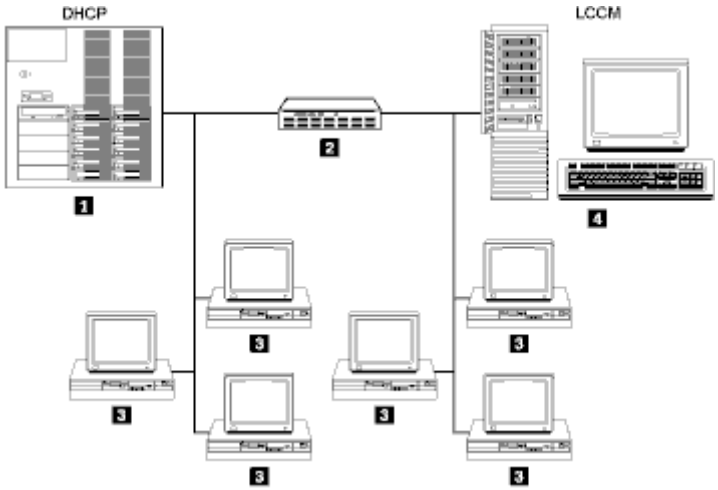
The DHCP server is installed on one system. The LCCM server and LCCM console are installed on another system. The client computers boot and connect either locally (through the local network segment) or through one or more IP routers.



1. DHCP server.
2. IP router (one or more).
3. Client computers.
4. LCCM server and LCCM console.

DHCP/PXE Example 3

The DHCP server and LCCM server are on different computers separated by zero or more IP routers. The client computers receive configuration data (either locally or through one or more IP routers), boot, and connect (either locally or through one or more IP routers).



1. DHCP server.
2. IP router (zero or more).
3. Client computers.
4. LCCM server and LCCM console.

Address Resolution Protocol

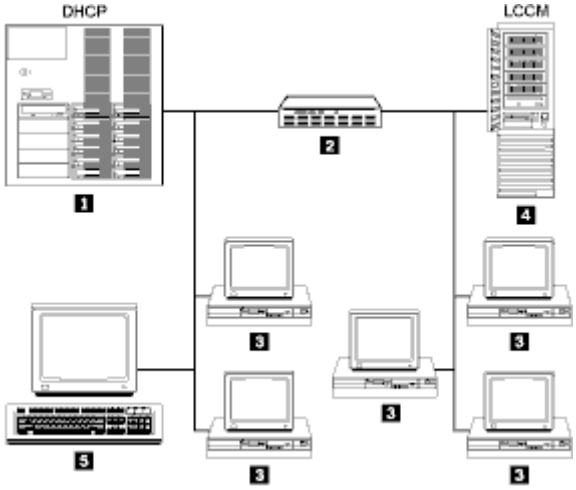
Proxy Address Resolution Protocol (ARP) allows 2 computers on different subnets to communicate even though they do not know about the existence of a router between them.

In the above environment, the client and a DHCP server are on one subnet, and the LCCM server is on the other subnet configured as a Proxy DHCP server. The router must have the Proxy ARP protocol enabled, and have a BOOTP forward defined for the LCCM Proxy DHCP server (and another for the DHCP server if clients may be on subnet B as well).

In general, it is recommended that Proxy ARP protocol be enabled on all routers regardless of the configuration, though it is only required for LCCM in the configuration described above.

DHCP/PXE Example 4

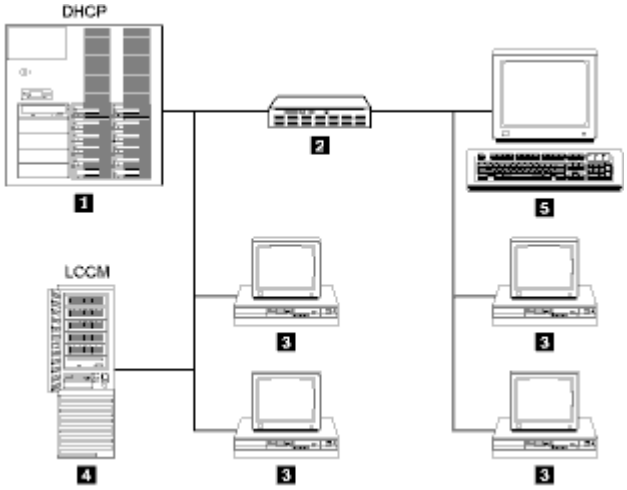
The DHCP server is separated from the LCCM server by one or more IP routers. The client computers receive configuration data (either locally or through one or more IP routers), boot, and connect (either locally or through one or more IP routers). The LCCM console connects to the LCCM server through one or more IP routers.



1. DHCP server.
2. IP router (one or more).
3. Client computers.
4. LCCM server.
5. LCCM console.

DHCP/PXE Example 5

The DHCP server and LCCM server are on the same LAN segment. The client computers receive configuration data (either locally or through one or more IP routers), boot, and connect (either locally or through one or more IP routers). The LCCM console connects to the LCCM server through one or more IP routers.

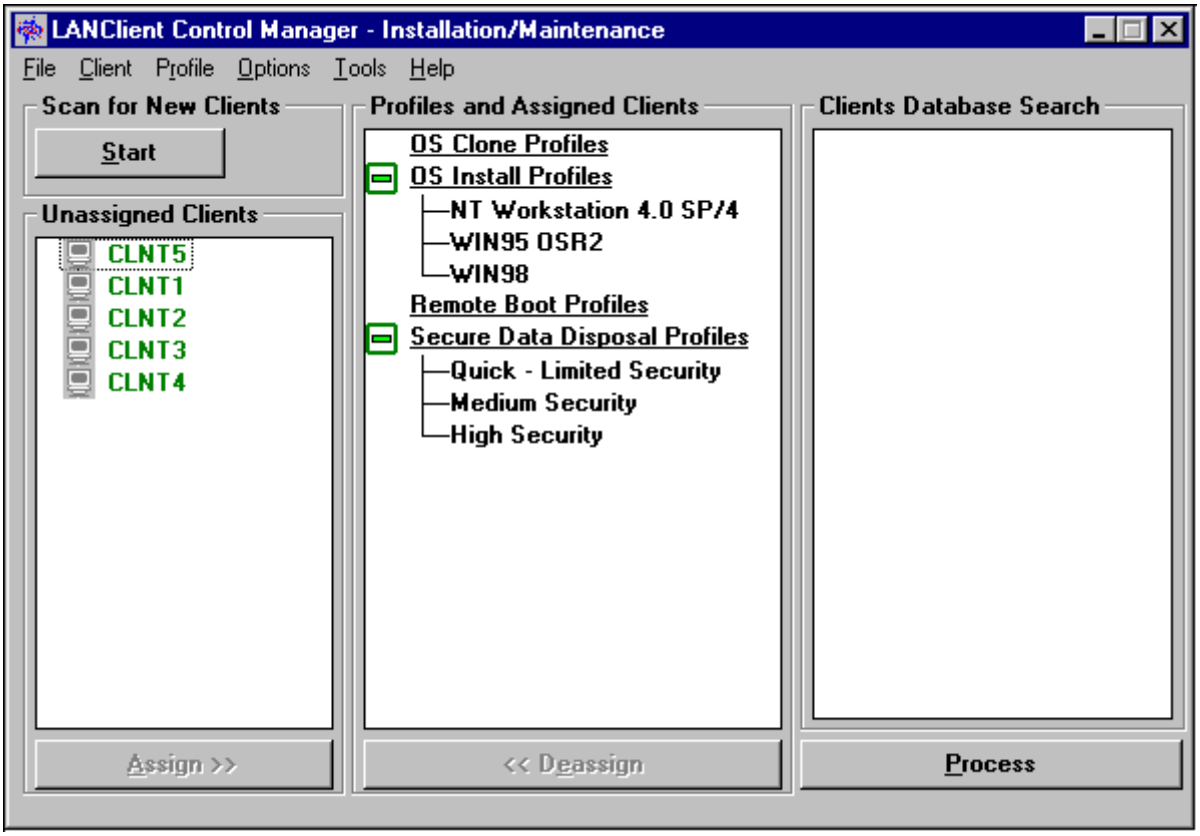


1. DHCP server.
2. IP router (one or more).
3. Client computers.
4. LCCM server.
5. LCCM console.

Basic Operation

LCCM has a scan feature that automatically searches the LAN for new client computers that are enabled for either RPL or DHCP/PXE. When it finds a new client computer, LCCM interrogates the client for information such as the serial number and network address. LCCM then assigns a name to the client and creates an Individual Client Details Notebook for the new client.

The Individual Client Details Notebook contains the name of the client and the information that was detected during the scan. The name of the client appears in the Unassigned Client's list of the Installation/Maintenance window. The following illustration shows the Installation/Maintenance window.



Once LCCM has recognized a new client, you can assign the client to a software profile. Each profile has an associated image (set of software) on the server. When you assign a client to a profile and click on the **Process** button, the client performs one of the following actions the next time it starts:

- If a client is assigned to a Remoteboot profile, the server downloads a Remoteboot image to the client's memory. The client starts, carries out the instructions contained within the image, and is ready to run the software made available to it through the LAN.
- If a client is assigned to an Operating System Clone profile, the server sets up a temporary operating system environment on the client; and then downloads one or more batch files. The client first runs an optional pre-load image batch file to prepare its hard disk to accept data, then runs a final image batch file to copy an image (operating system and application programs) from the server to its hard disk. Optionally, the final image batch file can contain instructions to personalize the installed image by adding system-unique information such as a unique network logon, TCP/IP address, and so on. On subsequent restarts, the client computer downloads only a short bootstrap load instruction from the server, which instructs the client to start from its own hard disk.

- If a client is assigned to an Operating System Install profile, the process actually performs a complete unattended installation of Windows NT Workstation / Server, Windows 95, Windows 95 OSR2 and Windows 98 on the client. On subsequent restarts, the client computer downloads only a short bootstrap load instruction from the server, which instructs the client to start from its own hard disk.
- Secure Data Disposal profiles are available in three levels, these are as follows
  - Level 1 :- Low Security and Fast Speed
  - Level 2 :- Medium Security and Medium Speed
  - Level 3 :- High Security and Slow Speed

Clients are assigned to any of these profiles in the same manner as they are assigned for Operating System Clone Install, Operating System Install and Remoteboot. The exceptions are Secure Data Disposal profiles, which cannot be edited or altered by the user.

You can create and store a variety of images and profiles on the server. The software within each image depends on the tasks to be accomplished by you or the end user.

Profiles are unique to the LCCM program. You create a profile to identify the associated image that resides on the server or the batch files used to copy an image from the server. Information about each profile created using Profile Wizard (see, Using Profile Wizard or the Software Profile Details Notebook (see, Software Profile Details Notebook), will be discussed later in this book.

Advantages of Using LCCM's Hybrid Remote Boot Process

Both the Operating System Clone Install profile and Operating System Install profile use a Hybrid Remoteboot process. The Hybrid Remoteboot process provides you with a very powerful technique for controlling your networked clients. There are several advantages of assigning clients to a profile that uses a Hybrid Remoteboot process. These advantages include:

- The time taken to download a complete image from the server to every client at startup is decreased.
- The elimination of the need for you to load software onto your client computers directly via CD-ROM or diskettes.
- The elimination of the need for you to take diskettes to the client computer to update or repair end-user software.
- End users are discouraged from keeping unauthorized or unlicensed software on their computers, because the administrator can clean the hard disk drive and reinstall all software at any time.
- Clients can be disabled from functioning if they are disconnected from the network. This is done by altering the primary startup sequence of the client BIOS. You can control the BIOS administrator password, which prohibits end users from altering the startup sequence.

Note: If an emergency occurs that prevents your clients from connecting to the network, they can optionally start up from their hard disk drives. For more information, see, Allowing Local Hard Disk Startup.

While the Hybrid Remoteboot process is unique to LCCM, it does not use any proprietary hardware, and does not use any nonstandard transactions over your LAN. It is therefore very unlikely to have an adverse effect on any LAN applications you already use.

If you currently use a software-distribution application over the LAN, it can probably be used with Operating System Clone Remoteboot to extend and improve your client control. For more information, see the World Wide Web at http://www.pc.ibm.com/us/desktop/lccm/index.html.

RFID Clients and AIA Support

If you are using an IBM computer that incorporates the IBM Asset ID Radio Frequency Identification (RFID) chip, and an Asset Information Area (AIA), you can use this stored AIA data with LCCM. The RFID chip is battery maintained and contains asset data specific to each client computer.

Some of the benefits of RFID enabled clients are as follows:

1. Asset Information about the client computer is stored on the client and is available to applications controlled by the administrator.
2. An additional utility, LCCUSTOM, can be used to extract and incorporate AIA data (parameters), from the AIA area into batch files, as an alternative to using the DEDITD utility and LCCM Parameter pages for selected fields. See, Using RFID and AIA Data (Asset ID) with Clients for the list of available data fields on the RFID chip.

   Note: Parameters that are not stored in the AIA area and are still required to fully customize your batch files can be taken from the Parameters pages of the Profile and Client Notebooks. These parameters may be substituted by using either LCCUSTOM or DEDITD. For more information about LCCUSTOM, see LCCUSTOM.EXE

3. Client computers using the RFID chip can automatically be assigned to a selected LCCM profile when they are first detected by the Scan process, based on the contents of data fields stored in the AIA area.

To use RFID and AIA with LCCM, see Using RFID and AIA Data (Asset ID) with Clients.

Service Processor Support

If you are using IBM computers that incorporate IBM Netfinity Advanced Remote Management (ARM) Service Processors, you can monitor and record events for ISA and EISA systems. The service processor or adapter can be installed only in ISA or EISA systems. The adapter is supported by TME 10 Netfinity Version 4.1.

Note: If your server has TME 10 Netfinity Version 4.0 installed, you can download IBM PC Server Advanced Systems Management Adapter files from: IBM PC Server World Wide Web page at http://www.pc.ibm.com/servers/ or alternatively IBM PC Company Bulletin Board Service (BBS) at (919) 517-0001. Refer to the README file for instructions. LCCM does not automatically install the NT device drivers necessary to use Netfinity with the Advanced Systems Management Adapter. To install the device drivers, go to the IBM PC Servers support pages on the World Wide Web at http://www.pc.ibm.com/support and copy the appropriate device driver diskette image for your model of Netfinity server. Follow the instructions supplied to enable the adapter and install the device driver before installing Netfinity Manager or Netfinity Services with Advanced Systems Management Adapter support.

LCCM 2.5.1 currently supports both Onboard and ISA expansion card models of Service Processor, but does not support the PCI expansion card model in this version of LCCM.

Service Processors

Some of the benefits of IBM's Netfinity Advanced Remote Management (ARM) Service Processors are as follows:

- ANSI Terminal Emulator, Netfinity Manager

- Environmental Monitors e.g. system board temperature, microprocessor temperature, voltage readings, fan status
- Power Control e.g. current system power status, power-off configuration and power off delay values
- Serial connection e.g. one connection for modems for several systems
- Remote Flash Update on system and ARM processor
- Remote POST Console to connect to the Netfinity Advanced System Management Processor on a remote system, open a remote POST window and restart the remote system
- Access to remote diagnostics e.g. diagnostics in system ROM
- Security/Dial-Back for modem configuration, dial-out entries, dial-out alerts, dial-in logins, system status, thresholds, system statistics, vital product information and system state
- Auto Restart
- User defined Actions/Event Thresholds

Interface Components

The interface of LCCM consists of the following major components:

- Installation/Maintenance window

  This is the main window of the program, where you can view the various clients and profiles, assign clients to profiles, start, stop the scan operation, and start processing changes.

- Progress and Errors Window

  This window displays the status of events as clients are being processed.

- Defaults Notebook

  You use this notebook to define global default parameters, such as how and when processing will take place, timeout durations, the administrator password to assign to each client computer, and specific questions (prompts) to display at the client computer during a scan process.

- Individual Client Details Notebook

  The information in this notebook is created automatically by the scan process for each client computer it detects. You can also create, copy, or modify the notebook manually. The notebook contains information about specific client computers, such as the serial number, network address, key hardware installed, image assigned, and BIOS level. It also contains the personalization values unique to each client computer that you use to personalize an image. You can also use this notebook to perform maintenance operations on client computers, such as updating the BIOS code or updating the administrator password. You can use the Scheduler feature to override the Default Scheduler and schedule a processing change at a specific date and time, or to schedule a repeat event.

- Software Profile Details Notebook

  The Software Profile Details Notebook contains information about the image that is associated with a specific profile. This information can be created automatically using LCCM's Profile Wizard, or manually using the Software Profile Details Notebook. It contains:

  - A description of the profile contents
  - The minimum hardware required by a client computer to use the image
  - The name of the pre-load image batch file used to prepare the local hard disk of the client, and the name of the final image batch file used to install the software
  - A listing of personalization names and values common to all computers using this profile

The interface is described in detail in What's New.

LCCM Version 2.5.1 has introduced a series of "Wizard" Helper Applications. These Wizards are designed to aid the LCCM Administrator in completing the following tasks

- **Profile Wizard:** has the purpose of creating software profiles and automatically creating all the LCCM batch control files associated with this profile.
- **DiffTool Wizard**: is run on a donor computer and completes all the necessary processing that is required to create an image of additional software applications that can be included with an LCCM unattended image.
- **Client Assignment Wizard:** has the purpose of ensuring that all of the substitution parameters for a particular client have values assigned to them prior to that client being processed by LCCM .
- **CloneIt Agent Wizard:** is run on a donor computer and completes all the necessary processing that is required to create a valid LCCM clone image for that computer (for example creating a compressed image of all the software on the client and transports this to the LCCM Server).

Concepts

The following conceptual information will help you understand the various elements used by LCCM.

Images

An image is the software stored on a server that is downloaded to a client computer during a Remoteboot operation. Images vary in size and in the type of software they provide to the client computer. The purpose and content of each image depends on the task to be accomplished, as well as the method used to download the image from the server to the client computer.

Operating System Unattended Install boot Images

The Unattended Install image distributed from your server is called an Operating System Unattended Install Remoteboot image. This image is stored in a directory on your server referred to as the distribution sharepoint. The Profile Wizard will generate all the necessary files for an Unattended Install including copying all the required setup files to the Distribution Share point on the LCCM Server. The Operating System Unattended Install Remoteboot process performs a complete unattended installation of Windows NT Workstation or Server, Windows 95, Windows 95 OSR2 or Windows 98. In contrast, other Hybrid Remoteboot processes distribute a preinstalled image. For more information, see Using Profile Wizard. Additional applications can be included in the image. For more information, see Using DiffTool Wizard.

Operating System Clone Install Remoteboot Images

The Clone Install image distributed from your server is called an Operating System Clone Install Remoteboot image. The Clone Install image (cloned from a donor computer) contains the software, designed to meet the requirements of a specific end user, department, or group of end users who perform similar tasks. It consists of a complete operating system; Windows 95, Windows 95 OSR2 or Windows 98, including application software resident on the donor computer. Multiple images can reside on a server, and the same image can be downloaded to multiple clients. The size of the image is limited only by the hard disk capacity of the client computer that will be using it. For more information, see Using Profile Wizard.

Remoteboot Images

The Standard Remoteboot function within LCCM downloads the complete operating system from the network. This function is only supported on RPL clients. For more information, see Creating a Hybrid Remoteboot Image or refer to your Windows NT documentation r.e. Remoteboot Manager.

BIOS Update Images

LCCM can read the contents of a flash BIOS update diskette and store it as an image on the server. All flash BIOS images are kept in a subdirectory on the server. Once the flash BIOS update is stored as an image on the server, you can use the Maintenance page of the Individual Client Details Notebook to update a client computer's BIOS level remotely. For more information, see Updating the BIOS Level.

CMOS Update Images

The CMOS update image is a file that contains the BIOS settings that are set through the client computer Configuration/Setup utility program. You use a donor computer Configuration/Setup utility program to save the settings you want. Next, you copy the settings to a file and copy the file to the server directory. For more information, see Creating a CMOS Setting Image. Once the file is on the server, you can use the Maintenance page of the Individual Client Details Notebook to copy these settings to the client computer CMOS memory. All CMOS update files must be identified with a (.CMS) file extension. For more information about this procedure, see Assigning Clients to a CMOS Settings Image.

Batch Files

LCCM uses batch files for the following tasks:

- Hard disk preparation (usually to invoke the FDISK operation)
- Software installation (usually using FORMAT, COPY, XCOPY and RESTORE commands)
- Software personalization (to search for and replace character strings using variables)
- Software maintenance (to replace one or more files)

If you want to create your own batch files manually see, Introduction. This method is only recommended for experienced LCCM 2.0 users.

The Profile Wizard, which is a new feature of LCCM version 2.5.1, will automatically create all the necessary batch files to configure your client computers for the successful installation of your operating systems and applications. For more information, see Creating a Software Profile Using the Profile Wizard. This method is the preferred method for all LCCM users.

Software Profiles

In many organizations, there are people doing the same or similar job and using the same software. In terms of support and maintenance, it is very **important** that these client computers use an identical set of software. This often is difficult to achieve, and once achieved, difficult to maintain. However, using software profiles in LCCM helps solve this problem.

You use a software profile to define a set of software and distribute it as an image via the LAN to one or more client computers, thereby creating identical operating environments. As clients are added, the same image can be distributed to them. If the image is updated, all client computers currently assigned to that software profile can be automatically updated with the revised image at the next Remoteboot. No user intervention is required at the client computer for the initial software installation or for updates.

Typically, most organizations will have several software profiles, each for a different type of job. For example, in addition to the operating system:

- An administrative assistant profile might include a word processor and calendar application.
- A marketing profile might include a spreadsheet and business graphics application.

After developing separate images for these functions and putting them on the server, you must create a software profile or each image and give each profile a descriptive name. Using the examples in the preceding list, their names "Administrators" and "Bob's Marketing Team" might be appropriate. When these profiles are created, the names appear in the Installation/Maintenance window. Each software profile is listed under profile type (Remoteboot Profiles, Operating System Clone Profiles, and Operating System Install Profiles). The LCCM administrator would then assign each marketing computer to the profile named "Bob's Marketing Team" and each administrative assistant's computer to the profile named "Administrators".

Chapter 2. Installing LCCM

Installing LCCM

IMPORTANT:

- When you are installing the LCCM program on the server, you must always log on as a network administrator or equivalent.
- You can locate the files for installing LCCM at http://www.pc.ibm.com/us/desktop/lccm/index.htmlon the World Wide Web.
- You can locate the latest information on installing LCCM by reading the Readme.txt at the above mentioned Web Site.

If you are upgrading from LCCM Version 2.0, you can use LCCM 2.5.1's upgrade program. For more information, see Upgrading from Version 2.0.

LCCM will automatically scan, configure, and recognize only supported network adapter cards. Therefore we recommend that you use one of the network adapter cards listed below with LCCM:

- **Token-Ring Adapters**
  - IBM High Speed 100/16/4 Token Ring PCI Adapter
  - IBM 16/4 Token Ring PCI Adapter 2 with Wake-on-LAN
  - IBM 16/4 Token Ring PCI Adapter 2
  - IBM PCI Wake-on-LAN Token-Ring Adapter
  - IBM AutoWake ISA Token-Ring (enhanced mode not supported)
  - IBM Auto 16/4 Token-Ring Credit Card Adapter
  - IBM Turbo 16/4 Token-Ring PC Card

- **Ethernet Adapters**
  - IBM 10/100 EtherJet PCI Management Adapter
  - IBM 10/100 EtherJet PCI Adapter with Wake-on-LAN

    Note: Should you wish to utilize the IBM 10/100 EtherJet PCI Adapter with Wake-on-LAN in Docking Stations, then you must re-flash the adapter with the latest ETPFLSH2.EXE V3.10 boot disk. This updated microcode can be obtained from the World Wide Web at http://www.networking.ibm.com/support and is located under 'IBM 10/100 Etherjet PCI Management Adapter'. We recommend that you update your Thinkpad systems to the latest BIOS level with microcode obtained from the ETPFLSH2.EXE V3.10 page.

  - IBM Crystal EtherJet
  - Intel 10/100 PCI Ethernet (PCI ID nos.80860004, 80860005 and 80861229)
  - Intel EtherExpressPro PCI (PCI ID nos.101400D7 and 80860008)

- Intel PRO/100+ Management Adapter
- ThinkPad Port Replicator/PC Card Enabler EtherJet
- IBM Desktops, Onboard Ethernet

If you are using unsupported cards, you must make the necessary entries into both NETWORK.LST and LCCM's default directory files according to your card manufacturer's documentation. This is particularly important for an unattended Windows NT install. For more information, see, Understanding the NETWORK.LST File and Installing Network Adapter Device Drivers.

IMPORTANT: If you are using an ISA network adapter card and you are going to use Windows 95, Windows 95 OSR2 or Windows 98 with LCCM you must set the BIOS for Plug 'n' Play. To access the Configuration/Setup Utility program (BIOS settings) on many IBM computers, press **F1** while the computer is starting up. From **Advanced Setup** select **Plug and Play control** and enable **Plug and Play OS**. It is recommended that you install supported PCI network adapter cards in the uppermost available expansion slot and ISA network adapter cards in the lowermost available expansion slot.

Prerequisites

- Windows NT Server 4.0, and Service Pack 4 or later.
- In most cases, it is best that the file system on your LCCM server be configured as NTFS, this allows you to set permissions and ensure the security of your server directories.
- Windows NT Server 4.0 must be installed as follows:
  - The server computer name cannot contain embedded spaces.
  - Password security must be set to allow zero length password.

    Note: The DLC (for RPL), NetBEUI and TCP/IP (for PXE) protocols must be installed. For more information on installation of protocols and the application of Remoteboot Services for LCCM, refer to the README.TXT, located in the NT directory under the LCCM temporary installation directory.

  - If you choose to use RPL on a LAN segment, the Remoteboot Service and Fix Security program must be installed, started, and functioning properly.
  - For this:
    a) From the NT Control Panel, select **Services**.
    b) Highlight “Remoteboot Service”.
    c) Click on **Startup**.
    d) In the Startup box, select the **Automatic** radio button.
    e) Click on **OK**.
    f) Click on **Start**.
    g) Close the Services window.
    h) Shut down and restart Windows NT Server.
    i) From Remoteboot Manager select **Configure**, click on **Fix Security** and answer **Yes**.
    j) Select **Configure** again, click on **Check Configuration** and answer **Yes**.

- The minimum memory requirement for an LCCM Server is 128MB.
- The recommended default pagefile size is 129MB (RAM plus 1MB). To change your default pagefile size:
    a) From Windows NT's Control Panel Double-click on **System**.
    b) Select the **Performance** Tab.
    c) Under Virtual Memory click on **Change**.
    d) Enter your pagefile size.
    e) Click on **OK**.

- When processing or scanning via RPL protocol, LCCM requires two Windows NT licenses for each client computer being processed concurrently. You will be asked to provide the number of licenses required during the Windows NT Server installation.

Note: You can limit the number of clients that will be processed at any single time within the LCCM program. For more information, see Preparing Computers for LCCM Use. To add additional licenses, use the Windows NT License Manager feature, which is accessible through the Administrator Tools (Common) program.

- Review the installation notes for changes or tips at http://www.pc.ibm.com/us/desktop/lccm/index.html, on the World Wide Web.

IMPORTANT: The LCCM/DHCP/PXE code on the LCCM server has been upgraded to support PXE2.0 Clients. Existing IBM 16/4 Token Ring PCI Adapter 2 with Wake-on-LAN network cards must be flashed with the latest level of micro code in order to continue working with the new level of code within the LCCM server. The latest micro code can be downloaded from web site http://www.networking.ibm.com/support .

Upgrading from Version 2.0

Only version 2.0, build 297uw.nt can be successfully upgraded to Version 2.5.1. The current version and build of LCCM can be displayed in the Title Bar after selecting the **About** option from the **Help** menu in LCCM's main window.

IMPORTANT: You must use LCCM's Upgrade function if you want to keep your old LCCM database

---

When you are upgrading from LCCM 2.0, you must log on as a network administrator or equivalent. To upgrade from LCCM 2.0 to version 2.5.1, do the following:

1. Make a thorough check to ensure that your current version of LCCM 2.0 is installed and working properly on your LCCM server.
2. Ensure that no versions of LCCM 2.0 are currently running on your server or on remote consoles connected to your LCCM server.
3. Download the IBM LCCM 2.5.1 compressed file from http://www.pc.ibm.com/us/desktop/lccm/index.html, to your Windows NT computer.
4. Uncompress the downloaded file to a temporary directory (e.g., <drive>:\LCCMINST).
5. Run the **SETUP.EXE** program. This is located in the <drive>:\LCCMINST\NT Directory, where LCCMINST is the temporary LCCM install directory you created in step 4.

6. At the Welcome to the LCCM Setup screen, click on **Next.**
7. Select the language option that you are going to use.
8. The IBM license agreement will be displayed. If you accept the terms and conditions of the license agreement, select **Yes** to continue with the setup program.
9. Select **Perform Server installation (including workstation files)** to upgrade your current version of LCCM 2.0 to LCCM version 2.5.1, to your Windows NT Server.

IMPORTANT: The Remote Workstation Install option is not supported. If you do select this option, the following error message will be displayed. "Cannot Update Current Installation. This computer already has LCCM installed, please uninstall it via the Control Panel before re-running SETUP.EXE. The installation process will now terminate".

---

10. The Previous Detected Version screen displays whether you have LCCM version 2.0, build 297uw.nt installed. If you do not have the supported version of LCCM 2.0 one of the following error messages will be displayed:
    - **Attempt to upgrade unknown version**. Cannot Upgrade Unknown Version - An unknown version of LCCM has been found on this machine, you must uninstall it before running **SETUP.EXE**. The installation process will now terminate.
    - **Problems reading Registry during version checking**. Cannot Check Registry. It has not been possible to check for previous LCCM installations in the Registry. Please check that you have sufficient privileges to make changes to the Registry before re-running **SETUP.EXE.**
11. If you do have the supported version of LCCM 2.0 you will be asked if you want to upgrade this installation. Alternatively, you may want to uninstall this version before re-running SETUP.EXE. Choose **Yes** to upgrade or **No** to exit this upgrade.
12. The Location of Backup Files screen displays the path and backup directory of copied control files from your LCCM 2.0 installation. If you made changes to default (.LST) files in your LCCM 2.0 installation (e.g. NETWORK.LST), check whether these changes are required in the corresponding LCCM version 2.5.1 files, as LCCM 2.5.1 supports a wider range of hardware.
13. At the Installation complete screen click on **OK** to confirm that the upgrade has completed successfully.
14. If you used the IBM DHCP service with LCCM 2.0, you must now update the IBM Intermediate Support Driver. To install IBM's Intermediate Support Driver, do the following:
    a) From the Windows NT desktop, click on **Start, Settings** and **Control Panel**.
    b) Double-click on **Network.**
    c) Select the **Protocols** tab, click on **Add** and then **Have Disk**.
    d) In the Path box, enter <drive>:\LCCMINST\NT\WEDGE and then click on **OK**.
    e) The Select OEM Option box will be displayed. The **IBM Intermediate Support Driver** will be highlighted. If not (you have entered the wrong pathname), check the pathname you entered in step d and retry. Click on **OK** to install this driver. You will be returned to the Network Setup window. Click on **Close** to exit.
    f) Shutdown and restart your server at this point. The new driver will be loaded as the server restarts.

Upgrading from Version 2.5

Only LCCM version 2.5, build 990119 can be successfully upgraded. The current version and build of LCCM can be displayed in the Title Bar after selecting the **About** option from the **Help** menu in LCCM's main window.

IMPORTANT: You must use LCCM's Upgrade function if you want to keep your old LCCM database

When you are upgrading from LCCM 2.5, you must log on as a network administrator or equivalent. To upgrade from LCCM 2.5 to version 2.5.1, do the following:

1. Make a thorough check to ensure that your current version of LCCM is installed and working properly on your LCCM server.
2. Ensure that no versions of LCCM are currently running on your server or on remote consoles connected to your LCCM server.
3. Download the IBM LCCM 2.5.1 compressed file from http://www.pc.ibm.com/us/desktop/lccm/index.html, to your Windows NT computer.
4. Uncompress the downloaded file to a temporary directory (e.g., <drive>:\LCCMINST).
5. Run the **SETUP.EXE** program, which you will find in the <drive>:\LCCMINST\NT Directory, where LCCMINST is the temporary LCCM install directory you created in step 4.
6. At the Welcome to the LCCM Setup screen, click on **Next.**
7. Select the language option that you are going to use.
8. The IBM license agreement will be displayed. If you accept the terms and conditions of the license agreement, select **Yes** to continue with the setup program.
9. Select **Perform Server installation (including workstation files)** to upgrade your current version of LCCM 2.5 to LCCM version 2.5.1, to your Windows NT Server.

   IMPORTANT: The Remote Workstation Install option is not supported. If you do select this option, the following error message will be displayed. "Cannot Update Current Installation. This computer already has LCCM installed, please uninstall it via the Control Panel before re-running SETUP.EXE. The installation process will now terminate".

10. The Previous Detected Version screen displays whether you have LCCM version 2.5, build 990119 installed: If you do not have a supported version of LCCM one of the following error messages will be displayed:
    - **Attempt to upgrade unknown version**. Cannot Upgrade Unknown Version - An unknown version of LCCM has been found on this machine, you must uninstall it before running **SETUP.EXE**. The installation process will now terminate.
    - **Problems reading registry during version checking**. Cannot Check Registry. It has not been possible to check for previous LCCM installations in the Registry. Please check that you have sufficient privileges to make changes to the Registry before re-running **SETUP.EXE.**
11. If you do have the supported version of LCCM 2.5 you will be asked if you want to upgrade this installation. Alternatively, you may want to uninstall this version before re-running SETUP.EXE. Choose **Yes** to upgrade or **No** to exit this upgrade.
12. The Location of Backup Files screen displays the path and backup directory of copied control files from your LCCM 2.5 installation. If you made changes to default (.LST) files in your current

LCCM 2.5 installation (e.g. NETWORK.LST), check whether these changes are required in the corresponding LCCM version 2.5.1 files, as LCCM 2.5.1 supports a wider range of hardware.

13. At the Installation complete screen click on **OK** to confirm that the upgrade has completed successfully.
14. If you used the IBM DHCP service with LCCM 2.5, you must now update the IBM Intermediate Support Driver. To install IBM's Intermediate Support Driver, do the following:
    a) From the Windows NT desktop, click on **Start, Settings** and **Control Panel**.
    b) Double-click on **Network.**
    c) Select the **Protocols** tab, click on **Add** and then **Have Disk**.
    d) In the Path box, enter <drive>:\LCCMINST\NT\WEDGE and then click on **OK**.
    e) The Select OEM Option box will be displayed. The **IBM Intermediate Support Driver** will be highlighted. If not (you have entered the wrong pathname), check the pathname you entered in step d and retry. Click on **OK** to install this driver. You will be returned to the Network Setup window. Click on **Close** to exit.

Shutdown and restart your server at this point. The new driver will be loaded as the server restarts.

Re-installing Version 2.5.1

Only LCCM version 2.5.1, build 990119, can be successfully re-installed. The current version and build of LCCM can be displayed in the Title Bar after selecting the **About** option from the **Help** menu in LCCM's main window.

IMPORTANT: You must use LCCM's Upgrade function if you want to keep your old LCCM database

---

When you are re-installing LCCM 2.5.1, you must log on as a network administrator or equivalent. To re-install LCCM 2.5.1, do the following:

1. Make a thorough check to ensure that your current version of LCCM is installed and working properly on your LCCM server.
2. Ensure that no versions of LCCM are currently running on your server or on remote consoles connected to your LCCM server.
3. Download the IBM LCCM 2.5.1 compressed file from http://www.pc.ibm.com/us/desktop/lccm/index.html, to your Windows NT computer.
4. Uncompress the downloaded file to a temporary directory (e.g., <drive>:\LCCMINST).
5. Run the **SETUP.EXE** program. This is located in the <drive>:\LCCMINST\NT Directory, where LCCMINST is the temporary LCCM install directory you created in step 4.
6. At the Welcome to the LCCM Setup screen, click on **Next.**
7. Select the language option that you are going to use.
8. The IBM license agreement will be displayed. If you accept the terms and conditions of the license agreement, select **Yes** to continue with the setup program.
9. Select **Perform Server installation (including workstation files)** to re-install your current version of LCCM 2.5.1, to your Windows NT Server.

IMPORTANT: The Remote Workstation Install option is not supported. If you do select this option, the following error message will be displayed. "Cannot Update Current Installation. This

computer already has LCCM installed, please uninstall it via the Control Panel before re-running SETUP.EXE. The installation process will now terminate".

10. The Current Detected Version screen displays whether you have LCCM version 2.5.1, build 990119 installed: If you do not have a supported version of LCCM one of the following error messages will be displayed:
    - **Attempt to upgrade unknown version**. Cannot Upgrade Unknown Version - An unknown version of LCCM has been found on this machine, you will need to uninstall it before running **SETUP.EXE**. The installation process will now terminate.
    - **Problems reading registry during version checking**. Cannot Check Registry. It has not been possible to check for previous LCCM installations in the Registry. Please check that you have sufficient privileges to make changes to the Registry before re-running **SETUP.EXE.**
11. If you do have the supported version of LCCM 2.5.1 you will be asked if you want to re-install this installation. Alternatively, you may want to uninstall this version before re-running SETUP.EXE. Choose **Yes** to upgrade or **No** to exit this upgrade.
12. The Location of Backup Files screen displays the path and backup directory of copied control files from your LCCM 2.5.1 installation. If you made changes to default (.LST) files in your current LCCM 2.5.1 installation (e.g. NETWORK.LST), check whether these changes are required in new the LCCM version 2.5.1 files.
13. At the Installation complete screen click on **OK** to confirm that the upgrade has completed successfully.
14. If you used the IBM DHCP service with LCCM 2.5.1, you must now update the IBM Intermediate Support Driver. To install IBM's Intermediate Support Driver, do the following:
    a) From the Windows NT desktop, click on **Start, Settings** and **Control Panel**.
    b) Double-click on **Network.**
    c) Select the **Protocols** tab, click on **Add** and then **Have Disk**.
    d) In the Path box, enter <drive>:\LCCMINST\NT\WEDGE and then click on **OK**.
    e) The Select OEM Option box will be displayed. The **IBM Intermediate Support Driver** will be highlighted. If not (you have entered the wrong pathname), check the pathname you entered in step d and retry. Click on **OK** to install this driver. You will be returned to the Network Setup window. Click on **Close** to exit.

Shutdown and restart your server at this point. The new driver will be loaded as the server restarts.

Installing the Program

When you are installing LCCM for the first time, you must log on as a network administrator or equivalent. You can find the files for installing LCCM on the World Wide Web at: http://www.pc.ibm.com/us/desktop/lccm/index.html.

The Profile Wizard typically copies large images to subdirectories within the LCCM directory. Disk space may be a problem. We therefore recommend that you install LCCM on your secondary partition. You should install Windows NT with Service Pack 4 on your primary partition.

IMPORTANT: If using a Primary and Backup Domain Controller:

If you are using a Primary Domain Controller (PDC), and a Backup Domain Controller (BDC), LCCM must only run from one of these servers at any one time. This is for two reasons:

a) Only one LCCM session can run across your network at any one time.

b) As the LCCM databases are not automatically synchronized between the BDC and the PDC, changes made to one database set will not automatically be carried across to the other.

To install LCCM, do the following:

1. Download the IBM LCCM compressed file from http://www.pc.ibm.com/us/desktop/lccm/index.html, to your Windows NT computer.
2. Uncompress the downloaded file to a temporary directory (e.g., <drive>:\LCCMINST).
3. **IMPORTANT:** if you intend to install LCCM using DHCP/PXE (recommended), you must install IBM's Intermediate Support Driver now. Otherwise, go to step 4.

   To install IBM's Intermediate Support Driver, do the following:

   a) From Windows NT desktop, click on **Start, Settings** and **Control Panel**.

   b) Double-click on **Network.**

   c) Select the **Protocols** tab, click on **Add** and then **Have Disk**.

   d) In the Path box, enter <drive>:\LCCMINST\NT\WEDGE, where LCCMINST is the temporary install directory you created in step 2, and then click on **OK**.

   e) The Select OEM Option box will be displayed and the IBM Intermediate Support Driver will be highlighted. If not (you have entered the wrong pathname), check the pathname you entered in step d and retry. Click on **OK** to install this driver. You will be returned to the Network Setup window. Click on **Close** to exit.

   f) Shutdown and restart your server at this point. The new driver will be loaded as the server restarts.

   IMPORTANT: When using LCCM in a DHCP/PXE routed environment for ethernet clients, enable the Proxy Address Resolution Protocol (ARP) and BOOTP forwarding capability on the router software. Proxy ARP allows two computers on different subnets to communicate even though they may be unaware of the existence of a router in between. For more details see, Address Resolution Protocol .

   ---

4. Run the **SETUP.EXE** program. This is located in the <drive>:\LCCMINST\NT Directory.

   The LCCM Installation program will begin and the LCCM Setup screen will be displayed. Select **Next** to continue with the setup program or **Cancel** to exit from the setup program.
5. Select the language option that you want to use and then select **Next**.
6. If you accept the terms and conditions of the license agreement, select **I Agree** to continue with the setup program. Selecting **I Disagree** will cancel the setup program.
7. Select the installation environment for your LCCM installation. Select **Perform Server installation (including workstation files)** if you want to install the server component (including the administrator's console component) of LCCM. Select **Perform Remote Workstation installation only** if you want to install the administrator's console component. For your remote administrator's console to work you must have a current and working LCCM Server (you will be asked for its name) present on your network.

   IMPORTANT: for Remote Workstation installation only

   - LCCM must already be installed on the server using all required functions (DHCP/PXE Support Only, RPL Support Only or Install Both DHCP & RPL Support).
   - Do not re-install IBM DHCP/PXE Support during the Perform Remote Workstation Installation option. This will already be operating on your server.
   - Remember that you must be logged on with administrator privileges in order to install LCCM.

8. Select the type of LCCM server installation you want to install. There are two ways of installing the LCCM program: typical or custom. A typical installation will install LCCM according to defaults based on the information that the LCCM setup program detects about your computer. A custom installation will step you through every decision that LCCM requires for a successful installation.

IMPORTANT: If you have more than one network adapter card installed in your server, you must choose the **Custom** installation option. If you select the **Typical** Installation option, LCCM will use IBM's DHCP Service by default. If you want to use a non-IBM DHCP service (e.g., Microsoft's) you will have to select the **Custom** Installation option.

Custom Installation

1. At the Choose LCCM Destination Directory dialog box, you can accept the default destination directory name where you want LCCM to be installed (this will become LCCM's program directory), or click on **Browse** to select a different destination directory and then click on **OK.** Click on **Next** to continue.
2. The Confirm Windows System Directory dialog box will appear. Accept the default given and click on **Next**.
3. The Request Server Name dialog box will appear. Enter the name of the server on which you want to install LCCM. Click on **Next**.
4. Next, the Choose LCCM Environment dialog box will appear. Choose one of the following:
   a) **Install DHCP Support Only** – Select if all your client computers are visible to an Internet Protocol (IP) Server within a DHCP/PXE environment (see, DHCP/PXE Environment).
   b) **Install RPL Support Only** – Select if all your client computers are configured for the RPL protocol and are on the same LAN segment as your LCCM server (see, RPL Environment).
   c) Install Both DHCP & RPL Support.

   If you choose an option that includes DHCP, carry out steps 5, 6 and 7. If RPL only is selected, go directly to step 8.
5. If you select an option that includes DHCP, you will be asked for the name of the DHCP Support Directory. You can accept the default C:\IBMTCPIP, or click on **Browse** to select a different destination directory and then click on **OK**. Click on **Next** to continue.
6. Click on **Nex**t. Enter IP Address Scope prompts will appear in the following order:
   a) Enter the TFTP Server IP Address of the server on which LCCM is installed. Click on **Next**.
   b) Select the DHCP/PXE Services you require from the following options:
      - Install all DHCP Support

        IBM's DHCP/PXE, BINL and TFTP services are installed. Select this option if you do not have another DHCP server running in your environment.
      - Install the IBM DHCP Proxy Service

        IBM's Proxy, BINL and TFTP services are installed. Select this option if there is another DHCP service (e.g., Microsoft's) running in your environment, and it is not installed on your LCCM server.
      - Install the BINL Service (Use with non-IBM DHCP services)

        IBM's BINL and TFTP services are installed. Select this option if there is another DHCP service (e.g., Microsoft's) running on your LCCM server. You must add PXE client option 60 to your DHCP service. For more information, see

Configuring PXE Option 60 for MS DHCP Server and your DHCP service's documentation.

c) Enter the first IP address in this scope. Click on **Next**.

d) Enter the last IP address of this scope. Click on **Next**.

e) Enter the subnet mask for this scope. Click on **Next**.

f) Enter the Default Gateway for this scope. Click on **Next**.

Note: If your LCCM server LAN segment includes a router you must enter a default gateway otherwise leave the default gateway dialog box blank and click on **Next**.

7. A dialog box will appear asking you if you have any further client scopes to enter. Continue until you have entered information identifying all your DHCP/PXE clients. Click on **No** at this dialog box to continue.

8. At the Choose Server Type box, enter the type of server on which you are installing LCCM. Choose from the following options:

   a) Primary Domain Controller

   If you choose **Primary Domain Controller**, and you have specified that you wish to use RPL, you will be asked to confirm the pathname of your RPL System Directory.

   b) Backup Domain Controller

   If you choose **Backup Domain Controller**, you will be asked to choose **User Name** and **Starting Number**. The defaults are DCBK and 1, respectively. You may change the default name if you wish. At this point, 30 NT Users are created using your default name, for example DCBK1 to DCBK30. These NT user accounts are required for the scan and download processes; the maximum concurrent downloads being 30. If you have specified that you are using RPL, you will be asked to confirm the pathname of your RPL System Directory.

   c) Stand Alone Server

   If you choose **Stand Alone Server**, and you have specified that you wish to use RPL, you will be asked to confirm the path of your RPL System Directory.

9. If you have installed LCCM on a Backup Domain Controller you must now carry out the following additional steps:

   a) From the Windows NT Desktop, select **Start**, **Programs**, **Administrative Tools** and then **Server Manager**.

   b) Select **Computer** and **Synchronize with Primary Domain Controller.** This will ensure that the user accounts are replicated between the Primary and Backup Domain Controllers.

LCCM can now be started. If you want to use LCCM default settings that are different from the supplied defaults, or you want to revert to defaults you set previously (if this is an upgrade), change the LCCM default settings on first starting the program.

LCCM is now installed. Once installed, LCCM is added to a program group within your start up menu.

Typical Installation

1. At the Choose LCCM Destination Directory dialog box, you can accept the default destination directory name where you want LCCM to be installed, (this will become LCCM's program directory) or click on **Browse** to select a different destination directory and then click on **OK**. Click on **Next** to continue.

2. Next, the Choose LCCM Environment dialog box will appear. Choose one of the following:

a) **Install DHCP Support Only** – Select if all your client computers are visible to an Internet Protocol (IP) Server within a DHCP/PXE environment (see, DHCP/PXE Environment).

b) **Install RPL Support Only** - Select if all your client computers are configured for the RPL protocol, and are on the same LAN segment as your LCCM server (see, RPL Environment).

c) **Install Both DHCP & RPL Support**.

3. If you choose an option that includes DHCP, carry out steps 4, 5 and 6. If you choose RPL only, go directly to step 7.
4. At the DHCP Support Directory screen, you can accept the default C:\IBMTCPIP, or click on **Browse** to select a different destination directory . Click on **OK**. Click on **Next** to continue.
5. Click on **Nex**t, the Enter IP Address Scope prompts will appear in the following order:
   a) Enter the first IP address in this scope. Click on **Next**.
   b) Enter the last IP address of this scope. Click on **Next**.
   c) Enter the subnet mask for this scope. Click on **Next**.
   d) Enter the Default Gateway for this scope. Click on **Next**.

   Note: If your LCCM LAN segment includes a router you must enter a default gateway, otherwise leave the default gateway dialog box blank and click on **Next**.

6. A dialog box will appear asking you if you have any further client scopes to enter. Continue until you have entered information identifying all your DHCP/PXE clients, then click on **No** at this dialog box to continue.
7. Confirm LCCM Folder name.

LCCM can now be started. If you want to use LCCM default settings that are different from the supplied defaults, or you want to revert to your previously set defaults (if this is an upgrade), change the LCCM default settings on first starting the program.

LCCM is now installed. Once installed, LCCM is added to a program group within your start up menu.

Installing LCCM on a Remote Computer

LCCM initially runs only on the computer through which you installed it. However, while working with the program, you can also run LCCM on another client computer connected to the LAN. You must also make sure that the prerequisites below are adhered to:

- LCCM must already be installed on the server using all required functions (DHCP/PXE Support Only, RPL Support Only or Install Both DHCP & RPL Support).
- Do not re-install IBM DHCP/PXE support during the Perform Remote Workstation Installation option. This will already be operating on your server.
- Remember that you must be logged on as a network administrator or equivalent in order to install LCCM.

Remote Workstation Installation

To install and run LCCM on a computer other than the one from which you installed the program to the server:

1. Download the IBM LCCM compressed file from **http://www.pc.ibm.com/us/desktop/lccm/index.html** or copy it from your LCCM Server, to your Windows NT computer.

2. Uncompress the downloaded file to a temporary directory. (e.g., <drive>:\LCCMINST)
3. Run the **SETUP.EXE** program, which you will find in the <drive>:\LCCMINST\NT where LCCMINST is the temporary install directory you created in step 2.
4. The LCCM Installation program will begin and the LCCM Setup screen will be displayed. Select **Next** to continue with the setup program or **Cancel** to exit from the setup program.
5. Select the language option that you want to use and then select **Next**.
6. If you accept the terms and conditions of the license agreement, select **I Agree** to continue with the setup program. Selecting **I Disagree** will cancel the setup program.
7. At the IBM Intermediate Support Driver Support prompt, select **No**.
8. At the installation prompt, select **Perform Remote Workstation Installation only** and click on **Next**.
9. At the Choose LCCM Destination Directory dialog box, you can accept the default destination directory name where you want LCCM to be installed (this will become LCCM's program directory), or click on **Browse** to select a different destination directory and then click on **OK**. Click on **Next** to continue.
10. The Confirm Windows System Directory dialog box will appear. Accept the default given and click on **Next**.
11. The Request Server Name dialog box will appear. Enter the server name on which the main LCCM Server resides. Click on **Next**.

IMPORTANT: If you intend to run LCCM on a remote computer, you must use the full path for all files and directories specified in the LCCM notebooks and associated batch files.

Example:

\\servername\sharename\directory\filename

LCCM automatically creates the following share:

\\servername\LANC$$

where LANC$$ will point toward:

\LCCM\CLNTFILE\

where LCCM is the default directory where LCCM was installed.

LCCM Password Implementation

In order to install LCCM on an NT Domain which has a User Account Policy requiring a minimum password length, you must inform the SETUP program of the default passwords you wish to use. These default passwords must meet any criteria you have set (for example, minimum password length).

To inform the setup program of your default passwords:

1. Open NOTEBOOK.EXE and enter the following text:

   [Passwords]

   background= <pwd1>

   user = <pwd2>

   You should enter your own values for <pwd1> and <pwd2>

2. Save your text (from step 1. above) as 'LCCM.INI' and place it in the same directory as SETUP.EXE.
3. Run SETUP.EXE and follow the prompts on screen.

Note: Users of systems configured with LCCM must be informed of the value set for <pwd2>. They will be prompted for this password when powering on their system for the first time. The newly installed operating system will prompt users to enter a new password immediately.

If you have already installed LCCM 2.5.1 on your system, and you wish to change your User Account Policy so that a minimum password length is required, or you wish to modify your default LCCM passwords, you should do the following:

1. Create LCCM.INI as indicated in steps 1 and 2 above. Save LCCM.INI in your LCCM install directory (i.e. in the same directory as LANCNT.EXE)
2. Modify the password of user account 'LSAONE' in User Manager to match the value entered for <pwd1>.

If you installed LCCM with DHCP support, you must also modify the BINLSD.CFG file (using NOTEPAD.EXE). BINLSD.CFG is located in your DHCP Support Directory under the subdirectory ETC. For example on a default installation the file will be C:\IBMTCPIP\ETC\BINLSD.CFG .

To modify the BINLSD.CFG file:

1. Locate the **pxevendor** section which should look similar to the following:

```
Pxevendor
{
        pxeoption 128 MYSERVER
        pxeoption 129 10.3.5.1
}
```

2. Insert a new pxeoption 130 defining your background password as it is entered in LCCM.INI **(**<pwd1>), for example:

```
Pxevendor
{
        pxeoption 128 MYSERVER
        pxeoption 129 10.3.5.1
        pxeoption 130 <pwd1>
}
```

IMPORTANT: When an administrator changes the default user policies on an LCCM server in order to limit the number of users with network access to the computer, the NET use command will fail for LCCM clients.

Uninstalling LCCM

The following procedure permanently removes LCCM from your server. If you are upgrading to an earlier version of LCCM, do not use this procedure, see Upgrading from Version 2.0 or Upgrading from Version 2.5

Perform the following from the administrator console, or at the computer on which you installed LCCM to permanently remove (uninstall) LCCM:

1. From the Windows NT Desktop, click on the **Start** button.
2. Select **Settings**.
3. Select **Control Panel**.
4. Select **Add/Remove Program Properties**.
5. Select **LANClient Control Manager**.
6. Click on the **Add/Remove** button.
7. At the LAN Client Control Manager Client Database dialog box, click **Yes** to exit and export the client database or click **No** to uninstall
8. At the LANClient Control Manager Uninstall dialog box click on **Yes**.
9. At the IBM Intermediate Support Driver dialog box click on **OK**.
10. Once the installation is complete click on **OK**.
11. At the LANClient Control Manager Uninstall Completed dialog box, you will be asked if you wish to reboot your computer. Select **No**.

Note: When you have uninstalled LCCM you may find that the program continues to be listed when you select **programs** from the start menu. This may happen occasionally if a previous LCCM installation did not complete a successful installation.

IMPORTANT: If you installed the IBM Intermediate Support Driver along with LCCM:

a) Select N**etwork** from the **Control Panel**.

b) Click on the **Protocols** tab, select **IBM Intermediate Support Driver**, and then click on **Remove**.

c) You will be presented with the warning: “This action will permanently remove the components from the system”. Click on **Yes** to continue.

d) Click on **Close**.

e) You will be asked if you wish to reboot your computer. Select **Yes**.

Note: Most of LCCM's components will be removed, but LCCM's program directory and some user-created files within this directory will not be removed. The directory and these files can be deleted manually.

IMPORTANT: If you want to re-install LCCM and keep your existing client and profile databases, do not delete LCCM's program directory or the user-created files within this directory.

Removing Temporary Files

To ensure that all redundant files are removed you can delete the following:

- The compressed LCCM file that you downloaded from the World Wide Web.
- LCCM's temporary install directory (e.g., <drive>:\LCCMINST)
- The contents of <drive>:\IBMTCPIP. This action will result in the deletion of all existing profiles and clients within LCCM's database.

IMPORTANT: Ensure that you remove all LCCM's user accounts from Windows NT's User Manager as they will no longer be required. This will ensure that clients are numbered consecutively for any future installations of LCCM.

Re-installing LCCM

If you have not deleted LCCM's program directory or the user-created files within this directory after uninstalling LCCM, you can re-install LCCM and keep your existing Client and Profile databases from the previous installation.

To re-install LCCM and use the Client and Profile databases from the previous installation:

1. Install LCCM to the same LCCM program directory as your previous LCCM installation.
2. At the "Setup has detected existing database files, do you wish to delete them ?" prompt, click on **No**. When installation is complete, you will be able to use the client and profile database from the previous installation.
3. To enable your clients do the following:
   a) Select a client (or multiple clients) from the Installation/Maintenance window
   b) Select **Client** from the menu bar.
   c) Select **Configure**. This will open your Individual Client Details Notebook.
   d) Click on the **Details** page.
   e) Check the **Client Disabled** checkbox.
   f) Click on **Process**.
   g) Re-open the **Details** page.
   h) Un-check the **Client Disabled** checkbox.
   i) Click on **Process**

Note: No changes will be made to the client computer as a result of performing steps f) and i).

Your clients will now be able to boot to the hard disk and boot the operating system they were assigned, from your previous LCCM installation.

Starting LCCM

The following procedure is for starting LCCM from the computer on which it was installed.

Before starting the program, make sure that you are logged on to the network at the administrator console as a system administrator or equivalent.

To start LCCM from the computer on which it was installed:

1. Click on the **Start** button within the Windows interface.
2. Click on **Programs**.
3. Click **LAN Client Control Manager**.

   The opening window appears. (If you prefer, you can uncheck the box that allows this window to display each time LCCM is started.)
4. Click on **OK** to start the program.

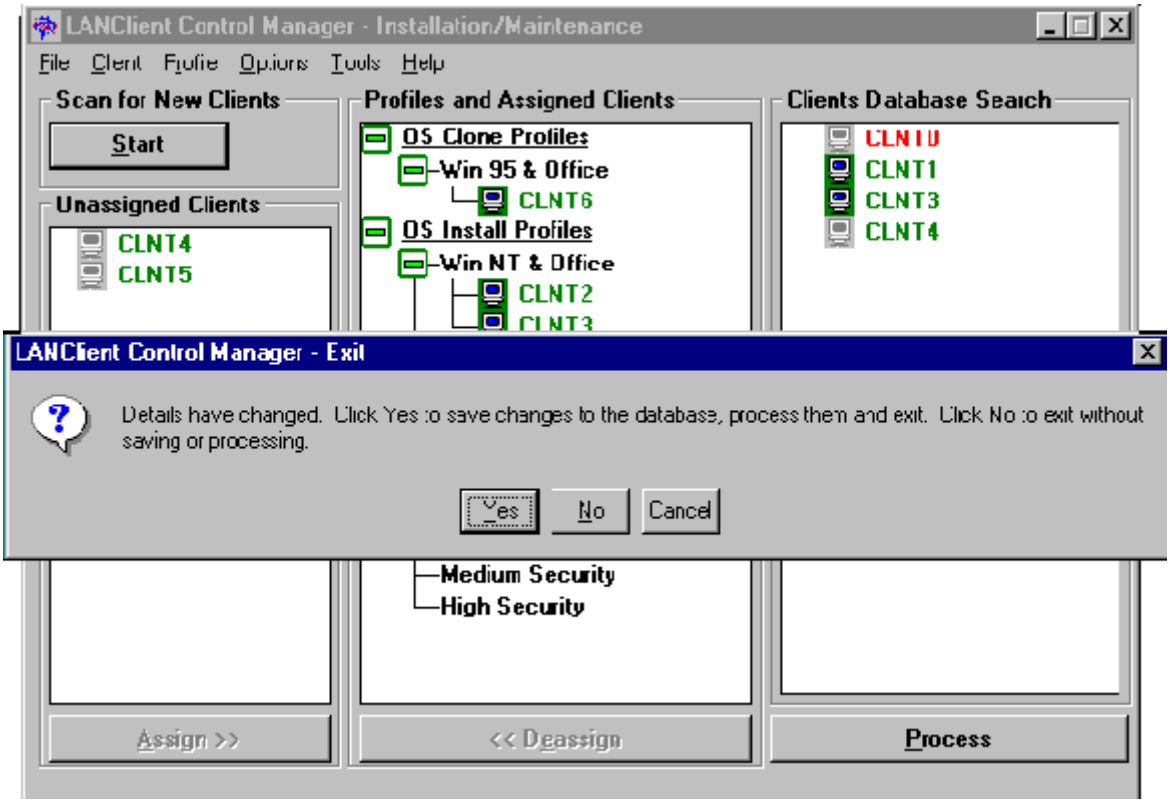
Exiting LCCM

To exit from the program:

1. Select **File** from the Installation/Maintenance window.
2. Select **Exit**.

If no details have changed, LCCM automatically closes.

If details have changed but have not been processed, the following window displays.



- Select **Yes** to save and begin processing the changes. The Progress and Errors Window displays. While this process is running, you can perform no other action within the program.
- Select **No** to discard all changes that have been made. Any changes that were in the processing queue, including repeat events, will have to be reentered after restarting the program.
- Select **Cancel** to return to the Installation/Maintenance window. No processing takes place.

Chapter 3. Working with the Interface

What's New

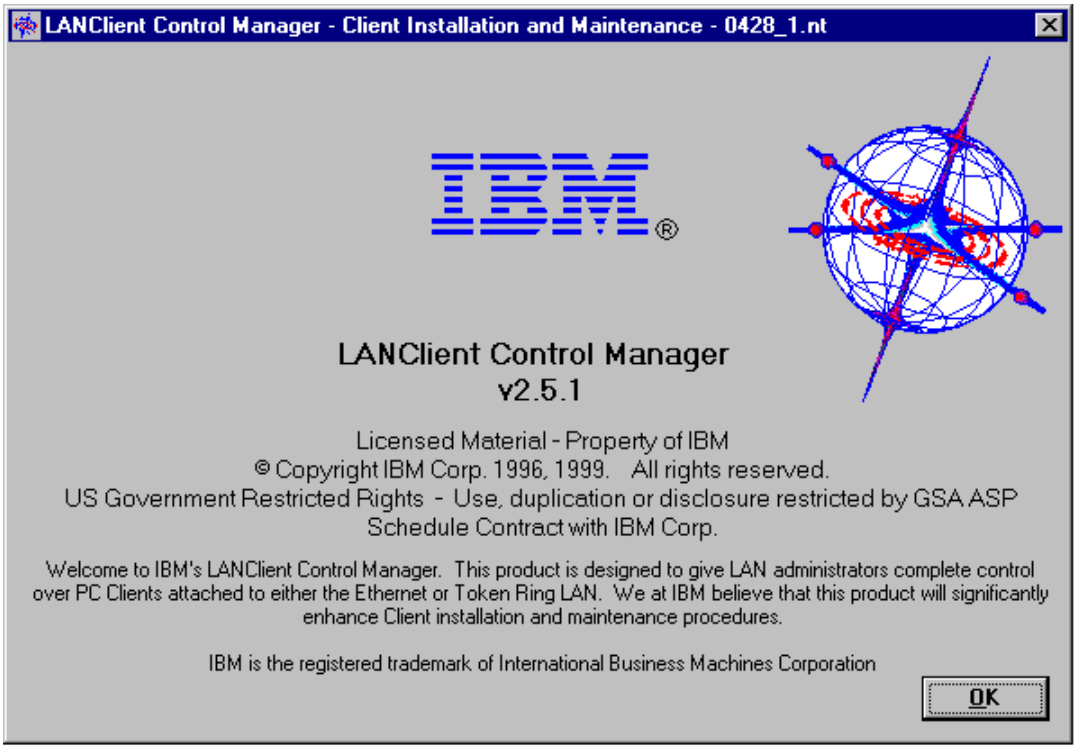
You are no longer required to write a script to carry out a complex task such as defining and installing a remote client image. You can now simply make choices in a set of wizard dialog boxes. Tasks will now be scripted for you automatically. Details of these wizards and how to use them can be found in Adding Clients. See, Using Profile Wizard, Using DiffTool Wizard, Using CloneIt Agent Wizard and Using Client Assignment Wizard.

Welcome to LCCM 2.5.1

After selecting LCCM 2.5.1 from the program group in your start menu, the Client Installation/Maintenance window will be displayed. This window has the following features:

- The Build Number within the Title Bar.
- The Version Number.

To start using LCCM 2.5.1 click on **OK**.



Installation/Maintenance Window

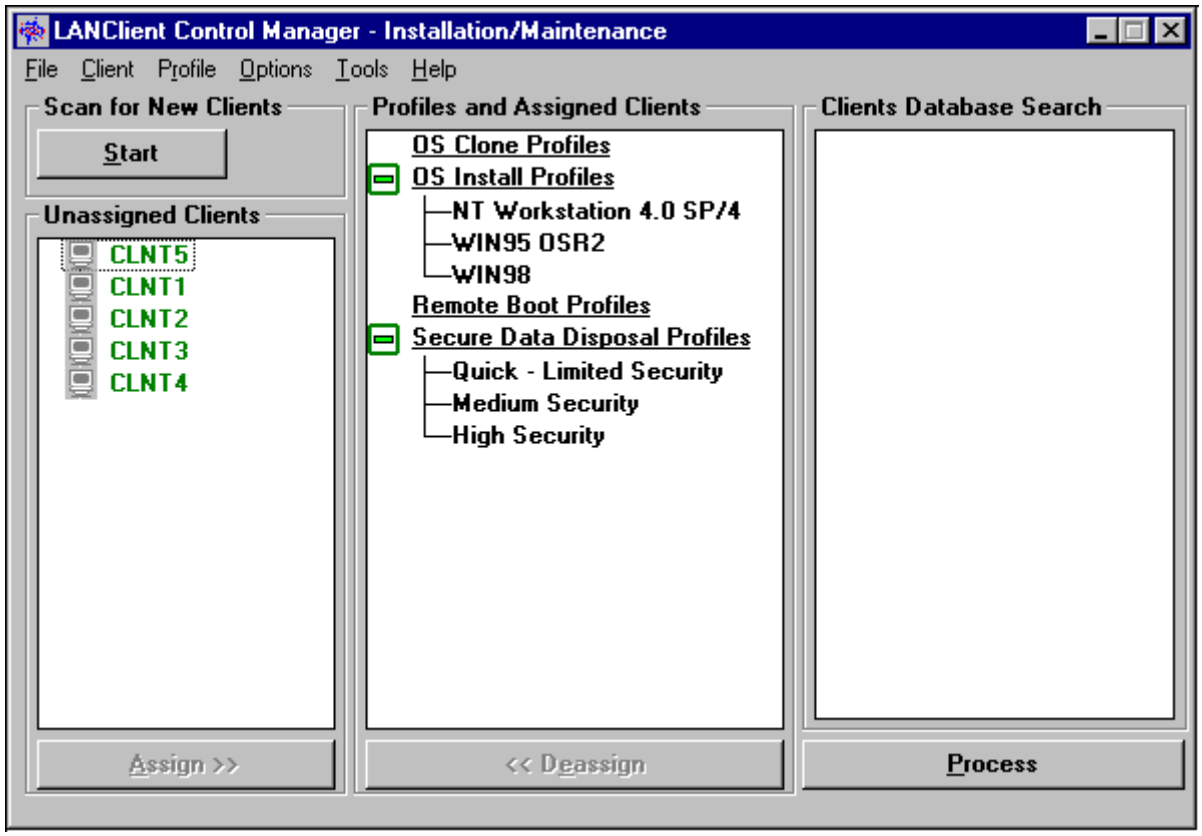
The main window within LCCM is the Installation/Maintenance window. Each time the program is started, the Installation/Maintenance window is the first window to appear after the initial welcome window.

Using the buttons in the Installation/Maintenance window, you can scan for new clients, assign and de-assign clients to and from specific profiles, and process client updates. The additional menu bar at the top of the window provides access to all other functions within the program.

You can use the mouse or keyboard (Alt key, Arrow keys, Tab key, Enter key, and so on) when moving within the Installation/Maintenance window and other windows of the program, and when selecting items on the screen.

By clicking on the **Process** button, you save new information and either process the changed clients immediately or initiate the Scheduler. Initiating the scheduler starts the client update at a scheduled day and time. For more information on the Scheduler, see Individual Client Details - Scheduler Page.

The following illustration shows the Installation/Maintenance window. When you first start LCCM, you will not see new clients until you add them to the database. For more information, see Adding Client Computers to the Database. You must also create software profiles before you can assign clients. For more information, see Creating a Software Profile Using the Profile Wizard and Creating a Software Profile Manually.



Selecting Clients

You can select one client or multiple clients before performing a procedure in the Installation/Maintenance window. Clients can be selected in one of three ways:

- To select one client, click on the client using the primary mouse button.
- To select multiple clients, press and hold the Ctrl key, click on the individual clients using the primary mouse button, and release the Ctrl key. Subsequent single clicks on individual clients while holding the Ctrl key down toggles the selection state of that client.
- To select a contiguous group of clients, click on the first client in the group, hold the shift key, and then click on the last client in the group. All clients between the two that you click on are selected.

Recognizing Clients within the Interface

If you are using a color monitor, you might notice that clients are displayed with different colors. The color of a client indicates specific qualities about the client.

- **Green** indicates that the client matches the minimum hardware requirements for the profile to which the client has been assigned.
- **Red** indicates that the client computer does not match the minimum hardware requirements of the profile to which the client has been assigned.
- **Gray** indicates that the client currently has RPL or DHCP/PXE disabled.
- **Blue** (background) indicates that the client is selected.

Processing Changes within LCCM

Changes made within LCCM are saved in a temporary database until you click on the **Process** button. This enables you to setup multiple changes before starting to process them.

- For immediate changes:
  Click on the **Process** button to begin processing the changes. Once you select the **Process** button, the changes are saved to the LCCM database and the processing begins. The Progress and Errors Window opens and displays all jobs currently in the processing queue and their associated status.
- For Scheduled changes:
  Once you click on the **Process** button, the changes are processed when the scheduled time arrives. The Progress and Errors Window opens and displays all scheduled jobs currently in the processing queue, including the day and time that the scheduled event will occur.

Note: After setting a scheduled change and clicking on the **Process** button, you must leave your administrator console powered on and LCCM running in order for the scheduled event to take place.

- On exiting from LCCM:
  If there are any processing changes in process or in the processing queue when you attempt to exit from LCCM, the exit information box displays giving you the opportunity to return to the program or to exit. See Exiting LCCM for more information.

Any errors that take place while an operation is being processed are displayed on screen. You will find these error messages in the Status column within the Progress and Errors Window.

The error codes can be returned by any process within the batch file being executed, or by any CMOS or BIOS process being run. LCCM cannot keep a list of meanings and actions for any external program error messages. This is because the messages are dependent on the program that has returned them. If an error message has been returned:

- By an image batch file for image installation

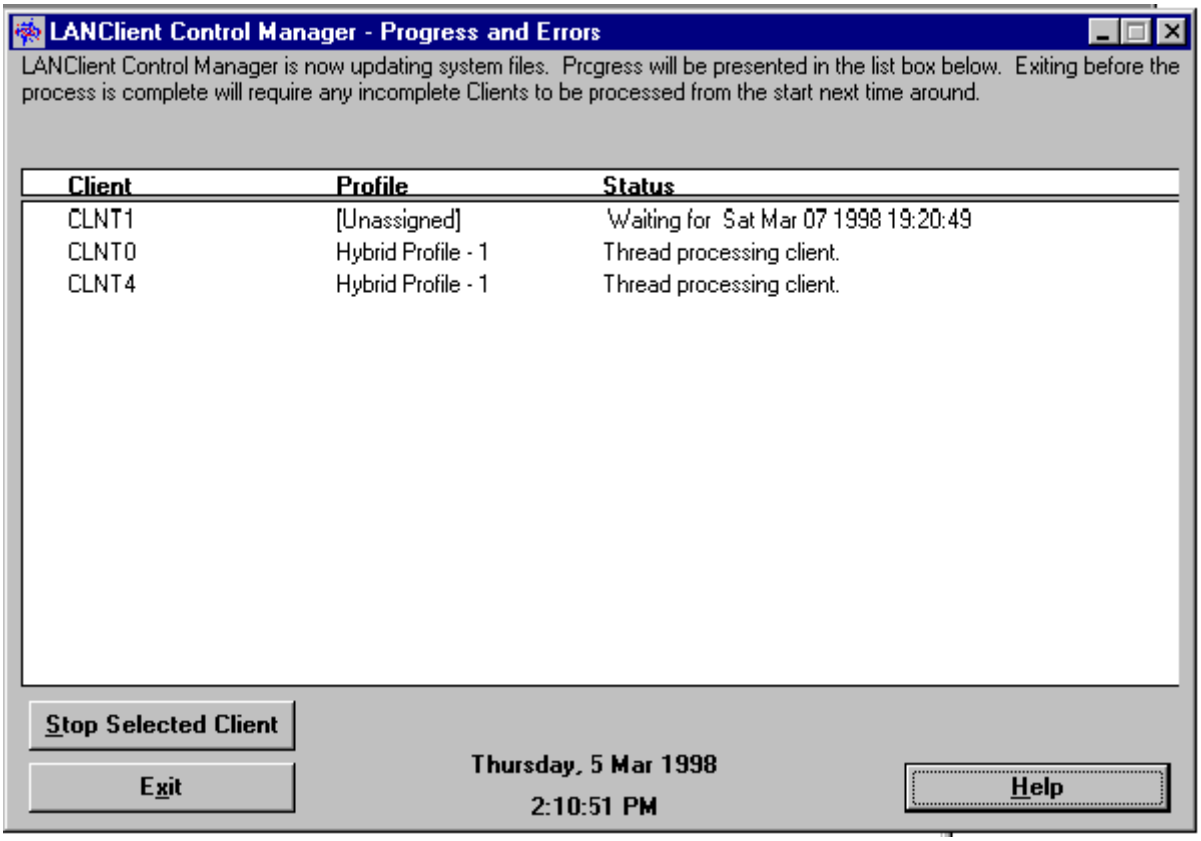
Add a "ctty con" statement to the beginning of your image batch file and a "pause" statement after each line. Then, run the image batch file on a donor computer until you find the error. Check the error code against the appropriate help file for the program in the image batch file that is not working. Correct the error and click on the **Process** button again. In general, if you detect an error in a batch file, it is best to run the batch file until it is finished. You must remember to remove the "ctty con" and "pause" statements after correcting the batch file.

- By a BIOS upgrade procedure or CMOS upgrade procedure

  On the original BIOS flash diskette, or in the directory containing the BIOS image, you will find a help file containing the error codes and a description of each error. Alternatively, after setting the diskette or BIOS-image directory as your default, you can type **CMOSUTIL /?** and click on **Enter**. The directory containing the BIOS image is "LCCM\CLNTFILE\BIOS\BIOS_Flash_Name", where LCCM is your LCCM program directory.

Progress and Errors Window

The Progress and Errors Window displays each time you click on the **Process** button. Processing changes can occur immediately after you click on the **Process** button or can be on a delayed schedule. For more information on scheduled changes, see Defaults Notebook - Scheduler Page or Individual Client Details - Scheduler Page. An example of the Progress and Errors Window is shown below.



While the changes are processing, you can stop the processing of specific clients, or view the Individual Client Details Notebook or Software Profile Details Notebook for one client or software profile.

To stop the processing of specific clients:

1. Select the specific client in the client column.
2. Click on the **stop selected client** button to stop processing.

To view the Individual Client Details Notebook or Software Profile Details Notebook for one client or software profile while processing on that client is in progress:

1. Click on the Installation/Maintenance window to make it the active window.
2. Double-click on a single software profile or client listed in the Profiles and Assigned Clients column.

Note: During processing, all pages of the Individual Client and Software Profile Details Notebook are disabled. It is therefore not possible to view all parameters of the Parameters page, or Client Parms page (Software Profile Details Notebook only) using the backward and forward arrow buttons because these are also disabled.

To view other parameters within the Parameters page of the Details Notebook:

1. Click on the Installation/Maintenance window to make it the active window.
2. Double-click on a single client or software profile listed in the Profiles and Assigned Clients column that is not currently being processed.
3. Click on the **Parameters** tab.
4. Click on the forward or backward arrow button to navigate to the set of 8 parameters you wish to view for the client being processed.
5. Click **OK** to close the Details Notebook of the client or software profile that is not currently being processed.
6. Double-click on the single client or software profile that is currently being processed.
7. On double-clicking on a single client you will be presented with a dialog box which states “One or more selected clients are currently being processed and cannot be configured, assigned, de-assigned or deleted. They can only be viewed individually at this time.” Click on the **OK** button to continue.

   Or

   On double-clicking on a single software profile you will be presented with a dialog box which states “One or more clients are assigned to the selected profile currently being processed. This profile cannot be configured or deleted, but it can be viewed at this time.” Click on the **OK** button to continue.
8. Click on the **Parameters** tab of the Individual Client Details Notebook of the client currently being processed, or the Software Profile Details Notebook of the software profile currently being processed, if it is not already visible. The new set of 8 parameters should now be listed on the parameters page.
9. Repeat steps 1 to 8 to view a different set of 8 parameters.

To view other parameters within the Client Parms page of the Software Profile Details Notebook:

1. Click on the Installation/Maintenance window to make it the active window.
2. Double-click on a single profile listed in the Profiles and Assigned Clients column that is not currently being processed.
3. Click on the **Client Parms** tab.
4. Click on the forward or backward arrow button to navigate to the set of 8 parameters you wish to view for the profile currently being processed.
5. Click **OK** to close the Details Notebook of the profile not currently being processed.
6. Double-click on the single profile that is currently being processed.

7. You will be presented with a dialog box which states “One or more clients are assigned to the selected profile currently being processed. This profile cannot be configured or deleted, but it can be viewed at this time.” Click on the **OK** button to continue.
8. Click on the **Client Parms** tab of the Software Profile Details Notebook of the profile currently being processed, if it is not already visible. The new set of 8 parameters should now be listed on the parameters page.
9. Repeat steps 1 to 8 to view a different set of 8 parameters.

There are three columns of information within the Progress and Errors Window.

- Client
  This lists the name that is assigned to each client.
- Profile
  This lists the software profile assigned to each client.
- Status
  The Status column indicates whether the client is waiting, scheduled, processing, or completed. Error codes are also returned to the Status column, if there has been a failure.

During processing one of two icons can appear to the left of the clients column:

- **black checkmark**
  This indicates that a process has completed successfully, an accompanying message will be displayed in the status column.
- **red cross**
  This indicates that an error condition has occurred, details of this error condition will be displayed in the status column.

Defaults Notebook

To change the default settings of the program, you must access the Defaults Notebook.

Note: Some settings within the Defaults Notebook are overridden by settings in the Individual Client Details Notebook. For more information, see Individual Client Details Notebook.

To access the Defaults Notebook:

1. Select **Options** from the menu bar of the Installation/Maintenance window.
2. Select **LANClient Control Manager Defaults**. The Defaults Notebook displays.

The Defaults Notebook contains four pages of information:

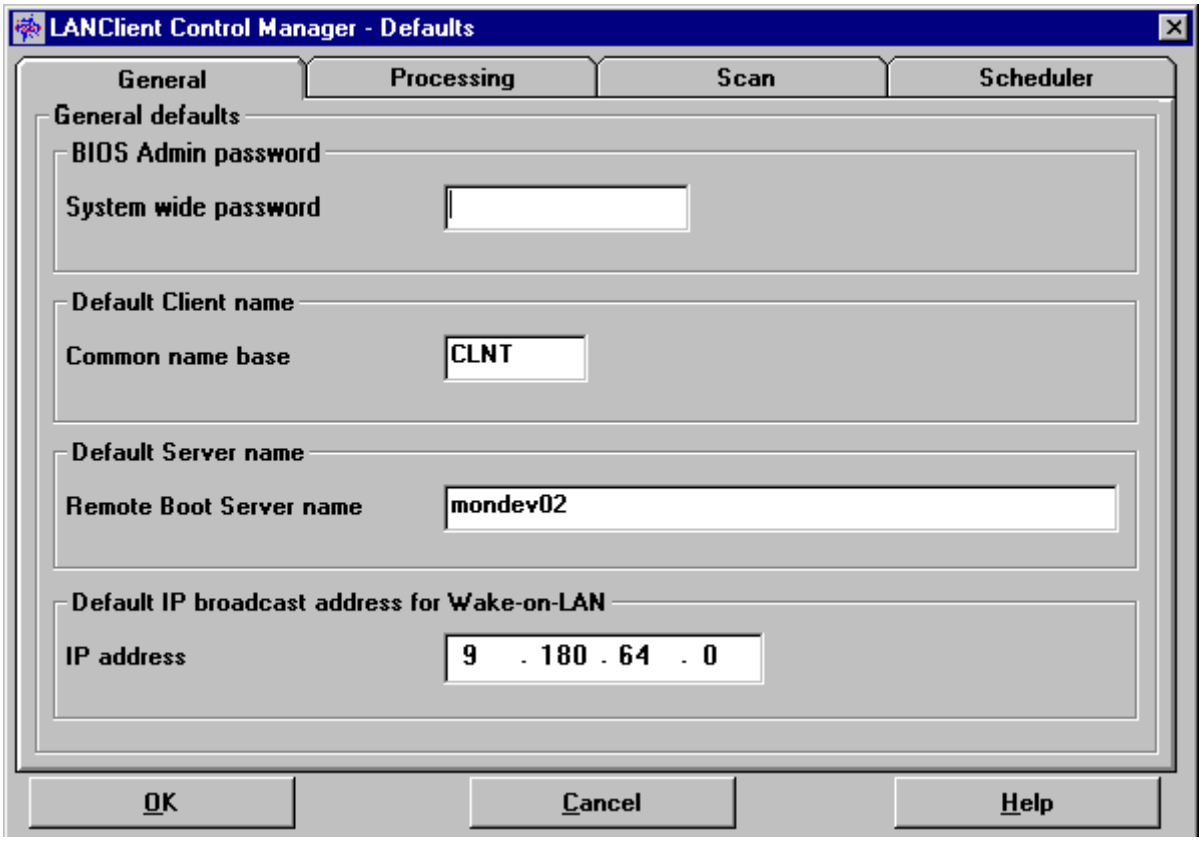
- General
  This page contains information about the BIOS administrator password, the client name, and the Remoteboot server name.
- Processing
  This page contains information about the Hybrid Remoteboot process, the text editor, and the client restart function.
- Scan

This page contains information about the optional user prompts that appear each time that the scan process discovers a client computer.

- Scheduler
  This page contains information about how and when changes are processed.

To change to another page, click on the tab with the name of the information you want to view or change. Each of the four categories (tabs) and associated options are explained in this section.

Defaults Notebook - General Page



- BIOS Administrator Password
  The default value, if specified, is assigned to all new clients during the scan process. If the field is left blank, no password will be set. If a default password is set, it is assigned to new clients when you scan them in. The default password is then applied to all new clients when the **Process** button is pressed to process immediate changes or when scheduled jobs reach their set time on the processing queue.

  Notes:

  - The default BIOS administrator password is set only during the scan process. If the default BIOS administrator password is set after the client has been scanned, the password will not be applied to that client.
  - Changing the default password does not affect the passwords of clients that have already been scanned. To change the BIOS administrator password for clients that have already been created, you can do so by using the maintenance page of the Individual Client Details Notebook. For more information, see Individual Client Details - Maintenance Page.

- The BIOS administrator password code is based on the positions of the keys, not the characters typed. If any of your clients use a keyboard layout that is different from the keyboard layout you use to operate LCCM (for example, a keyboard for another language), the BIOS password set through LCCM might not be recognized when typed on the client keyboard. Be sure to use only characters that occur in the same position on all keyboards used. If the field is left blank, the password is disabled.

- Default Client name

  Every client managed by LCCM must be allocated a name that is unique on the network. When the scan process generates clients, a name is automatically allocated. This name consists of the default client name base followed by an automatically generated number.

  The default client name base is an alphanumeric string with a maximum of eight characters. The string must start with an alpha character. The actual client name generated is the name base followed by a decimal number from 1 to 999. You can change the client name base if the default is not suitable.

- Default Server name

  This is the name of the LCCM server that controls the Remoteboot process for your clients. Anyone using LCCM must have administrator access privileges to this server. The default value is set during the installation of LCCM. A single backslash, double backslash, or no backslash might precede the server name. Changing the server name has no effect until you stop and restart LCCM.

- Default IP broadcast address for Wake-on-LAN

  This field is the default IP address used to send wake-up frames to any client that does not have a wake-up address automatically configured. It may be overridden by the IP broadcast address for Wake-on-LAN that is available on theIndividual Client Details - Hardware Page.

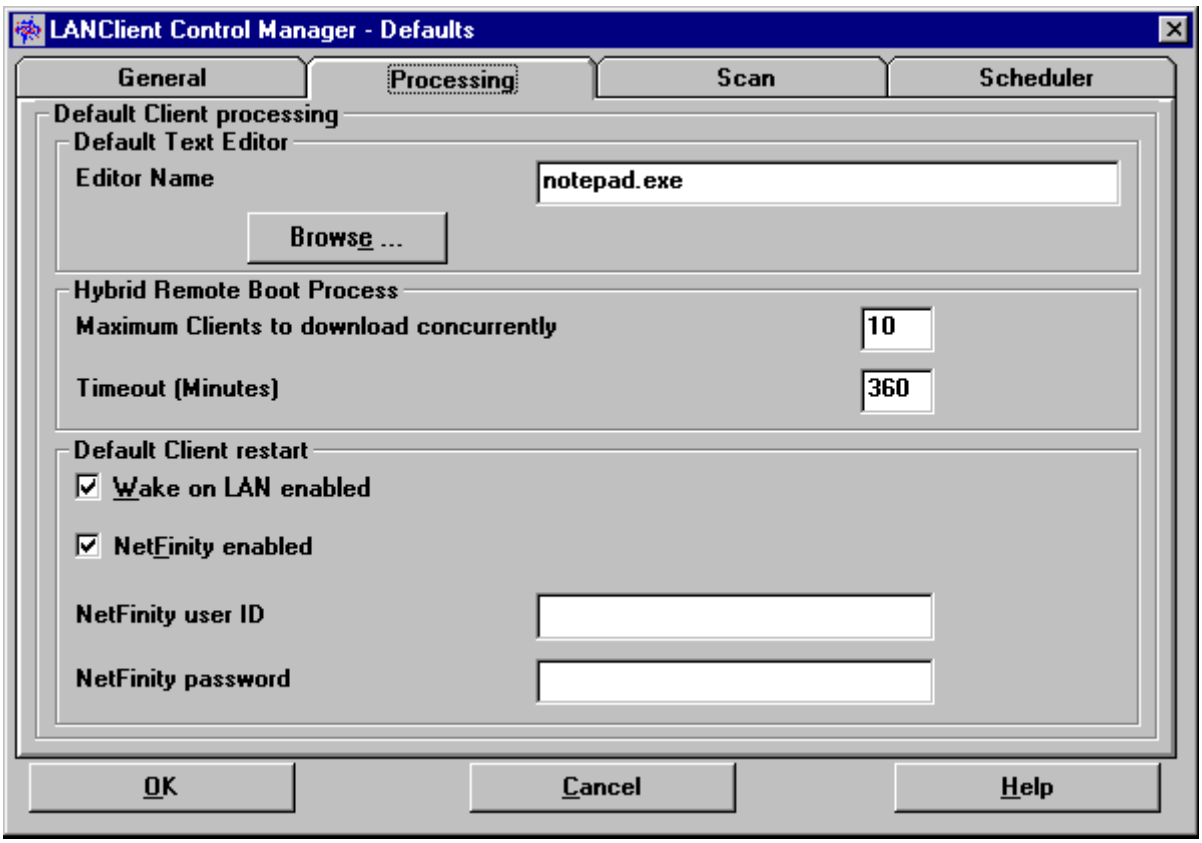
To determine the IP broadcast address for a client (do the following for each byte):

1. From Window NT's **Start**, **Programs** and **Accessories**, select and open Calculator.
2. From the view menu enable **Scientific**.
3. Enter the subnet mask of the client subnet into the calculator and click on **AND**.
4. Enter the client IP address and click on " = ". This gives you the client's subnet value.
5. Clear the values on the calculator; then, enter again the subnet mask value. Click on **XOR**.
6. Enter the value 255 and click on " = ". This gives you the host value.
7. Clear the values on the calculator. Enter the subnet value and click on **OR**.
8. Enter the host value and click on " = ". This gives the subnet- directed or IP broadcast address for your particular client.

Valid IP broadcast addresses must be entered into the Default Notebook- Details Page before LCCM can awaken clients, see Creating a Wake-Up Database.

The wake-up address must be configured so that wake-up frames are sent as MAC level broadcast packets on the LAN to which the client is attached. Wake-up frames are sent by the console, not by the server. This configuration is therefore especially important if you are using a remote console.

Defaults Notebook - Processing Page



- Default Text Editor

  You can specify the editor you want to use when editing files within LCCM. Use the **Browse** button to locate the editor of your choice, or type the name (path and file name) directly into the space provided.

- Hybrid Remoteboot Process

  Use the following fields to set limits for the Hybrid Remoteboot process.

  – Maximum Clients to download concurrently

    This setting limits the number of clients that can download Hybrid Remoteboot images at the same time. For example, if you specify 10 for this limit, and if more than 10 clients try to perform a Hybrid Remoteboot download at the same time, all the downloads will work, but only 10 will actively transfer images over the network at the same time. When the first one completes, the eleventh will start, and so on until they have all been loaded. The purpose is to prevent excessive load on the network and the server. The optimum setting depends on many aspects of network setup, tuning, and loading.

    Note: This setting affects only the number of concurrent downloads and not the number of clients that can operate in Hybrid Remoteboot mode once download is complete.

  – Timeout (Minutes)

    This setting specifies the time limit to wait for processing to complete for each client. If the Hybrid Remoteboot download is not completed in the specified time, an error message is returned and processing stops.

- Default Client restart

  Use the following fields to record restart options.

  - Wake-on-LAN enabled

    Client computers that are powered off can be powered back on by LCCM. To power on client computers, LCCM sends a wake-up packet containing the media access control (MAC) address of the computer in seven second intervals across the network. When the network adapter of the client detects this address, it powers up the computer.

    Note: Some network adapter and computer manufacturers might also refer to the MAC address as the Universally Administered Address (UAA), the Network Interface Card (NIC) address, or the network address.

    Client computer requirements for Wake-on-LAN:

    - The computer must be plugged into a power socket.
    - The network adapter must be enabled to support Wake-on-LAN.
    - The computer must have the BIOS Wake-on-LAN feature available and enabled.
    - The network adapter must be properly connected to the computer system board or power supply.
    - The computer must be properly connected to the network.

  - Netfinity enabled

    LCCM can use the functions of the Netfinity Manager program to remotely shut down and restart computers before processing changes. If you have Netfinity Manager installed on your server, check this box to enable its functions. For details on alternative methods of shutting down and restarting computers see the Forced Shutdown section of the Individual Client Details - Scheduler Page.

    Note: The power-down capability of Netfinity is currently limited to client computers running Windows 95, Windows 95 OSR2 and Windows 98.

Neither Netfinity Manager or Netfinity Services is shipped with LCCM. For Netfinity Manager to function correctly with LCCM, you must have the following:

- Netfinity Manager, Version 5.0 or greater installed on the computer or server on which you have installed LCCM.
- Netfinity Services Version 4.00.2 or greater (or Netfinity Manager Version 5.0) installed on each client you want to remotely shut down or reboot through LCCM. Refer to the Netfinity Manager documentation for details on using these products.

  - Netfinity user ID

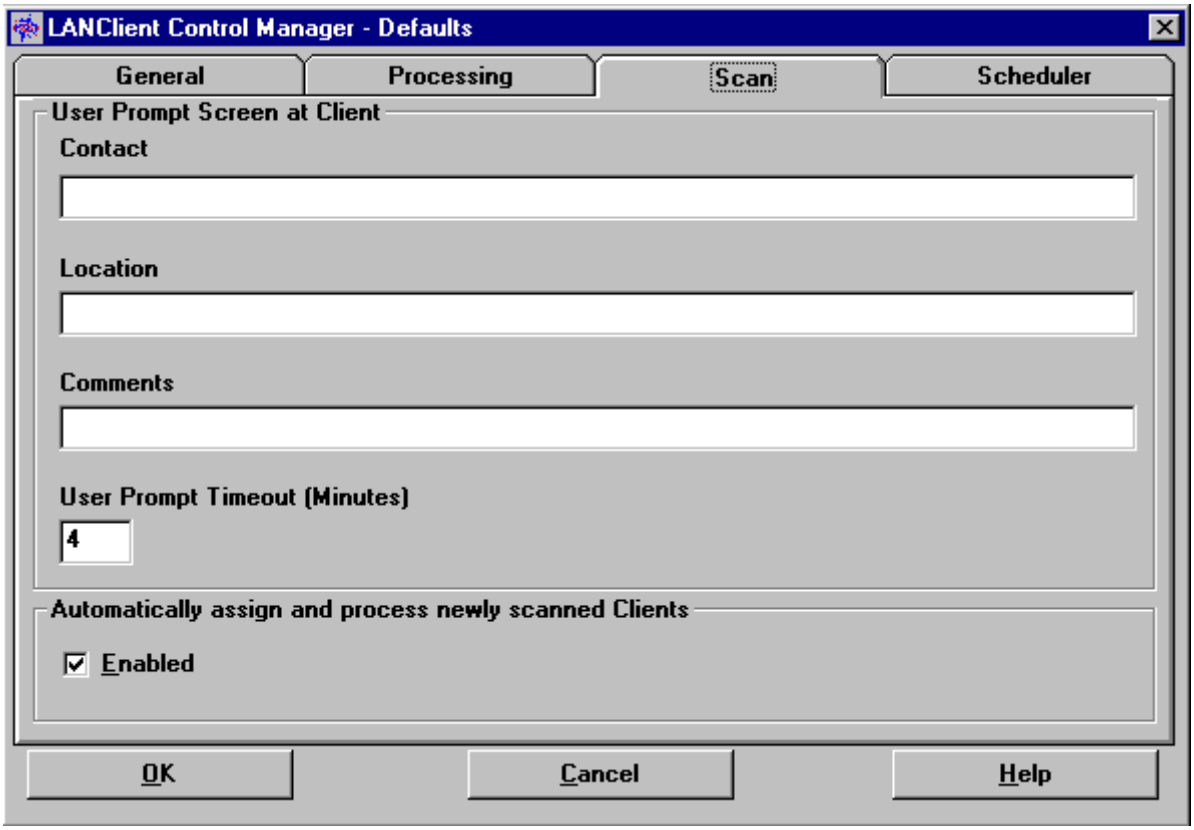
    If you are using Netfinity Manager, enter the Netfinity Manager user ID here to enable LCCM to issue Netfinity Manager commands, without being prompted for a logon.

  - Netfinity password

    Enter your password for Netfinity Manager here.

Defaults Notebook - Scan Page

You can set LCCM to ask specific questions of the end user or installer at each client computer. These questions are asked onscreen at every new client computer detected by the scan process. Displaying questions during the scan operation is optional. The Scan page of the Defaults Notebook is shown below.



User Prompt Screen at Client

You can specify the questions that you want to ask concerning the following information:

- Contact
- Location
- Comments

You can ask any question you wish. The answers are saved on the Details page of the Individual Client Details Notebook. For more information, see Individual Client Details Notebook. The answers can be viewed, modified and used as the value to display in lists of clients. If you do not specify any user prompts, the scan process completes without end-user input, and the values in the Individual Client Details Notebook are left blank. You can enter the information into the Individual Client Details Notebook later.

You can also specify the timeout period for the end-user response. This is the number of minutes that the scan process will wait for each prompt to be answered. If no input is entered, the scan process completes, leaving the information blank. If no timeout is specified, the scan process waits indefinitely for input.

- Automatically Assign and Process Newly Scanned Clients

  Enable this option if you have Radio Frequency Identification chip (RFID) and Asset Information Area (AIA) enabled clients. Data can be read from or written to an onboard Electronically Erasable Programmable Read Only Memory (EEPROM), and used with LCCM. You can use AIA data fields

to initialize LCCM-created profiles when the scan process first detects a client computer. The scan program will then read data from the AIA. This data must be available on the client. Do not specify User Prompts during the scan process.

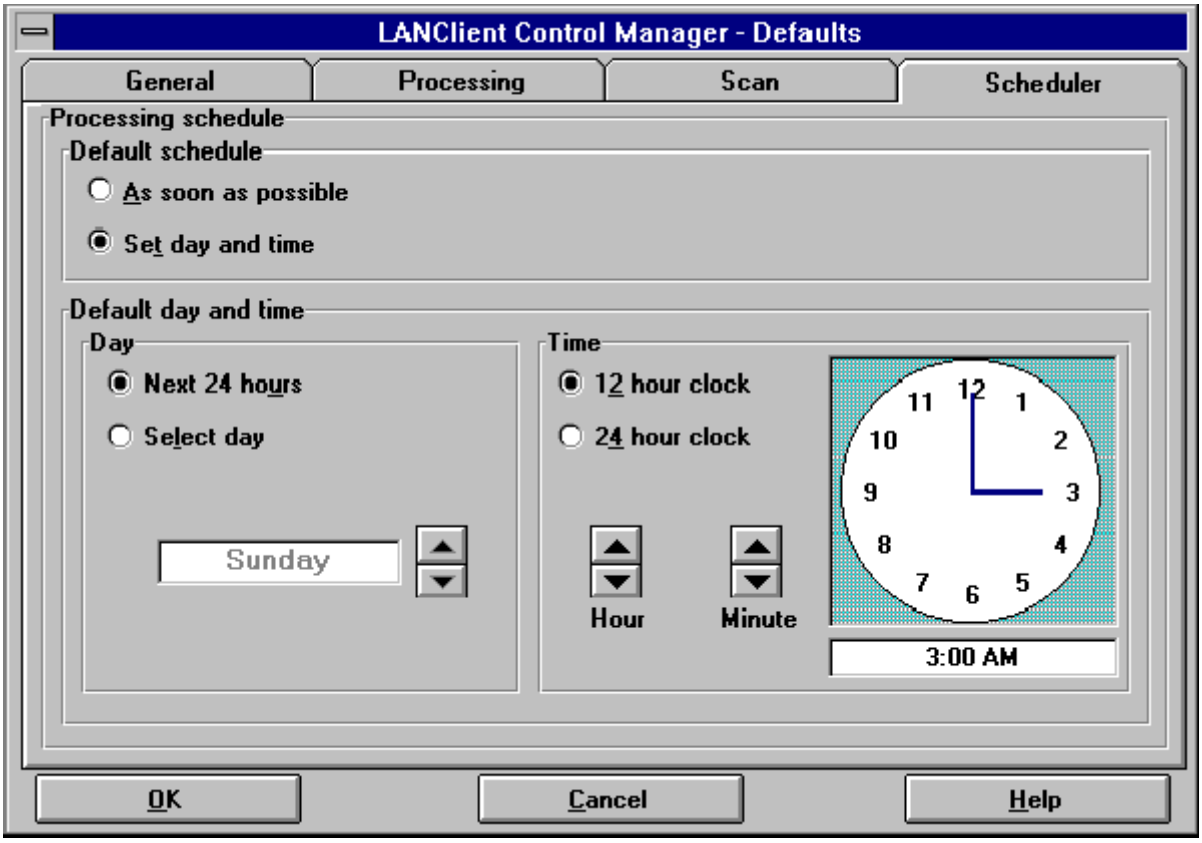
For more information on this function, see Using RFID and AIA Data (Asset ID) with Clients.

Defaults Notebook - Scheduler Page

In the Defaults Notebook on the Scheduler page you can specify the day and time that LCCM begins processing the changes that have been made.

IMPORTANT:

- The scheduler information in the Defaults Notebook is overridden by the scheduler information in the Individual Client Details Notebook. For more information, see Individual Client Details Notebook.
- Use the schedulers for the Defaults Notebook and the Individual Client Details Notebook with care. For example, if you incorrectly set the Scheduler for 3 p.m. instead of 3 a.m., and specify the forced shutdown or restart operating system options in the Client Details Notebook Scheduler, the client computers are immediately restarted in the middle of the working day. Also, if you set the Scheduler to update client computers during an overnight process, be sure to warn end users who might be running overnight processing that their computers will be shut down at the specified time and that any end-user processing jobs in progress at that time will be terminated.



- Default schedule
  - As soon as possible

If you select this button, the changes begin processing as soon as you click on the **Process** button in the Installation/Maintenance window.

- Set day and time

  Setting day and time enables LCCM to process the changes unattended during the day and time of your choice.

  Note: If you use the Scheduler to set a specific day and time, you must still click on the Process button and leave the program running for the scheduled changes to take place. Clicking on the Process button places the scheduled changes in the processing queue of the Progress and Errors Window. When the specific day and time arrives, the scheduled changes are processed.

- Default day and time

  The day and time fields are available only if you have selected the **Set day and time** radio button. Select these fields using the following values:

  - Day
    - Next 24 hours

      Processing takes place as soon as the specified day and time is reached after the scheduled job has been placed in the processing queue.
    - Select day

      Selects the desired day to process the changes. Processing takes place as soon as the specified day and time is reached after the scheduled job has been placed in the processing queue.
  - Time
    - 12-hour clock displays a clock using the 12-hour format (a.m. and p.m.).
    - 24-hour clock displays a clock using the 24-hour format.
    - Hour selects the hour using the up and down arrows.
    - Minute selects the minute using the up and down arrows.
  - Clock face

    The clock face provides you with an alternative method of setting the time.

    Click on the clock face hour hand with your left mouse button. With your finger on the left mouse button, drag the minute hands to the chosen time. Similarly, you can drag the hour and minute hands to the chosen time with the right mouse button. Time is displayed on a 24-hour clock face during this procedure.

Individual Client Details Notebook

Information about each client is managed from the Individual Client Details Notebook. This notebook displays when you edit configuration details of existing clients or create new clients without using the scan option.

To access the notebook for an existing client:

1. Select a client (or multiple clients) in one of the listings of the Installation/Maintenance window.
2. Select **Client** from the menu bar.
3. Select **Configure**

Note: By selecting a single client, you can make changes for that client only. By selecting multiple clients, you make changes for all clients selected. When making changes for multiple clients, some fields are unavailable for editing. Fields unavailable for editing are grayed out.

To create a new Individual Client Details Notebook:

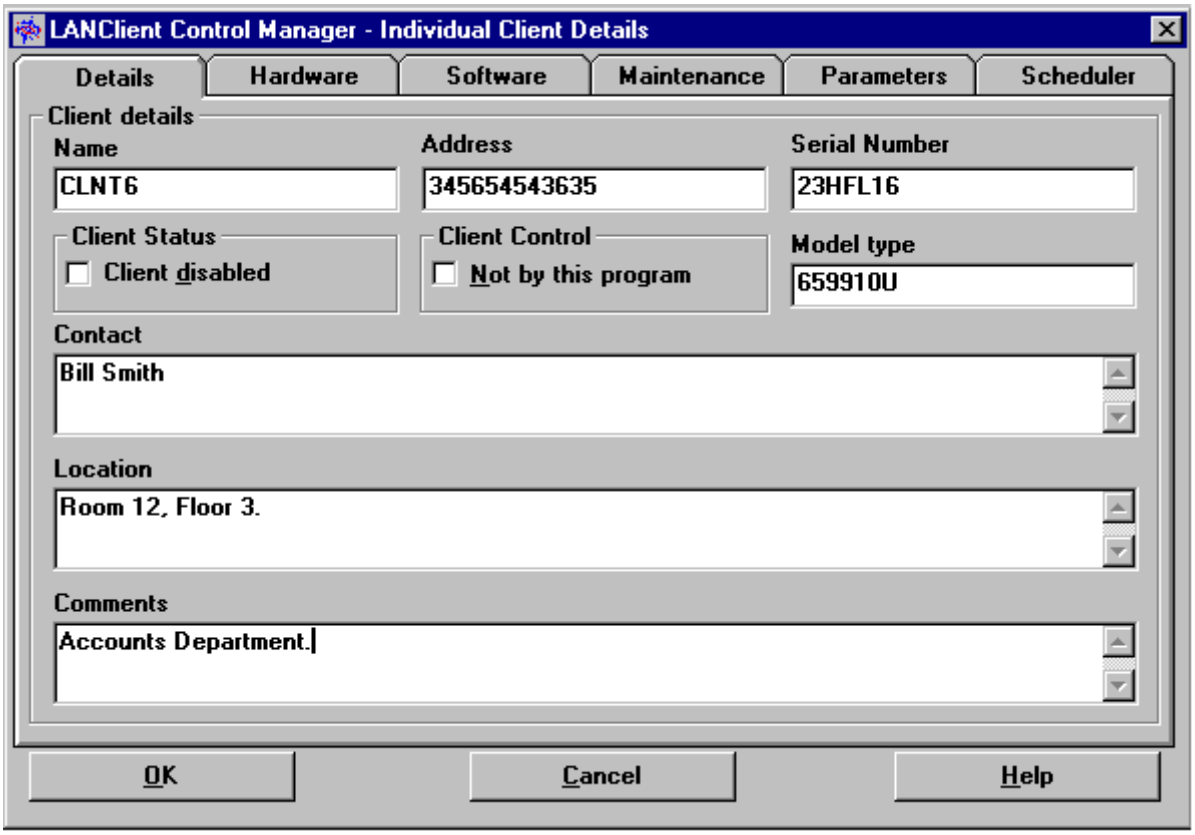
1. Select **Client** from the menu bar.
2. Select **Create New**.

The Individual Client Details Notebook contains the following pages:

- Details
  You can use this page to view details about the client. For example: address, and serial number.
- Hardware
  You can use this page to view information about the client hardware.
- Software
  You can use this page to view details of the client's assignment to a software profile.
- Maintenance
  You can use this page to enter information about various maintenance procedures for the client, such as BIOS, CMOS, and administrator password updates.
- Parameters
  You can use this page to personalize information within a Hybrid Remoteboot image for the client.
- Scheduler
  You can use this page to control when scheduled changes will take place for the client.

Individual Client Details - Details Page

The Details page of the Individual Client Details Notebook contains information that identifies the client.



- Name

  If the client is created automatically by the scan process, LCCM generates the name. If you manually create a client, you must type the name here. The name must be unique and cannot be modified while configuring multiple clients.

- Address

  This is the 12-digit, hexadecimal, Universally Administered Address (UAA) of the network adapter installed in the client computer. The manufacturer of the network adapter sets this address. Some manufacturers also refer to this address as the Media Access Control (MAC) address or network interface card (NIC) address. For more information, see Client Address.

- Serial Number

  This is the client serial number that is collected during the scan process or manually entered when you create a client.

- Client Status

  If the **Client disabled** checkbox is selected, the client cannot start by either RPL or DHCP/PXE.

- Client Control

  This field indicates whether this LCCM program or another program is controlling this client. If you enable the **Not by this program** check box, it indicates that the client is controlled by another program and the scan operation is the only operation that can be performed on that client by this LCCM program. The controlling program can be LCCM running on another server or some other remote management program.

- Model Type

  This field shows the type and model number of the client computer. This information is collected during the scan process.

- Contact, Location, and Comments

  The end user or installer typically enters this information if questions were specified on the Scan page of the Defaults Notebook. For more information, see Defaults Notebook - Scan Page. You can change or update these fields.

Client Address

The client network adapter MAC addresses or client address, is normally collected during the scan process. If you create a client without using the scan process, you must get the network address from the client and type it in this field.

The client address must match the network address (MAC, UAA, or NIC address) that is permanently assigned to the client network adapter. You can change this field, but do so only under the following circumstances:

- You are creating a new client without using the scan process.
- The network adapter for an existing client has been changed (for example, if it develops a fault).

To find the network address for a client, turn on the client and let it attempt to start up from the network. The address is displayed on the screen along with other information. The format varies depending on the type of network adapter. For examples, see below:

- "Network Address for IBM Token Ring Adapter (RPL)"
- "Network Address for IBM Ethernet Adapter (RPL)"

Alternatively, some network adapters have their addresses printed on labels attached to the adapter's bracket. In addition, if the network subsystem is integrated with the system board of the computer, the network address might be accessible through the Configuration/Setup Utility program.

Network Address For IBM Token-Ring Adapter (RPL): When the client attempts to start up from the network, the client screen displays information about the RPL process. The following example is a typical RPL display for an IBM token-ring adapter. The network adapter address follows the prefix AA. In this example, the adapter address is 0004AC8140D7.

ET-00:00:22

ID-166

BU-0000

AA-0004AC8140D7

AL-00 0B00 P322AB

BL-C41876M

MM-DA00 11

SR-DC00 16

OP-0000 04 S

RQ-0008

Network Address For IBM Token-Ring Adapter (DHCP/PXE): When the client attempts to start up from the network, the client screen displays information about the DHCP/PXE process. The display is similar to the RPL display for an IBM token-ring adapter. The network adapter address still follows the prefix AA.

Network Address For IBM Ethernet Adapter (RPL): When the client attempts to start up from the network, the client screen displays information about the RPL process. The following example is a typical RPL display for an IBM Ethernet adapter. The network adapter address follows the prefix RPL-ROM-ADR: In this example, the network adapter address is 1000 5ABA AE2D.

RPL Protocol ROM v1.03 (930311)

IBM LAN Adapter for Ethernet MLID v1.20 (930311)

(C) IBM, NSC, 1993. All Rights Reserved.

RPL-ROM-ADR: 1000 5ABA AE2D

RPL-ROM-IRQ: 5

RPL-ROM-PIO: 0280

RPL-ROM-FFC: 10

Network Address For IBM Ethernet Adapter (DHCP/PXE): When the client attempts to start up from the network, the client screen displays information about the DHCP/PXE process. The following is an example of a typical DHCP/PXE client display for an IBM 100/10 EtherJet adapter. The network adapter address is 00 6094 A5 BB BB.

Intel LANDesk (R) Service Agent, version 0.99b

Copyright (c) 1997 Intel Corporation, All rights reserved.

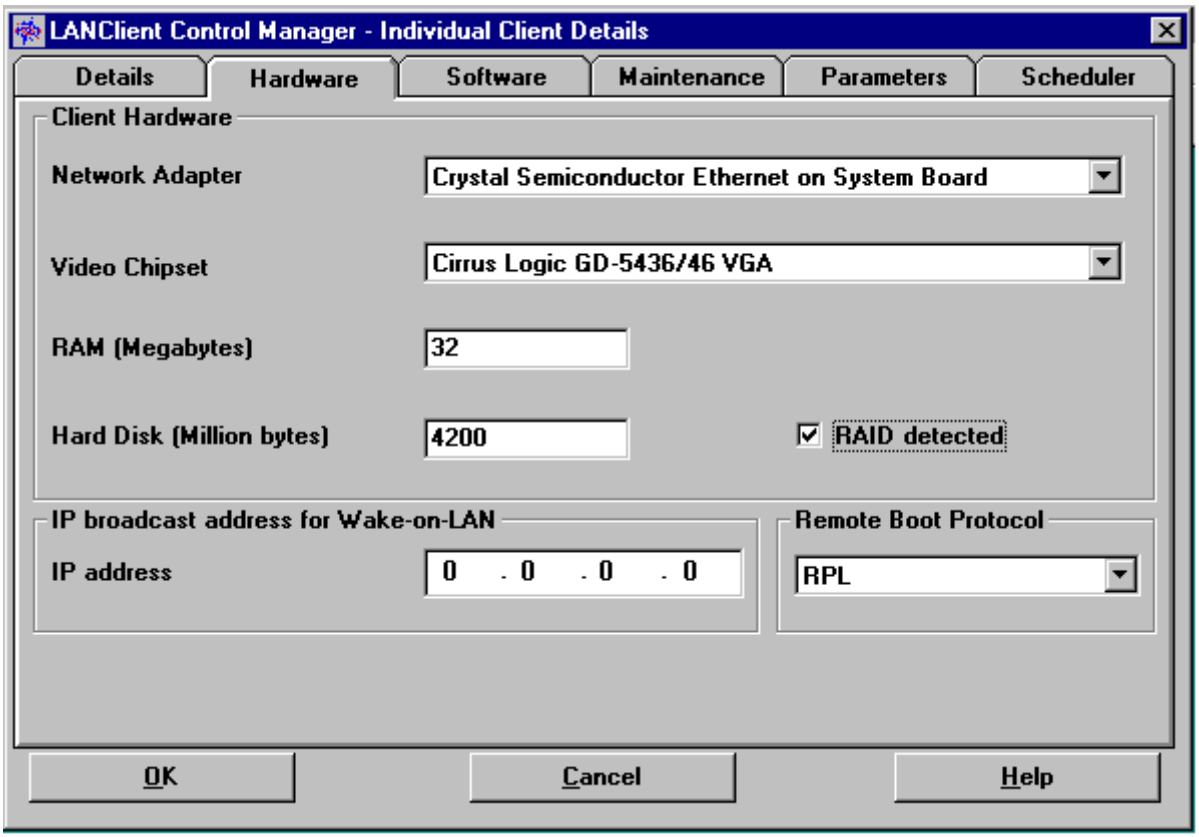
DHCP MAC ADDR: **00 6094 A5 BB BB**

IP ADDR: 9.180.64.36

TFTP

Individual Client Details - Hardware Page

The Hardware page of the Individual Client Details Notebook contains details about the installed hardware of each client. LCCM uses this information to ensure that a new client meets the hardware requirements for a specific software profile. The client hardware details are normally collected by the scan process, but can be entered or modified using this page.



All items below will be searched for by the scan process and their respective fields will be completed with valid components that the scan process has found.

- Network Adapter

  The Adapter identified in this box is the one that is scanned in by the scan process. It is strongly recommended that you do not change this setting.

- Video Chipset

  As with the Network Adapter this Video Chipset is the one that the scan process identified. It is strongly recommended that you do not change this setting.

- RAM

  This field displays the amount of installed random access memory (RAM). The amount specified is in units of 1 048 576 bytes.

- Hard Disk

  This field displays the capacity of the primary hard disk drive. The amount specified is in units of 1 000 000 bytes. The text **Unconfigured RAID** displays in this field if you have an unconfigured RAID controller. Therefore you must enter the RAID hard disk capacity for your client computer.

Note: Since FDISK will not create a partition of less than 4MB, the default value for new clients is set to 5 000 000 bytes for some types of disk drives.

If you have specified a single partition of a fixed size in LCCM Profile Wizard's Profile Wizard - Target Machine's Disk Setup for your ServeRAID adapter, ensure that the corresponding entry has been made in the hard disk field .

- RAID detected

  This field displays whether RAID has been detected. The size displayed refers to the first logical drive.

- IP broadcast address for Wake-on-LAN

  This field is the IP address used to send wake-up instructions to any client that does not have a wake-up address automatically configured.

  To configure wake-up addresses for RPL and DHCP/PXE clients:

  Note: The wake-up addresses for RPL and DHCP/PXE clients created by this method will not be automatically configured:

  – Select **Client**, **Create** and then **New**

  – Select **Tools** and then **Wake**

  To configure wake-up addresses for DHCP/PXE clients:

  Note: The wake up addresses for DHCP/PXE clients created by this method will be automatically configured:

  – Select **Client**, **Create** and then **Copy**

  – Scan Process

  This IP broadcast address overrides the default IP broadcast address for Wake-on-LAN that is available in the General Defaults screen. The wake-up address must be configured so that wake-up packets are sent as MAC-level broadcasts on the LAN subnet to which the client is attached. The console, not the server, sends wake-up packets. This configuration is therefore especially important if you are using a remote console.

  If your network does not use subnets, or all your clients are on a LAN that is included in the same subnet as the CONSOLE, you can use the IP broadcast address 255.255.255.255 (the default).

  If your network uses subnets and your clients are not on a LAN that forms part of the same subnet as the console, you must configure this field as a subnet directed broadcast address. The wake-up instructions will then be routed to the correct LAN for your clients.

  Note: Your network routers must be configured to forward subnet directed broadcasts.

  To determine the IP broadcast address for a client (do the following for each byte):

  1) From Windows NT select **Start**, **Programs** and **Accessories**, then select and open Calculator.
  2) From the view menu enable **Scientific**.
  3) Enter the subnet mask value of the client subnet into the calculator and click on **AND**.
  4) Enter the client IP address and click on " = ". This gives you the client's subnet value.
  5) Clear the values on the calculator; then, enter again the subnet mask value. Click on **XOR**.
  6) Enter the value 255 and click on " = ". This gives you the host value.
  7) Clear the values on the calculator. Enter the subnet value and click on **OR**.
  8) Enter the host value and click on " = ". This gives the subnet- directed or IP broadcast address for your particular client.

  Multiple Client Edit: If you select a group of clients for editing, and the clients have different IP addresses in this field, the field will be displayed as [**].[**].[**].[**]. If your clients belonged to

another subnet, they will have the appropriate IP broadcast address for that subnet. By overwriting this field with a valid IP address, all the clients in the selected group will be forced to use the new value. If you make a mistake, you can reset each client in the group to its original IP address. To reset each client, before you click on **OK**, type a single left-square bracket character ([).

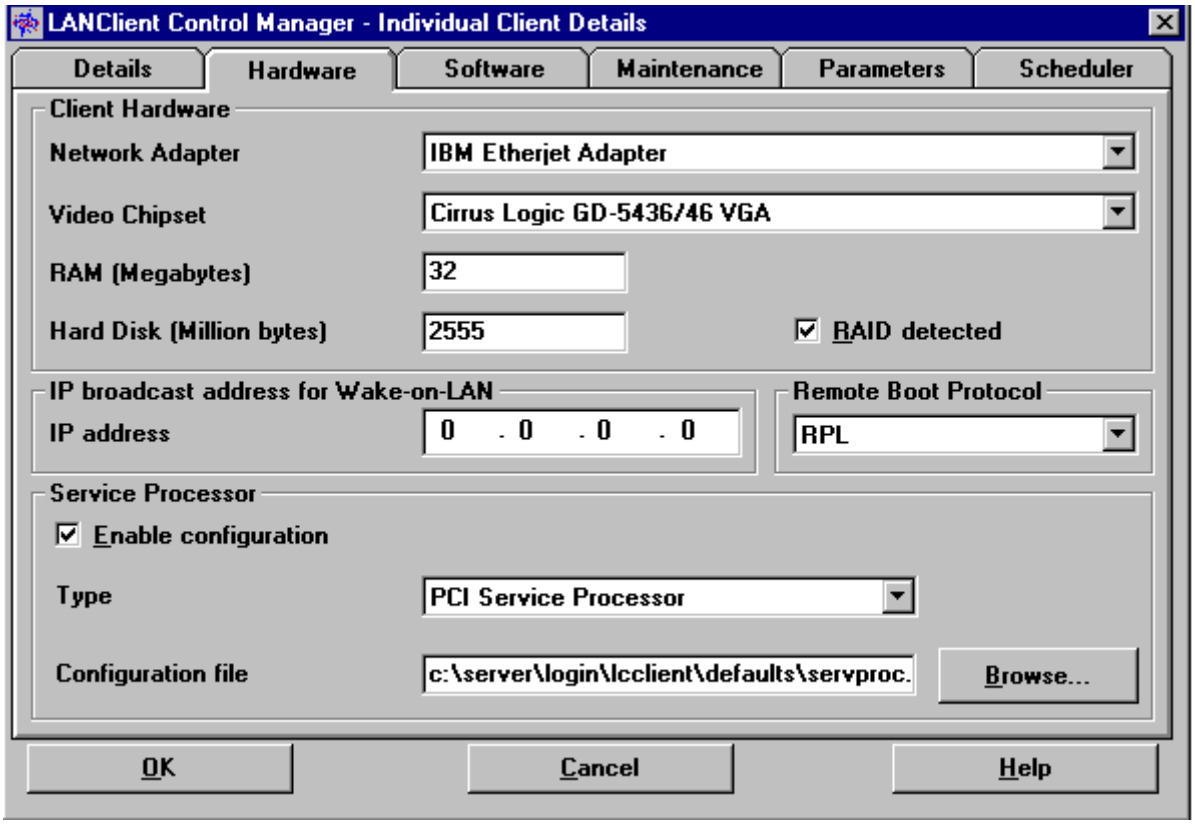
- Remote Boot Protocol

  This field displays the client computer network protocol detected by LCCM during the scan process. This field is selectable.

IMPORTANT: After changing the protocol, LCCM will not change the protocol at the client computer. Therefore, LCCM will not process a client with an incorrectly designated network protocol. After changing the protocol designation in this field, remember to change the network protocol on the Network Adapter option ROM.

Service Processor Clients

If your client computers have service processors installed, service processor items will be searched for by the scan process and the respective fields will be completed with valid components that the scan process has found.



- Enable configuration

  The Enable configuration check box must be enabled for LCCM to fully implement your service processor on your client computer.

- Type

  The service processor scanned in by the scan process appears in this box. It is strongly recommended that you do not change this setting.

- Configuration file

  The configuration file that shows up in this box is the default service processor initialization file SERVPROC.INI supplied with LCCM 2.5.1.

  Note: The default configuration file SERVPROC.INI supplied with LCCM 2.5.1 has no default values. For this file to reflect your server network configuration, you must edit SERVPROC.INI, using Notepad. Please read the warning and comments within this file.

- Browse

  If you want to use another service processor configuration file, the **Browse** button allows you to direct LCCM to your new configuration file.

Individual Client Details - Software Page

The Software page of the Individual Client Details Notebook is used to set up the details of a client assignment to a software profile. The contents of this page vary depending on the Remoteboot profile type to be processed.

Operating System Clone Remoteboot Profile for Client

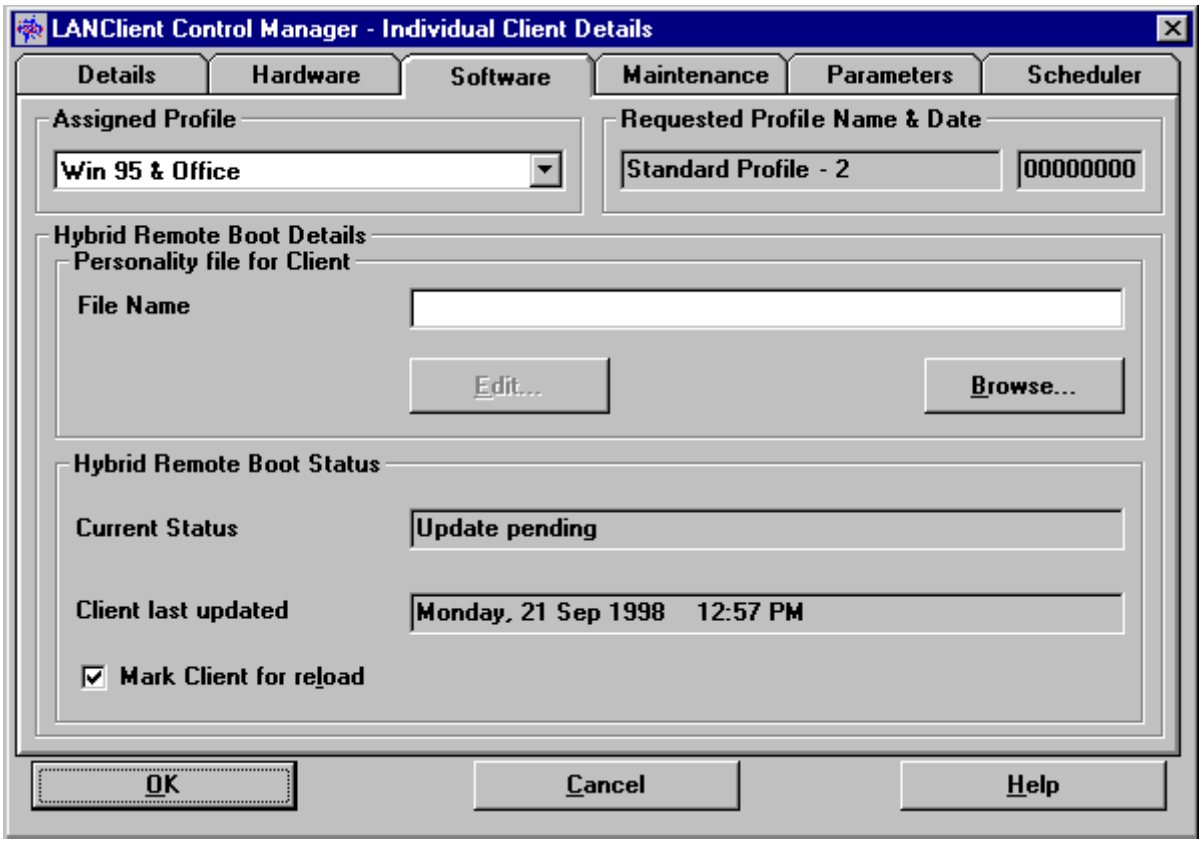
The following fields are available:

- Assigned Profile

  Select an appropriate software profile from the drop-down list for the client computer (If there are no software profiles created, the default, **Unassigned**, is selected).

- Requested Profile Name & Date

  For client computers equipped with a Radio Frequency Identification (RFID) or Asset ID chipset, LCCM reads the EEPROM fields designated by RFID for software profile names and dates. If the client has been scanned and detected, LCCM will process the software profile listed in this field as though it had been assigned and processed manually through the LCCM interface. For more information on RFID, refer to the IBM Web Site: http://www.ibm.com/pc/us/desktop/assetid/.



- Personality file for Client

  You can specify a personality batch file for Operating System Clone Remoteboot clients by using the **Browse** button to select a file. Once a file is selected, click on the **Edit** button if you want to edit the file. You can use a personality batch file to customize an image after it's download at an individual client level instead of at the software profile level. For example, if an end user wants sound disabled, you can use a common software profile, but use a personality batch file to modify the appropriate files to disable sound for that end user only.

  Use this option only if you cannot use the parameter passing method discussed in Passing Parameters to Image Batch Files, or to pass more parameters than the LCCM interface provides for.

  This field cannot be selected for multiple clients.

- Hybrid Remote Boot Status

  The Current Status and Client last updated fields are for informational purposes only. You cannot enter data into these fields.

- Mark Client for reload

  You can force a reload of software to an Operating System Clone Remoteboot client at its next startup by clicking on the reload check box. This is useful if the software on the client has been damaged. Rather than try to diagnose the problem and replace the individual damaged files, you can reload the whole image and ask the user to restart the computer.

Operating System Unattended Install Remoteboot Profile for Client

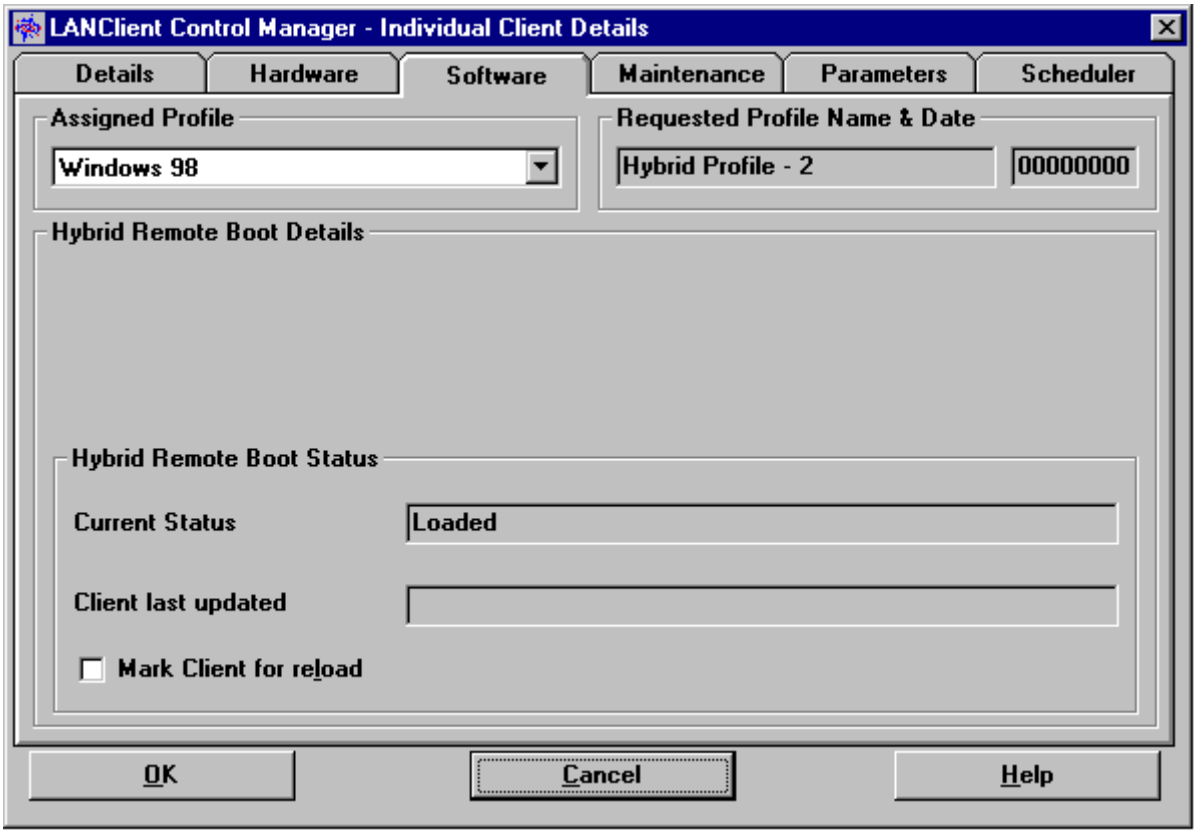
The following fields are available:

- Assigned Profile

Select an appropriate software profile from the drop-down list for the client computer (If there are no software profiles are created, the default, **Unassigned**, is selected).

- Requested Profile Name & Date

  For client computers equipped with a Radio Frequency Identification (RFID) chipset, LCCM reads the EEPROM fields designated by RFID for software profile names and dates. If the client has been scanned and detected, LCCM will process the software profile listed in this field as though it had been assigned and processed manually through the LCCM interface. For more information on RFID, refer to the IBM Web Site: http://www.ibm.com/pc/us/desktop/assetid/.



- Hybrid Remote Boot Status

  The Current Status and Client last updated fields are for informational purposes only. You cannot enter data into these fields.

- Mark Client for reload

  You can force a reload of software to an Operating System Unattended Install Clone Remoteboot client at its next startup by clicking on the reload check box. This is useful if the software on the client has been damaged. Instead of trying to diagnose the problem and replace the individual damaged files, you can reload the whole image by checking the reload box and asking the user to restart the computer.

Remoteboot Profile for Client

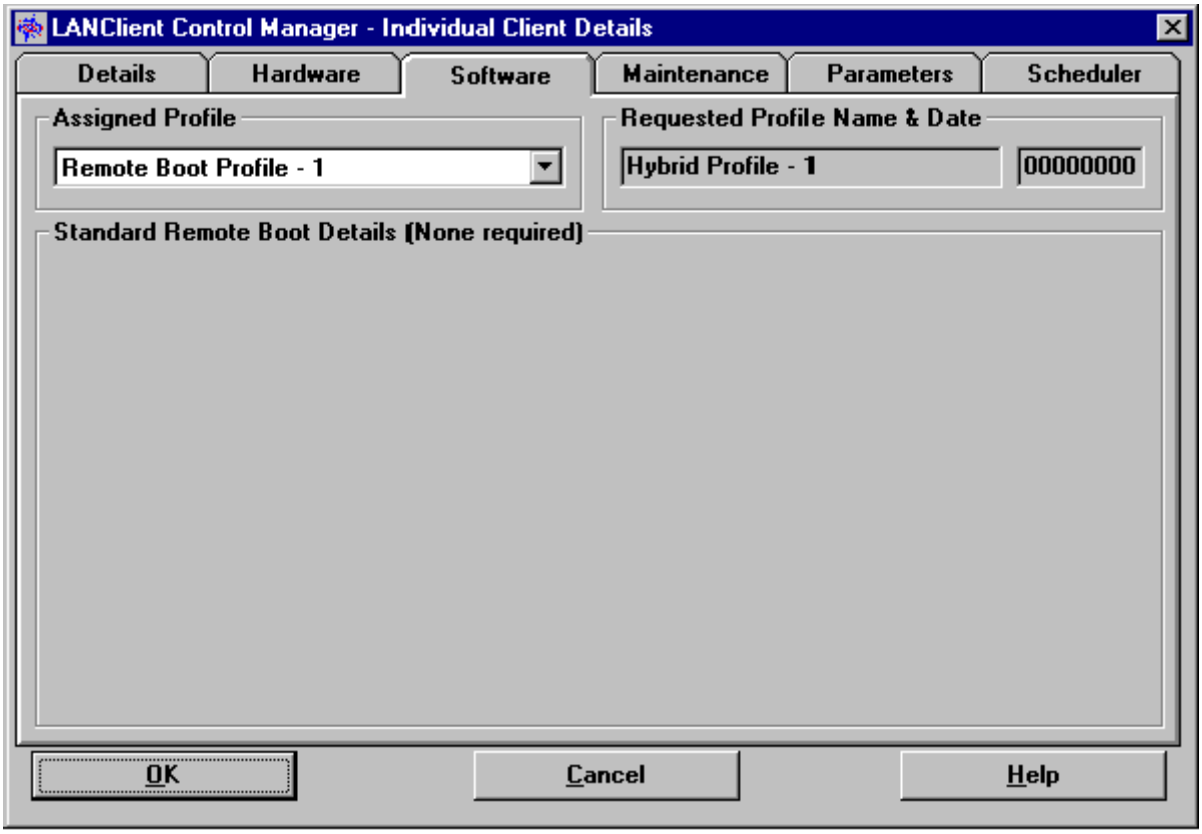
The following fields are available:

- Assigned Profile

  Select an appropriate software profile from the drop-down list for the client computer (If there are no software profiles created, the default, **Unassigned**, is selected).

- Requested Profile Name & Date

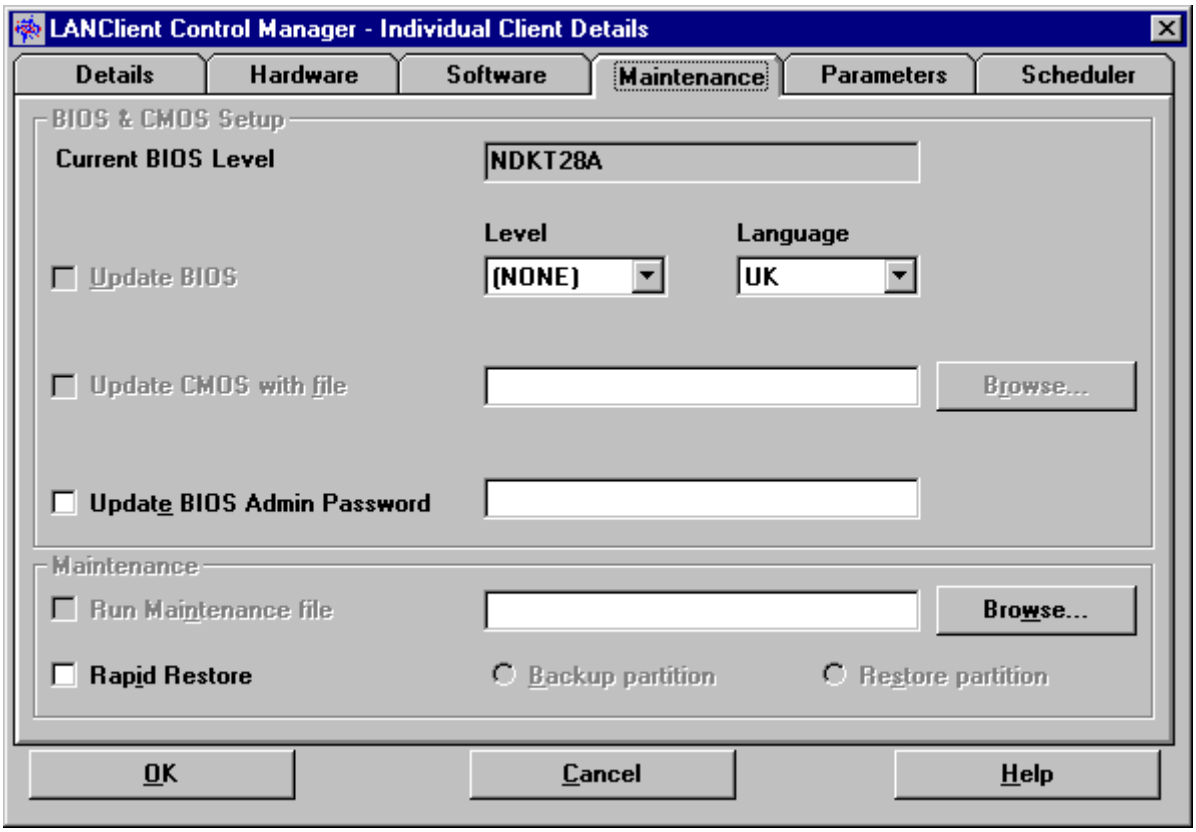
  For client computers equipped with a Radio Frequency Identification RFID) chipset, LCCM reads the EEPROM fields designated by RFID for software profile names and dates. If the client has been scanned and detected, LCCM will process the software profile listed in this field as though it had been assigned and processed manually through the LCCM interface. For more information on RFID, refer to the IBM Web Site: http://www.ibm.com/pc/us/desktop/assetid/.



Individual Client Details - Maintenance Page

The Maintenance page of the Individual Client Details Notebook is used to specify various actions to maintain and update the client.

Note: LCCM version 2.5.1 does not support remote client power-on password modification



If you select any of the Update or Run boxes, the next time the client is processed, the selected procedure runs. The following fields are available on the Maintenance page:

- Current BIOS Level
  The current BIOS level is determined by the scan process. This field contains the name of the BIOS level currently installed in the client. This information will not match the level as reported by the BIOS setup screens of the client if you have changed the default level name detected during the Read BIOS Flash Diskette process. For more information, see Updating the BIOS Level.
- Update BIOS
  Select this box to update the client BIOS level at the next startup. Use the following fields to customize this selection:
  - Level
    Select the BIOS level from the drop-down list.
  - Language
    Select the BIOS language from the drop-down list.
- Update CMOS with file
  Select this box to update the client CMOS settings. Type in the name of the file, or search for a file by selecting the **Browse** button. The file extension for CMOS-update files is (.CMS). The CMOS settings will be updated the next time this client is processed. Refer to Assigning Clients to a CMOS Settings Image for more information.
- Update BIOS Admin Password

Select this box to set or change the client BIOS administrator password. You can type in the new password or delete the current password. The password will be updated the next time this client is processed. Refer to Changing or Deleting a BIOS Administrator Password.

- Run Maintenance file

  Select this box to run a maintenance batch file. A maintenance batch file is a batch file used to perform a one-time action on a client the next time the client starts up. This maintenance file normally performs a partial image download or upgrade. For example, if your word processing package is upgraded, write a small maintenance file to copy only those new files that are required. This avoids running a full-image download.

  If you select a maintenance batch file and check the **Run Maintenance file** box, the next time the client starts, instead of the Operating System Clone Remoteboot bootstrap or Remoteboot image being downloaded, a maintenance bootstrap is loaded on to the client and the specified batch file is run. When the batch file completes, the client restarts and normal operation continues. You can use this process to update a single application on the client without reloading the whole image. You can type in the name of the maintenance batch file you want to use or you can use the **Browse** button to search for a file. Maintenance batch files must have a file extension of .MNS.

Note: If your maintenance file is not found or the path is not valid the Run Maintenance file checkbox will be disabled

- Rapid Restore

  Enable Rapid Restore to create a backup of your client's primary partition when it is in a known good state. The client's primary partition will be copied to a hidden partition on the client hard drive.

Note: You can run Rapid Restore from an LCCM console by enabling Rapid Restore and selecting either Backup partition or Restore partition. For more details see, The Rapid Restore Hard Drive Recovery Partition.

- Backup partition

  Select this option to create your Rapid Restore Backup.

- Restore partition

  Select this option to restore your client's primary partition from an existing backup partition.

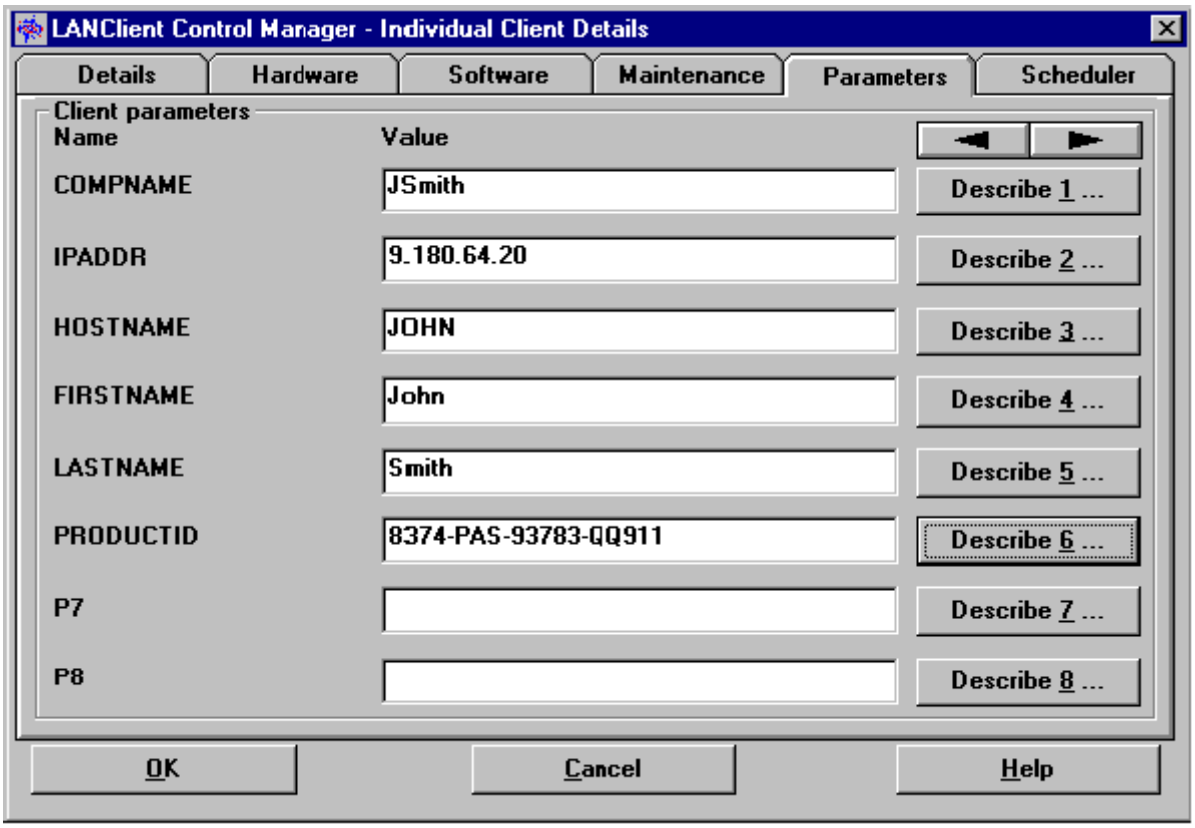
Individual Client Details - Parameters Page

The Parameters page is used to personalize an image to contain information for an individual client. The values you specify on this page are passed to Operating System Clone Remoteboot image batch files. The parameter values specified on this page are unique for each client using this profile. There are up to 24 possible parameter names and values available for each client. Use the left and right arrow buttons to navigate between the 3 pages of possible parameters.

Before you can specify parameter values on this page, you must first specify the corresponding parameter names in the Client Parms page of the Software Profile Details Notebook and assign the client to that profile.

IMPORTANT: Do not process the client until you fill in the values on this page.

For more information, see Software Profile Details - Parameters.



The following fields are available on this page:

- Name

  The parameter names (COMPNAME, IPADDR, HOSTNAME, and so on) are taken from the Client Parms page of the Software Profile Details Notebook. See Software Profile Details - Parameters Page for more information. You cannot edit the names from the Individual Client Details Notebook.

- Value

  In the Value fields, you can use up to 24 characters to define a value for the corresponding parameter name. These values are passed to a final image batch file (.LCI file), a maintenance batch file (.MNS file), or a customization batch file (.BAT) as automatic responses to Parameter requests embedded within these files.

- Left and Right Arrow Buttons
- Click the right arrow button to show the next block of eight parameters, or the left arrow button to show the previous block of eight parameters. There are a total of 24 parameters available.
- Describe

  When you click on one of the **Describe** buttons, a text box displays the parameter description entered in the corresponding Description text-edit box of the Software Profile Details notebook - Client Parameters page. You cannot edit this information from within the Individual Client Details window.

Note: If you use LCCM's Profile Wizard to create your software profiles, the Profile Wizard will automatically enter the correct parameters into the Parameters page of your Individual Clients Details Notebook. These parameters will be displayed as grayed out entries and cannot be edited.

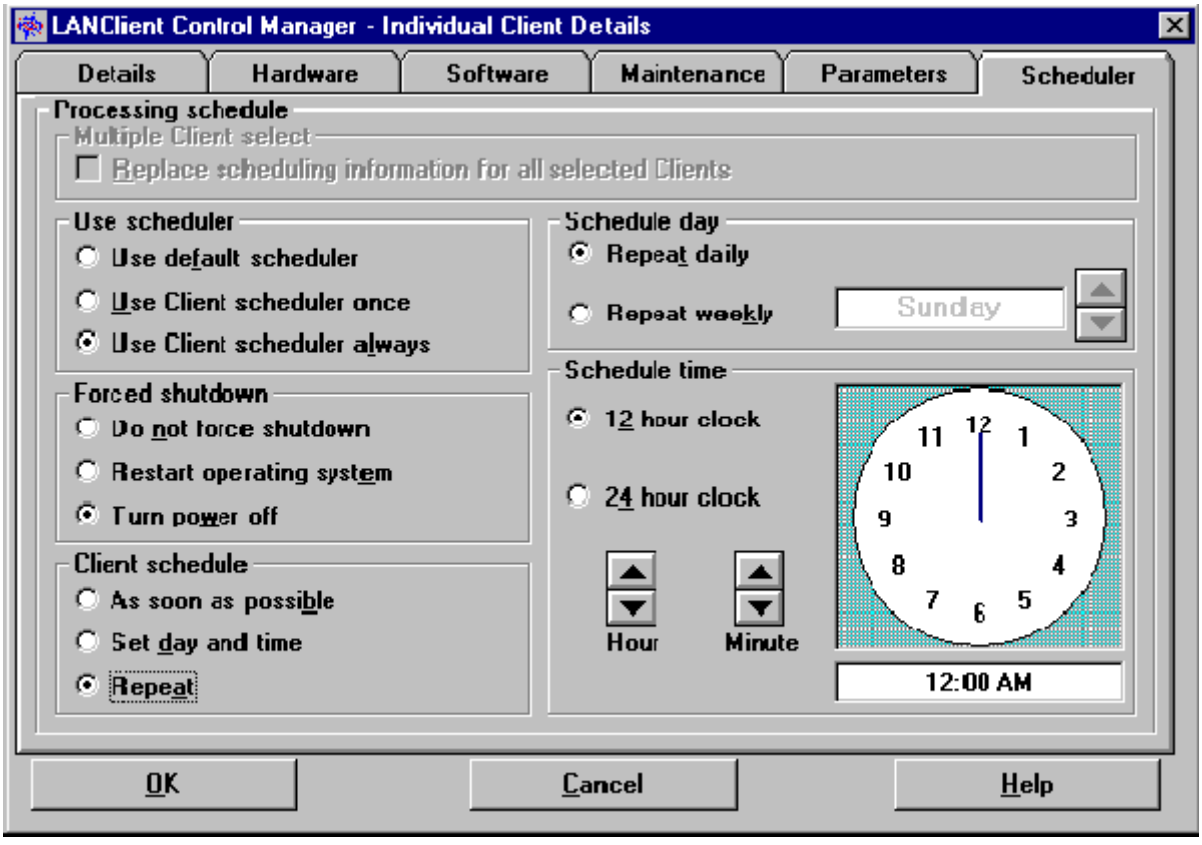
IMPORTANT: Be careful when reassigning clients to new software profiles. The parameter values from this page must match those requested from any (.LCI) files, (.MNS) files, or (.BAT) files that the client uses in the new software profile.

Individual Client Details - Scheduler Page

The Scheduler page is used to specify the date and time that LCCM begins processing the changes that have been requested for the selected computers. For more information on processing changes, see Processing Changes within LCCM. This page specifies the day and time that changes to the computers are performed. Scheduled changes are placed on the list of actions to be taken in the Progress and Errors Window. You must select the **Process** button to start scheduled jobs.

You can schedule one-time events, such as a Hybrid Remoteboot download, or repeat events, such as a hard-disk backup, on a daily or weekly basis.

IMPORTANT: Use the Scheduler for the Defaults Notebook and the Individual Client Details Notebook with care. For example, if you incorrectly set the Scheduler for 3 p.m. instead of 3 a.m., and specify the forced shutdown or restart operating system options, the client computers are restarted in the middle of the working day. Also, if you set the Scheduler to update client computers during an overnight process, warn end-users who might be running overnight processing jobs of their own that their computers will be shut down at the specified time and that any end-user processing jobs in progress at that time will be terminated.



- Multiple Client select
  This box is grayed and not checked unless you selected multiple clients. If you have selected multiple clients and this box is selected, this schedule will be used for all checked clients.

- Use Scheduler

  There are three options for Use Scheduler:

  - Use Default Scheduler

    If you select this option, all functions on this page are disabled and the Scheduler of the Defaults Notebook is used.

  - Use Client Scheduler once

    If this option is selected, the schedule information on this page is used for the next client process only. Thereafter, the client reverts to using the Scheduler of the Defaults Notebook.

  - Use Client Scheduler always

    If you select this option, the schedule information on this page is retained and used for all future processes.

- Forced shutdown

  LCCM uses Netfinity Manager software to shut down and restart client computers before processing changes. The power-down capability of Netfinity is currently limited to client computers running Windows 95, Windows 95 OSR2 or Windows 98. The following requirements must be met before a forced shutdown will function correctly:

  - Netfinity Manager (Version 5.0 or greater) must be installed on the computer or server on which you have LCCM installed.
  - Netfinity Services (Version 4.00.2 or greater) or Netfinity Manager (Version 5.0 or greater) must be installed on each client computer you want to shutdown or restart.
  - Netfinity Manager must know about the clients. To ensure Netfinity Manager knows about all affected clients, you must perform the following procedure:
    a) Start Netfinity Manager from your administrator console.
    b) From the main window of Netfinity Manager, select **Remote System Manager**.
    c) Open a new group and give it a name (for example, "All_Clients").
    d) From the Netfinity Manager System pull-down menu, select **Discover Systems**. The clients appear in the group window as they are discovered.

  For more information on the Default Client Restart, see Defaults Notebook - Processing Page.

  There are three forced-shutdown options:

  - Do not force shutdown

    If the client computer is still operating when the scheduled process time arrives, the computer will not be shut down and restarted. The Remoteboot download takes effect the next time the end-user restarts the client computer, or via Wake-on-LAN if the client is powered-off and supports Wake-on-LAN, and Wake-on-Lan is enabled.

  - Restart operating system

    Take care when selecting this option. If the client computer is operating when the scheduled time arrives, the computer is restarted through Netfinity, even if it is processing a job. Any jobs in process are terminated and any unsaved data is lost. The Wake-on-LAN feature must be enabled in the Processing page of the Defaults Notebook.

  - Turn power off

    If the **Turn power off** option is selected, the client computer will be powered off through Netfinity and then powered on through the Wake-on-LAN function to perform a clean startup.

The following options are available if either **Use Client Scheduler once** or **Use Client Scheduler always** is selected under Use Scheduler.

- Client schedule
  - As soon as possible

    If you select this button, the changes process as soon as you click on the **Process** button in the Installation/Maintenance window.

    Set day and time

    If you select this button, LCCM will process the changes at the day and time of your choice.

    Note: If you use the Scheduler to set a specific day and time, you must still click on the Process button and leave the program running for the scheduled changes to take place. Clicking on the Process button places the scheduled changes in the processing queue of the Progress and Errors Window. When the specific day and time arrives, the scheduled changes are processed.

  - Repeat

    If you select **Repeat**, you can schedule a repetitive event to take place on a daily or weekly basis. The Repeat button in the Client schedule section is available only if you have selected the **Use Client Scheduler always** button in the Use Scheduler section. If you select **Repeat**, the selections in the Schedule day section change from **Next 24 hours** and **Select day** to **Repeat daily** and **Repeat weekly**.

    Note: If you use the Scheduler to set a repeat event, you must still click on the Process button and leave the program running for the scheduled event to take place. Clicking on the Process button places the repeat event in the processing queue of the Progress and Errors Window, and when the specific day and time arrives, the repeat event takes place.

  - Day and Time

    The day and time fields are available only if you have selected the **Set day and time** or **Repeat** button. Select these fields using the following values:

- Schedule day
  - Next 24 hours

    Processing takes place as soon as the specified time is reached, after the scheduled job is placed in the processing queue.

  - Select Day

    Selects the desired day to process the changes. Processing takes place as soon as the specified day and time are reached, after the scheduled job is placed in the processing queue.

The fields change to weekly events if you select the **Repeat** button. Select these fields using the following values:

  - Repeat daily

    Processing takes place as soon as the specified time is reached, after the scheduled job is placed in the processing queue. LCCM will continue to process the assigned task every subsequent day at the assigned time.

  - Repeat weekly

Selects the desired day to process the changes. Processing takes place as soon as the specified day and time are reached, after the scheduled job is placed in the processing queue. LCCM will continue to process the assigned task every subsequent week at the assigned day and time.

- Schedule time
  - 12-hour clock displays a clock using the 12-hour format (a.m. and p.m.).
  - 24-hour clock displays a clock using the 24-hour format.
  - Hour selects the hour using the up and down arrows.
  - Minute selects the minute using the up and down arrows.
- Clock Face

  You can use the clock face to set the time by an alternative method.

  Click on the clock face with your left mouse button, keeping your finger on the left mouse button and drag the minute hands to the chosen time. Similarly, you can drag the hour and minute hands to the chosen time with the right mouse button. Time is displayed on a 24-hour clock face during this procedure.

Software Profile Details Notebook

LCCM Version 2.0 had a set of Software Profile Details Notebook Pages that allowed you to set up your own profiles. In addition, LCCM Version 2.5.1 has a new feature called the Profile Wizard that will do this for you (See Creating a Software Profile Using the Profile Wizard).

To alter existing profiles or the details in any software profile created by the Profile Wizard you must use the Software Profile Details Notebook. If you do amend any details in the software profiles created by the Profile Wizard, you must be certain that you have modified the appropriate LCCM control files accordingly.

Information about each software profile is managed in the Software Profile Details Notebook. This notebook is displayed when you edit configuration details of an existing software profile or when you create a new software profile.

To access a Software Profile Details Notebook, do one of the following:

- Double-click on an existing software profile within the Installation/Maintenance window.
- Select an existing software profilewithin the Installation/Maintenance window. From the menu bar, click on **Profile** then **Configure**.

The Software Profile Details Notebook contains the following pages:

- Details

  This page contains the profile name, profile type, and a description of the software.
- Minimum HW

  This page contains information about the hardware required for the specific software profile.
- Software

  This page contains fields, which identify the image to be downloaded to clients.
- Parameters

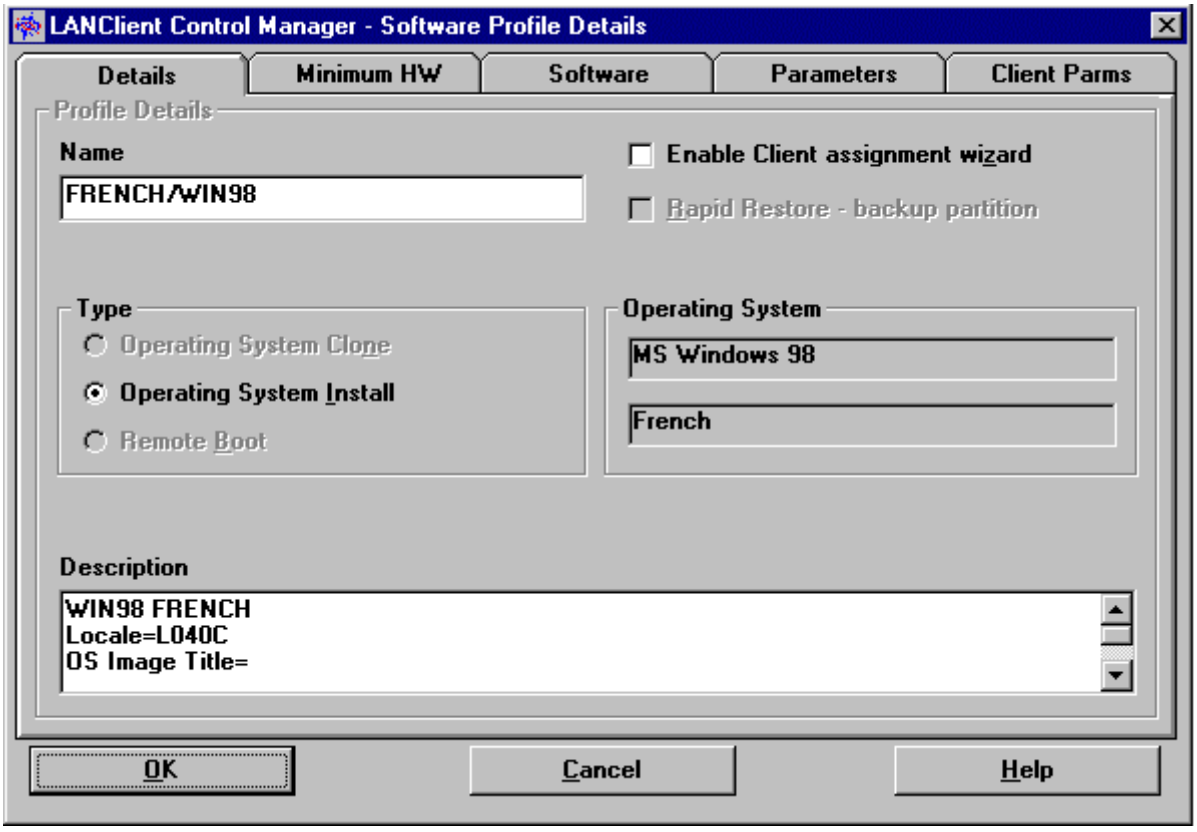
  This page contains information about custom parameters that are common for all clients assigned to the software profile.

- Client Parms

  This page contains information about custom parameters that are unique to individual clients assigned to the software profile.

Note: These pages cannot be edited or viewed when a client assigned to the profile is being processed.

Software Profile Details - Details Page



The Details page contains the following fields:

- Name

  The name of each software profile must be unique. Give the profile a descriptive name that identifies the group of clients for which it is intended or the job the profile is designed to do.

- Type

  If you have created a software profile using LCCM's Profile Wizard, only the radio button for that software profile will be enabled. If you have created a software profile manually all three radio buttons will be enabled.

- Operating System Clone

  Select this button if the profile will be using the Hybrid Remoteboot process to download either a Windows 95, Windows 95 OSR2, Windows 98 image or a DOS/Windows image to the client hard disk.

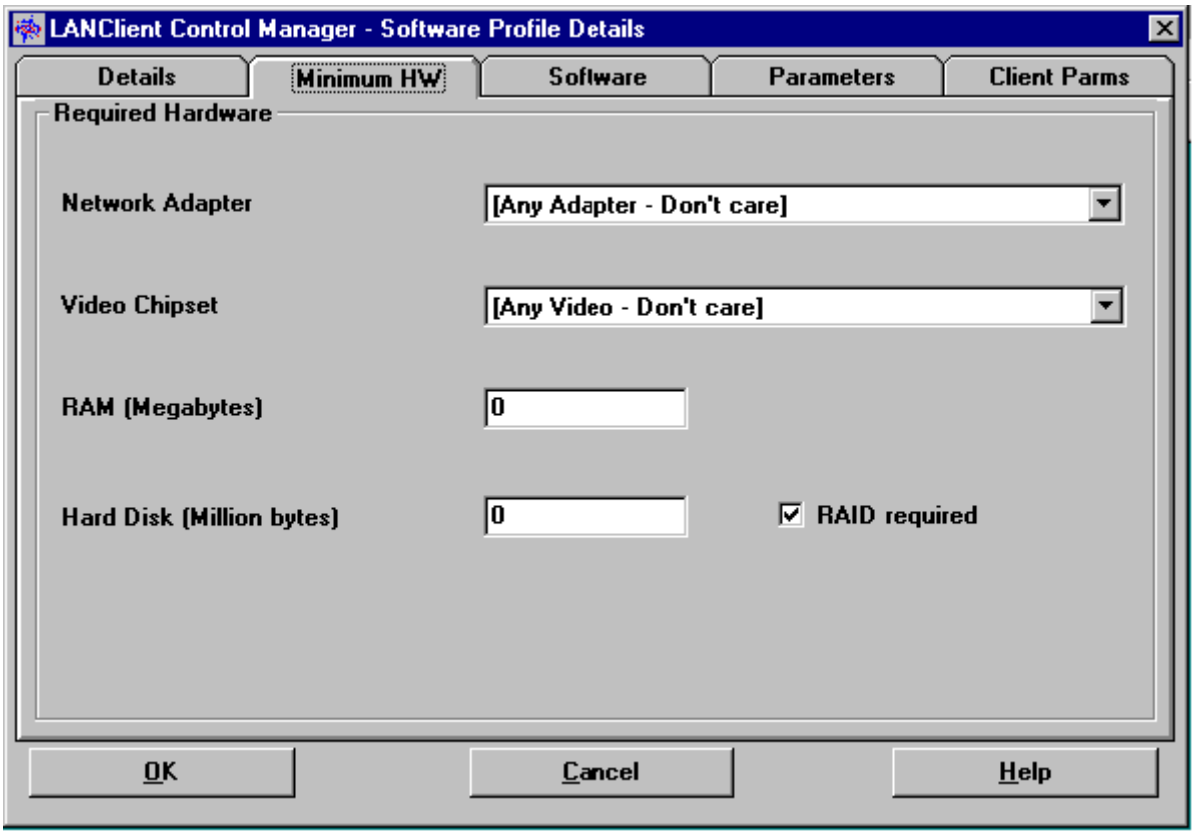
- Operating System Install

Select this button if the profile will be used to perform an unattended Windows NT operating system installation (with or without applications), Windows 95, Windows 95 OSR2 or Windows 98.

- Remote Boot
  Select this button if the profile will be downloading a Remoteboot image to the client memory.
- Description
  Use this space to write a description of the software profile. For example, for a Remoteboot image, you can describe the contents of the image, or for a Hybrid Remoteboot image, you can describe what the various batch files will do.
- Enable Client Assignment Wizard
  For the wizard to start automatically when a client is assigned to a particular software profile, this box must be checked. For more details see, Using Client Assignment Wizard.
- Rapid Restore – backup partition
  Check this box to enable a Rapid Restore Backup. For more details see, RAVE.EXE (Using with a DOS Startup Diskette) .
- Operating System
  The operating system to be installed will be displayed.

Software Profile Details - Minimum HW Page

The Minimum HW page contains the following fields:



- Network Adapter

Select a network adapter from the drop-down list. If your adapter is not on the list, or if the clients assigned to this profile will be using a variety of network adapters, choose **Any Adapter – Don't Care**. This setting allows the image to be installed on any client.

- Video Chipset

  Select a video chipset from the drop-down list available. If your video chipset is not on the list, or if the clients assigned to this profile are using a variety of video chipsets, choose **Any Video – Don't Care**. This setting allows the image to be installed on any client.

- RAM

  Enter the minimum amount of RAM required to download and use the software controlled by this profile. If you enter a value of zero, LCCM ignores the minimum RAM requirements. The memory specified is in units of 1 048 576 bytes.

- Hard Disk

  Enter the minimum amount of hard disk space required to download and use software controlled by this profile. If you enter a value of zero, LCCM ignores the minimum hard disk requirements insofar as it will not declare a client to be mismatched with the profile if it has a small hard disk capacity. The hard disk space is specified in units of 1 000 000 bytes.

- RAID required

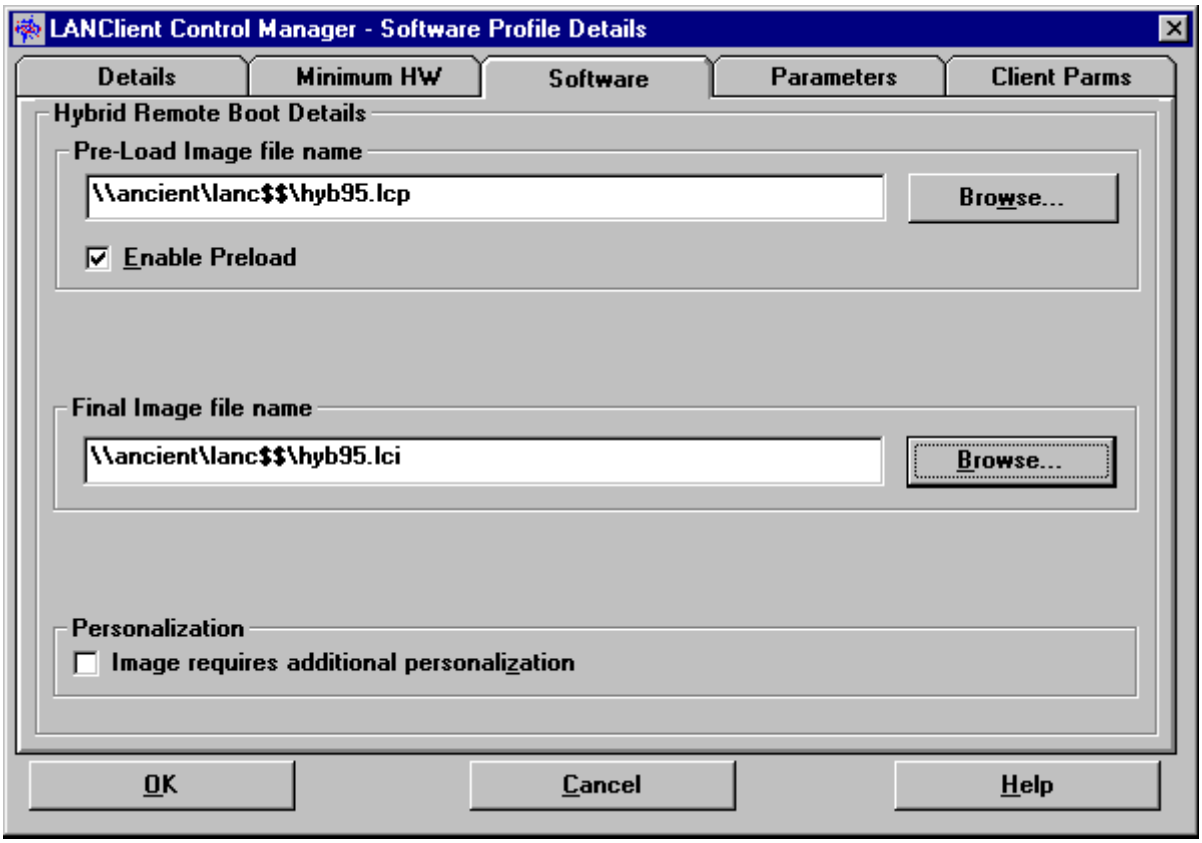
  Check this box to enable RAID. For more details, see Profile Wizard - RAID Adapter Setup.

Software Profile Details - Software Page

The appearance of this screen is directly related to the type of Remoteboot process selected in the Details page of this notebook. See Software Profile Details - Details Page for more information.

Hybrid Remote Boot Details

If you enabled the Operating System Clone radio button on the Details page, the Software page below will be displayed. The Hybrid Remoteboot process can be used to perform a clone operating system install of Windows 95, Windows 95 OSR2 and Windows 98.



- Pre-Load Image File Name

  Type in the path and name of your pre-load image batch file, or use the **Browse** button to locate the file. The file extension for pre-load image batch files is .LCP.

  The pre-load image batch file specifies the actions to be performed at the client before downloading the final image. The pre-load image batch file is normally used to run FDISK on a new client computer. You must create the pre-load image batch file yourself. Multiple clients and multiple software profiles can use a single pre-load image batch file.

- Enable Preload

  Check this box to enable the specified pre-load image batch file to be downloaded to the client. Uncheck this box to disable the specified pre-load image batch file from being downloaded to the client.

- Final Image File Name

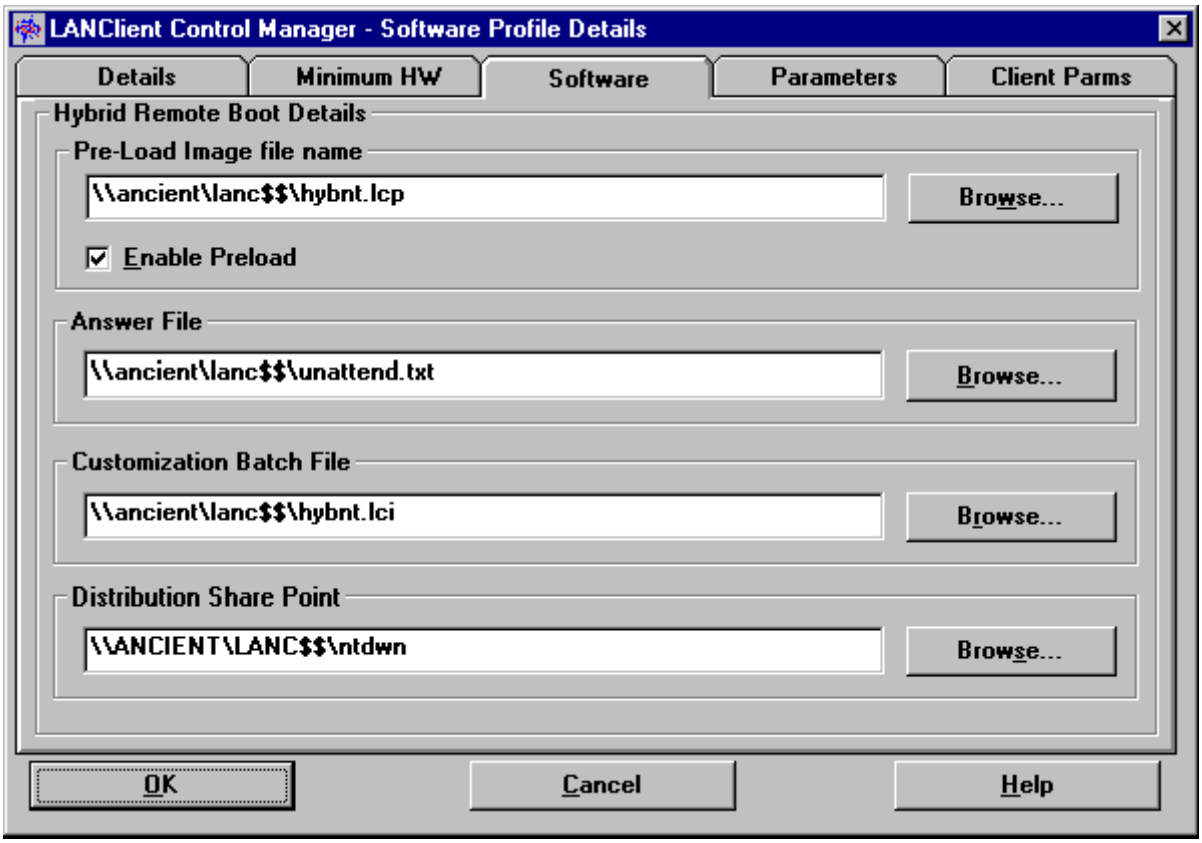
  Type in the path and name of your final image batch file, or use the **Browse** button to locate the file. The file extension for final image batch files is .LCI. You can create the final image batch file yourself or use LCCM's Profile Wizard to automatically create the file (see, Creating a Software Profile Using the Profile Wizard).

- Image requires additional personalization

  Check this box if you want a personalization batch file to be included in your software profile.

Hybrid Remote Boot Details

If you enabled the Operating System Install radio button on the Details page, the Software page below will be displayed. The Hybrid Remoteboot process can be used to perform an unattended operating system install of Windows NT 4.0 Server or Workstation, Windows 95, Windows 95 OSR2 and Windows 98.



- Preload Image file name

  Type in the name and location of your pre-load image batch file, or use the **Browse** button to locate the file. The pre-load image batch file specifies the actions to be performed at the client before downloading the final image. In the case of an Operating System Unattended Install Remoteboot operation, the client computer hard disk is automatically formatted before downloading and installing the Windows files. Therefore, use a pre-load image batch file only if you want to change the partition configuration of the client computer hard disk before the automatic formatting of drive C (for example, to partition the hard disk into two separate partitions). You can write the pre-load image batch file yourself to meet your specific requirements or use LCCM's Profile Wizard to automatically create the file (see, Creating a Software Profile Using the Profile Wizard). A single pre-load image batch file can be used with multiple software profiles. The file extension for a pre-load image batch file is .LCP. For additional information, see Pre-load Image Batch File.

- Answer File

  You can use the answer file to create a set of responses that will be passed to the Windows installation process to allow seamless unattended installation. A sample answer file (UNATTEND.TXT) is shipped with LCCM.

- Customization Batch File

  You can write the customization batch file yourself or use LCCM's Profile Wizard to automatically create the file (see, Creating a Software Profile Using the Profile Wizard). It will run the program LCCUSTOM.EXE (supplied with LCCM). LCCUSTOM.EXE is a text-replacement utility that replaces parameters within the Answer file with values from the Parameters page of the Software Profile Details Notebook and the Client Parameters page of the Individual Client Details Notebook.

- Distribution Sharepoint

The distribution sharepoint is the directory on your server, which contains the install image for an unattended install profile. The distribution sharepoint is the directory where the installation files from the operating systems installation CD have been copied. Each operating system supported will have it's own distribution sharepoint. For Windows NT 4.0 Server and Workstation, the I386 directory will be copied to the distribution sharepoint; for Windows 95 or Windows 95 OSR2, the WIN95 directory; or for Windows 98, the WIN98 directory. Use the **Browse** button to locate the sharepoint.

IMPORTANT: The distribution sharepoint must always be specified using the full path:

\\servername\LANC$$\sharepoint.

where LANC$$ has been automatically mapped by LCCM to point toward "\LCCM\CLNTFILE", and LCCM is your LCCM program directory. The sharepoint directory must always reside under the CLNTFILE directory.

To Create a Distribution Sharepoint Manually:

Set up a directory to act as your distribution sharepoint as shown:

1. <drive>:\LCCM\CLNTFILE\Dist_Sharepoint

   where LCCM is your LCCM program directory and "\Dist_Sharepoint" is the directory of a specific distribution sharepoint. You can give the distribution sharepoint directory any name you want.

2. Create a subdirectory under your distribution sharepoint directory for the operating system you want to install and name it I386 for Windows NT, WIN95 for Windows 95 or Windows 95 OSR2, or WIN98 for Windows 98.

3. From the Windows operating system CD, copy the contents (including sub-directories) of the I386 directory for Windows NT; WIN95 for Windows 95 or Windows 95 OSR2; and WIN98 for Windows 98 to the corresponding directory in your distribution sharepoint.

   For example to copy Windows NT to your distribution sharepoint:

   XCOPY D:\I386*.* C:\LCCM\CLNTFILE\WINNT40\I386 /S /E /V

   Where WINNT40 is the name of the distribution sharepoint directory, you have created.

To Create a Distribution Sharepoint Remotely

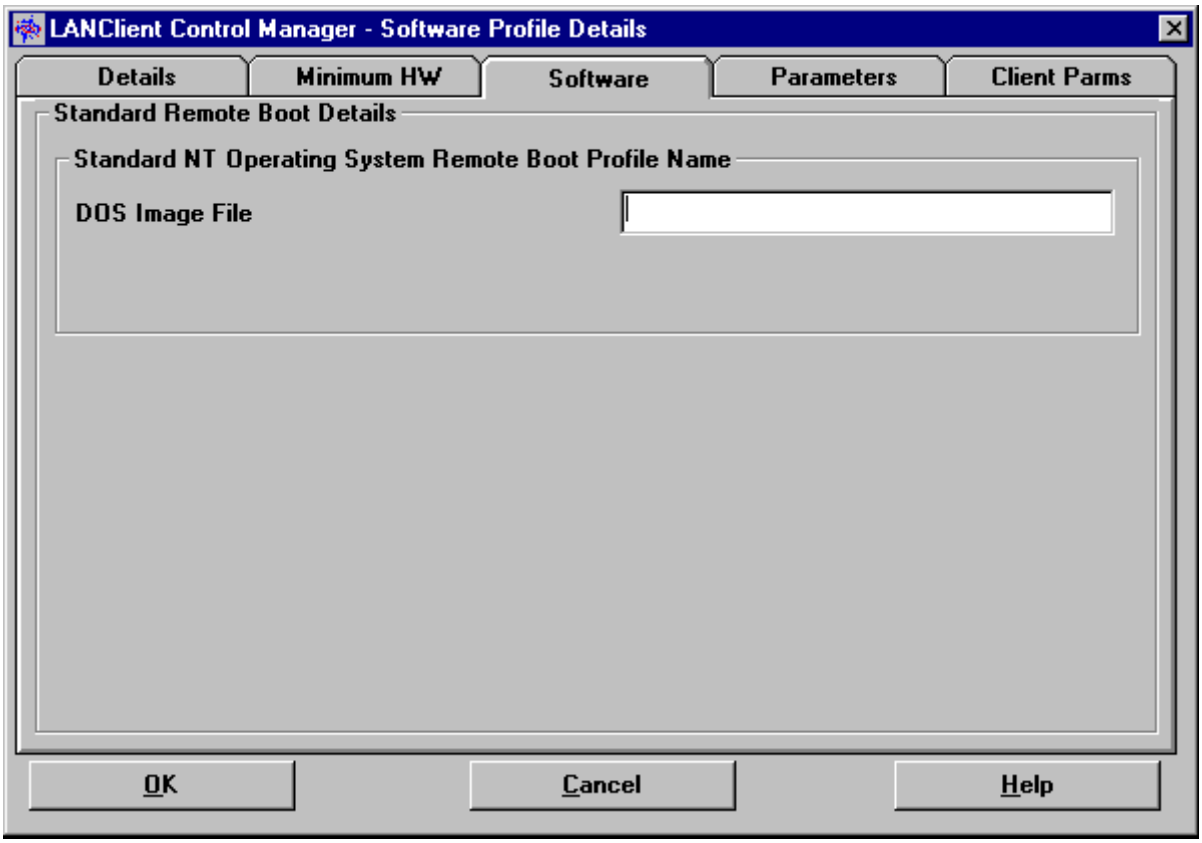
If you intend to run LCCM from a remote computer, you must use the full path for specifying the distribution sharepoint and the full path for specifying all other files and directories (as shown in the answer file and customization batch file paths shown in the Software page of the Software Profile Details notebook).

When you create a profile manually with a remote sharepoint and supply the full path to the distribution sharepoint under the Software page of the Software Profiles Details Notebook and click on OK to save the profile, the following message will be displayed:

"The Distribution Share Point was not found or could not be accessed from the LANClient Control Manager console. Do you wish to continue saving data?". Click on **Yes** to continue saving the profile.

Standard Remoteboot Details

If you enabled the Remote Boot radio button on the Details page, the Software page below will be displayed.



Type in the name of your Remoteboot image file. LCCM uses this Remoteboot image to start up client computers without the use of the local hard disk drives of the computers. For more information on creating a Remoteboot image, see Creating a Remoteboot Image. For a RPL client you must enter the name of the Remoteboot Manager Profile.

Note: Standard Remoteboot profiles are not supported for DHCP clients.

Software Profile Details - Parameters Page

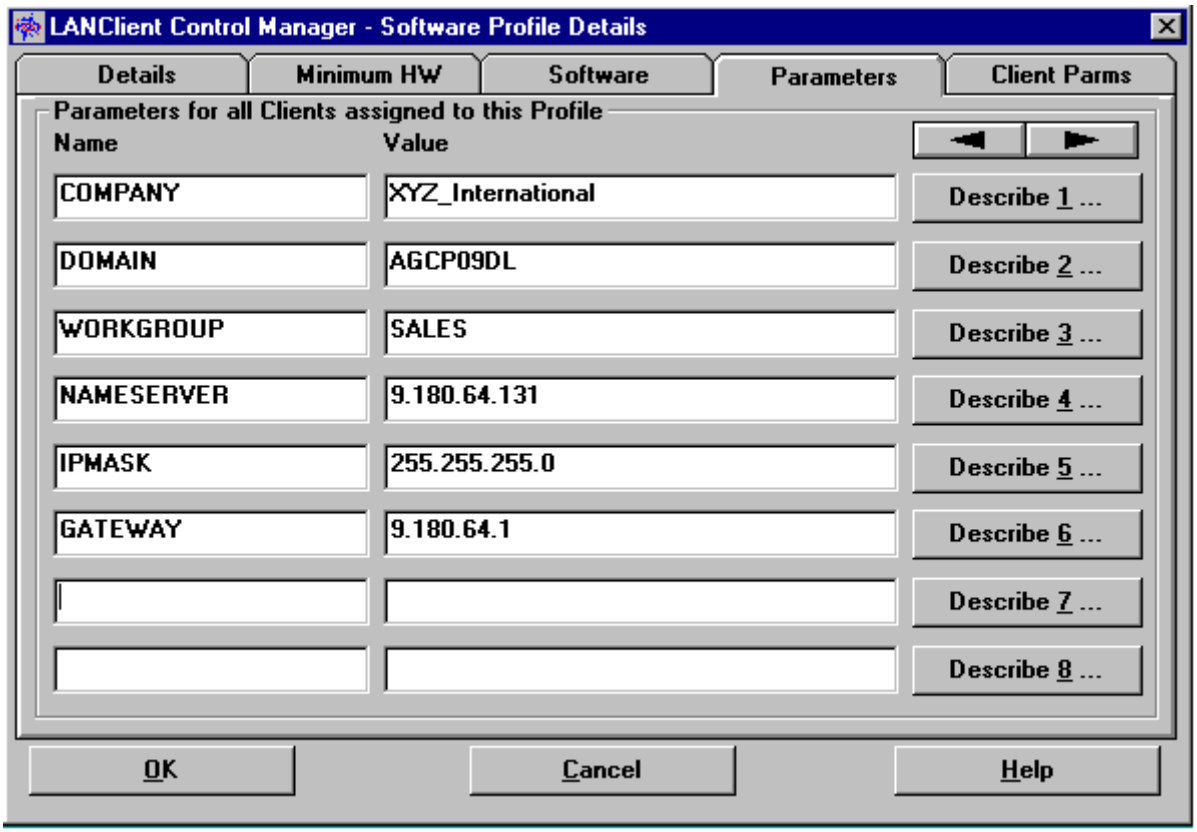
This page specifies a group of named parameters that are passed to the Hybrid Remoteboot final image batch file. The parameter values specified on this page are common for all clients using this profile. There are up to 24 possible parameter names and values available for each profile. Use the left and right arrows to navigate between the 3 pages of possible parameters. The illustration has some parameter names and corresponding values for all the Clients assigned to this profile. These do not have to be the names and values that you use to create your Client details. They can be put in any order, you can leave blank lines as the fields do not have to run contiguously.

Note: For unique parameters for each individual client, you must enter them in the Client Parms page of this notebook. For more information, see Software Profile Details - Client Parms Page.

The following fields are available for this page.

- Name
  You can specify up to 16 characters for the parameter name. The Name fields correspond to parameter names used in the final image batch files (.LCI files). In these batch files, the parameter

names are always prefixed and suffixed by "%" sign. For example, in the illustration, the first parameter name, COMPANY, would be written in an image batch file as %COMPANY%.



- Value

  You can specify up to 24 characters for the parameter value. This is the value that is passed to final image batch files for the parameter names specified in the corresponding Name field. In the illustration, "XYZ_International" is returned as a value to a final image batch file that had a %COMPANY% parameter specified.

- Left and Right Arrow Buttons
- Click the right arrow button to show the next block of eight parameters, or the left arrow button to show the previous block of eight parameters. There are a total of 24 parameters available.
- Describe

  When you click on a **Describe** button, a text-edit box pops up in which you can enter a parameter description. This description can be up to 127 characters long.

For an example of batch files that use these parameters, see Introduction.

Note: If you use LCCM's Profile Wizard to create your software profiles, the Profile Wizard will automatically make the correct entries into the Parameters page of your Software Profile Details Notebook. These parameters will be displayed as grayed-out entries and therefore cannot be edited.

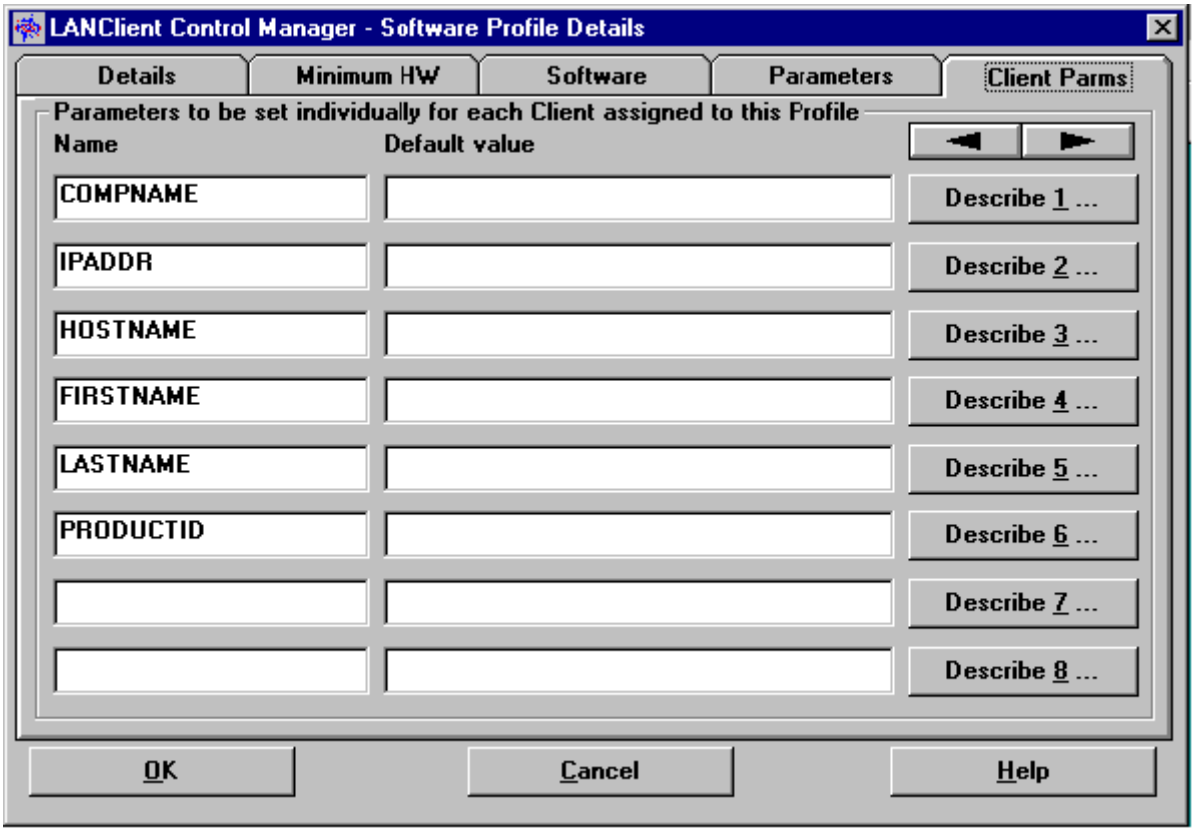
Software Profile Details - Client Parms Page

This page specifies a group of named parameters that are passed to Hybrid Remoteboot final image batch files. The parameters specified on this page are unique for each client using this profile.

The following fields are available for this page.

- Name

  You can specify up to 16 characters for the parameter name. The Name fields correspond to parameter names used in the final image batch files (.LCI files). In these batch files, the parameter names are always prefixed and suffixed by a "%" sign. For example, in the following illustration, the first parameter name, COMPNAME, would be written in an image batch file as %COMPNAME%. The names specified on this page are passed to the Parameters page of the Individual Client Details Notebook, where unique values can be provided for each individual client.



- Default Value

  In most cases, the default values can be left blank because unique values will be defined in the Parameters page of the Individual Client Details Notebook. However, you can specify up to 24 characters for a default parameter value, which is passed to the Parameters page of the Individual Client Details Notebook (where it can be overwritten, if necessary). Remoteboot image batch files that request client parameters take the values from the Parameters page of the Individual Client Details Notebook.

Like any other values specified on this page, %COMPNAME is passed to the Parameter page of the Individual Client Details Notebook; but unlike other values, it automatically picks up the unique name of the client (from the Name field on the Details page of the Individual Client Details Notebook) and passes it to any batch file that has the parameter name %COMPNAME%. See, Individual Client Details - Details Page and Passing Parameters to Image Batch Files for more information.

- Left and Right Arrow Buttons

  Click the right arrow button to show the next block of eight parameters, or the left arrow button to show the previous block of eight parameters. There are a total of 24 parameters available.

- Describe

When you click on the **Describe** button, a text-edit box pops up in which you can enter a parameter description. This description can be up to 127 characters long.

Note: If you use LCCM's Profile Wizard to create your software profiles, the Profile Wizard will automatically enter the correct parameters into the Clients Parms page of your Software Profile Details Notebook. These parameters will be displayed as grayed out entries and therefore cannot be edited.

Parameter Exceptions

The following character strings are reserved for specific purposes when used as parameter values. If any of the reserved character strings are used as a value in either the Client Parameters page of the Software Profile Details Notebook or the Parameters page of the Individual Client Details Notebook, the character string picks up a pre-existing value from the Details page of the Individual Client Details Notebook.

Each of the following character strings picks up the values specified in the associated fields in the Details page of the Individual Client Details Notebook.

- %COMPNAME%
  This character string yields the company name of the client.
- %CNAME%
  This character string yields the name of the client.
- %CADDRESS%
  This character string yields the address of the network adapter or network subsystem.
- %CSERIAL%
  This character string yields the serial number of the client.

If you enter the string "LCCMDETAILS" (without the quotes) under a Name field within the Parameters page of the Software Profile Details Notebook, then LCCM will automatically create the following environment variable SET statements in the final image batch file IMAGE.BAT for your profile:

- SET LCCMCONTACT=<client_contact_string>
  Where client_contact_string is the value taken from the Contact field in the Details page of the Individual Client Details Notebook.
- SET LCCMLOCATION=<client_location_string>
  Where client_location_string is the value taken from the Location field in the Details page of the Individual Client Details Notebook.
- SET LCCMCOMMENTS=<client_comments-string>
  Where client_comments_string is the value taken from the Comments field in the Details page of the Individual Client Details Notebook.

Note: LCCM will remove "new line sequences" from the Contact, Location and Comments fields in the Details page of the Individual Client Details Notebook, prior to copying these to the associated SET statements.

Each of the following character strings picks up the values specified in the associated fields in the Details page of the Individual Client Details Notebook.

- %LCCMCONTACT%
  This character string yields contact information for your client.
- %LCCMLOCATION%
  This character string yields location information for the client.
- %LCCMCOMMENTS%
  This character string yields additional information for the client.

Profile Wizard Parameter Exceptions

The Profile Wizard automatically creates its own Profile and Client Parameters denoted by the prefixes:

- LPRO_
- LCLI_

Additional Help

When you are running LCCM, you can find on-screen help by doing one of the following:

- Click on **F1**.
- Select **HELP** from the menu bar of the Installation/Maintenance window.

Chapter 4. Procedures

Adding Clients

This section provides instructions for setting up client computers for use with LCCM. Instructions for adding new client computers to the LCCM database are also provided.

Preparing Computers for LCCM Use

This scenario has the following steps:

1. The computer setup.
    a) Connect everything (keyboard, monitor, network adapter etc.)
    b) Plug into the network and into the electrical outlet.
2. Make sure your computer boots to the network.
    a) Power on. If it boots to the network with the correct protocol, stop there.
    b) Otherwise, reboot and enter your Configuration/Setup utility (on many IBM computers press **F1** while the computer is starting up).
    c) Change your settings.
    d) Save your changes.
    e) Reboot.

Objective: To setup new client computers that can be used with LCCM.

The following instructions describe the general steps for installing new client computers for use with LCCM. Refer to the documentation that comes with each computer for specific instructions.

To install new client computers:

1. Verify that each computer contains one of the following:
    - Integrated Ethernet or token-ring subsystem
    - Ethernet or token-ring adapter with integrated RPL or DHCP/EXE function
    - Ethernet or token-ring adapter with optional RPL ROM chip (module)

Note: The network subsystem (adapter or integrated controller) must support the Remoteboot function in either an RPL or DHCP/PXE environment. For more information, contact the manufacturer of the adapter.

---

2. Set up the computers according to the manufacturer's instructions.
3. Connect network cables to the computers and to your network.
4. Turn on each computer and enter the Configuration/Setup Utility program. To access the Configuration/Setup Utility program on many IBM computers, press **F1** while the computer is starting up.
5. The relevant settings within the Configuration/Setup Utility program must be enabled for RPL or DHCP/PXE.
    a) If there is a Network Boot (or equivalent) option, choose **RPL** or **DHCP/PXE** (depending on your environment) for this setting.

Note: Some IBM computers with an integrated Ethernet subsystem have an Ethernet Support category in the Configuration/Setup Utility program. This category is usually under the Devices and I/O Ports category listed on the main menu. Within the Ethernet Support category is the Network Boot option. Ensure that either RPL or DHCP is selected for this option. For more details, refer to the documentation provided with the IBM computer. If you are using an optional network adapter, you might have to re-flash the adapter EEPROM or run a utility program to enable it for **RPL** or **DHCP/PXE**. For more details, refer to the documentation provided with the network adapter.

b) Do one of the following:

- In the startup sequence menu, select **network** as the first startup device and **hard disk 0** as the second startup device.
- If you want to be able to start the computer from a diskette, in the startup sequence menu, select the **diskette drive** as the first startup device, **network** as the second startup device, and **hard disk 0** as the third startup device.

Note: Some IBM computers might already be enabled to start up from the network. For more information, refer to the documentation provided with the computer. Some IBM computers might also have a dual startup sequence. The first sequence is the primary startup sequence of the computer and determines the order in which the client computer looks for startup devices when it has been started manually from its power switch. The second sequence is the Automatic Power On startup sequence, and it determines the order in which the client computer looks for startup devices when it has been started over the network using the Wake-on- LAN feature. In the Automatic Power-On sequence, **network** must be listed as the first startup device and **hard disk 0** must be listed as the second startup device. For more information about the second sequence, see Using Dual Startup Sequences. For more details on setting the startup sequences, see the documentation that comes with the IBM computer.

c) On each computer that supports the Wake-on-LAN function, set **Wake-on-LAN** to enabled.

6. Save any changes you made, and exit from the Configuration/Setup Utility program.
7. Restart each client computer.
8. Do one of the following:
   - If you plan to create a wake-up database for the scan operation, record the network addresses and give them to the network administrator. For additional information see Creating a Wake-Up Database.
   - If you plan to automatically scan new clients into the LCCM database, set the appropriate values in the Defaults Notebook. For more information, see Defaults Notebook - Scan Page.
   - If you have already set the values in the Defaults Notebook, see Using the Scan Feature.
   - If you plan to add a new client to the LCCM database by manually creating an Individual Client Details Notebook, see Adding a New Client Manually.

IMPORTANT: for a Windows NT Server or Workstation 4.0 unattended install it is desirable also to install Windows NT 4.0 Service Pack 4.

Setting Specific Defaults Prior to Scanning

Objective: To set specific defaults for LCCM so that each scanned client computer is assigned the appropriate values.

This section is directly related to the scan feature of LCCM. If you intend to manually add clients to the LCCM database, this section does not apply. For more detailed information on all the fields within the Defaults Notebook, see Defaults Notebook.

To set defaults specific to the scan process:

1. Select **Options** from the menu bar of the Installation/Maintenance window.
2. Select **LCCM Defaults**.
3. Enter the appropriate information in the following pages:
    - General page - BIOS administrator password
    - General page - Common base name
    - Scan page - All fields

If you change the BIOS administrator password, the following points must be noted:

- LCCM sets the BIOS administrator password to the default value on new client computers during the scan process.
- Changing the default BIOS administrator password does not affect the BIOS administrator passwords of clients that have already been added to the LCCM database. To change the BIOS administrator password for clients that have already been created, see Individual Client Details - Maintenance Page and Changing the BIOS Administrator Password for Service.
- The BIOS administrator password code is based on the positions of the keys, not the characters typed in. If any of your clients use a different language keyboard or a keyboard layout different from the keyboard you use to interact with LCCM, the BIOS administrator password might not be recognized when typed in from the client keyboard. Ensure that you use only characters that occur in the same position on all keyboards used
- If the field is left blank, the password is disabled.

After you have set the default settings, continue with Adding Client Computers to the Database.

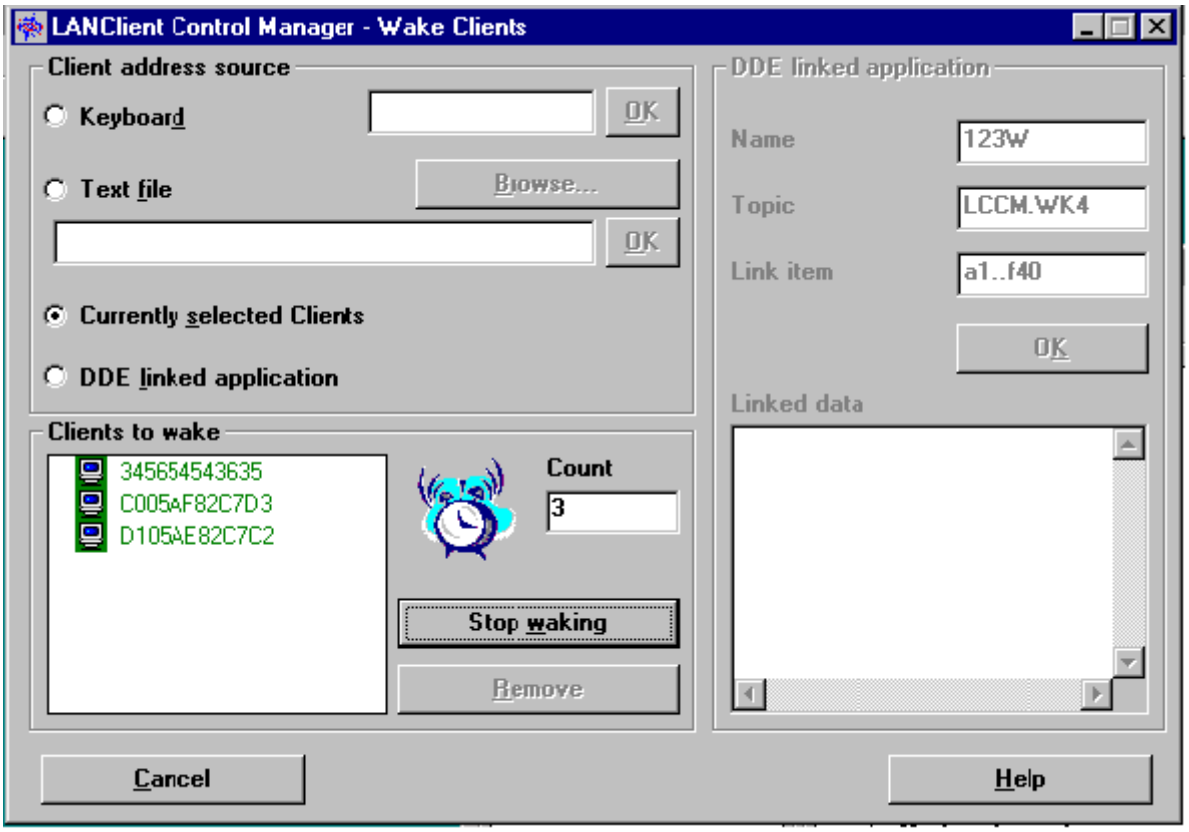
Adding Client Computers to the Database

Objective: To add a new client computer to the LCCM database using one of the following methods:

- Automatically, by waking up the client computers remotely and using the scan feature. See Using the Scan Feature.
- Manually by creating a Wake-Up Database see below.
- Automatically, by turning on the clients manually and using the scan feature. See Using the Scan Feature.
- Manually, by making entries in the Individual Client Details Notebook. See Adding a New Client Manually.
- Automatically, by using Asset Information Area (AIA) and IBM Radio Frequency Identification (RFID) memory chips. See Using RFID and AIA Data (Asset ID) with Clients.

Creating a Wake-Up Database

You can introduce new clients to LCCM through the Wake Clients function. Select **Tools**, **Wake** and then **Client** to access the Wake Clients function. Using the Wake Clients function, you can remotely power on computers without having to access their power switch. When clients have been started by this function, normal LCCM processing can take place, allowing any type of download, diagnostic, or maintenance function to be carried out on these clients.



Valid IP broadcast addresses must be entered in the General Page of the Default's Notebook before LCCM can waken clients (see, Defaults Notebook - General Page).

The information in the client address source fields is used to enter MAC addresses into the LCCM program without using the Scan function. Clients can be started from the Wake Clients screen. A valid MAC address is any 12-character hexadecimal string, not case sensitive, delimited by blank characters, commas, single or double quotes, forward or back slashes. The delimiters do not have to match.

Client Address source: When you choose the source, all clients found will be displayed in the Clients to Wake box. Choose one of the sources listed below:

- **Keyboard**. If Keyboard is selected, the text field is enabled. This is the default. If a string is typed in, followed by an enter, the string is parsed for any MAC addresses. The string may contain other information, such as model type or serial number, which is ignored. If a valid MAC address is found, it is added to the list of Clients to wake. If no valid MAC address is found, no error occurs. This allows an application which simulates the keyboard to continue to type in strings without hanging the input. The text field is also enabled for a standard paste operation, which allows input from most other sources.
- **Text File**. When Text file is selected, the **Browse** button is enabled. You may type in the path name of a file followed by the Enter key, or use the browser to select a file. The file is read, parsed, and any valid MAC address is added to the list of clients to wake. The Addresses found text field is reset to zero when a file is selected and is continuously updated with the number of addresses found at that point. If any error occurs in reading the file, or no MAC addresses are found, a warning is issued requiring user acknowledgment. Several files may be selected sequentially and the MAC addresses are accumulated in the list.
- **Currently selected Clients**. If Currently selected clients is selected, the MAC addresses of any clients currently selected in the assigned clients, unassigned clients, and search results fields are

added to the list of clients to wake. If more, or different, clients are subsequently selected, and the Wake Clients window is brought back into focus, the newly selected clients are added to the list.

- **DDE linked application**. If DDE Linked Application is selected, the DDE Linked Application subpanel is enabled with the fields initialized to the last values used. Upon installation the fields are blank. When you click on the **OK** button, the link specified by the content of the Name, Topic, and Item fields is opened and the linked data is displayed in the Linked Data field. If the link specification is invalid, a system error message pops up. The link remains live and the Linked data is parsed for valid MAC addresses until either the **DDE** radio button is deselected, or the specification of the DDE link is changed and you click on the **OK** button again.

Clients to wake: The list of addresses to be awakened is displayed as a scrolling list which is continuously updated by adding addresses (in uppercase) to the bottom of the list as they are recognized. The Count field tracks the number of clients currently in the list. Other buttons in the **Clients to wake** section are:

- **Start waking / Stop waking**. When the **Start waking** button is clicked on, it changes to **Stop waking**. All the clients on the list are issued with magic packets every 7 seconds. This process can run concurrently with adding addresses to the list from any of the processes above, and with the Scan process. When you click on the button again, the waking process is stopped.
- **Remove**. You may select one or more addresses from the list and click on the **Remove** button. This may be done concurrently with reading addresses from file or from an external application.

DDE Linked Application: This section is used to promote information to link a database program to LCCM and use the functions of that program to read in clients to LCCM. The fields for the DDE linked application section are:

- **Name**. Enter the name of the .EXE file for the linked application; for example, normally you will be linking to a spreadsheet application, so enter the name of the spreadsheeet program (e.g. 123W). The linked application must support DDE windows functions.
- **Topic**. Enter the name of the data file that contains the MAC addresses (e.g. LCCM.WK4).
- **Link Item**. Enter the row and column numbers that are to be linked, for example a1..c20. Click on OK to link the application.
- **Linked Data Box**. When you click on **OK**, the linked data will appear in this area.

Using the Scan Feature

Before you begin:

1. Ensure that the client computers you want to add are setup correctly.
2. Ensure that the desired values are set in the Defaults Notebook. For details, see Setting Specific Defaults Prior to Scanning.
3. If you have set the defaults (on the Scan page of the Defaults Notebook) to collect user data when the new client computer is scanned, ensure that someone resides at each computer to answer the questions.

IMPORTANT: The new client computers being scanned must be turned on before or during the scan process. You can turn on the client computers manually, or you can create a wake up database and turn on the clients remotely. The scan feature does not wake up new client computers that are turned off. For details about waking up the clients remotely, see Creating a Wake-Up Database.

To start the scan process:

1. At the administrator console, start LCCM; then, start the scan process by clicking on the **Start** button in the Installation/Maintenance window.

The following actions occur:

a) The text on the button changes to **Stop** and the scan icon becomes animated to indicate that a scan is in progress.

b) The scan function collects details about new clients that have been attached to the network since the last scan operation and for which no details are currently recorded in the client's database of LCCM. The details collected from a scan include:

- Network address
- Type and model number
- Serial number
- Amount of random access memory (RAM) installed
- Hard disk drive capacity
- Video adapter or chip set

c) If you have set the Defaults Notebook to ask questions about the client computer, on-screen prompts display at the client computer, and an end-user response is required. If a timeout period has been set, the prompts must be answered within the allotted time or the processing will continue without collecting the end-user input.

d) If a default BIOS administrator password was specified in the General page of the Defaults Notebook, the password is assigned to each new client detected during the scan operation.

e) Each new client computer is placed in the Unassigned Clients list of the Installation/Maintenance window.

2. To stop the scan process, click on the **Stop** button. All client computers that were properly setup are now added to the LCCM database.

Note: If the scan process cannot locate the clients, see Installing Network Adapter Device Drivers to ensure the correct device drivers are installed and the NETWORK.LST file is configured correctly. An optional method for scanning is to start the scan process, go to the client computers, set them up, and then turn on each computer. By doing this, you can personally address any prompts that have been set for an end-user response. This optional method might be preferable if you are using end-user prompts, because you can answer the prompts as soon as you are finished setting up the client, and only one trip is required. If you are not using prompts, you just plug in the client, power it on, and proceed to the administrator console of the program. As an alternative to powering on the clients manually, you can use a wake-up database to wake up the clients remotely. For more information, see Creating a Wake-Up Database.

PCMCIA Scan

LCCM treats supported PCMCIA cards (e.g. IBM Auto 16/4 Token Ring Credit Card Adapter) like any other supported network card. For unsupported PCMCIA and network cards, see, Installing Network Adapter Device Drivers. In terms of scanning, you will see no difference between PCMCIA and other network adapters.

Note: That your client computers must be able to boot from the network (e.g. IBM Thinkpad 600 and 770's) for PCMCIA Scan to work. You must have at least NT's Service Pack 2 installed on your Thinkpad in order to successfully install Windows NT 4.0

What to do next:

- If you have already created software profiles, assign each client to a profile of your choosing.

- If an appropriate software profile does not exist, create it. For more information, see Using Profile Wizard (this is the preferred method for all LCCM users) and Creating a Software Profile Manually (this method is only recommended for experienced LCCM users).

Adding a New Client Manually

As an alternative to the scan process, which scans the entire network, you can enter the details of new clients directly into the Individual Client Details Notebook.

IMPORTANT: Before you begin, collect the Network address for your client computers (see Client Address for more details)

To manually add a new client:

1. Select **Client** from the menu bar of the Installation/Maintenance window.
2. Select **Create New**.
3. When the Individual Client Details Notebook opens, type information in the relevant fields. To create a new client, at a minimum you must record the following client information in the Details page:
    - A unique client name
    - A unique network address
4. After you have typed the appropriate information, select **OK**.
5. Select the **Process** button in the Installation/Maintenance window.

To create a new client from a copy of an existing client:

An alternative method of creating a new client is to copy an existing client and enter the unique information that applies to the new client.

1. Click on an existing client from the Installation/Maintenance window.
2. Select **Client** from the menu bar.
3. Select Create Copy.
4. When the Individual Client Details Notebook appears, all fields have been copied except those from the Details page. Type information in the Details page for the new client, and alter any other relevant information. The client name and network address must be entered and must be unique for the new client to be created.
5. After you have typed the appropriate information, select **OK**.

What to do next:

If you have already created the software profile, assign each client to the appropriate software profile. For more information see, Using Client Assignment Wizard and Assigning Clients to Software Profiles Manually.

If an appropriate software profile does not exist, create it.

Working with Images

LCCM Version 2.5.1 has been updated to offer you the following two ways of creating a software profile:

1. Manually: using the same methods as LCCM Version 2.0. To create a software profile using this method or more information, see, Creating a Software Profile Manually. This method is only recommended for experienced LCCM 2.0 users.
2. Using the Profile Wizard: this is a new feature of LCCM Version 2.5.1. This is the preferred method for all LCCM users.

Creating a Software Profile Using the Profile Wizard

The aim of the Profile Wizard is to make it easy for an LCCM user to create working profiles. The Profile Wizard leads you through the process of creating working profiles without the need for the manual creation of batch files or manual entering of parameters in LCCM's Notebooks. The Profile Wizard will automatically create the necessary batch files and make the correct entries for you. The resulting batch files and notebook entries made by the Profile Wizard should not be altered, as the associated profile will not work.

Support is provided for creating the following LCCM profile types. The profile types are associated with both the operating system to be installed and the method of installation:

Unattended Installs

1. Windows NT 4 unattended install
2. Windows NT 4 Server unattended install
3. Windows 95 unattended install
4. Windows 95 OSR2 unattended install
5. Windows 98 unattended install

Clone Installs

1. Windows 95 clone install
2. Windows 95 OSR2 clone install
3. Windows 98 clone install

IMPORTANT: You must have sufficient hard disk space to copy the operating systems onto your server. For Windows NT 4.0 Server and Workstation, Windows 98, Windows 95 OSR2 and Windows 95; reserve sufficient hard disk space for LCCM's copies of the necessary install files, any Service Packs required (Service Pack 4 for Windows NT 4.0) and images of all the applications you want to install. Due to the limitations imposed by the disk partitioning utility FDISK, you are restricted to a maximum primary partition of 2047Mb.

Navigation Between Wizard Screens

Each wizard screen will provide **Next**, **Back** and **Cancel** buttons.

LCCM will only allow you to progress to the next screen (using the **Next** button) when the required information has been entered (some screens may have none or have defaulted values). On the final wizard screen, the **Next** button will be re-labeled as **Finish**. The **Next** (or **Finish**) button will always be the **Default** button if it is enabled.

The **Back** button will return you to the previous screen (this will be disabled on the first screen). When navigating between screens, all information entered will be retained. The exception is if a change to a

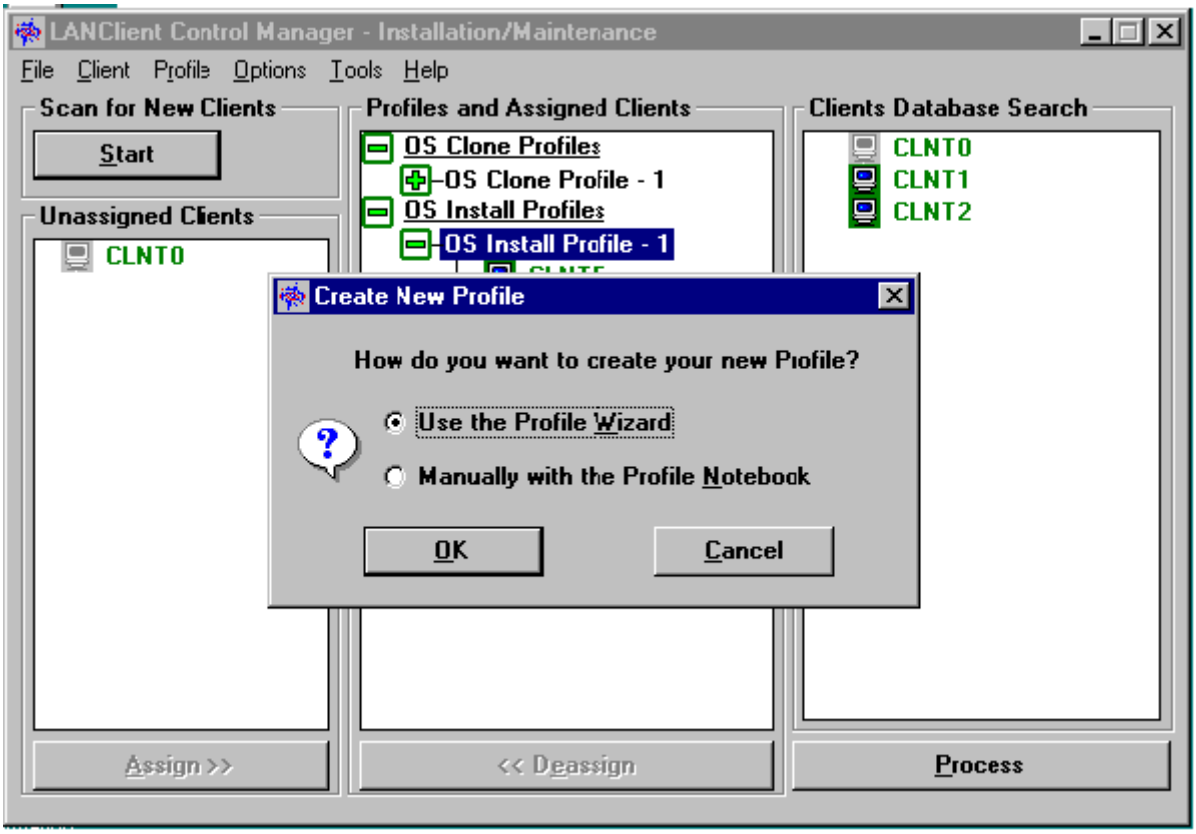
previous screen has been made that will affect subsequent screens (e.g., changing the type of the profile). When this is the case, all information dependent on the changed data will be erased.

The **Cancel** button will always be available. When selected, it will abort the creation of the profile, after your confirmation.

The Profile Wizard is an application modal dialog (i.e., you must complete or cancel the wizard before you are allowed to perform any other action within the LCCM console).

Starting Profile Wizard

When you choose the **New Profile** menu option within the LCCM console, you will be presented with a modal dialog asking how you wish to create the profile. Two radio boxes will provide the choices of **Use the Profile Wizard** or "**Manually with the Profile Notebook**. The default will be to use the wizard. The dialog box will have two buttons: **OK** and **Cancel**. **OK** starts the selected method of profile creation. **Cancel** returns you to the console screen without creating a profile.



Using Profile Wizard

You can create two types of client profile with Profile Wizard: clone install and unattended install. Each type of profile requires its own information and has its own sequence of screens to follow. For every screen in the Profile Wizard, certain choices must be made and information boxes completed. Until this is done, you cannot move on to the following screen to continue with the installation. The following pages describe in detail each Profile Wizard screen for both unattended install (including installing additional applications) and clone install. Where both unattended and clone install make use of a similar wizard screen, only one screen is described, with the differences between unattended install and clone install identified.

Welcome to the Profile Wizard

The Profile Wizard is designed to help you create working profiles. Experienced and new LCCM users will find the Profile Wizard convenient to use.

Profile name

A unique name that will identify your software profile.

Unattended Install

Allows the Unattended Installation of Microsoft's Windows operating systems. Unattended Installations onto multiple computers with different hardware specifications are possible, including scheduled installations out of working hours for your convenience and minimization of disruption.

Do you want to also install applications with this profile

Allows you to install IBM System Management and other software, including:

- Universal Management Agent(UMA)
- Netfinity Services
- LCCM 2.5.1
- Additional applications using DiffTool

Note: Universal Management Agent 1.1 and Netfinity 5.2.02 and above are supported.

IMPORTANT: Enabling these options will add one or more of the following screens, depending on your selection:

- Profile Wizard - Application Selection
- Profile Wizard - Windows NT 4.0 Server Application
- Profile Wizard - Customizing Universal Management
- Profile Wizard - Selecting Universal Management Agent
- Profile Wizard - Customizing Netfinity
- Profile Wizard - Selecting Netfinity Services
- Profile Wizard - Customizing LCCM 2.5.1

Clone Install

Allows the installation of a complete operating system clone image: Windows 95, Windows 95 OSR2 or Windows 98, including application software resident on the donor computer. The size of the image is limited only by the hard disk capacity of the client computer that will be using it.

Select the operating system you wish to install for this profile

The option of an unattended install supports the installation of Windows 95 (CD-ROM only), Windows 95 OSR2, Windows 98, Windows NT 4.0 Workstation and Windows NT 4.0 Server operating systems.

The option of a Clone Install supports the installation of Windows 95, Windows 95 OSR2 and Windows 98 operating systems.

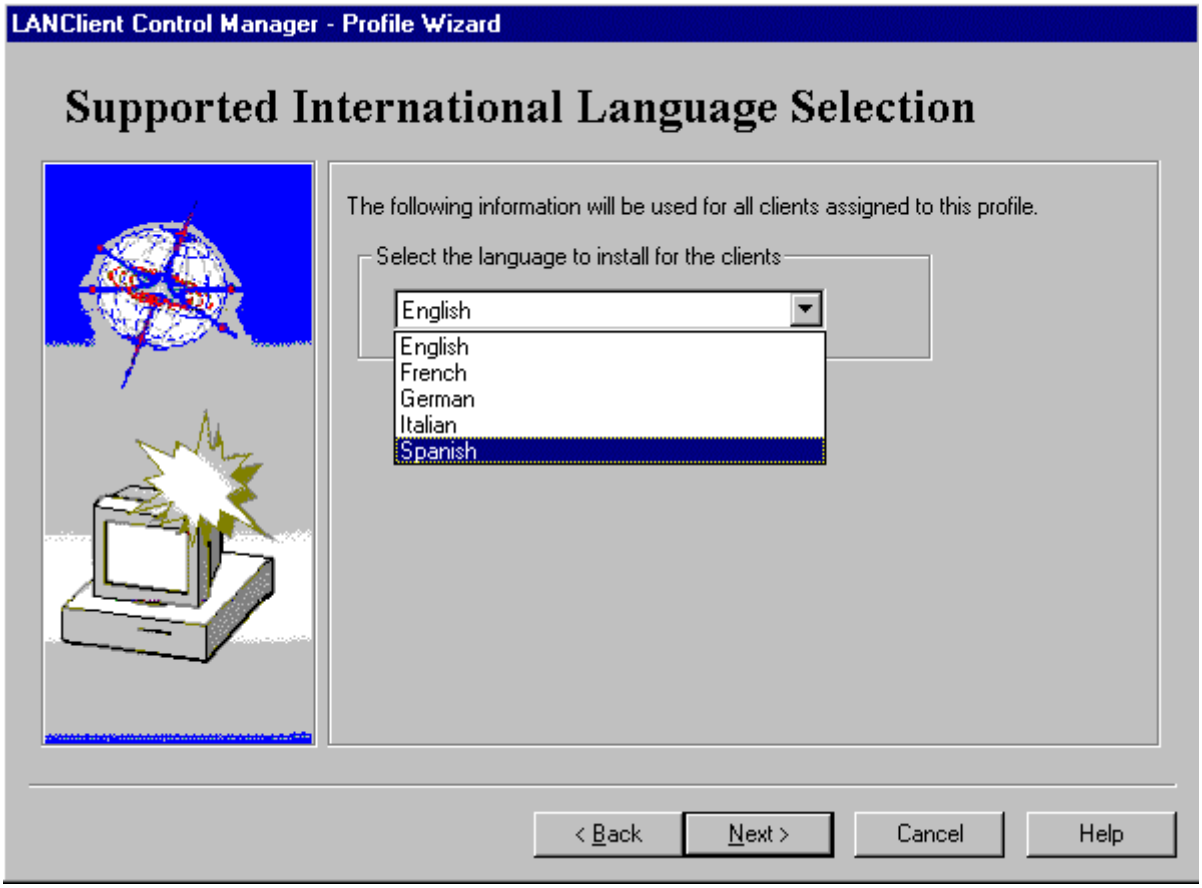
Service Pack Upgrade

Allows the selection of the appropriate Service Pack from the drop-down list. LCCM currently supports Service Pack 4.

IMPORTANT: Ensure that the Service Pack that you install does not have older versions of OEM device drivers than the versions on your client.

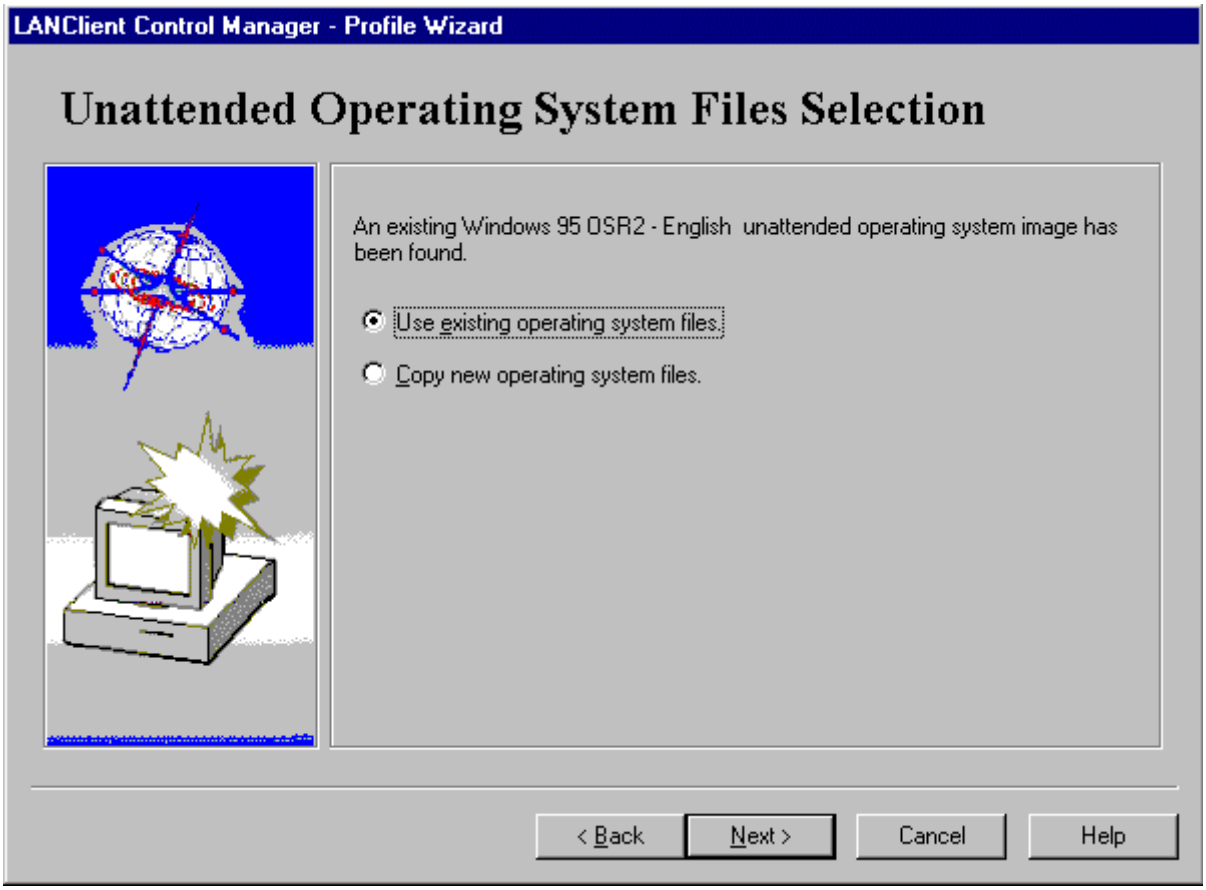
Profile Wizard - Supported International Language Selection

The Supported International Language Selection screen allows you to select the operating system language that will be downloaded to the clients assigned to a profile.



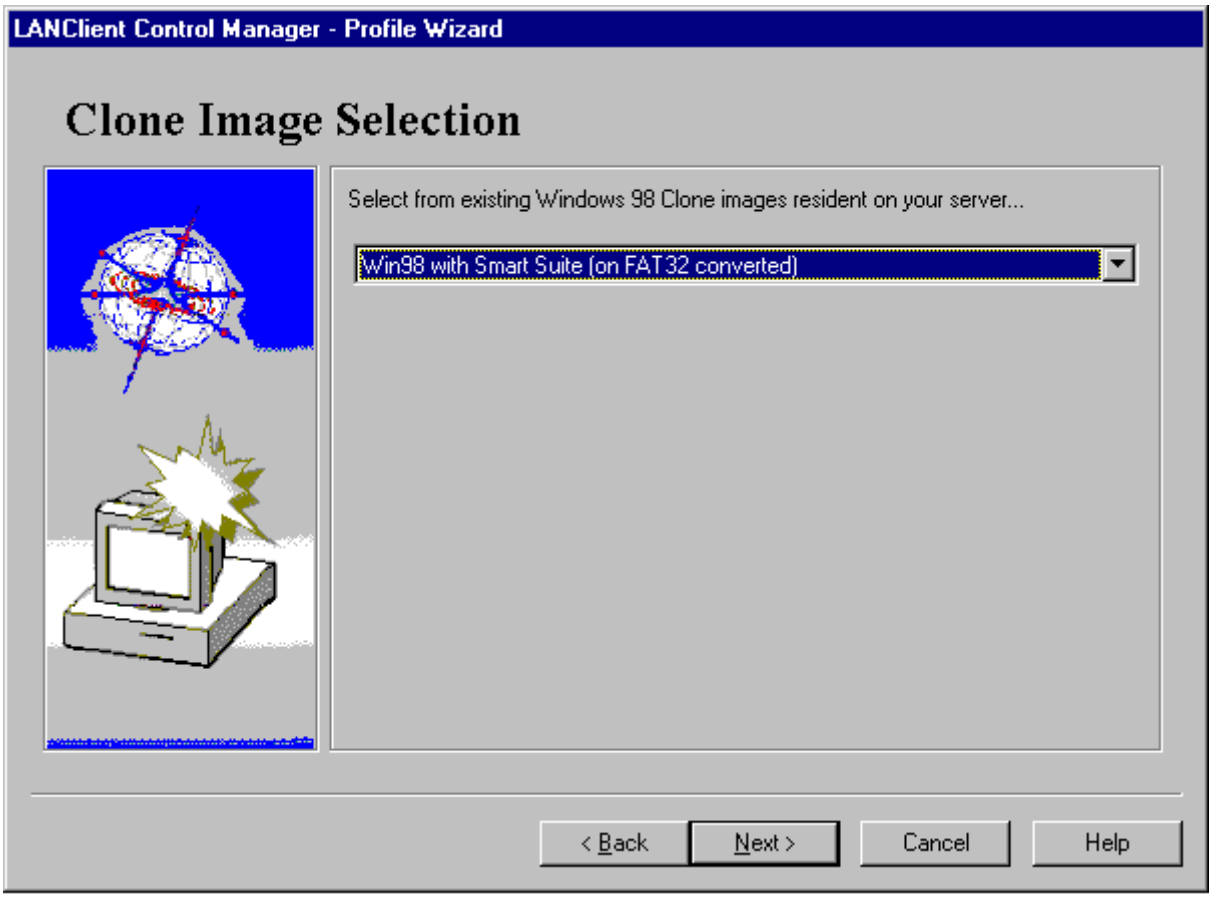
Profile Wizard - Unattended Operating System Files Selection

If the operating system files are already installed in the server the **Profile Wizard – Unattended Operating System Files Selection** screen will be displayed. Select the appropriate radio button to either use these existing unattended install operating system files or copy new operating system files to the LCCM server.



Profile Wizard - Clone Image Selection

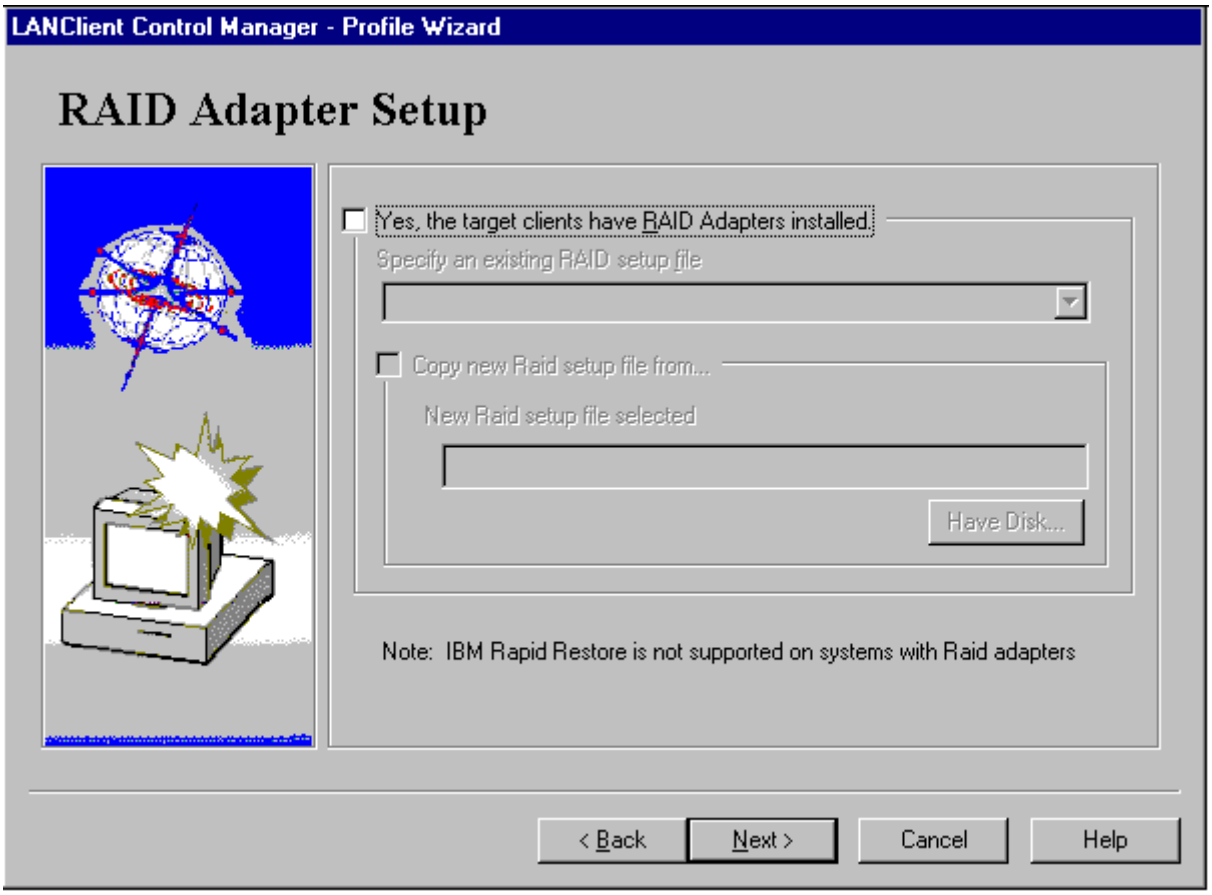
The Clone Image Selection screen allows you to select existing clone images from the drop-down list.



If the Clone Image you wish to install is not present, or indeed none is available, you must exit this Profile Wizard and use the CloneIt Agent (see Using CloneIt Agent Wizard). This will allow you to create a valid clone image from a donor computer and it will then be available from the drop-down list that contains existing clone image files.

Profile Wizard - RAID Adapter Setup

The RAID Adapter Setup screen allows you to enable RAID. Check this box if your target clients have RAID Adapters installed and select an existing RAID setup file from the drop-down list. If your target clients have RAID adapters installed and you do not check this box, the installation process will fail.



If the RAID setup file you wish to use is not visible, or indeed none is available, you must enable the "Copy new RAID setup file from" check box and "Have Disk" button. This allows you to select the correct filename and path of the RAID setup files to be taken from donor computers with the appropriate RAID Adapter configuration.

Creating a RAID Setup File from a working ServeRAID Configuration

To create an IPS file (RAID setup file) from a working ServeRAID configuration you must:

1. Choose the donor computer that you are going to use for your RAID setup.
2. Boot from the "ServeRAID Configuration Disk" supplied with your Adapter (or download the latest version from the Internet). This will start the ServeRAID Configuration Utility.
3. Select **Advanced Functions.**
4. Select **Backup IPS ServeRAID Config.**
5. Enter a name for your config file.

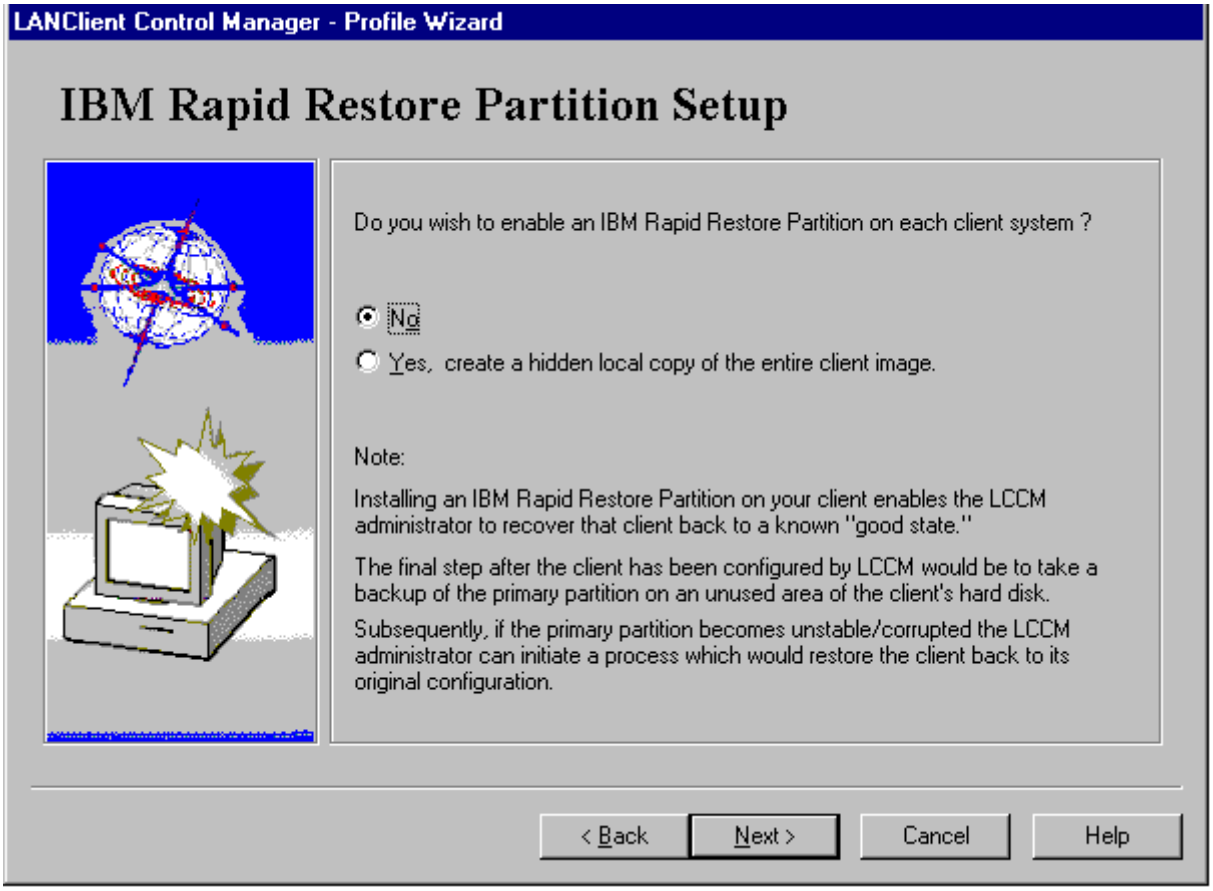
Note: The default name is "a:\config", and an .IPS extension will be added automatically to indicate that it is a ServeRAID configuration file. For further information see ServeRAID Adapter Installation and Users Guide, Chapter 3 – Configuring the IBM ServeRAID Adapter.

IMPORTANT: The hardware setup of your client computers must be identical to that of the donor computer you used to create the file. As Rapid Restore is not supported on systems with Raid adapters, enabling the RAID option will disable the Rapid Restore option.

During a Clone Install the options available for the RAID Adapter Setup screen, the IBM Rapid Restore Partition Setup screen, the Target Machine's Disk Setup screen, the Profile Customization screen and the TCP/IP Configuration screen will be determined by the software, hardware and network setup and configuration of the donor computer on which your software profile is to be based. The resulting clone image will be an exact copy of the donor computers software, hardware and network setup and configuration. The options on these screens will be grayed out and cannot be edited. Therefore, click on **Next** to progress through these screens.

Profile Wizard - IBM Rapid Restore Partition Setup

The IBM Rapid Restore Partition Setup screen allows you to enable the use of IBM's Rapid Restore program (see RAVE.EXE (Using with a DOS Startup Diskette)). The default for this screen is **No**, not to set up the partition. If you enable **Yes**, this will create a hidden partition that contains an exact copy of the operating system partition you are about to install. It can be used as a known good-state recovery in case of failure due to corrupted or missing files on the operating-system partition on the client.

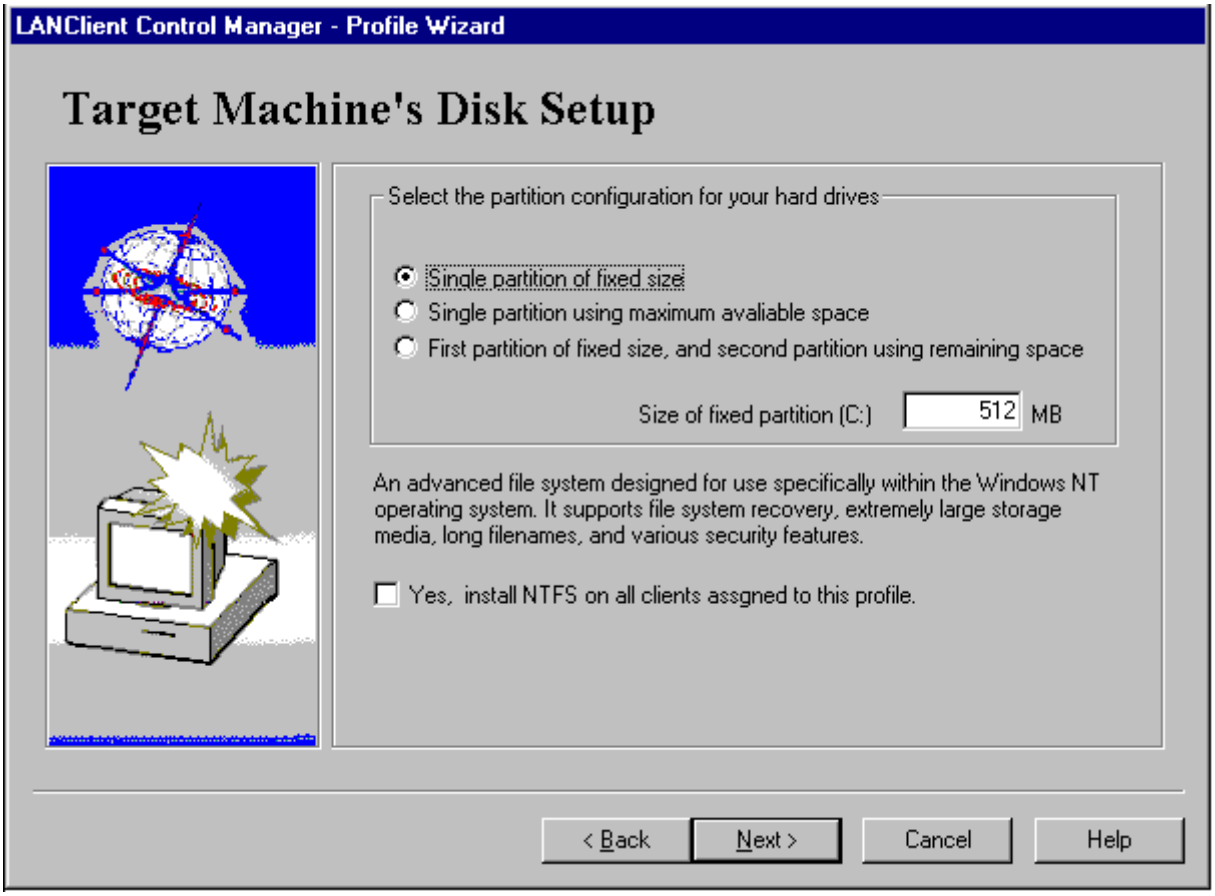


If you have enabled the RAID option you cannot enable Rapid Restore. This is because Rapid Restore is not supported on systems with Raid adapters.

IMPORTANT: During a clone install, the **No** and **Yes** options will be grayed out and cannot be edited. The donor computer, which has been cloned, will determine whether Rapid Restore is enabled and included in the Clone Install profile. When enabled, Rapid Restore will limit the clients to half of their available Hard Disk space, as Rapid Restore creates a hidden partition equal to your primary partition plus 5Mb for administrative overheads. Ensure your primary partition occupies less than half the physical hard disk space on your client. With a 1GB primary partition, an extra 1GB plus 5MB is required. For more information, see RAVE.EXE (Using with a DOS Startup Diskette) .

Profile Wizard - Target Machine's Disk Setup

The Target Machine's Disk Setup screen allows you to specify the size and method of partition on your client computers (see Minimum Requirements of the Recovery Partition.). If you are creating a clone install profile the fields on this window will be disabled and cannot be edited. The donor computer, which is being cloned, will determine which of the options will be included in your profile. For example, your clone install profile will use the same file system as that used on the donor computer, either FAT16, with a maximum partition size of 2GB, or FAT32, with a maximum partition size of 8GB. The size of the first partition will be the same as the size of the first partition on the donor computer. If you are creating an unattended install profile for Windows 95, Windows 95 OSR2 or Windows 98, FAT16, with a maximum partition size of 2GB is the file system that will be used. For Windows NT 4.0 Server and Workstation there is the option to use Windows NT's file system (NTFS) with a maximum partition size of 2GB.



If you chose to enable the Rapid Restore partitioning setup on the previous screen, whatever partitioning option you enabled, Rapid Restore will automatically create a hidden partition on your client's hard disk. This hidden partition size will be equal to the size of your client's primary partition plus approximately 5MB for administrative overheads. This will be the case for any partitioning option you choose.

Single partition of fixed size

You can enter the size of your single partition in the Size of fixed partition (C:) dialog box. For example with a fixed partition of 2GB, the remainder of your client's hard disk space will be available for another partition. With Rapid Restore enabled, when calculating the amount of available hard disk space, in addition to the fixed partition of 2GB, you must take into account Rapid Restore's hidden partition of 2GB plus 5MB for administrative overheads. The overall physical size of your hard disk and the partition size limitations imposed by the FDISK utility, will impose limitations on the size of your partitions.

If RAID has been enabled for your client and you have specified a single partition of a fixed size for your ServeRAID adapter, ensure that a corresponding entry specifying this partition size has been made in the Individual Client Details - Hardware Page in the hard disk field.

Single partition using maximum available space

If Rapid Restore is enabled, you will obtain the largest partitions that FDISK can create. For example, an 8GB hard drive and FAT16 file system will result in a 2GB partition, a 2GB Rapid Restore hidden partition plus 5MB for administrative overheads, and the remainder will consist of unused disk space.

If Rapid Restore is not enabled, you will obtain the largest partition that FDISK can create. For example, a hard drive size of 2GB and FAT16 file system will result in a 2GB partition and no unused disk space.

The overall physical size of your client's hard disk and the limitations imposed by the FDISK utility, will impose limitations on the size of your partitions. With Rapid Restore enabled, the amount of disk space available on your client's hard disk is reduced to take into account Rapid Restore's hidden partition.

First partition of fixed size, and second partition using remaining space

You can enter the size of your first partition in the Size of fixed partition (C:) field. The overall physical size of your client's hard disk and the limitations imposed by the FDISK utility (for partitioning hard disks) of 2047 MB will impose limitations on the size of your partitions. With Rapid Restore enabled you must take into account Rapid Restore's hidden partition for this dual option as outlined above when calculating the amount of free and available hard disk space on your clients.

Yes, install NTFS on all clients assigned to this profile

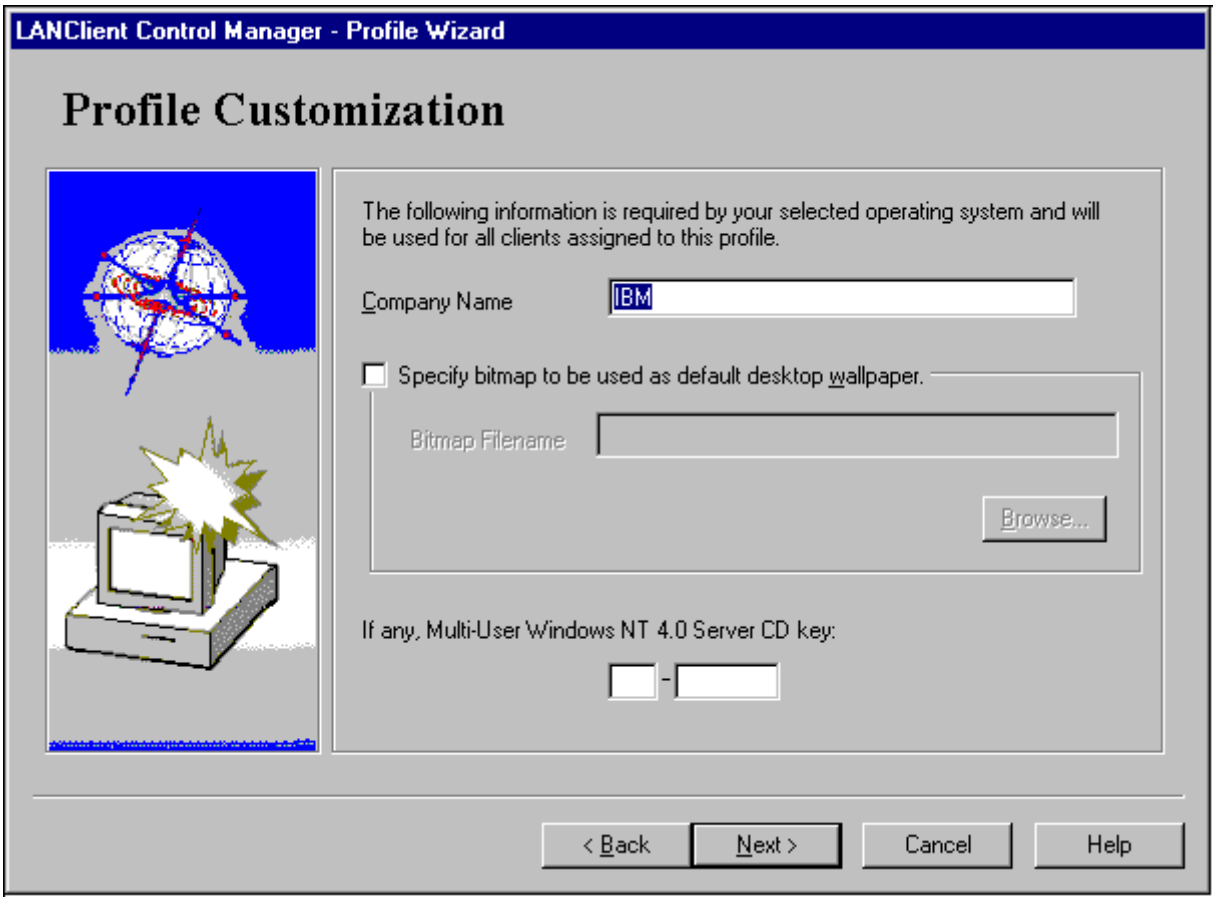
This option allows your Windows NT 4.0 Server and Workstation profiles to make use of Microsoft's NT file system NTFS.

Yes, install FAT32 on all clients assigned to this profile

This option will always be disabled and cannot be edited. It will be displayed for a clone install profile based upon a Windows 95 OSR2 or Windows 98 donor computer that uses the FAT32 file system.

Profile Wizard - Profile Customization

The Profile Customization screen allows you to customize your profile.



Company Name

You must enter a name or you will not be able to continue. This name will be assigned to all clients that are installed with this profile. More than one profile can have the same company name.

Bitmap Option

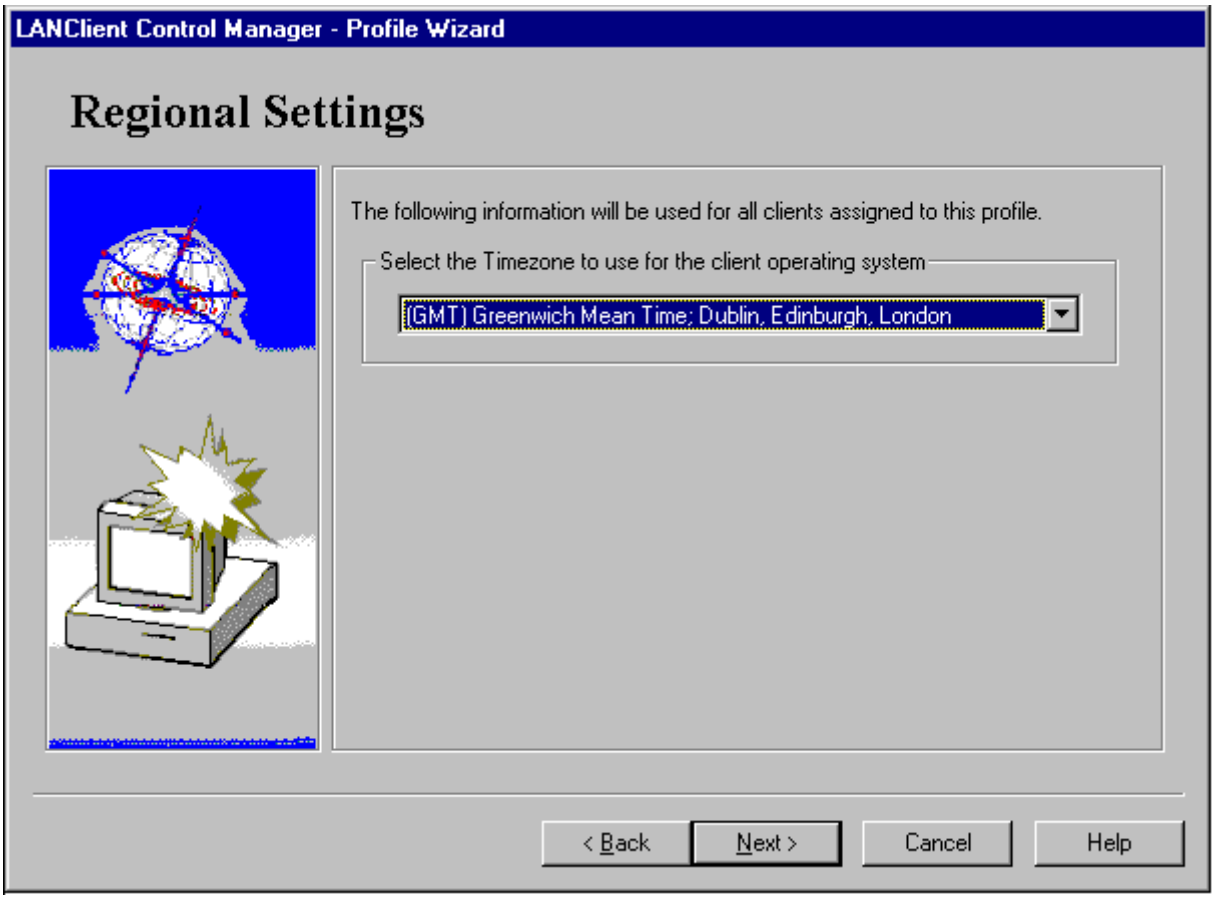
You can specify the default desktop wallpaper name and path to be installed on client computers.

CD-Key

A unique identification number can be found on the software packaging of each of your licensed operating system installation disks/CD-ROM.

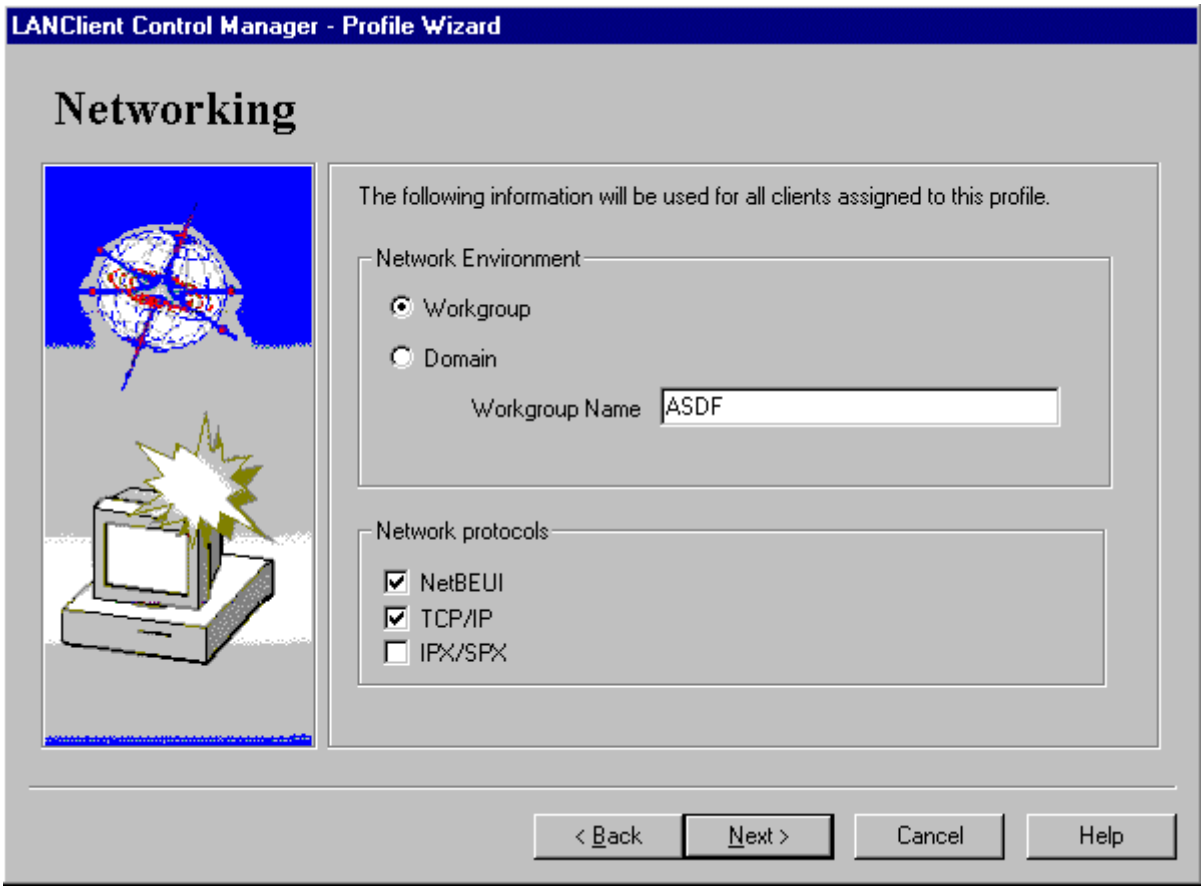
Profile Wizard - Regional Settings

The Regional Settings screen allows you to specify the time zone for this profile. This option can be selected from the drop-down list.



Profile Wizard - Networking

The Networking screen allows you to enter the name of the workgroup or domain to which your client computer will belong. For a Windows NT 4.0 Server or Workstation profile the following screen will be displayed.



Network Environment

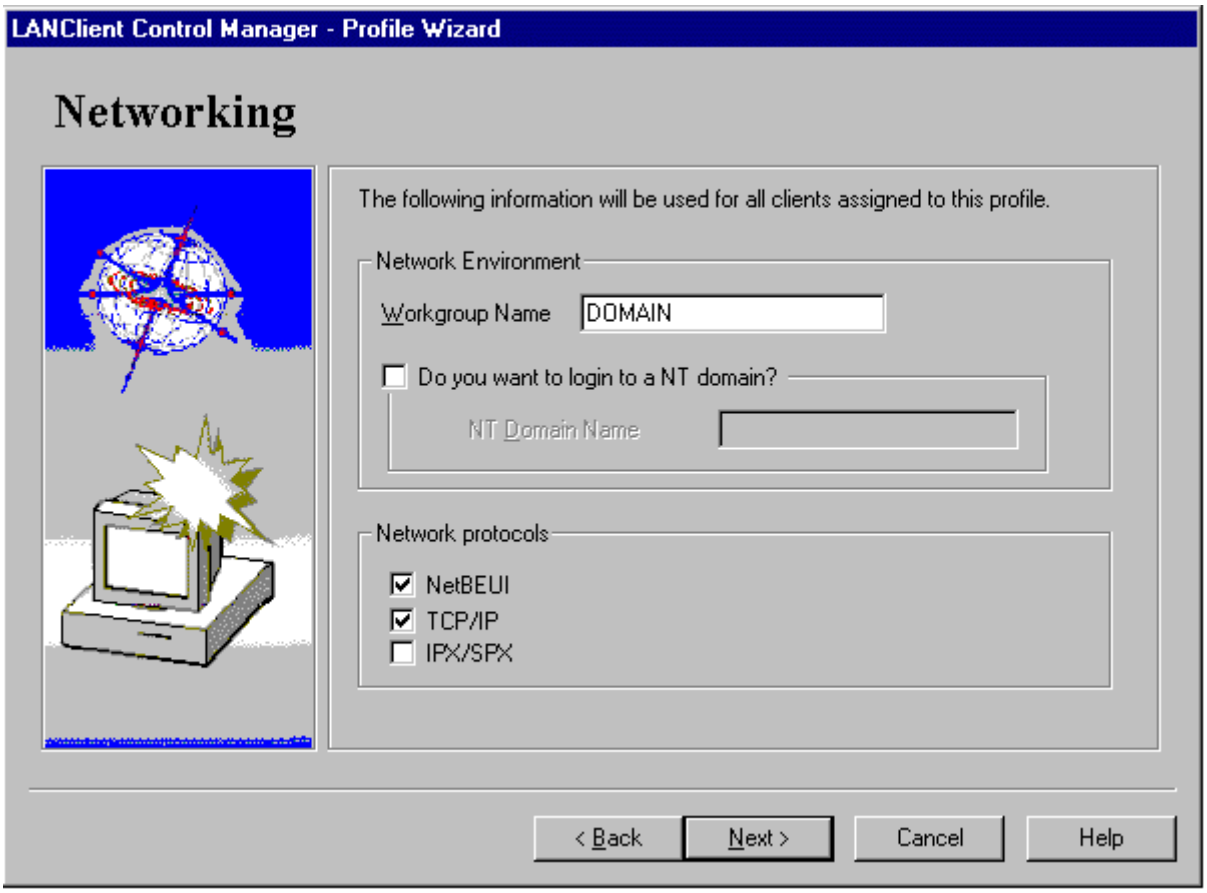
Windows NT 4.0 Workstations can belong to either a workgroup or a domain but not both at the same time. To join a workgroup, enable the **Workgroup** radio button and enter the workgroup name. To join a domain enable the **Domain** radio button and enter the domain name. Windows NT 4.0 Servers can only belong to a domain.

Network Protocols

NetBEUI is Microsoft's non-routable protocol for use within peer-to-peer networks using Windows 95, Windows 95 OSR2, Windows 98 or Windows NT Server and Workstation operating systems. TCP/IP is a routable protocol for use across networks using Windows 95, Windows 95 OSR2, Windows 98, Windows NT Server or Workstation. IPX/SPX provides connection services similar to TCP/IP and is used by Novell Netware operating systems.

During a clone install, network protocols are determined by the donor computer that the clone installation is to be based upon, therefore these options will not be available on this screen.

For a Windows 95, Windows 95 OSR2 or Windows 98 profile the following screen will be displayed.

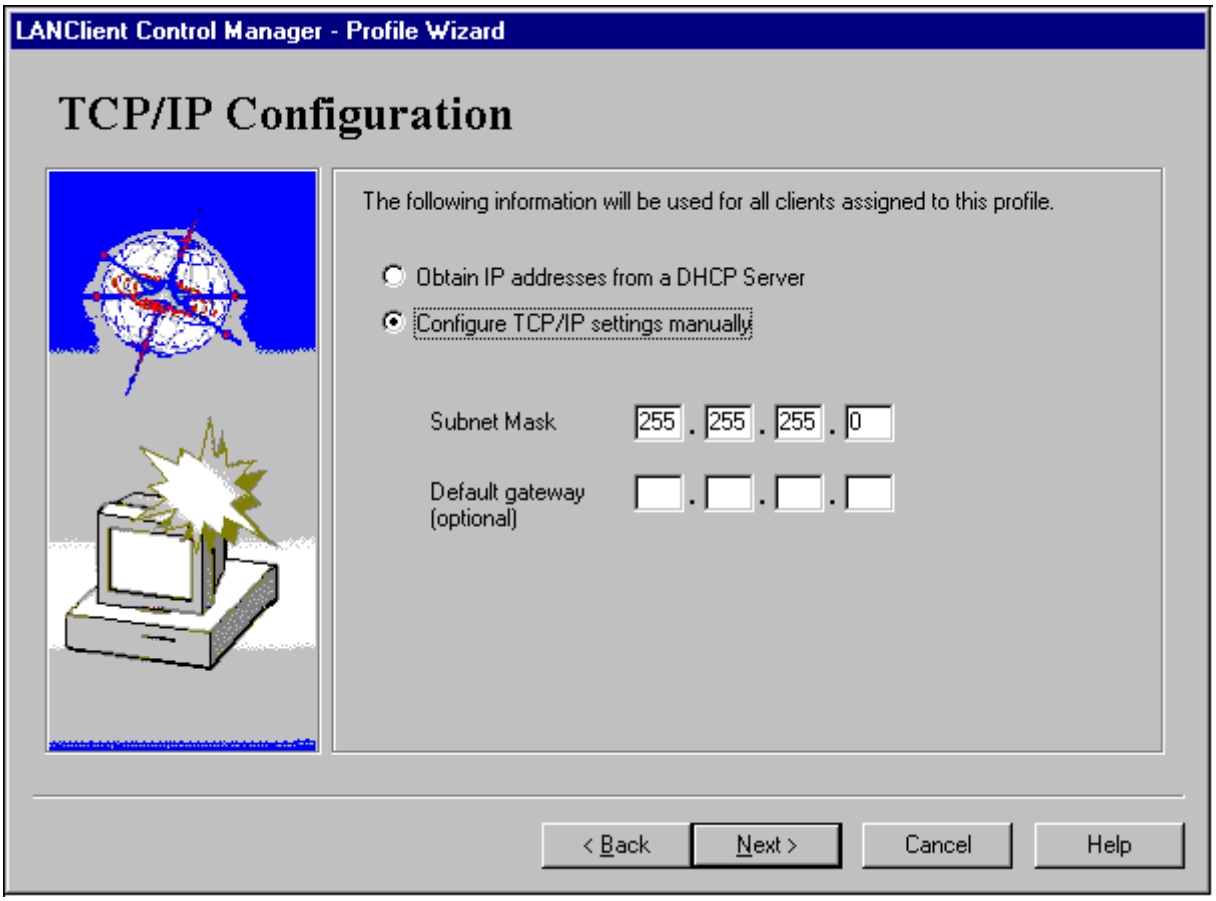


Network Environment

Windows 95, Windows 95 OSR2 and Windows 98 must belong to a workgroup. To join a workgroup, enter the workgroup name. Windows 95, Windows 95 OSR2 and Windows 98 can logon to a Windows NT Domain but will not be able to use NT's file system NTFS. To join a domain check the **Do you want to login to a NT domain?** checkbox and enter the domain name.

Profile Wizard- TCP/IP Configuration

Having selected TCP/IP for the Network Protocol in the previous screen, the TCP/IP Configuration screen allows you to configure TCP/IP for each of your client computers.



Obtain IP Address from a DHCP Server

If this option is chosen, your DHCP Server will automatically configure the correct TCP/IP settings for your client computers.

Configure TCP/IP settings manually

If this option is chosen, you must enter the correct settings manually.

Subnet Mask

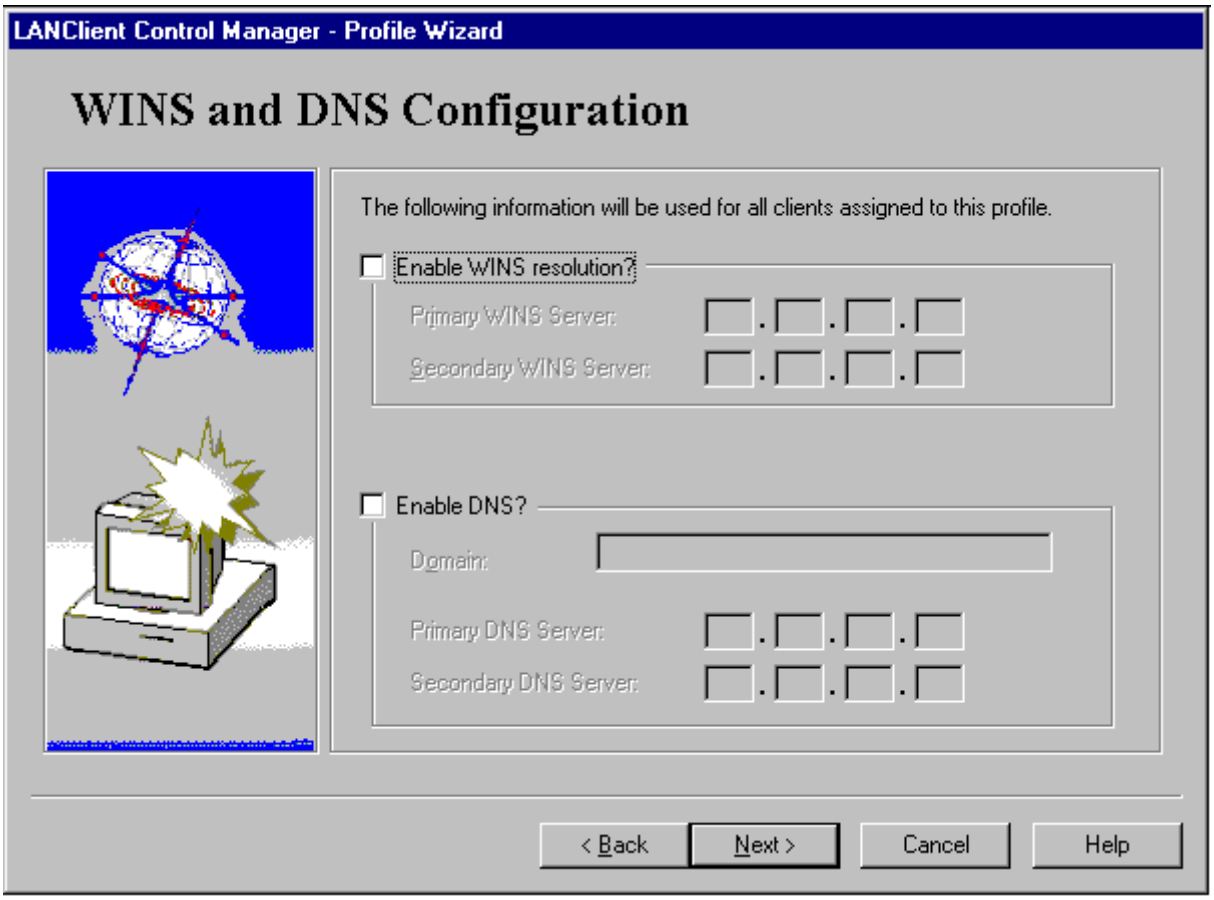
Enter the correct subnet mask for your network.

Default gateway

If the server to which you want to connect resides on another network, you must enter the correct default gateway.

Profile Wizard - WINS and DNS Configuration

Having chosen TCP/IP as the Network Protocol the WINS and DNS Configuration screen allows you to choose between Microsoft's WINS or DNS servers to automatically resolve or match IP addresses to their associated domain names. This information will be assigned to all your clients that receive this profile.



Enable WINS Settings

Enabling Wins resolution requires the IP addresses of both the WINS Primary and Secondary Servers to be entered.

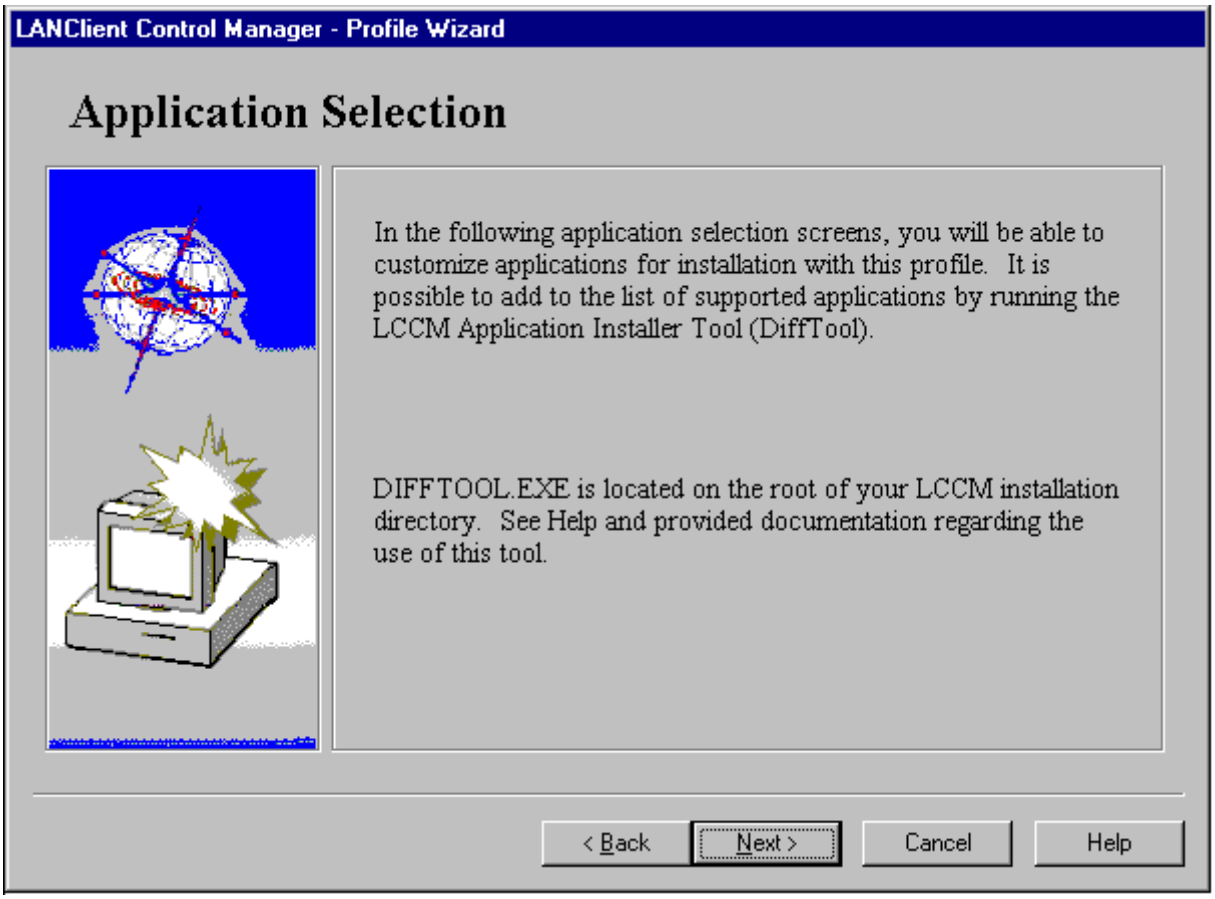
Note: You should not check the enable WINS resolution check box if your client computers reside on the same domain as your LCCM server.

Enable DNS

Enabling DNS resolution requires the domain name and the IP addresses of the Primary server (and the Secondary server if your network requires it) to be entered.

Profile Wizard - Application Selection

The Application Selection screen introduces you to specific applications that are supported by LCCM.



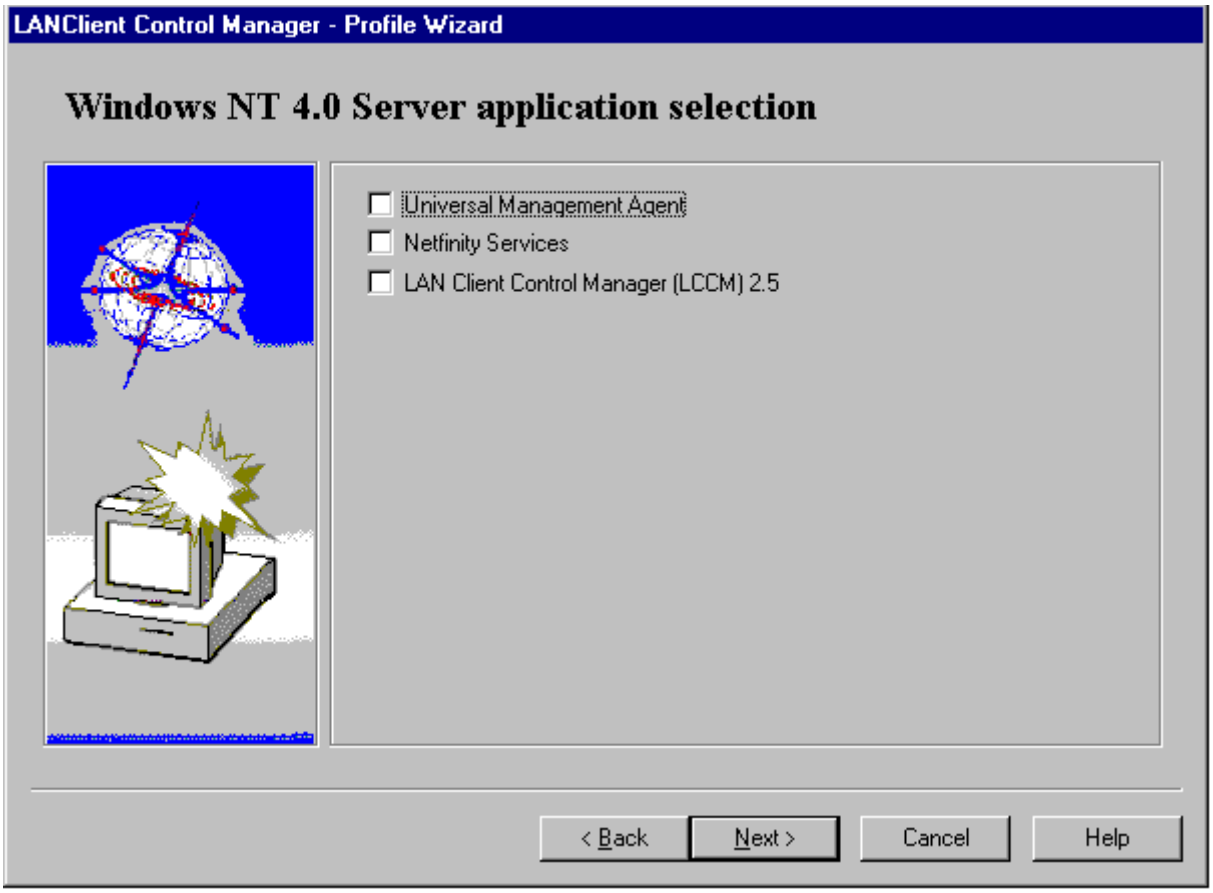
During a clone install the following screens are not available:

- Regional Settings
- Application Selection
- NT Application Selection
- Customizing Universal Management Agent and Selecting Universal Management Agent Components
- Customizing Netfinity Services and Selecting Netfinity Services Components
- Customizing LCCM 2.5.1
- NT Server Customization

This is because a Clone Install supports Windows 95, Windows 95 OSR2 and Windows 98 and not Windows NT Server and Workstation.

Profile Wizard - Windows NT 4.0 Server Application Selection

The Application Selection screen allows you to specify Universal Management Agent, Netfinity Services or LCCM 2.5.1 by enabling the appropriate checkbox or checkboxes. If you have used IBM's DiffTool to install additional applications, an option for selecting each additional application will be present on this screen (see, Using DiffTool Wizard).



Universal Management Agent

LCCM supports Universal Management Agent 1.1, a common client management agent based on Tivoli's Management Agent, IBM's Netfinity Manager Services technologies and Intel's LANDesk Client Manager. The Universal Management Agent (UMA) integrates into other management applications (like Microsoft's SMS and Intel's LANDesk Management Suite) that will run on IBM and other manufacturer's desktops, mobile systems and servers.

The Universal Management Agent consists of four critical capabilities:

- Hardware Features and Settings – contains information about the basic hardware, audio, I/O ports, input devices, memory, drives, video and network settings
- General System Information – contains software and operating system information, user information and an error log
- Proactive Policy Enforcement – contains events, alarms and responses, along with a number of manageability extension features
- Advanced Management Utilities – contains manageability extensions like SMART Reaction, Asset ID, hardware inventory and other tools

Netfinity Services

LCCM supports Netfinity Services 5.2.02 and above, which enables you to monitor and manage systems remotely without interrupting work in progress. Running the Netfinity programs in the background does not interfere with work on your system. You can monitor the status of systems in the network, anticipating and correcting problems before they become serious.

LCCM 2.5.1

LCCM 2.5.1 can be remotely installed on your client computers. This option is only available for Windows NT 4.0 Server.

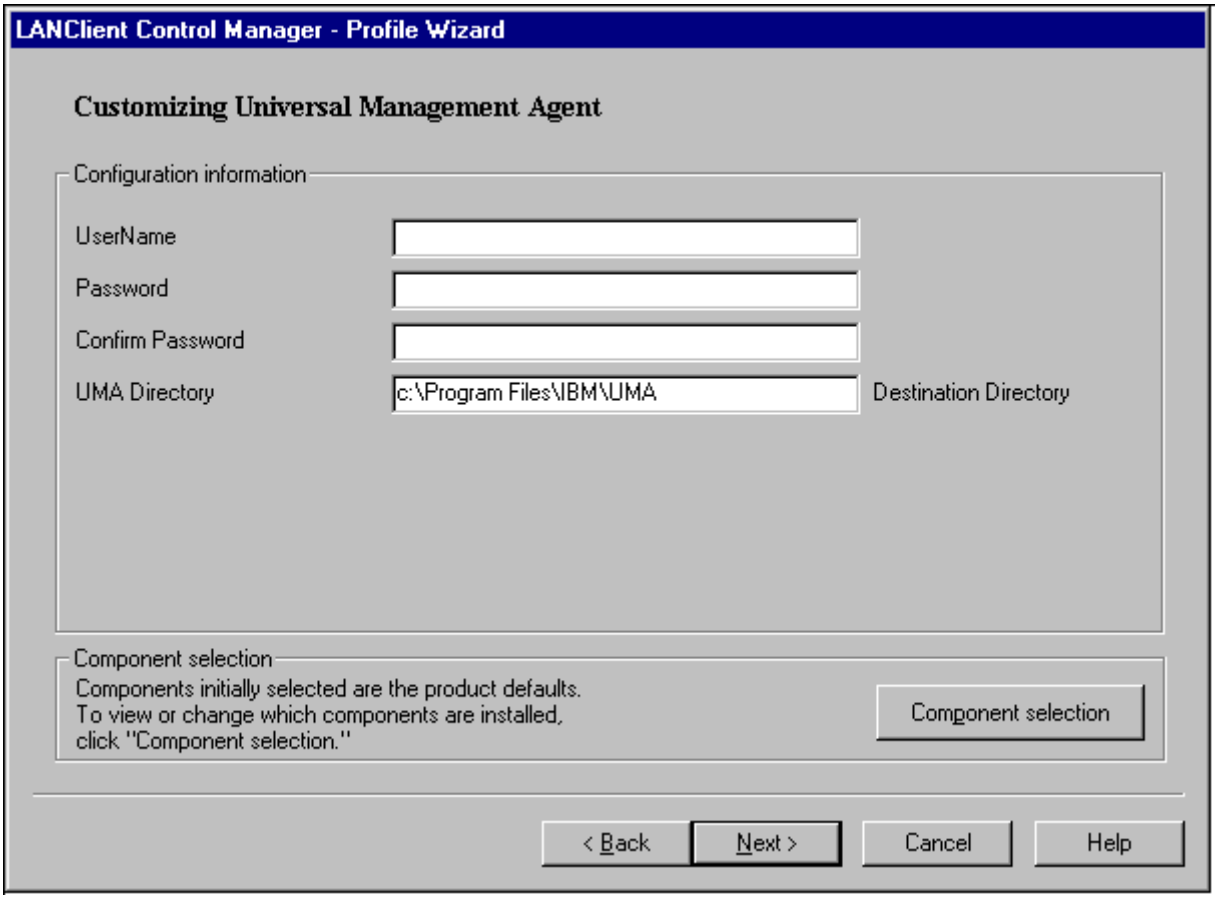
Additional Applications

Additional Applications as an option will only be available if installed using DiffTool see Using DiffTool Wizard.

Note: This screen will only appear if the **Do you want to also install supported applications** check box has been enabled on the Welcome to the Profile Wizard screen.

Profile Wizard - Customizing Universal Management Agent

The Customizing Universal Management Agent screen allows you to enter configuration information. Having chosen Universal Management Agent as a supported application on the earlier Application Selection screen, you can customize UMA.



UserName (optional)

Allows you to enter a User Name.

Password

Allows you to enter a password for UMA.

Confirm Password

Allows you to re-enter your password for confirmation.

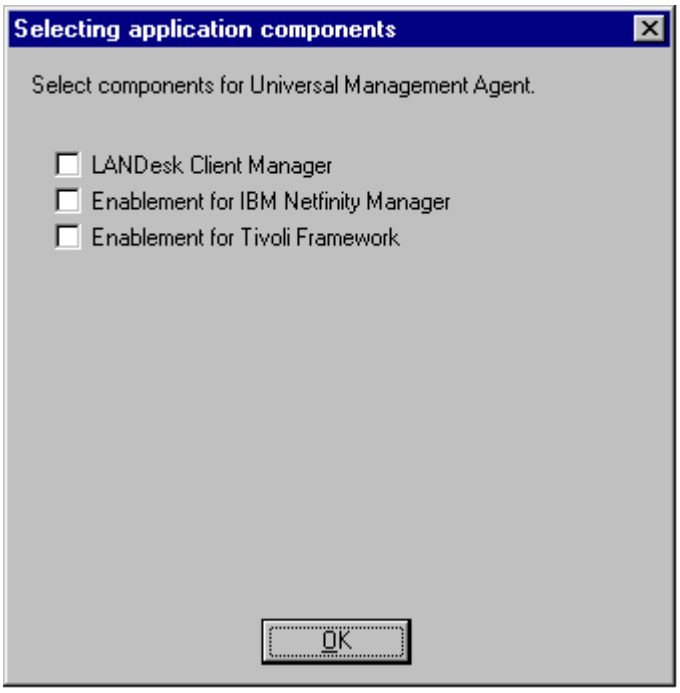
UMA Directory

Allows you to enter the directory in which to install UMA.

Note: This screen will only appear if the **Do you also want to install supported applications** check box has been enabled on the Welcome to the Profile Wizard for an unattended install and the **Universal Management Agent** check box is enabled on the earlier Profile Wizard - Windows NT 4.0 Server Application Selection screen.

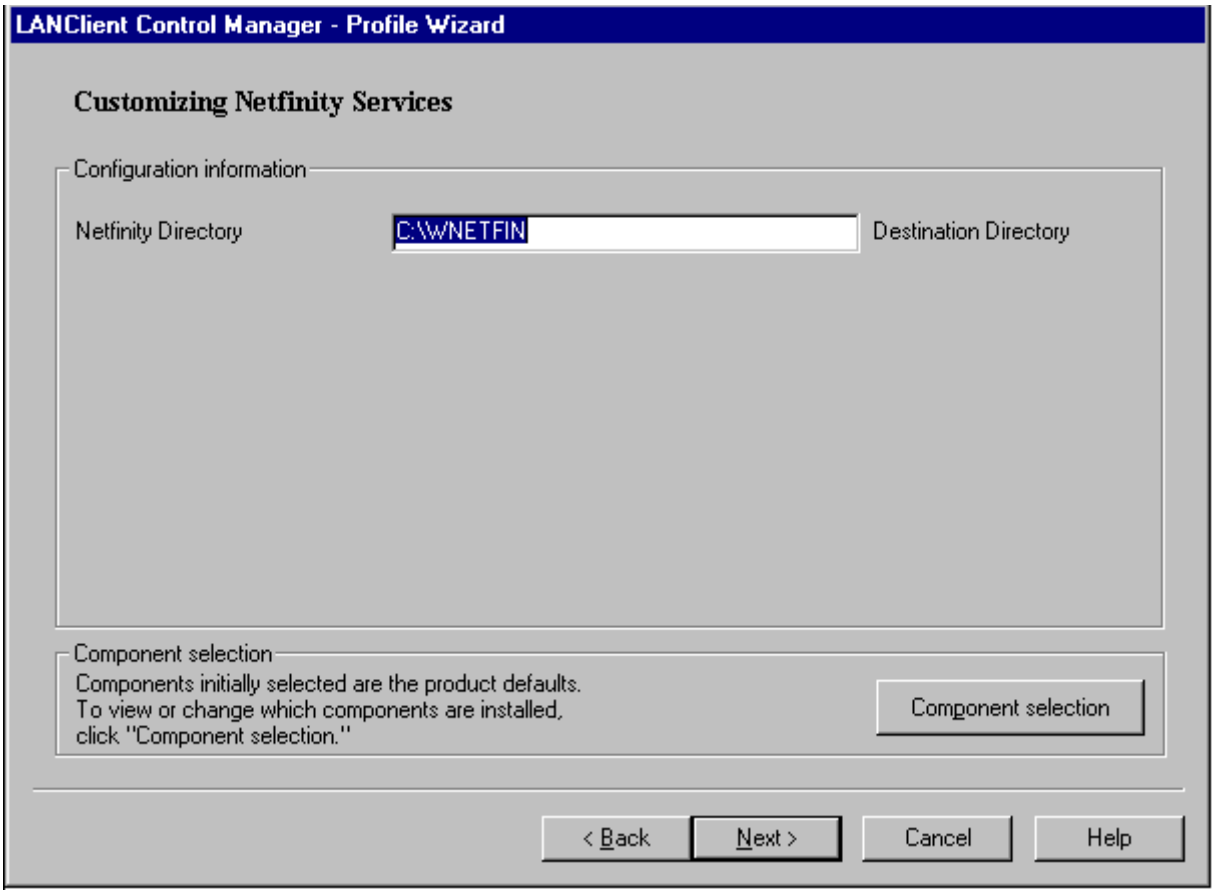
Profile Wizard - Selecting Universal Management Agent Components

The Selecting application components screen allows you to select one or more components to be installed by enabling the appropriate check box or checkboxes.



Profile Wizard - Customizing Netfinity Services

The Customizing Netfinity Services screen allows you to enter configuration information. Having chosen Netfinity Services as a supported application on the earlier Application Selection screen, you can customize Netfinity Services.



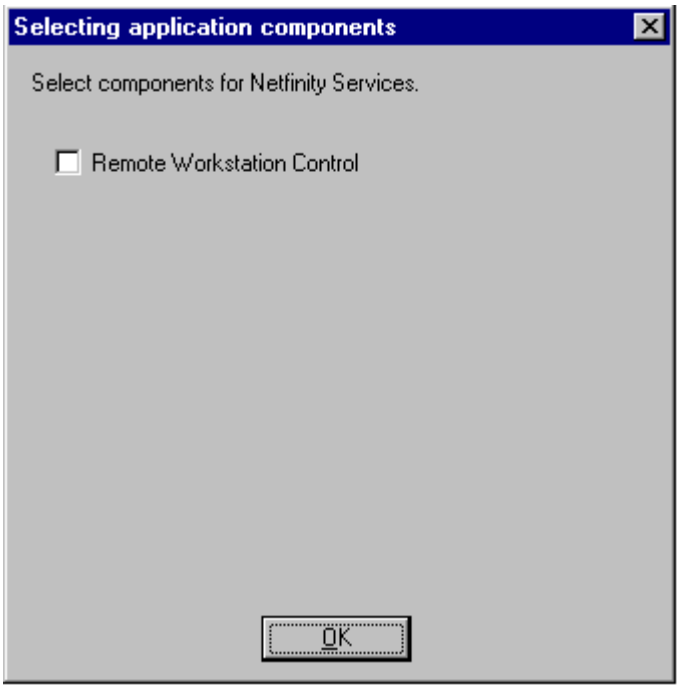
Netfinity Directory

This option allows you to enter the directory in which to install Netfinity Services.

Note: This screen will only appear if the **Do you also want to install supported applications** check box has been enabled on the Welcome to the Profile Wizard for an unattended install and the **Netfinity Services** check box is enabled on the earlier **Profile Wizard - Windows NT 4.0 Server Application Selection** screen.

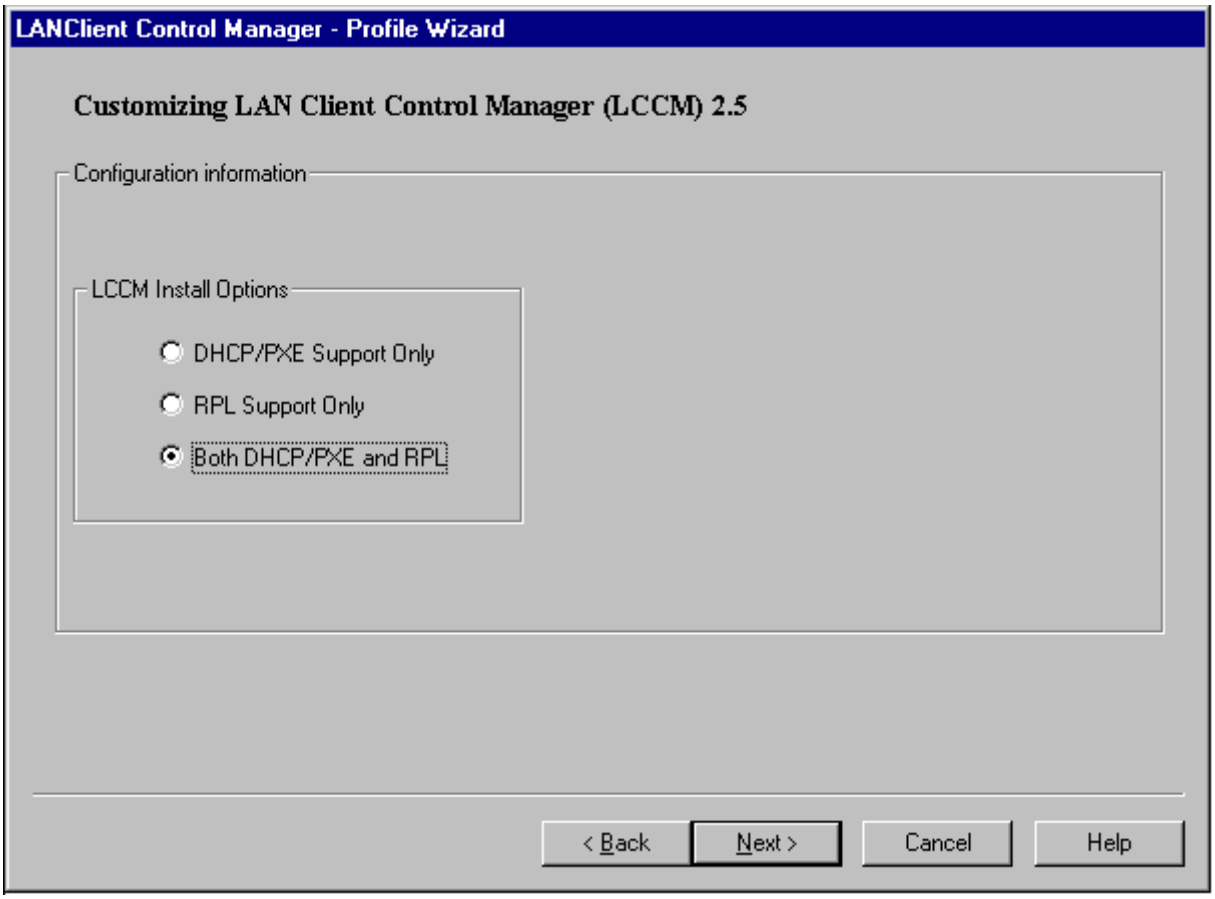
Profile Wizard - Selecting Netfinity Services Components

The Selecting application components screen allows you to select the Remote Workstation Control component by enabling the check box. This will allow you to monitor and manage systems remotely without interrupting work in progress.



Profile Wizard - Customizing LCCM 2.5.1

The Customizing LCCM 2.5.1 screen allows you to specify the method of installation used to install LCCM 2.5.1 on to your client computer. Having chosen LCCM 2.5.1 as a supported application on the earlier Application Selection screen, you can customize LCCM 2.5.1.



DHCP/PXE Support Only

Routers are supported in this environment. Your Internet protocol (IP) router must support BOOTP Relay Agent function. For more details, see DHCP/PXE Environment.

RPL Support Only

Remote Program Load (RPL), is a network process that allows clients to remotely boot software from a server without accessing a hard disk or floppy drive. Routers are **not** supported in this environment. All client computers configured for RPL protocol must reside on the same LAN segment as the LCCM Server.

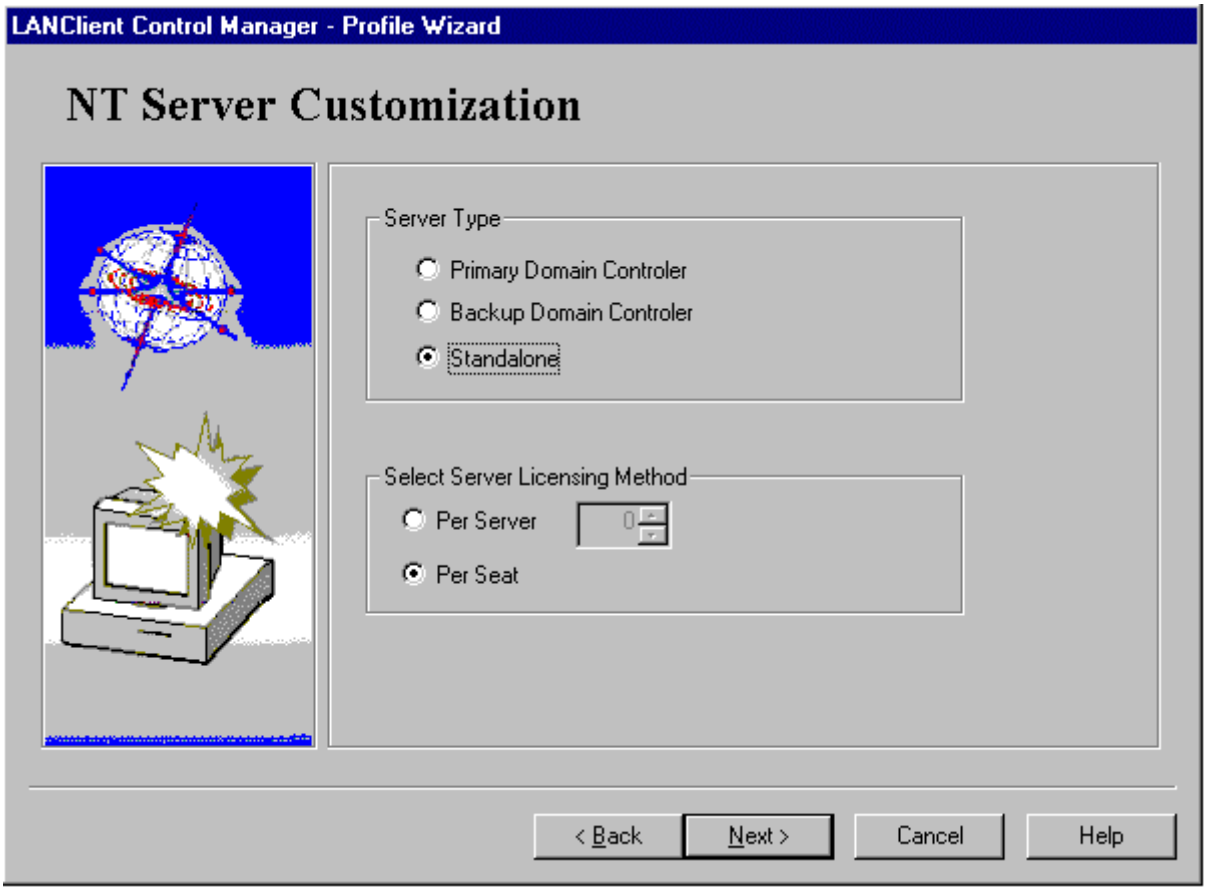
Both DHCP/PXE and RPL

Where both the above are applicable, enter both.

Note: This screen will appear only if the "Do you also want to install supported applications" check box has been enabled on the Welcome to the Profile Wizard for an unattended install and the LCCM 2.5.1 check box is enabled on the earlier Profile Wizard - Windows NT 4.0 Server Application Selection screen.

Profile Wizard - NT Server Customization

The NT Server Customization screen allows you to specify the server type or network role of your NT Server 4.0 client computer within your target domain.



Primary Domain Controller (PDC)

PDC servers maintain the master copy of the central domain authorization database and validate connections to the domain they control.

IMPORTANT: There can be only one PDC per domain

Backup Domain Controller (BDC)

BDC servers maintain a duplicate copy of the central domain authorization database, which is periodically synchronized with the PDC's master copy. In case of the breakdown or absence of the PDC, the BDC can become the PDC. Domains can have multiple BDC's per domain for improved performance and increased network security.

Standalone

Standalone servers can be members of a domain but they cannot be PDC's or BDC's. Standalone servers depend on the PDC or BDC to validate connections to the domain to which they belong. If the LCCM server is a Standalone server, running Windows NT, and is not joined to any domain, the **Primary Domain Controller** and **Backup Domain Controller** radio buttons will be disabled (i.e. grayed out).

Select Server Licensing Method

It is a legal requirement that you have the appropriate number of client access licenses for your network and therefore your Windows NT Server 4.0 computer.

Per Server

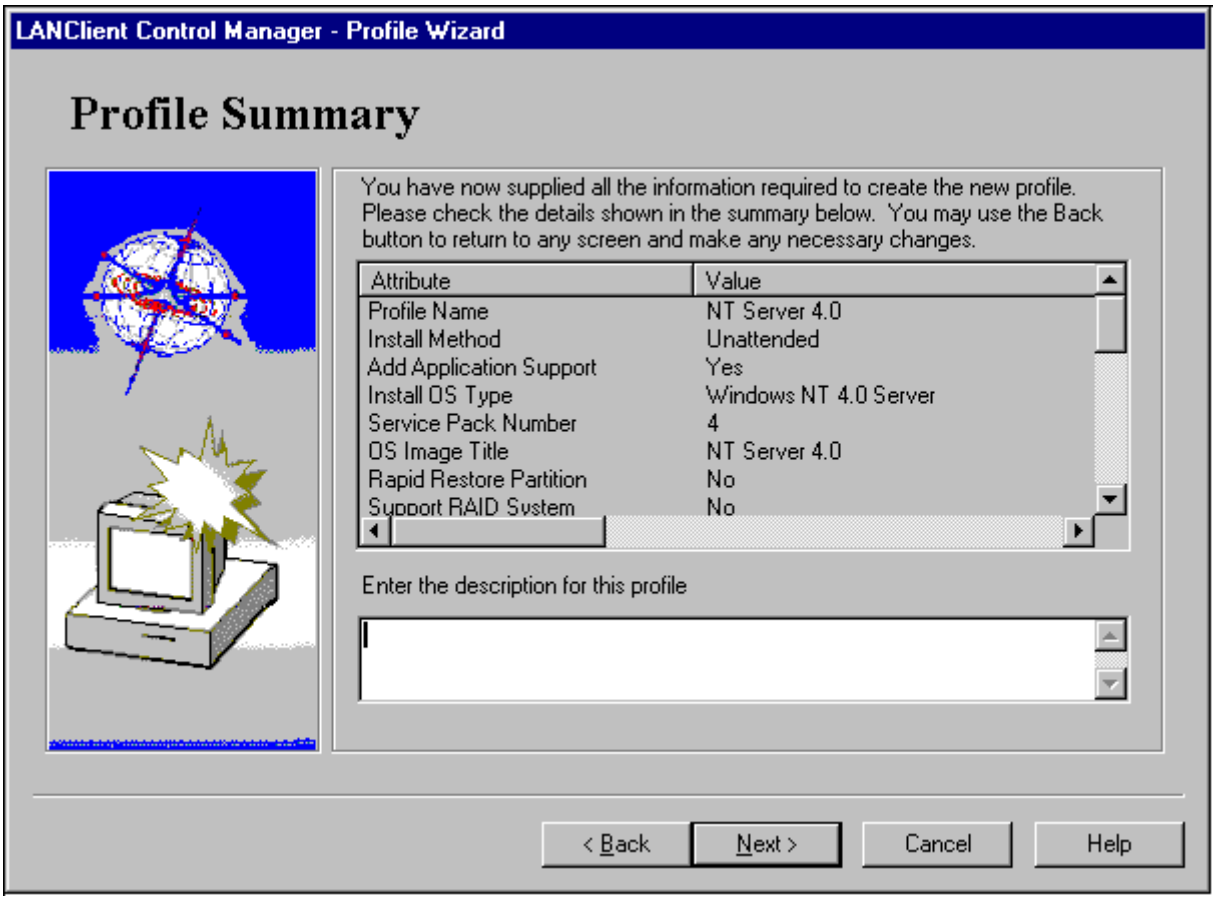
If you select this option, your licenses will be determined by your server license. The number of client connections will be determined by the number of client licenses purchased.

Per Seat

If you select this option you will require a license for each client connected to your server.

Profile Wizard - Profile Summary

The Profile Summary screen gives a summary of the current profile. To make any changes, you must go back through the Profile Wizard. Once this is complete, clicking on finish will start the Profile creation process.



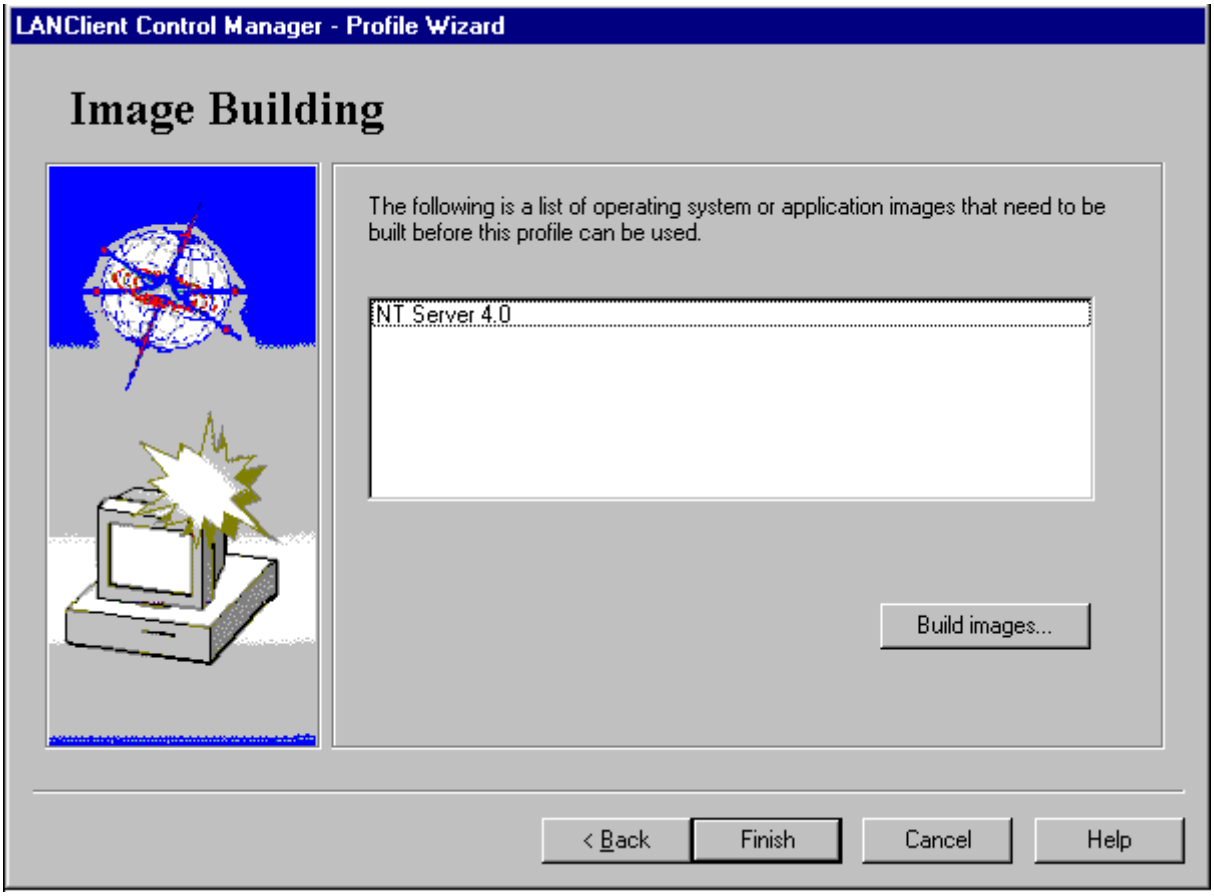
This step will provide you with a summary list of the choices made for this profile. The **Next** button will be re-labeled as **Finish** on this screen. Clicking on the **Finish** button will start the creation of the profile.

The profile creation may include copying of operating system files to the standard distribution LCCM share point. In this case an additional on screen message, warning you about this (since it is likely to take more time than a normal creation) appears.

When the profile has been successfully created you will be returned to the LCCM console (the new profile will appear in the appropriate section in the profiles list). Should there be any problems with the profile creation, you will be presented with a dialog box giving you the choice to continue with the creation or return to the wizard to resolve the problem.

Profile Wizard - Image Building

The Image Building screen is shown only for unattended install profiles. The operating system and application images to be built are listed. You can go back through the wizard to make any changes. Once you are satisfied with the Profile Summary, clicking on the **Build images** button will start the Image Building process.



You will then be prompted to select **Yes** to continue, **No** to skip building images or **Cancel** to exit the Profile Wizard.

Copying New operating System Files

If you enabled the **Copy new operating system files** checkbox on the Unattended Operating System Files Selection screen (see, Profile Wizard - Unattended Operating System Files Selection), a Locate the Windows Setup file screen will be displayed. From this screen you can browse for your operating systems setup file; For Windows NT 4.0 Server and Workstation you must browse for WINNT.EXE, for Windows 95 and Windows 95 OSR2 you must browse for WIN95 and for Windows 98 you must browse for WIN98.

When you have located your operating system's setup files click on **Open**. When the Successfully finished copying NT Server 4.0 and SP4 dialog box is displayed click on **OK**.

At the Profile Summary screen "No more image files to build" will be displayed. Click on **Finish**.

Hints & Tips for Windows NT Unattended Installs

The hints and tips that follow will provide helpful recommendations to specific situations.

If you want to install Multiple Primary Domain Controllers

To install multiple Primary Domain Controllers (PDC's) onto multiple domains do the following:

1. Create a Windows NT Server 4.0 (including Service Pack 4) software profile using the Profile Wizard. Select your own domain (see, Using Profile Wizard).
2. At the Installation/Maintenance window:
   a) Select **Configure** from the **Profile** menu.
   b) Click on the **Client Parameters** tab.
   c) Enter a new parameter **LCLI_NTDOMAIN** under the Name column at the next available field and click on **OK**.
3. From Windows NT's Explorer, double-click on the .LCA file associated with the profile you have created (which you will find at <drive>:LCCM\CLNTFILE\PROFILE\PROF000\PROF000.LCA where 000 represents the consecutive number allocated to each (.LCA) file; e.g., the first profile will be associated with prof000.lca, the second profile will be associated with prof001.lca, etc.), and change the entry at line 33 from **LCPRO_NTDOMAIN** to **LCLI_NTDOMAIN.** Save your changes and close the file.
4. Assign your clients to the profile you have created using the Client Assignment Wizard (see, Using Client Assignment Wizard). At the NTDOMAIN Parameter page (now added to the Client Assignment Wizard), enter the name of the domain to which you want your client to belong.
5. Once your client has been assigned, you can repeat step 4 to assign multiple clients to multiple domains.
6. At the Installation/Maintenance windows click on **Process** to update your clients.

PCMCIA & Unattended Install

For a Windows NT Server or Workstation 4.0 unattended install please install Windows NT 4.0 Service Pack 4. It is also necessary to copy PCMCIA.SYS from Windows NT 4.0 Service Pack 4 and replace the existing PCMCIA.SYS in C:\LCCM\CLNTFILE\NT$SRV\ENG for Windows NT Server 4.0 and C:\LCCM\CLNTFILE\NT4WKS\ENG for Windows NT Workstation 4.0.

Unattended Installation of NT Video Drivers

Note: Unless otherwise stated, "NT" refers to Windows NT 4.0 Workstation or Server. "Unattended Installation" refers to an unattended installation using a profile generated by the profile wizard.

Overview

In LCCM v2.5.1 the unattended installation of NT uses the lowest common default when providing a video driver. It utilizes NT's own default VGA driver, which provides 640 by 240 resolution with 16 colors.

It is possible to manually extend the unattended installation to include the loading of specific video drivers for an individual profile.

In the simplest case this will effectively limit the use of the profile to clients with a single video adapter, however several drivers can support several different adapters . For example, the video adapters Matrox Millennium G200 and Matrox Millennium II share the same driver. Similarly the S3 86C911/86C924/86C928/86C928 PCI, S3 86C801/86C805/86C805I, S3 Vision864/964/866/868/968 and S3 Trio32/Trio64/Trio64V+/Trio64V2 range of adapters can all share the same driver files.

Changes to Unattended Answerfile

For more information refer to Microsoft technical article Q156655 "Install OEM Video Drivers w/ Windows NT 4.0 Unattended Setup".

When the Profile Wizard is used to create an NT unattended installation profile, it creates an unattended answerfile in the `CLNTFILE\PROFILE\PROFxxx` directory associated with the profile. The actual name can be found by looking at the Software tab in the Profile Notebook on the LCCM console. The answerfile will be called `PROFxxx.LCA`. You should change the [Display] section in this answer file so that it contains the following information:

```
[Display] InfFile="CI546x.inf"InfOption=" Cirrus Logic 546x 1.71a "
InstallDriver=1
BitsPerPel = 16
XResolution = 800
YResolution = 600
VRefresh = 60
AutoConfirm = 1
ConfigureAtLogon = 0
```

This example uses the Cirrus Logic 546x driver, you must change the `InfFile` and `InfOption` fields for each specific client. The `InfFile` field defines which `.inf` file will be used to install the driver and the `InfOption` field defines which option to install. The option must be one of the fields defined in the field referred to by the `[Manufacturer]` section.

It is also necessary for the answerfile to be set as an OEM pre-install using the following:

```
[Unattended]
```

OemPreInstall = Yes

This has already been carried out for all LCCM answerfiles by including the above section in the default answerfile.

You must copy the `.inf` file and all the necessary files to install the driver into a directory called `display` under the profile directory, i.e.

CLNTFILE\PROFILE\PROFxxx\OEM\DISPLAY

The contents of this directory will automatically be copied onto each client before the unattended installation of NT commences.

Profile Modification to Support the Installation of ISA Onboard Service Processor Device Drivers

If you intend assigning a Netfinity server client with an onboard Service Processor, you must load the appropriate NT device driver for that Service Processor.

To load the appropriate NT device driver:

1. Locate the profile directory corresponding to the NT server profile to which the service processor drivers will be added:
   a) At the Installation/Maintenance window, highlight the profile in the profiles and assigned clients column.
   b) From the **Profile** menu, select **Configure**.

      Or

      Double-click on the profile.
   c) Click on the Software tab.
   d) Locate the **Answer File** field. This field contains the directory name where the answer file is located.
2. Take note of the directory name where the answer file is located (1d above). This should be of the form <LCCM_DIR>\clntfile\profile\PROFXXX, where XXX denotes the profile number.
3. Create directory OEM\SERVPROC within the profile directory. The OEM directory will already have been created.
4. Copy the device driver files and setup program from the diskette A:\NT*.* to directory OEM\SERVPROC.
5. Modify the file named cmdlines.txt (This file is in Microsoft INF format and is located in the OEM directory) by adding ".\SERVPROC\setup /q" beneath the section titled "[Commands]".

The Service Processor drivers will install unattended during NT Graphics Mode Setup.

Note: This procedure is relevant only to the ISA onboard Service Processor found on the following Netfinity servers: Netfinity Series 5000 : Model 8659, Series 5500 : Model 8660, Series 5500 M10 : Model 8661 and Series 5500 M20 : Model 8662.

Installation of OEM Devices with Windows NT 4.0

To install Unsupported OEM devices and programs manually, you must add the correct files to your network distribution sharepoint using a OEM\OEMFILES folder. Your distribution sharepoint path can

be found in the Software page of the Software Profile Details Notebook (see, Software Profile Details - Software Page). The correct files can be determined by the completion of the following Windows NT OEM standard installation procedure. Notepad or similar can be used as your Text Editor.

To create the OEM\OEMFILES Folder:

1. Create the OEM\OEMFILES folder on your distribution share point. For example, if your distribution share Point is \\ANCIENT\LAN$$\NTDWN, then create your folder there as \\ANCIENT\LAN$$\NTDWN\$OEM$\OEMFILES folder.
2. For each instance and type of unsupported OEM device that you want to install, create the appropriate folder and sub folders on the path created in step 1.
    - **Hardware Dependent Files** that have to be loaded during the text-mode stage of a Windows NT setup, such as a HAL, SCSI, keyboard, video or pointing-device driver: Create a OEM\OEMFILES\TEXTMODE folder, inside this folder, create a folder for each device and a TXTSETUP.OEM file. This file identifies all the files required by the setup loader and text-mode setup to load and install the additional drivers.
    - **System Files** that either replace or supplement the Windows NT system, such as a different file system driver: The files must be placed in the correct Windows NT system folder structure in the OEM\OEMFILES\$$WINNT folder. For example, if a driver has to be installed in the SYSTEM32\DRIVERS folder, a OEM\OEMFILES\SYSTEM32\DRIVERS folder must be created.
    - **Network Component Files** such as network adapter drivers, protocols, or services, are placed in separate folders in the OEM\OEMFILES\NETWORK folder.
    - **Program Files** that support scripted installation, as well as any files copied to the destination computer, can be placed in the OEM\OEMFILES\$$ROOT folder. In this folder, create a folder for each logical drive in the computer to which the programs will be installed. For each program, create a folder in the logical drive folder, and copy the installation files, including any directory structure, for the program. For example, to install Microsoft Word for Windows 95, create the following folder for Word files: OEM\OEMFILES\$$ROOT\C\Word95.
3. You must add the line **OemPreinstall = Yes** to the [Unattended] section of the unattend.txt file (on your distribution sharepoint e.g., \\ANCIENT\LANC$$\UNATTEND.TXT). You must also add the installation commands for the program to a OEM\OEMFILES\CMDLINES.TXT file.

Installation of OEM Mass Storage Devices with Windows NT 4.0

Since Windows NT cannot auto-detect non-standard mass storage devices, these must be specified in the unattended install answer file. LCCM provides the following mechanism to automate the process.

During an unattended install of Windows NT, the client's model number is used to look for a file in the "defaults" directory (e.g., C:\LCCM\CLNTFILE\DEFAULTS). These filenames have the form XXXX.LCA, where XXXX represent the first 4 digits of the client's model number (e.g., 6888, 6272, 6561). The model number can be found in the Individual clients notebook.

Entries in these (.LCA) files refer to devices specified in the TXTSETUP.OEM file (C:\LCCM\CLNTFILE\DEFAULTS\OEM\TEXTMODE\TXTSETUP.OEM).

Note: Due to an NT installation limitation, specifying one mass storage device disables mass storage devices auto-detect function and requires you to specify all other mass storage devices present in the system, even if they can be auto-detected, e.g., IDE CD-ROM.

For **example**, here is the 6888.LCA file:

```
[MassStorageDrivers]
```

"IDE CD-ROM (ATAPI 1.2)/PCI IDE Controller"="RETAIL"

"Adaptec AHA-290x/291x/294x/394x/4944 or AIC-78xx PCI SCSI Controller(NT4.0)"="OEM"

[OEMBootFiles]

txtsetup.oem

aic78xx.sys

aic78xx.inf

To add a new model with mass storage drivers specified, you must obtain the NT 4.0 driver diskette for the required device (text in bold is for example only)

1. Copy the driver file and copy it to the TEXTMODE directory. (C:\LCCM\CLNTFILE\DEFAULTS\OEM\TEXTMODE)

   COPY A:\NEWDRV.SYS

   C:\LCCM\CLNTFILE\DEFAULTS\OEM\TEXTMODE\NEWDRV.SYS

2. Copy the OEMSETUP.INF file to the TEXTMODE directory and rename it so as not to overwrite the existing OEMSETUP.INF provided for IDE CD-ROMS.

   COPY A:\OEMSETUP.INF

   C:\LCCM\CLNTFILE\DEFAULTS\OEM\TEXTMODE\NEWDRV.INF

3. Merge the two TXTSETUP.OEM files manually.

   a) Copy all lines from the [Disks] section in the driver diskette OEMSETUP.INF to the merged OEMSETUP.INF.

   b) Change the disk numbers "d1,d2,d3,etc." to unique numbers within the merged OEMSETUP.INF and remove the paths from the end of the lines e.g.,

      [Disks]

      d1 = "Adaptec 7800 Family Manager Set for Windows NT 4.0" , \, \

      plus

      [Disks]

      d1 = "Adaptec 7800 Family Manager Set v2.10 for Windows NT 4.0" , \disk 1, \winnt\4_0

      equals

      [Disks]

      d1 = "Adaptec 7800 Family Manager Set for Windows NT 4.0" , \, \

      d2 = "Adaptec 7800 Family Manager Set v2.10 for Windows NT 4.0" , \, \

   c) Ignore the [Defaults] section.

   d) For all other sections, merge common sections and append new sections.

   e) Replace all references to the disk number (d1) in your new driver lines with the number you gave it in the merged file e.g.,

      driver = d1, aic78xx.sys, aic78xx

      changes to

      driver = d2, aic78xx.sys, aic78xx

   f) Remember to change any references to OEMSETUP.INF to it's new name (NEWDRV.INF in the example above)

4. Finally, create a new (.LCA) file, of the form C:\LCCM\CLNTFILE\DEFAULTS\XXXX.LCA, where XXXX represents the first 4 digits of the model number. Use the existing (.LCA) files in this directory as a template. Remember to include the IDE CD-ROM driver line if present.

Installation of OEM Devices with Windows 95, Windows 95 OSR2 and Windows 98

Windows 95, Windows 95 OSR2 and Windows 98 do not have an OEM install feature similar to Windows NT. If you have a non IBM device that is on Windows 95, Windows 95 OSR2 or Windows 98 hardware compatibility list then the device can be auto-detected by the Windows operating system. Alternatively you can edit the answer file (.LCA) which you can find at <drive>:\LCCM\CLNTFILE\DEFAULTS\XXXX.LCA and for example add the line "netcards=<pnp ID#>" to install a network adapter card.

Location of Unattended Install Directories

When LCCM performs an unattended install, a number of directories and files are created by the Profile Wizard. Each unattended install performed by LCCM will have an associated directory that will contain all the files associated with the installation. Associated directories will be created under <drive>:\LCCM\CLNTFILE (where LCCM is your program directory) and will be automatically named by LCCM according to the operating system installed as follows:

- Windows NT Server 4.0 will become Nt4srv
- Windows NT Workstation will become Nt4wks
- Windows 98 will become W98
- Windows 95 OSR2 will become W95b
- Windows 95 will become W95

Removing Redundant Unattended Install Directories

The resultant unattended install directories can amount to hundreds of megabytes. Therefore, to save hard disk space, you can manually delete no longer needed unattended install directories found in <drive>:\LCCM\CLNTFILE where the name of the unattended install directory will be NT4SRV, NT4WKS, W98, W95OSR2 or W95 according to the operating system installed.

Location of Clone Images

When LCCM is used to clone a client computer, a number of directories and files are created by the Profile Wizard.

IMPORTANT: In order for the LCCM Console and the Profile Wizard to find and use a cloned image, the clone control file must be in \\SERVERNAME\LANC$ADM\CLNTFILE. Access to this directory is via the NT share LANC$$.

Each clone created by the CloneIt Agent will have an associated directory that will contain all the files associated with the clone and referred to in the clone control file. Associated directories will be created under <drive>:\LCCM\CLNTFILE (where LCCM is your LCCM program directory) and will be named 'clonennn' (where nnn is replaced with a unique 3-digit number, starting with 000). Control files (.LCC) will be created under <drive>:\LCCM\CLNTFILE and will use the name you specified for your clone image during the cloning process (CloneIt Agent Wizard - Cloned Image Name). This is the clone image you select at the Clone Image Selection screen of the Profile Wizard (Profile Wizard - Clone Image Selection).

Removing Redundant Clone Images

The resultant clone image directories can amount to hundreds of megabytes. Therefore, to save hard disk space you can manually delete no longer needed clone image directories found in <drive>:\LCCM\CLNTFILE\CLONEnnn\CLONE.LCZ. Where LCCM is your LCCM program directory and CLONE.LCZ is your clone image folder. You can also delete the accompanying (.LCC) control file found in <drive>:\LCCM\CLNTFILE . This is the clone image you specified during the cloning process and the clone image you selected at the Clone Image Selection screen of the Profile Wizard.

Error Handling in the Profile Wizard

In general, LCCM will not allow the user to proceed to the next screen using the **Next** button until all the required information for that screen has been entered. Conditions that cannot be handled (like failure to read or write a file) in this way will be handled by warning pop-ups. Error pop-ups are system modal, and have **OK** buttons only, which returns you to the wizard. The wizard is application modal and allows you to perform system functions like clearing disk space without canceling the wizard operation.

Installing Additional Applications

The installation of additional applications is not restricted to Universal Management Agent, Netfinity Services and LCCM 2.5.1. You can install different applications during an unattended install. DiffTool is a utility program supplied with LCCM which will allow you to install additional applications from a donor computer.

DiffTool

DiffTool is a utility program supplied by LCCM which will produce exact copies of applications from a donor client computer.

Applications which have been tested with LCCM 2.5.1 (It is expected DiffTool will work with other applications that are not on this list) are listed as follows:

- QuickBooks 4.0 by Intuit
- IBM Universal Management Agent 1.1
- Netfinity Manager 5.20
- WinFax 8.0
- Microsoft Office 97 Professional
- Microsoft Visual J++
- Peachtree Accounting
- Microsoft Visual C++
- ACT 3.0
- Jana Contact Manager
- Rational Visual Test 4.0
- IBM Visual Age PL1
- Norton Utilities
- Great Plains Dynamics
- Netscape Navigator 4.0

- Smart Business Professional
- Lotus Smartsuite 97
- Lotus Notes 4.53
- Cheyenne Backup
- Announcements 3.0, by Parsons Technology
- Microsoft Project
- Microsoft Team Manager

These can be included as additional applications by checking the "Do you also want to enable supported applications?" checkbox (See Welcome to the Profile Wizard) in your software profile.

Note: DiffTool is not necessary if you are carrying out a clone install. This is because all of the applications on the donor computer will be included in the clone install.

IBM's DiffTool is similar to Microsoft's SysDiff Tool, but is more general and supports more environments. Both of these are compared below:

FUNCTION	DIFFTOOL	SYSDIFF
Supports Windows NT	Yes	Yes
Supports Windows 95	Yes	No
Supports Windows 98	Yes	No
Graphical User Interface	Yes	No
Handles Shared DLL's	Yes	No
Integrated with LCCM 2.5.1	Yes	No

Note: When you run DiffTool on a donor computer with NT 4.0 Server or Workstation, the resulting application image can only be installed on client computers with the same operating system. Therefore you will need to run DiffTool on a Windows 95, or Windows 98 donor computer if you want the resulting application image to be installed on a Windows 95 or Windows 98 client computer.

Starting DiffTool

DiffTool must be used correctly to ensure that a good copy of the selected applications is made from your donor client. On your donor client, follow these steps closely to make a good copy.

1. Make a thorough check to ensure that all the required application software is installed and working properly on the donor client, and that the network connection is operating properly.
2. From the Windows Desktop, double-click on the **Network Neighborhood** resource. A list of available servers will be displayed.
3. Look for the name of your LCCM Server, and double-click on it. A list of NT "shares" will be displayed for this server.
4. Double-click on the share **LANC$ADM**. This will open the LCCM program installation directory.
5. Double-click on **DiffTool.exe** to begin the installation process. An easy-to-use DiffTool Wizard will begin on the client. Follow the on-screen instructions to install your applications.

Using DiffTool Wizard

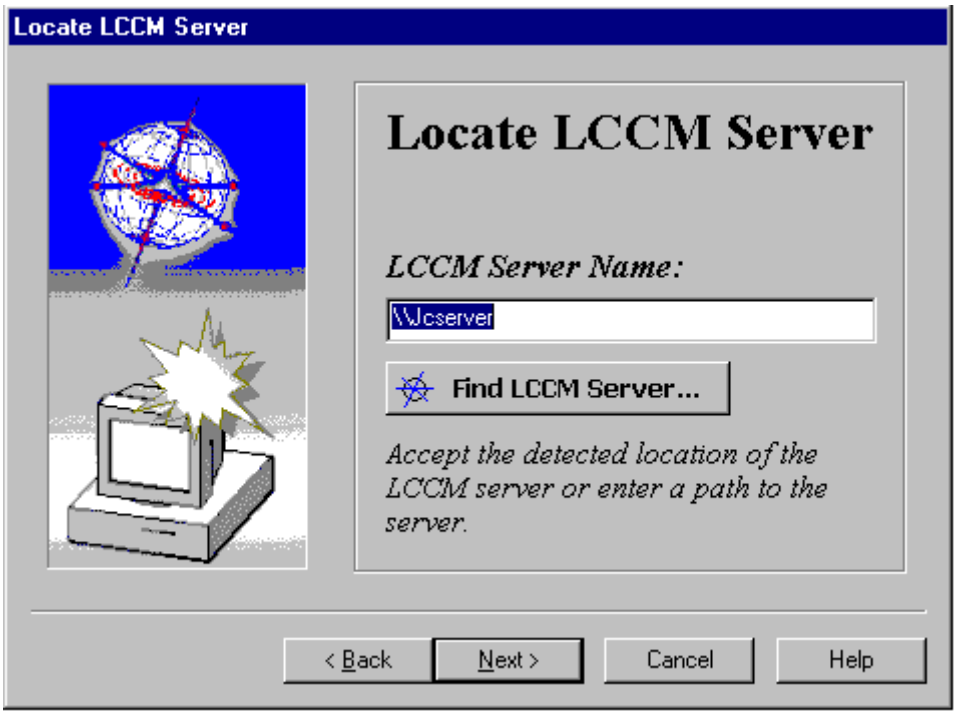
The aim of the DiffTool Wizard is to make it easy for an LCCM user to produce exact copies of selected applications from a donor computer, which can be included as additional applications by checking the **Do you also want to enable supported applications?** checkbox on the Welcome to the Profile Wizard screen of the Profile Wizard during an unattended install. For every screen in the DiffTool Wizard, appropriate choices must be made and information boxes completed, otherwise you cannot proceed to the following screen and continue with the installation.

DiffTool Wizard - Welcome to the DiffTool Wizard

The Welcome to the DiffTool Wizard screen introduces you to the wizard.

DiffTool Wizard - Locate LCCM Server

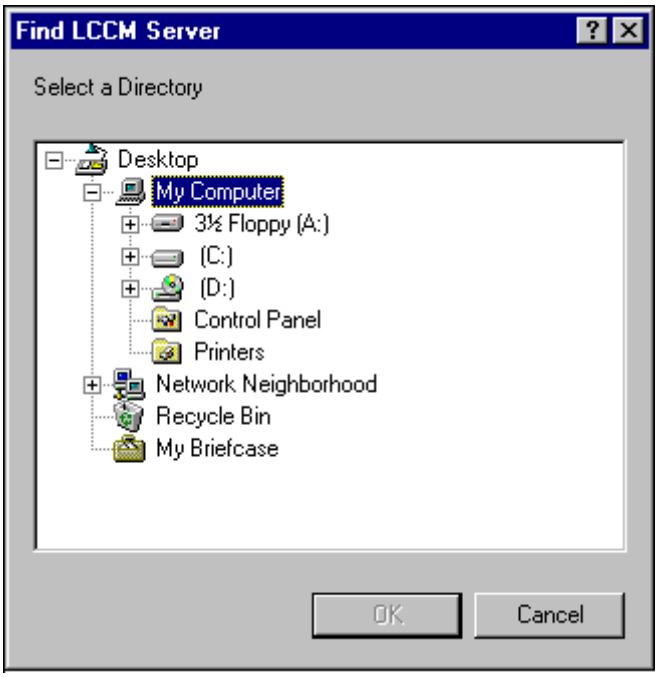
The Locate LCCM Server screen allows you to specify the correct server name and path of your LCCM server.



You will not be permitted to continue if you have not entered an appropriate Server Name. An error message will be displayed indicating that your choice is not a valid LCCM server.

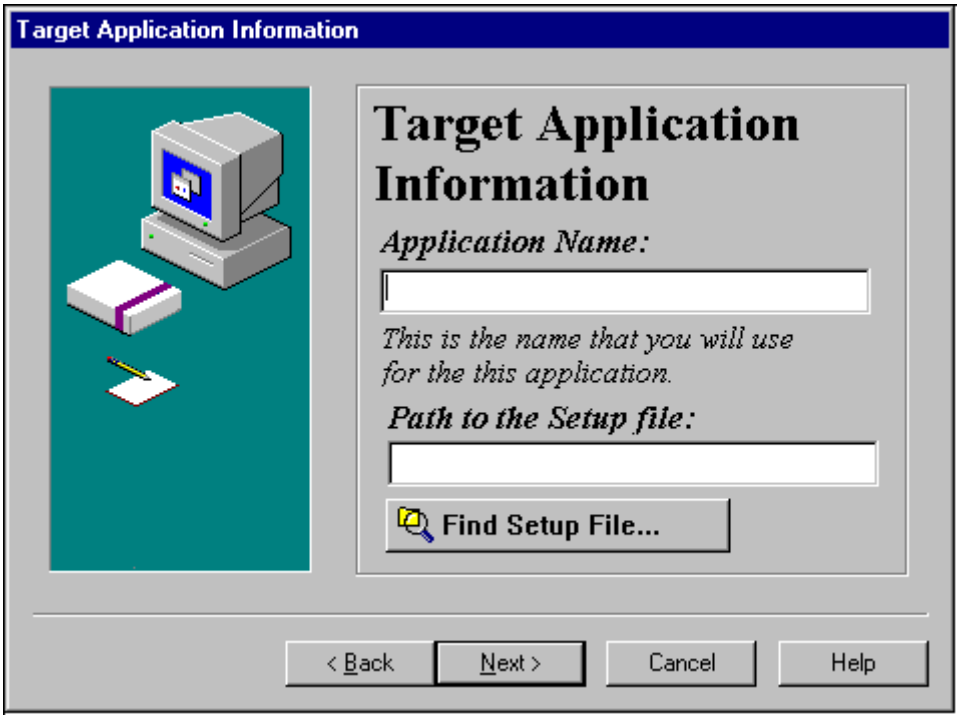
Find LCCM Server

If you do not know the correct name and path of your Server, click on the **Find LCCM Server** button. This allows you to browse through your Network Neighborhood. Once you have selected your Server and clicked on **OK**, LCCM will automatically enter the correct server name and path.



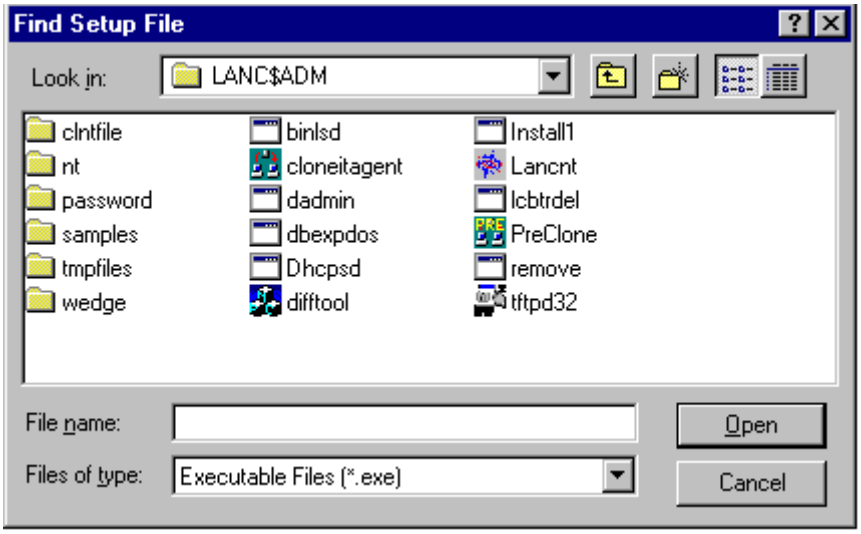
DiffTool Wizard - Target Application Information

The Target Application Information screen allows you to enter a name and the path to the setup file for the application you wish to install.



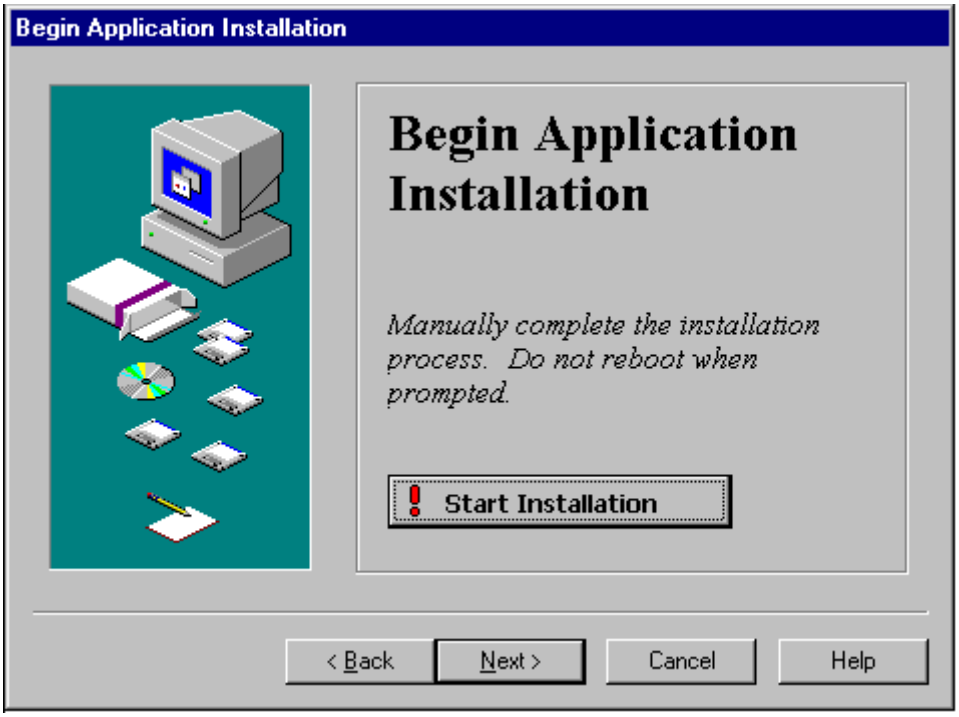
Find Setup File

If you do not know the correct name and path of your setup file, click on the **Find Setup File** button. This allows you to browse for your setup file. Once you have selected your setup file and clicked on **Open,** LCCM will automatically enter the correct setup filename and path. Click on **Next** to continue.



DiffTool Wizard - Begin Application Installation

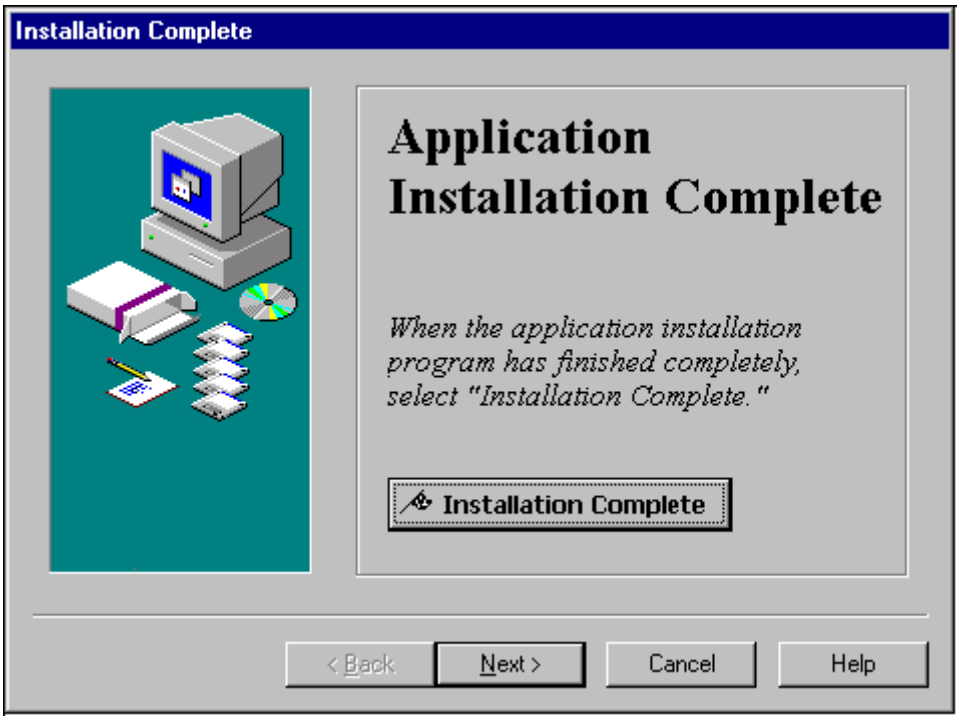
The Begin Application Installation screen allows you to start your installation by clicking on the **Start Installation** button.



Note: If your application setup program asks you to reboot, choose **NOT** to at this time. You can then click on the **Next** button. This is because the DiffTool process must complete for a working image to be created. Ensure that any application you want to use with DiffTool will not automatically reboot at this stage.

DiffTool Wizard - Application Installation Complete

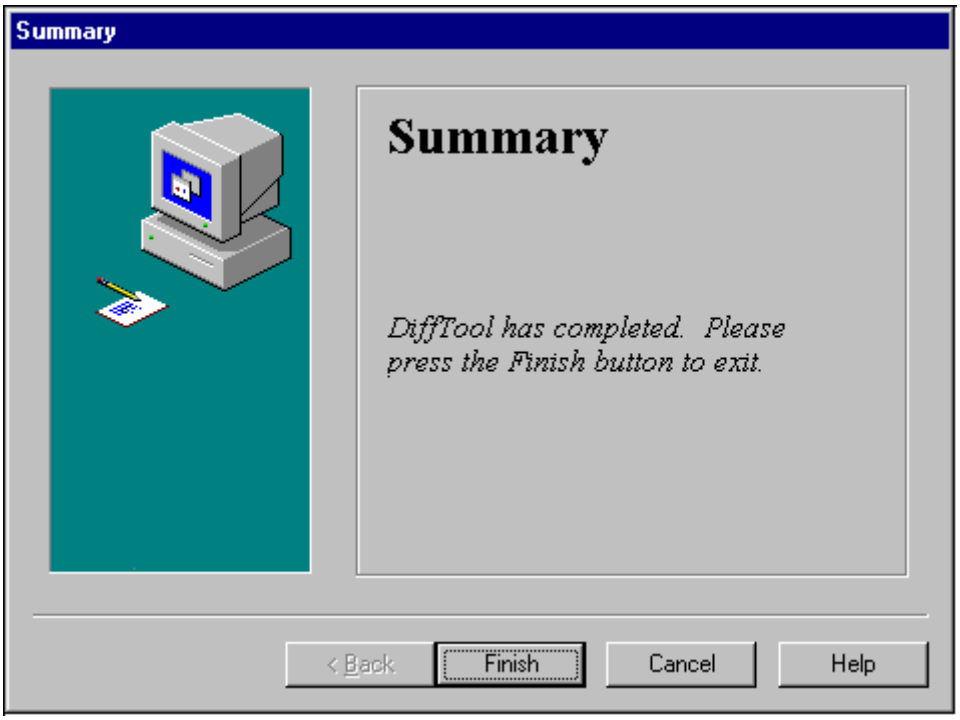
Once your installation has been successful, The Application Installation Complete screen allows you to complete your installation by clicking on the **Installation Complete** button.



Note: Once the hourglass disappears and you return to the Application Installation Complete screen you can then click on the **Next** button.

DiffTool Wizard - Summary

The Summary screen allows you to finish using the DiffTool Wizard by clicking on the Finish button.



Location of Additional Application Directory

When DiffTool installs an additional application on your LCCM server, that can be included in an Operating System Unattended Install profile using the Profile Wizard, a directory and files are created under <drive>:\LCCM\CLNTFILE\DIFF (where LCCM is your program directory). Each additional application will be created under <drive>:\LCCM\CLNTFILE\DIFF, which will contain all the files associated with each installation. All the files for each application are named DIFFnnn.* where "nnn" is used by LCCM to identify each additional application.

Removing Redundant Additional Applications

The resultant additional application installation files can amount to hundreds of megabytes. Therefore, to save hard disk space you can manually delete no longer needed files found in <drive>:\LCCM\CLNTFILE\DIFF . Where DIFF is your additional application directory. If you have installed more than one additional application, each application can be identified by referring to <drive>:\LCCM\CLNTFILE\DIFF \DIFFnnn.LBT to ensure that application "nnn" is the application you want to delete.

Creating a Software Profile Manually

You can create a profile by entering new information, or you can create a copy from a similar, existing profile. The latter saves time because you do not have to re-enter duplicate information. LCCM Version 2.5.1 has been updated to offer you two ways of creating a software profile. These are as follows:

1. Manually: using the same methods as LCCM Version 2.0. This method is only recommended for experienced LCCM 2.0 users.
2. Using the Profile Wizard: this is a new feature of LCCM Version 2.5.1. To create a software profile using this method see Creating a Software Profile Using the Profile Wizard. This is the preferred method for all LCCM users.

To create a new Software Profile:

1. Select **Profile** from the menu bar of the Installation/Maintenance window.
2. Select **Create New**. A new Software Profile Details Notebook appears.
3. In the blank fields of the different pages, type the information for the new software profile.
4. Click on **OK** to save the new profile and return to the Installation/Maintenance window.

To create a Software Profile from a copy of an existing profile:

1. Select the software profile you want to copy within the Installation/Maintenance window.
2. Select **Profile** from the menu bar of the Installation/Maintenance window.
3. Select **Create Copy**. When the copy is created, all fields are transferred except the profile name.
4. Type a unique profile name in the Details page.
5. Edit the other fields that are different from the original software profile.
6. Click on **OK** to save the new profile and return to the Installation/Maintenance window.

Viewing or Editing an Existing Software Profile

To view or edit an existing Software Profile:

1. Double-click on the software profile within the Installation/Maintenance window, or highlight the software profile, select **Profile** from the menu bar, and then select **Configure**. The Software Profile Details Notebook appears.
2. Do one of the following:
    - To view the software profile, select the appropriate pages of the notebook.
    - To edit the software profile, modify the appropriate fields of the various pages of the notebook. For more information, see Software Profile Details Notebook.

Modifications to an existing profile will not take effect on a client already assigned to this profile unless you check the **Mark client for reload** checkbox on the Software page of the Individual Client Details Notebook. If you check this box, the entire image will be reinstalled on the selected client.

3. Click on the **OK** button to return to the Installation/Maintenance window.

Deleting a Software Profile

To delete an existing Software Profile:

1. Select the software profile within the Installation/Maintenance window.
2. Select **Profile** from the menu bar.
3. Select **Delete**.
4. Select **Yes** in the message box that displays.

All clients assigned to the deleted software profile are placed in the Unassigned Clients list of the Installation/Maintenance window.

Creating a Hybrid Remoteboot Image

LCCM Version 2.5.1 has been updated to offer you two ways of creating a Hybrid Remoteboot image, these are as follows:

1. Using the CloneIt Agent Wizard: this is a new feature of LCCM Version 2.5.1. To create a Hybrid Remoteboot image using this method see, Using CloneIt Agent Wizard. This is the preferred method for all LCCM users.
2. Manually: using the same methods as LCCM Version 2.0. To create a Hybrid Remoteboot image using this method see below. This method is only recommended for experienced LCCM 2.0 users.

Objective: To create a Hybrid Remoteboot image and the associated batch files that are used to transport the image and prepare it for use.

For general information on images, see Images.

To create a Hybrid Remoteboot image:

1. Create the image (operating system, applications, etc.) on a donor computer and test it thoroughly.
2. Create a backup batch file to prepare the image and transport it to the server.

    When copying directories using XCOPY, do not exceed the limit of 56 characters in the path name. If you have an especially deep file structure (many subdirectories under the main directory), you might encounter a problem if your extended directory structure becomes too long. This can cause XCOPY to fail, as it runs out of space to store all the names of the directories, subdirectories, and files.

    If you encounter this problem, perform one of the following:

- Reduce the length of the directory structure involved. For example, when copying a new final image from a donor computer to your server, copy the files to a top-level directory on your server (instead of a directory under the LCCM directory). Make sure this top-level directory has a short name (for example \DW59HYB1).
- Use another program for copying files from your server to your clients. For more information, see Using Alternative Methods for Transporting Images.

You might also have to modify long file names or change hidden and system file attributes before using XCOPY. For more information, see LCATTRIB.EXE and DOSLFNBK.EXE.

3. Transport the image to the server. For more information on copying files from the donor computer to the server, see Using a Donor Computer Startup Image.
4. Create batch files with the appropriate file name extensions.
   a) If you choose, you can create a pre-load image batch file with the (.LCP) file name extension.

      This batch file is used to partition the hard disk on the client before the final image is downloaded. The pre-load image batch file executes a program such as FDISK.

      When you use the FDISK command, you can create a response file or use command line arguments in your pre-load image batch file. If you choose to use a response file, you must use an editor that allows input of nonprintable characters because the response file must contain the ENTER and ESC control characters. For more details, see FDISK.COM.
   b) Create a final image batch file with the (.LCI) file name extension.

      This batch file executes such programs as COPY or XCOPY on the client to transport all required software from a directory on the server to the hard disk of the client. Use specific commands for restoring attributes for system and hidden files, for restoring long file names, and for personalizing the image.
5. Copy the batch files to the server.

What to do next:

- Create the Software Profile (see Creating a Software Profile Manually).
- Scan Clients (see, Using the Scan Feature).
- Assign Clients to Profiles (see, Assigning Clients to Software Profiles .
- Process Changes (see, Processing Changes within LCCM).

Creating an Operating System Unattended Install Remoteboot Image

Objective: To create a Windows NT Workstation image and the associated files that are used to prepare the image for unattended installation.

LCCM works in conjunction with the distribution features built into Windows NT Server and provides the ability to pass individual client parameter values to a common NT answer file instead of using the Windows .UDF file for each individual client.

This procedure provides a high-level overview of the steps required to create an image and the associated files required for unattended installation. A working knowledge of Windows NT Server and of editing the Windows NT Workstation answer file (UNATTEND.TXT) are required in order to perform this procedure.

Note: In order to achieve 100% unattended installation of Windows NT Workstation, all adapters and devices installed in or attached to the client computer must support unattended installation. Some adapters and devices do not support unattended installation will prompt the user at the client computer for additional information or files during the Windows NT Workstation installation process. If you are unable to achieve

100% unattended installations, contact the manufacturer of the adapter or device, or refer to the Microsoft Knowledge Base on the World Wide Web for possible tips or fixes.

To create an Operating System Unattended Install Remoteboot image:

1. Set up a directory to act as your distribution sharepoint as shown:

   C:\LCCM\CLNTFILE\Dist_Sharepoint

   where "C:\LCCM" where "\Dist_Sharepoint" is the directory of a specific Sharepoint.

   You can give the distribution sharepoint directory any name you want.

2. Create a subdirectory under your distribution sharepoint directory and name it "I386".
3. From the Windows NT Workstation CD, copy the contents of the I386 directory and all of its subdirectories to the I386 directory in your distribution sharepoint. For example:

   XCOPY D:\I386*.* C:\LCCM\CLNTFILE\WINNT40\I386 /S /E /V

4. Create the following two directories to set up the directory structure for network device drivers:
   - C:\LCCM\CLNTFILE\Dist_Sharepoint\I386\OEM
   - C:\LCCM\CLNTFILE\Dist_Sharepoint\I386\OEM\NET
5. Under the OEM\NET directory, create a directory for each type of network adapter that your clients will be using. Next, copy the Windows NT device driver and OEMSETUP.INF file from each network adapter device driver diskette into the appropriate network directory.
6. Edit the Windows NT answer file, UNATTEND.TXT, to assign "dummy" parameter names to set unattended installation options and to set up network adapter information.
7. If your client's hard disk is not partitioned, it is essential to create a pre-load image batch file. Name and save this file with a (.LCP) extension under C:\LCCM\CLNTFILE. Enable the pre-load image batch file within the Software page of the Software Profile Details Notebook. If your client's hard disk is already partitioned and has sufficient capacity for the image you want to download, a pre-load image batch file is not required.
8. Create the customization batch file using DEDITD commands to assign variables to the dummy names you used in the answer file. Name and save this file with a (.LCI) extension under C:\LCCM\CLNTFILE.

As an alternative you can use the more powerful LCCUSTOM utility to replace DEDITD for replacing all occurrences of a parameter with it's value throughout a file.

What to do next:

- Scan Clients (see, Using the Scan Feature).
- Assign Clients to Profiles (see, Assigning Clients to Software Profiles) .
- Process Changes (see, Processing Changes within LCCM).

Create the Operating System Unattended Install software profile for the Windows NT Workstation image. See Creating a Software Profile Using the Profile Wizard.

Within the Software Profile Details Notebook:

- Fill in the Parameters page with the parameter names you used in the customization batch file and the associated values that are common for all clients using the profile (for example, the organization name).
- Fill in the Client Parameter page with the parameter names you used in the customization batch file that will have values unique to each individual client (for example, the Windows NT product identification number from the Certificate of Authenticity).

Creating a Remoteboot Image

Objective: To create a Remoteboot image for use with LCCM for RPL clients only.

LCCM uses a Remoteboot image to start up client computers without the use of the local hard disk drives of the computers.

The Remoteboot image is created using the Microsoft Windows NT Remoteboot Manager program. Use the Remoteboot management tools of Windows NT to do this, as LCCM does not provide these functions. You must refer to your Windows NT documentation for full information on creating a standard Remoteboot client.

To create the image:

1. Create a Standard Windows NT Remoteboot client. For additional information, refer to your Windows NT Server Installation Guide produced by the Microsoft Corporation, or the Windows NT Workstation Resource Kit produced by Microsoft Press.
2. For each client using this profile:
    a) Ensure that each new client computer is set up correctly for Remoteboot.
    b) Restart the client computers.
    c) Use the scan function to locate new clients as required. If you cannot locate clients using the Scan function, see Installing Network Adapter Device Drivers.

To create the Software Profile:

1. Return to the LCCM interface.
2. Select **Profile**.
3. Select **Create New.** A blank Software Profile Details Notebook appears.
4. On the Details page:
    a) Type the name of the new profile.
    b) Select the **Standard** radio button.
5. On the Software page, type the image file name in the DOS Image File field. This is the same profile name you created within Remoteboot Manager.
6. Type all other required information on all pages in the notebook. For additional information, see Software Profile Details Notebook.
7. When you are finished typing the information, select **OK** to save the information and close the notebook.

To assign a client to the profile and process the changes:

1. In the Installation/Maintenance window, assign clients to the new software profile. For additional information, see, Assigning Clients to Software Profiles Manually and Using Client Assignment Wizard.
2. Click on the **Process** button to save changes to the LCCM database and begin processing.

Using a Donor Computer Startup Image

Use the following procedure to create and assign a donor computer startup image. This procedure establishes a LAN connection between the donor computer and the LCCM server. When you establish the connection, you have read/write access to the server and can transport the image from the donor computer.

After creating the donor computer startup image and profile, you can use it repeatedly to transport images from any donor computer.

To create a donor computer startup image and profile:

1. Use a text editor to create a final image batch file (.LCI) by typing the following (without the bullet points):
   - Pause
   - Pause
2. Save the file and name it with a name of your choice. Ensure the file name has a .LCI file extension. In this example, DONORBT.LCI is used.
3. Copy the DONORBT.LCI file into the following directory:

   \LCCM\CLNTFILE

   where LCCM is your LCCM program directory.

4. Create a Software Profile Details Notebook for DONORBT.LCI:
   a) Within the Installation/Maintenance window, select **Profile** and then select **Create New**.
   b) On the Details page:
      - Type **Donor Boot** in the Profile Name field.
      - Select the **Hybrid** radio button.
   c) On the Minimum Hardware page:
      - Select the donor computer network adapter from the drop-down menu of the **Network Adapter field**.
      - Select **Any Video – Don't Care** from the drop-down menu of the **Video Chipset** field.
      - Type 0 in the **RAM** field.
      - Type 0 in the **Hard Disk** field.
   d) On the Software page, in the Final Image File Name field, use the **Browse** button to locate the DONORBT.LCI file, then select it. Leave the other fields on this page blank.
   e) Select **OK** to save and close the notebook.

To assign the image to the donor computer:

1. Start LCCM and start the scan process by clicking on the **Start** button in the Installation/Maintenance window.
2. Within the Installation/Maintenance window, assign the donor computer to the Donor Boot Image profile and click on the **Process** button.
3. If your donor computer has Wake-on-LAN enabled LCCM will automatically restart the donor computer otherwise you will have to restart the donor computer manually. A Hybrid Remoteboot takes place on the donor computer and establishes a LAN connection.
4. From the donor computer keyboard, press **Ctrl + C** to escape from the Hybrid Remoteboot. The LAN connection remains active, and a command prompt appears.
5. Type "net logoff" and **Enter**.
6. Type "net logon" and **Enter**.

7. Type your **user ID** and **password**, when prompted. You must log on as the network administrator. You now have read/write access to the appropriate server drive. It is very important that you understand the operating system environment now present at the donor. The donor computer hard disk is now drive D. Any statements in your backup batch file DONORBT.LCI that refer to the donor computer hard disk must use drive letter D. The environment now present at the donor computer might affect the other drive letters and paths used in your backup batch file. For more details, see Introduction.

Once you have created a Donor Boot image profile, you can use it repeatedly to transport images from any donor computer. For example if your donor computer has a Windows 95 operating system, the Donor Boot image profile will transport the complete Windows 95 operating system. If another donor computer has a Windows 95 operating system and MS Word installed, the Donor Boot image profile will transport the complete Windows 95 operating system and MS Word.

Using Alternative Methods for Transporting Images

Most of the examples and training exercises in this guide use XCOPY as the method of transporting images from the donor computer to the server and from the server to the client computer. See the introduction for specific examples using XCOPY. When looking over these procedures, you might notice that XCOPY has limitations with long file names, file attributes, and the number of characters that can be used in a path. Furthermore, files transported with XCOPY are full size (no compression), which adds extra traffic on the LAN. You can avoid some of these limitations by using backup and restore programs, see the examples given below.

The following examples show two methods of using the DOS version of the PKZIP program to transport an image from a donor computer to a server and from a server to the client computer. Other archive and backup/restore programs might have similar capabilities and can be used to achieve the same result.

EXAMPLE 1: Using PKZIP as the transport method to the server:

1. Install a licensed copy of PKZIP and PKUNZIP in the "\LCCM\CLNTFILE" directory or one of its subdirectories, where LCCM is your LCCM program directory.
2. Create the donor computer and test it thoroughly.
3. Create a directory under C:\LCCM\CLNTFILE for your zipfile.
4. Use the following PKZIP command in your backup batch file to compress (ZIP) the image into a single .ZIP file residing on the server.

   C:\path_1\PKZIP C:\path_2\W95EXMP1.ZIP -r -P D:*.*

   where:

   - C: is the server drive
   - path_1 is the path to the directory on the server containing PKZIP (LCCM)
   - path_2 is the path to the directory you created for the image (the directory you created in step 2)
   - W95EXMP1.ZIP is the name of the ZIP file to be created
   - D: is the active partition of the donor computer

Because the backup batch file is run outside of the Hybrid Remoteboot process, you cannot use the drive variables %TARGET% and %LCCMPATH%. Therefore you must be aware of how the drives are mapped during the donor boot process and you must use the correct path. During the donor-boot process, C:\LCCM is mapped to the server "LCCM\CLNTFILE" directory, where LCCM is your LCCM program directory and the primary partition of the donor computer hard disk is assigned as D:

Note: PKZIP attributes are case sensitive. You might want to use a different parameter for compression based on the load this method puts on your LAN. For very large images, you might have to run PKZIP against smaller portions of the image by using list files. Refer to the PKZIP documentation for information about PKZIP attributes and the use of list files.

When you run your backup batch file from the donor computer, a single .ZIP file is created on the server.

EXAMPLE 2: Using PKUNZIP as the transport method to the client:

In your final image batch file, include the following line in place of the XCOPY statement:

%LCCMPATH%\path_1\PKUNZIP -d %LCCMPATH%\path_2\W95EXMP1.ZIP %TARGET%

where:

- %LCCMPATH% is the path to the server "LCCM\CLNTFILE" directory.
- path_1 is the path to the directory on the server containing PKZIP
- path_2 is the path to the directory on the server for W95EXMP1.ZIP
- W95EXMP1.ZIP is the name of the ZIP file
- %TARGET% is the client computer active hard disk partition

When you have assigned a client to this profile, the final image batch file is run, and the single compressed file on the server is unzipped on the client hard disk. For a complete example, see Final Image Batch File: DOS/Windows Image.

Passing Parameters to Image Batch Files

Parameters can be replaced automatically within image batch files and within the Windows NT Workstation answer file (UNATTEND.TXT) using LCCM. This is done during the image download process. One generic image batch file is associated with each software profile. The LCCM utility program DEDITD.EXE is used to replace parameters.

1. Create the image batch file

   If you have not already done so, create the image batch file you will be working with. This can be any type of batch file used with LCCM, for example, a final image batch file (.LCI) or a maintenance file (.MNS). In your image batch file, create environment variables ("dummy" entries, enclosed within percentage signs) where parameter values are required. For example, %USERNAME%.

2. Create a Software Profile

   If this is a new image, create a new software profile. For additional information, see Software Profile Details Notebook.

3. Set up the parameters common to all clients as follows:
   a) In the Installation/Maintenance window, select the profile you are working with.
   b) Select **Profile** and then **Configure** or double-click on the selected profile.
   c) Click on the **Parameters** tab.
   d) Enter the parameters that are common to all clients using this software profile. The Name fields must correspond to names you have given to parameters used in your batch files. Within the batch files, the parameter names must be enclosed within percentage (%) signs.

4. Set up the parameters that are unique for each client as follows:
   a) Click on the **Client Parms** tab.

b) Type the Names of each parameter. These Names will be copied automatically into the Parameters page of the Individual Client Details Notebook for every client assigned to this software profile. There are only three possible values you can enter at this stage. For additional information, see Parameter Exceptions and Software Profile Details - Client Parms Page.

c) Click on the **OK** button to save the changes to the Software Profile Details Notebook.

d) If you have not yet assigned clients to this profile, you must do this now. For additional information, see Assigning Clients to Software Profiles .

e) In the Installation/Maintenance window, select the first client using this software profile. The Individual Client Details Notebook is displayed. For additional information, see Selecting Clients.

f) From the Individual Client Details Notebook, select the Parameters page. The available parameters (copied from the Client Parms page of the Software Profile Details Notebook) are displayed.

   Enter the Values for the available parameters. You can also specify three parameter exceptions as values on this page. For more details see, Parameter Exceptions and Software Profile Details - Client Parms Page.

g) Return to step 4f above and select the next client. Continue until you have assigned parameters for all clients.

5. Select the Image For Load (or Reload).

   You must now select the image to be loaded on the client. There are several ways of doing this, depending on what type of image you are working with. You can load the image on to a single client, a group of clients, or all clients using this software profile.

   - If this is a new final image and you have followed all the above steps, simply click on the **Process** button to begin downloading the image, or specify a scheduled time and day for the download to take place (you can do this through the Scheduler of the Individual Client Details Notebook or the Default notebook). Click on the **Process** button.
   - If this is an update to a final image that has already been assigned to a client, check the **Mark Client for reload** check box in the Software page of the Individual Client Details Notebook.
   - If this is a maintenance image, check the **Run maintenance file** check box in the maintenance page of the Individual Client Details Notebook.

Parameter Exceptions

Four character strings are reserved for specific purposes when used as parameter values. If any of the reserved character strings are used as a value in either the Client Parameters page of the Software Profile Details Notebook or the Parameters page of the Individual Client Details Notebook, the character string picks up a pre-existing value from the Individual Client Details - Details Page.

Each of the following character strings picks up the values specified in the associated fields in the Details page of the Individual Client Details Notebook.

- %COMPNAME%
  This character string yields the company name of the client
- %CNAME%
  This character string yields the name of the client.
- %CADDRESS%
  This character string yields the MAC address of the network adapter or network subsystem.

- %CSERIAL%
  This character string yields the serial number of the client.

Client Clone Facility

LCCM supplies a utility program that will produce an exact copy of a donor client computer. This process is known as "cloning", and the program, which carries out the operation, is known as the CloneIt Agent.

The compressed image file is automatically copied to the LCCM server so that it can be used to install duplicate cloned images onto other clients with identical hardware as the donor computer.

The CloneIt Agent currently supports the following computer platforms:

- Windows 95
- Windows 95 OSR-2
- Windows 98

Making a Cloned Computer.

The CloneIt Agent must be used correctly to ensure that a good "Clone" is made from your donor client. On your donor client, follow these steps closely to make a good clone:

Build the donor computer:

1. Install the operating system and all other required application software onto the client computer that you wish to use as the donor for the clone profile.
2. Connect the new donor client to the LAN that can be accessed by the LCCM Server.
3. Make a thorough check to ensure that all the required application software is installed and working correctly on the donor client, and that the network connection is operating properly.
4. Shutdown and Restart the donor client.

Build the Clone Image:

5. Allow the donor client to restart fully, allowing sufficient time for all programs to load that may have been placed into Window's automatic Startup folder.
6. When startup has completed, shutdown all programs that are currently active on the client, leaving only the Windows operating system active. Active programs are displayed on the Windows taskbar at the bottom of the screen. Right-click on active items and select **Close**.
7. From the Windows desktop, double-click on the **Network Neighborhood** resource and then on **Entire Network**. A list of available servers will be displayed.
8. Look for the name of your LCCM Server, and double-click on it. A list of NT "shares" will be displayed for this server.
9. Logon to the domain with **Domain Administrative** rights.
10. Double-click on the share **LANC$ADM**. This will open the LCCM program installation directory.
11. Double-click on **CloneItAgent.exe.**
12. Click on **OK** to begin the Cloning process. An easy to use CloneIt Agent Wizard will begin on the client. Follow the simple onscreen instructions to create the clone.

What to do next:

- Build the software profile (see, Using Profile Wizard)
- Assign and process clients (see, Using Client Assignment Wizard)

Note: Remember to logon to the donor computer as a normal user once you have completed the cloning process.

When the CloneIt Agent begins, the donor client computer's network configuration will be summarized, and you will be asked to supply a name for the cloned image to be created. All the files and directories will then be copied to the LCCM server in a compressed format, into the \LCCM\Images directory.

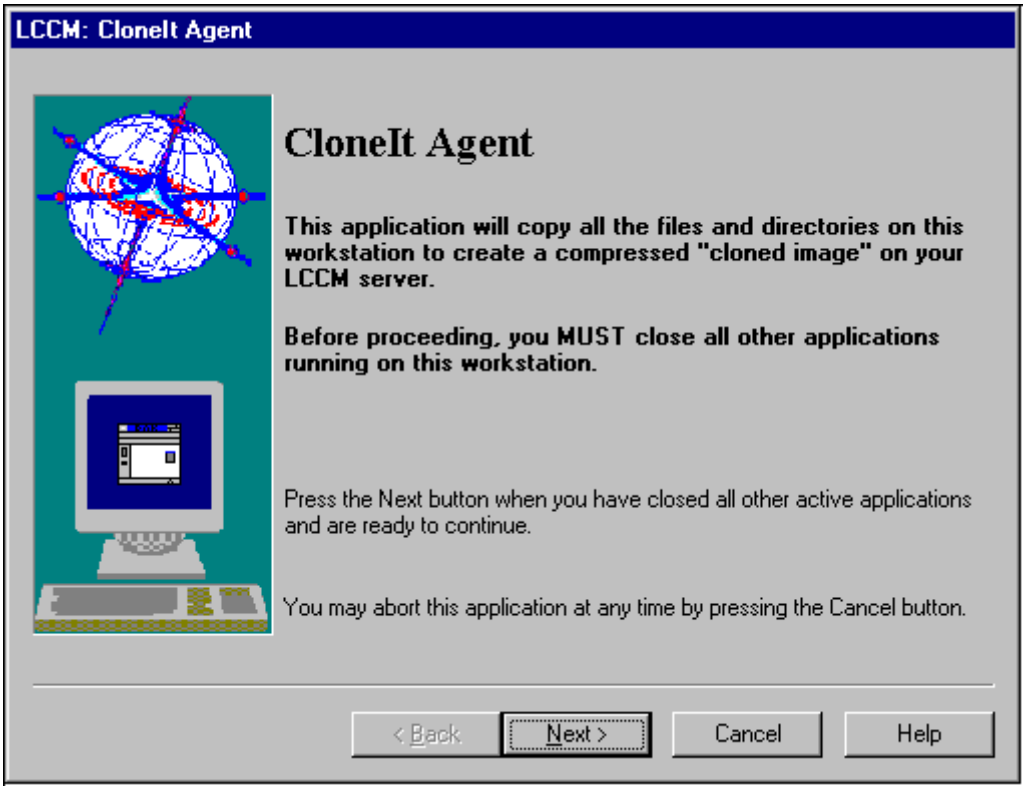
Note: You may only assign clients with identical hardware setups to the original donor computer, to the new software profile.

Using CloneIt Agent Wizard

The aim of the CloneIt Agent Wizard is to make it easy for an LCCM user to produce an exact copy of a donor computer, and a corresponding software profile based on the donor image. For Screens in the CloneIt Agent Wizard, you must enter the correct values. Failure to enter a correct value may mean that you cannot move onto the following screen to continue with the cloning.

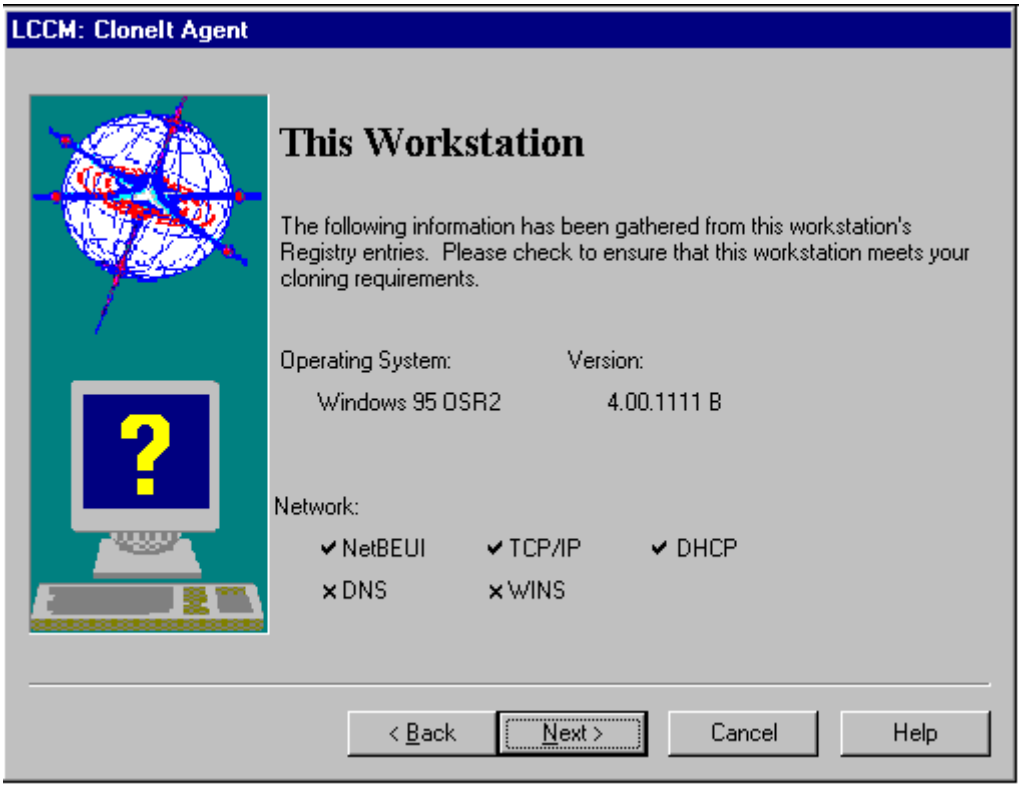
CloneIt Agent Wizard - CloneIt Agent

The CloneIt Agent screen provides a description of the CloneIt process. Having read the text in bold, you can progress to the next screen.



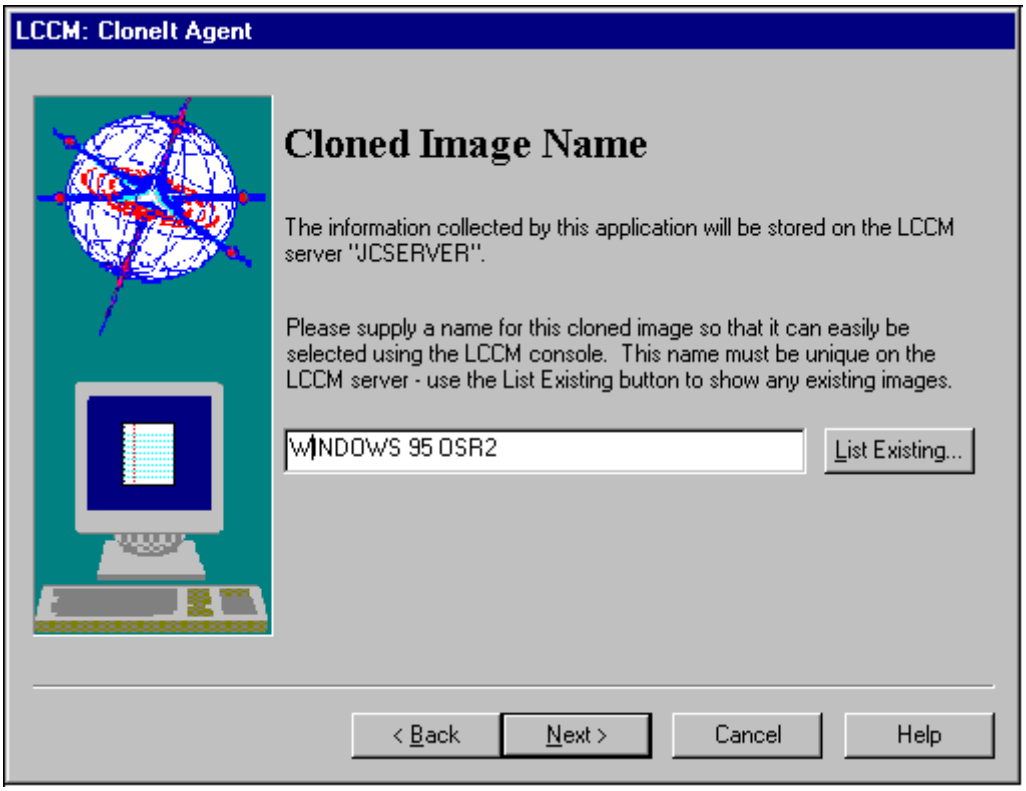
CloneIt Agent Wizard - This Workstation

The Workstation screen gives details from the donor computer's registry. Verify these details and then you can progress to the next screen. If the details do not meet your requirements, you should cancel at this stage.



CloneIt Agent Wizard - Cloned Image Name

The Cloned Image screen indicates the LCCM server on which the cloned image will be stored and, allows you to specify a descriptive name.

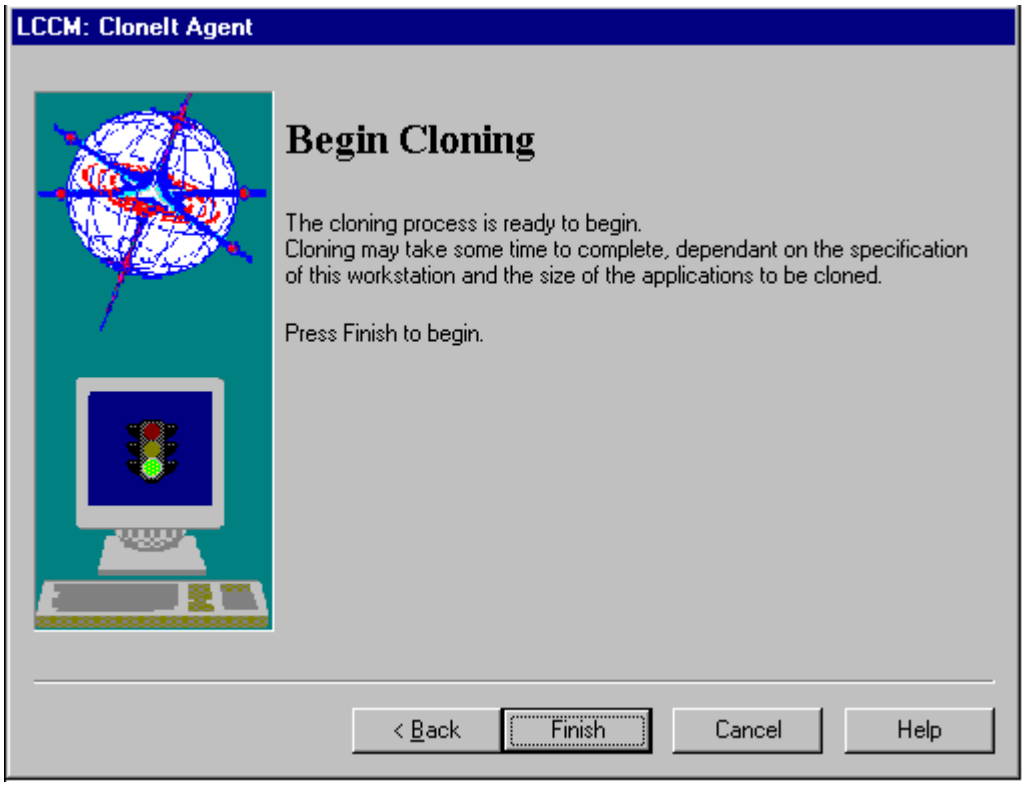


List Existing

To display a list of existing Cloned Images click on the **List Existing** button.

CloneIt Agent Wizard - Begin Cloning

The Begin Cloning screen indicates that the cloning process is ready to begin. You can make any changes at this stage by going back through the wizard before clicking on **Finish** to begin the cloning process.



Cloning in Progress

When the cloning process has begun, the Cloning in Progress screen will be displayed giving the current status of the cloning process and the estimated time remaining in minutes and seconds.

Managing Client Hard Drive Partitions

The Rapid Restore Hard Drive Recovery Partition.

The Rapid Restore Recovery Partition is created by the Rapid Restore program. Rapid Restore is a Backup/Recovery mechanism that allows the backup of the primary partition of a client when it is in a known good state. It copies the primary partition to a hidden partition on the client hard drive. In the case of a later failure, a Rapid Restore can be made to restore the client's active (boot) partition to a known good state. When enabled, Rapid Restore will reserve an amount of disk space equal to the size of your primary partition. The rest of the space on your hard disk will be unused.

A Rapid Restore backup can be enabled on either a successful completion of an LCCM client install (if it is selected in the LCCM profile), or it can be run as a DOS utility from a DOS boot disk.

IMPORTANT: The Rapid Restore operation will completely overwrite the original primary partition, including all data that may reside there. This will recover the client to a known good state**,** but you will lose any data that you added to your client after the initial LCCM deployment of the client. Rapid Restore will automatically create a non DOS partition on your client's hard disk, where it stores your backed up data. If you delete this partition using FDISK, NT Disk Administrator or another disk administration tool, then your Rapid Restore backup partition will be deleted and a subsequent Rapid Restore will not work.

Minimum Requirements of a Rapid Restore Partition.

The program that creates the Rapid Restore partition will first check the size of the client's primary partition. It will then check for enough space on the client's hard drive equal to the size of the primary partition + 16 sectors (the extra sectors are required to store Rapid Restore information). You must have at least this much space remaining on the client's hard drive available in order to create the Rapid Restore partition.

Using Rapid Restore To Back Up or Restore Your Boot Partition.

A Rapid Restore partition can be created in one of three ways:

- Automatically using the Profile Wizard

  The easiest and recommended method for creating a Rapid Restore partition is simply to enable the function on the Profile Wizard. The Rapid Restore partition will then be created on each client that is assigned to the profile, before downloading the Image. After the Image has been copied onto the client, an exact copy of the Primary partition will be made to the hidden Rapid Restore partition. For more details, see Profile Wizard - IBM Rapid Restore Partition Setup.

- Using the Individual Client Details Notebook

  By checking the **Rapid Restore** checkbox and enabling the **Backup partition** radio button. This will allow a Rapid Restore Backup operation to be run from an LCCM console. For more details, see Individual Client Details - Maintenance Page.

- Manually

  The Rapid Restore partition can be created manually on the client, using a DOS startup diskette and the RAVE.EXE program. For details on running Rapid Restore manually, see RAVE.EXE (Using with a DOS Startup Diskette) .

Note: To re-run a backup operation or make your backed up partition up-to-date any of the above methods can be used.

To run a restore operation any of the above methods can be used, but when using the Individual Client Details Notebook after checking Rapid Restore, select the **Restore partition** radio button.

Creating a BIOS Update Image

Objective: To create a BIOS flash image to update the BIOS level of specific client computers on your LAN.

The BIOS level of the client is part of the information collected during the scan process. (For more details on the information collected during a scan, see Using the Scan Feature). Upgrade the BIOS level for the following reasons:

- Updates to the BIOS function are required.
- A change to the client computer's BIOS language is necessary.

If updates are required, IBM makes the new files available through bulletin board systems, publicly accessible servers, the World Wide Web, or similar means. BIOS updates are distributed as self-extracting executable (.EXE) files which can be identified by the format xxJTnny.EXE for English and xxJ2nny.EXE for Japanese (xx is a two letter system identifier code and nny identifies the BIOS level). You download them to your hard disk, and run the .EXE file. The .EXE file will prompt you with instructions for creating the update diskette. In the following procedure, this diskette is referred to as the BIOS flash diskette. Alternatively LCCM has a new feature whereby BIOS updates are distributed as self-extracting executable

(.EXE) files (identified by the format xxJ5nny.EXE, where xx is a two letter system identifier code and nny identifies the BIOS level), from which LCCM will automatically run the .EXE file.

For "JT" and "J5" files, updating the BIOS level for a client is a two-step process. First, you must create an image from the BIOS flash diskette. You do this through the Installation/Maintenance window of LCCM. Once an image is created, you can perform the second step, of using the Individual Client Details Notebook to update the BIOS level for specific clients. For more information on this second step, see Updating the BIOS Level.

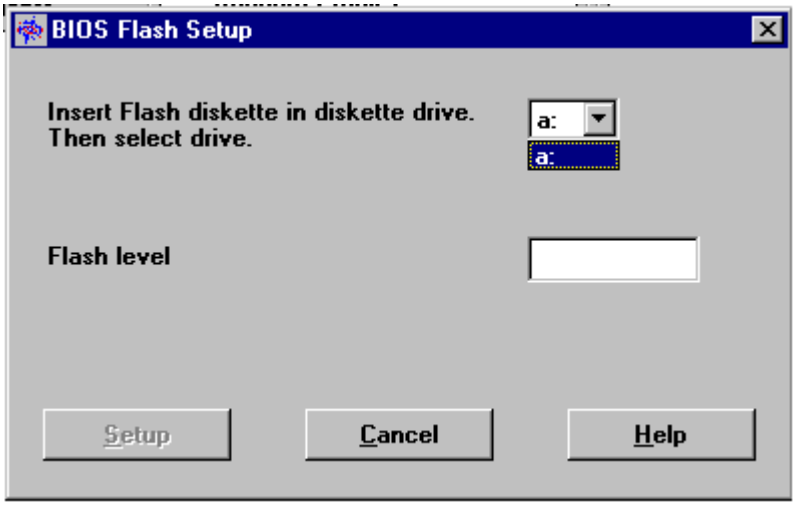
IMPORTANT: Write-protect the BIOS flash diskette before performing this procedure.

To create an image from a BIOS flash diskette:

1. Insert a BIOS flash diskette into the diskette drive.
2. Select **Tools** from the menu bar of the Installation/Maintenance window.
3. Select **Import BIOS** files.
4. Select **Read BIOS Flash Diskette**.
5. In the BIOS Flash Setup window, select the diskette drive letter.

   The diskette is read and the flash level displayed. (The flash-level name is the volume label of the diskette. The first two characters of the name are unique to the system. The third and fourth characters identify the flash BIOS routine. The fifth and sixth, with sometimes an additional seventh, characters identify the revision level).
6. Accept the flash level name given or type in a new name. This name is used by LCCM to identify the BIOS level.

   Note: If you change the level name generated from the BIOS flash diskette, and download this to a client, the client BIOS level shown on the BIOS setup screens of the client computer will not match the Current BIOS Level field from the Maintenance page of the Individual Client Details Notebook. This is because the BIOS program has the original level name embedded within the program code.



7. Select **Setup**.
8. A new directory, named after the flash level, is created under the <LCCMDRIVE>:\LCCM\CLNTFILE\BIOS directory, and the contents of the diskette are copied, where LCCM is your LCCM program directory.

9. If you are overwriting an existing directory, you are warned of this and given the option to **Cancel** or **Overwrite**.
10. Click **OK.**

To assign this BIOS update image to different client computers, see Updating the BIOS Level.

Note: Only BIOS levels compatible with the client system board will be displayed in the BIOS Level field on the Individual Client Details Maintenance page.

IMPORTANT:

For LCCM to process BIOS updates for IBM's Netfinity 7000, Model 86/51:

1. Rename the file CD0_CD0_.BAT in your CLNTFILE\BIOS\<biosid> directory to LCREFLSH.BAT
2. After your BIOS Image has been updated, refer to your update diskette's README.TXT. This will provide you with instructions on how to manually add the BIOS Model Number and Serial Number that LCCM requires to process your BIOS update.

A Note to Japanese Customers

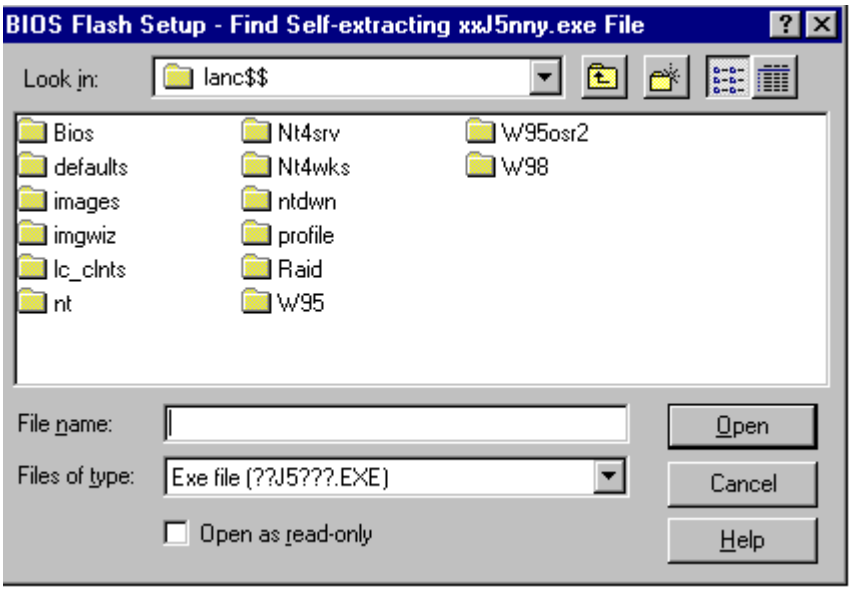
J2 and JT files are self- extracting files which create BIOS Flash Update Images. These images can subsequently be imported into LCCM's BIOS flash directory using the method described in steps 1 to 10 above.

Unpacking (xxJ5nny.EXE) Files.

If you intend to alter your client BIOS administrator password using LCCM, use this option to search for a group of packed files that are supplied for this purpose (on selected IBM systems only).

To unpack a BIOS flash .EXE file:

1. Select **Tools** from the menu bar of the Installation/Maintenance window.
2. Select **Import BIOS** files.
3. Select **Unpack Self Extracting .exe File**.
4. Browse for the BIOS Flash executable file. This file will be in the format xxJ5nny.exe
5. When you have found the file click on **Open**.



From the opened browser shown above, you can search for a file.

When a file is selected, it will be unpacked into the correct flash BIOS directory on your server.

If this file is not shipped with your BIOS flash diskette, you may still use LCCM to change the BIOS administrator password. Check the LCCM Web page for an updated list of supported systems.

Creating a CMOS Setting Image

Objective: To create a CMOS settings image to use with different client computers on your LAN.

CMOS is a small block of data that contains the BIOS configuration settings of a client computer. You might want to create different CMOS images depending upon your end users or variations in the installed hardware. For example, you might want to allow some clients access to their diskette drives, while restricting diskette drive access for other clients.

Before you begin you must download the BIOS update diskette that matches your client type. From the new BIOS update diskette, you must use the CMOSUTIL.EXE or SRCMOSxx.EXE (where xx will be two characters identifying the system board type). You will find the CMOSUTIL or SRCMOSxx program on the flash BIOS diskette where you obtained this BIOS level, on your LCCM server in the LCCM\CLNTFILE\BIOS\BIOS_Flash_Name directory, or in the original Internet download file.

To create a CMOS settings image:

1. At a donor computer:
    a) Start the computer and access the Configuration/Setup Utility program. On many IBM computers, you can access this program by pressing F1 while the computer is starting up.
    b) Change and save the desired settings as required.
    c) Exit from the Configuration/Setup Utility program and restart the computer. Ensure that the computer starts up and functions properly.
2. Use the CMOSUTIL.EXE program to save the current settings of the donor computer to a file that you will name with the .CMS extension.
    a) To run the CMOSUTIL or SRCMOSxx program and save the settings to a file, type:

    CMOSUTIL \path\file_name.CMS /create

    Or

SRCMOSxx \path\file_name.CMS /create

Where **xx** is the two character system board identifier, and **path** is any accessible directory name of your choice

Give the file a unique name that you can identify later. For example, NO35DISK.CMS could be the name of a file that has settings that restrict a client computer access to diskette drives.

b) Copy this file to the corresponding BIOS directory on your server which is named:

C:\LCCM\BIOS\Flash_BIOS_Name

where the Flash_BIOS_Name directory is the name of the BIOS level on your donor computer (unless this was changed by the system administrator during the Read BIOS Flash Diskette process).

3. If you want to create another CMOS image that uses different settings, return to step 1 and repeat the procedure, saving the results to a different file name.

To assign this CMOS image to client computers, see Assigning Clients to a CMOS Settings Image.

Managing Clients

Objective: To manage client settings through the LCCM interface.

The procedures in this section are specific to the interface (screens) of LCCM. For most of the procedures, you must access the Individual Client Details Notebook. For specific information on the components of the Individual Client Details Notebook, see Individual Client Details Notebook.

For the majority of the procedures in this section, you must select (click on) clients from the listings within the Installation/Maintenance window. If you select a single client, you can make changes for that client only. If you select multiple clients, you can make changes for all clients selected. When you are making changes for multiple clients, not all fields are available for editing. Fields unavailable for editing are grayed out. For information on selecting multiple clients within the Installation/Maintenance window, see Selecting Clients.

Assigning Clients to Software Profiles

LCCM Version 2.5.1 has been updated to offer you two ways of assigning your clients to a software profile. These are as follows.

1. Manually: using the same methods as LCCM Version 2.0. To assign a client to a software profile using this method see, Assigning Clients to Software Profiles . This method is only recommended for experienced LCCM 2.0 users.
2. Using the Client Assignment Wizard: this is a new feature of LCCM Version 2.5.1. This is the preferred method for all LCCM users.

Starting Client Assignment Wizard

The Wizard will start automatically when clients are dragged and dropped onto the new profile. The Wizard consists of several screens designed to make assigning clients (including assigning parameter values) as easy as possible.

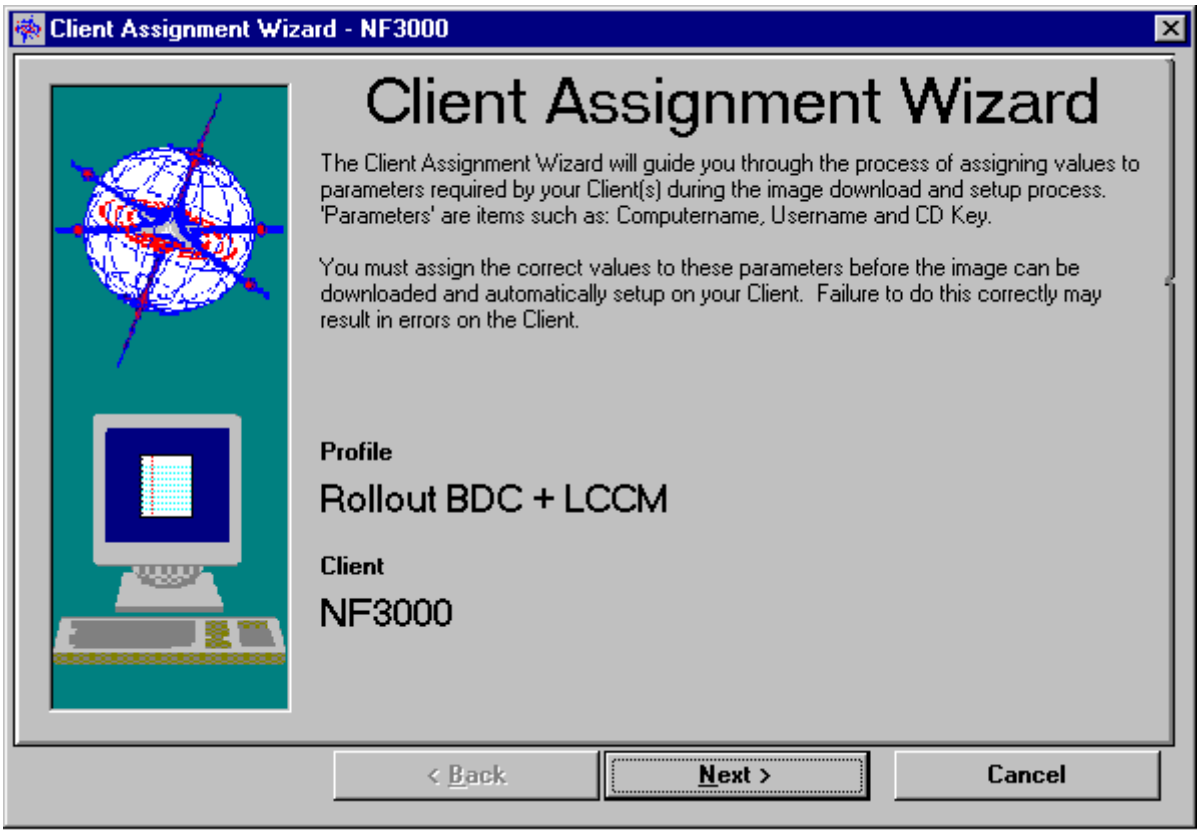
For Screens in the Client Assignment Wizard, default values will be accepted unless you enter customized values to override the default values.

Using Client Assignment Wizard

Clients can easily be assigned to software profiles using the Client Assignment Wizard. To assign the clients to a profile manually, disable this option by unchecking the **Enable Client Assignment Wizard** checkbox on the Details page of the Software Profiles Details Notebook, as and when you create a new Profile. This box is checked by default.

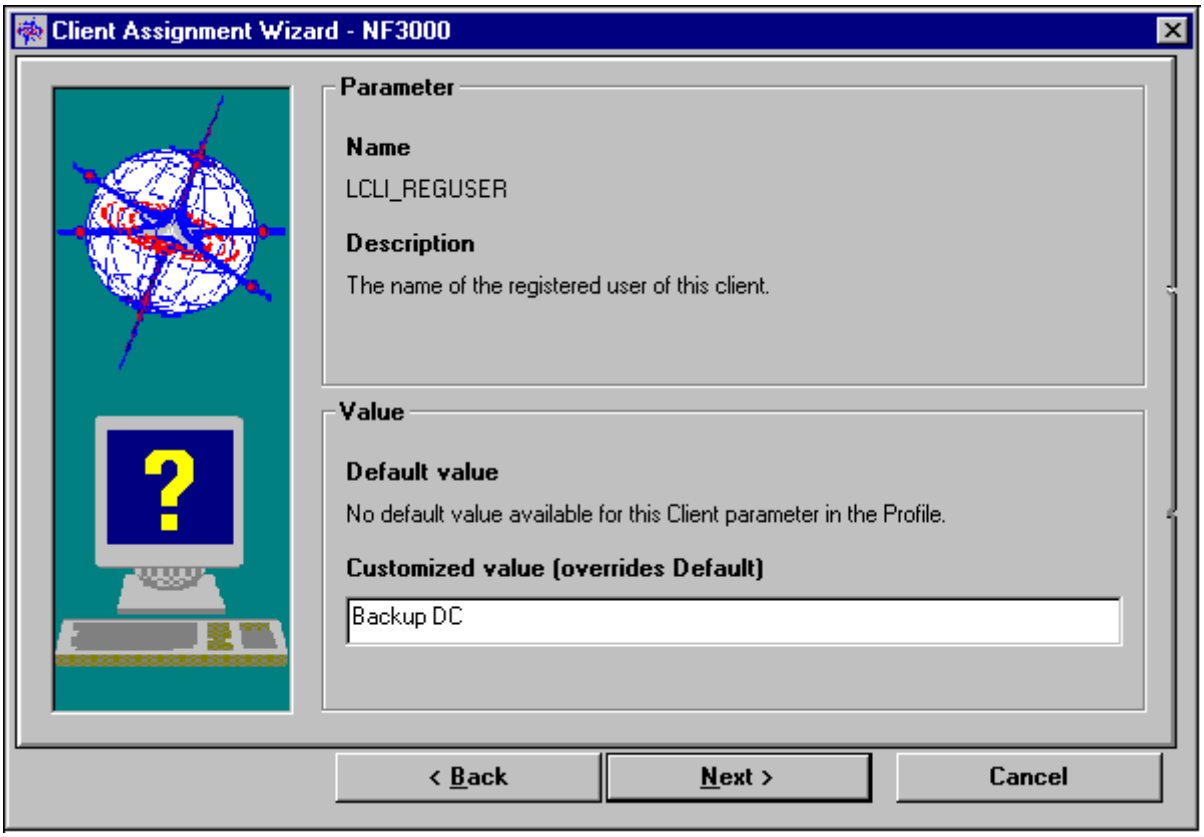
Client Assignment Wizard - Client Assignment

The Client Assignment Wizard screen identifies the existing profile name and client name to which your scanned client is to be assigned.



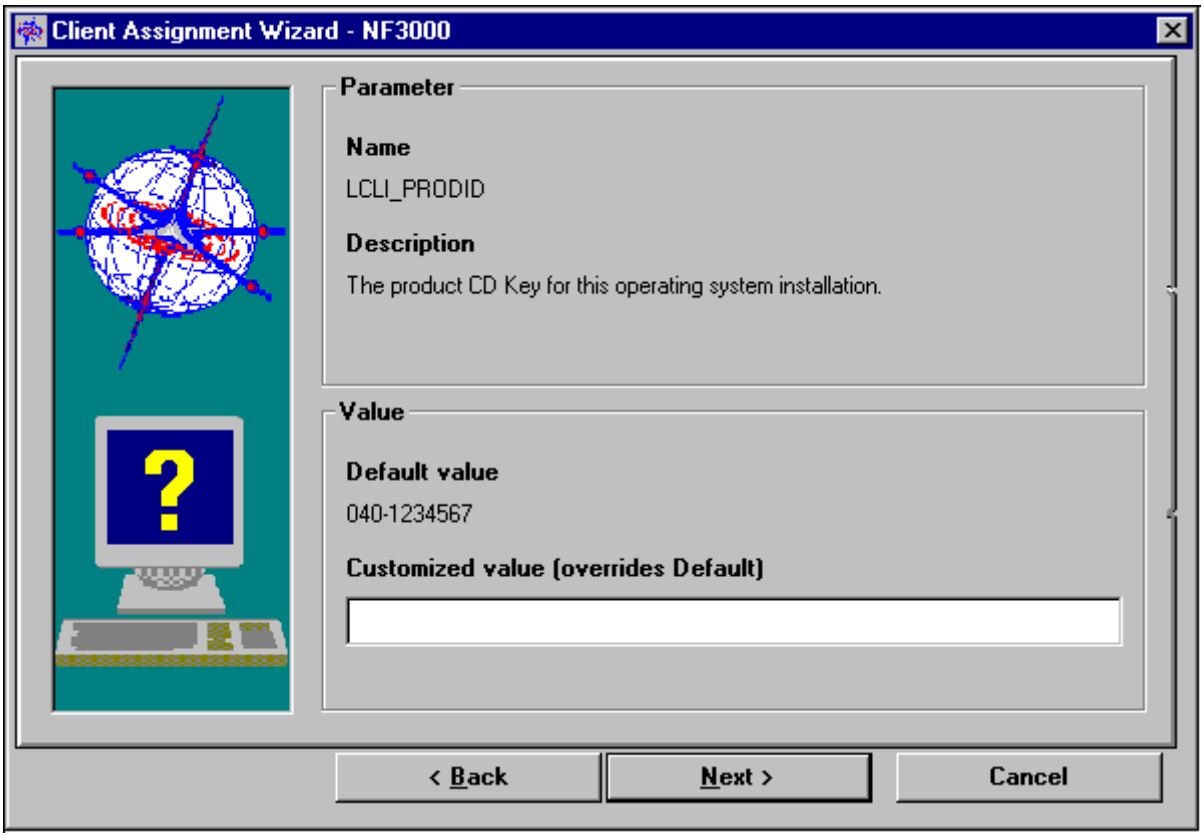
Client Assignment Wizard - Registered User

The Registered User parameter screen allows you to specify the name of the person who will use this client. The default value is a blank field.



Client Assignment Wizard - Product ID

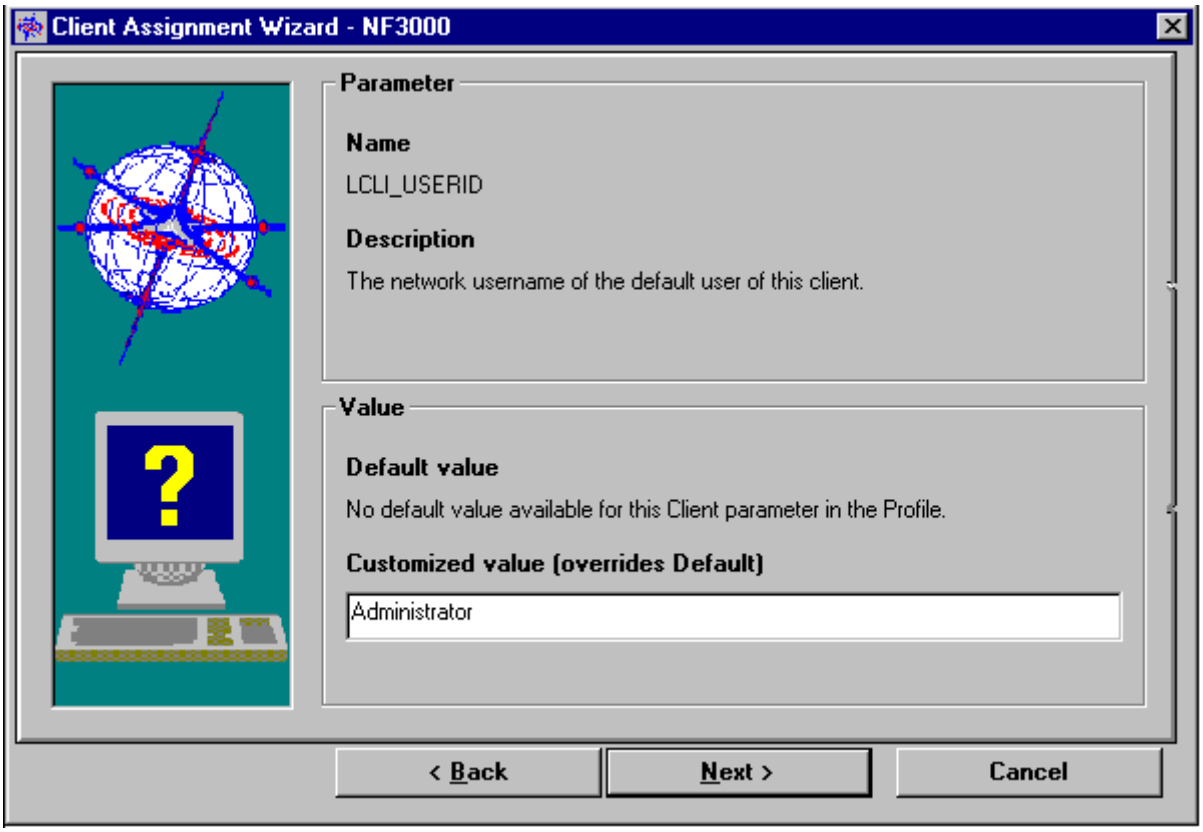
The Product ID parameter screen allows you to specify a product ID for the operating system being installed, this can usually be found on the software packaging of your operating system installation disks/CD-ROM.



Note: You may be required to enter the Product ID over two screens, please enter the product ID in the format indicated.

Client Assignment Wizard - Network Username

The Network Username parameter screen allows you to specify a username for your client. The default value is a blank field



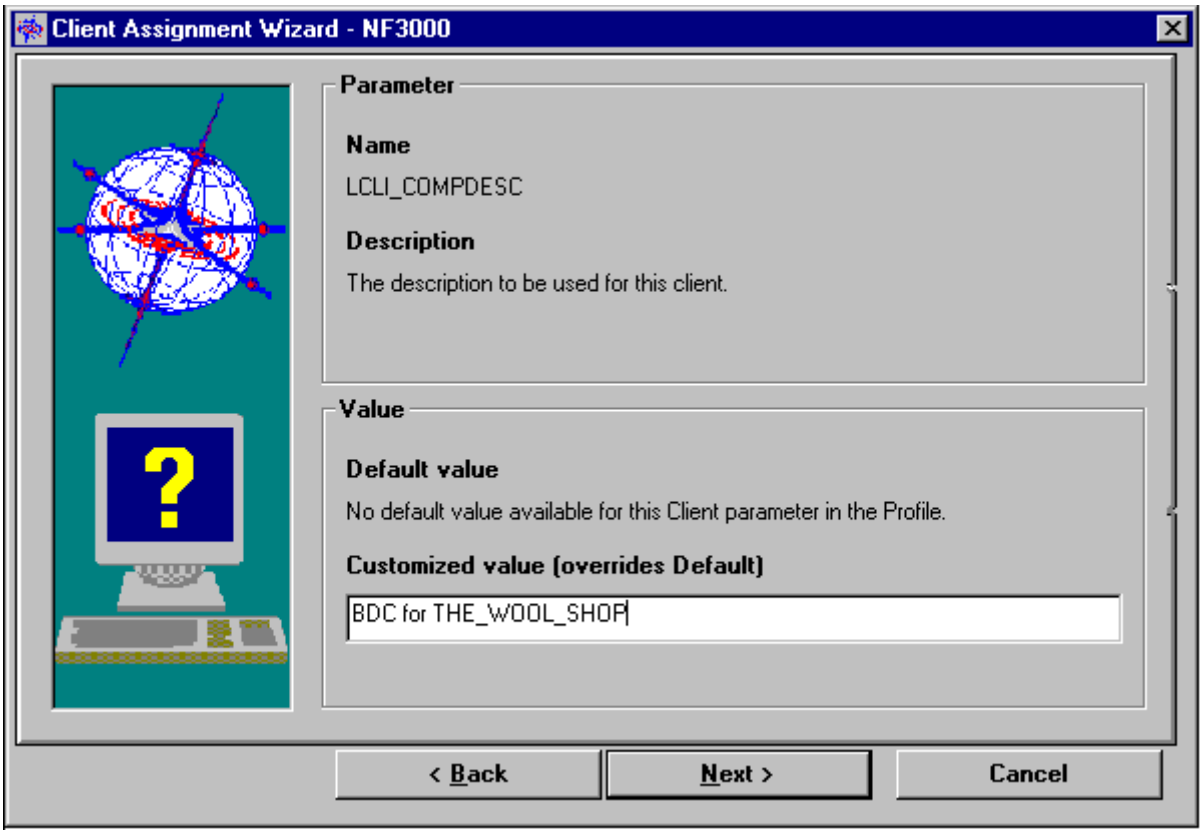
IMPORTANT: When the profile to which you are assigning your client is an NT 4.0 Server Unattended Install (either a Primary Domain Controller or a Standalone server) enter **Administrator** as your network username, do not leave this field blank. Click on **Next**. Once you have finished assigning your client to your profile and you have updated your client computer (see Processing Changes within LCCM) you will be prompted to enter a password for your client computer's Administrator account. At this stage do the following:

1. Click on **OK** (do not enter a password).
2. When prompted enter a new password
3. Confirm your new password

After logging onto your server you can manually create a user account via Windows NT's User Manager.

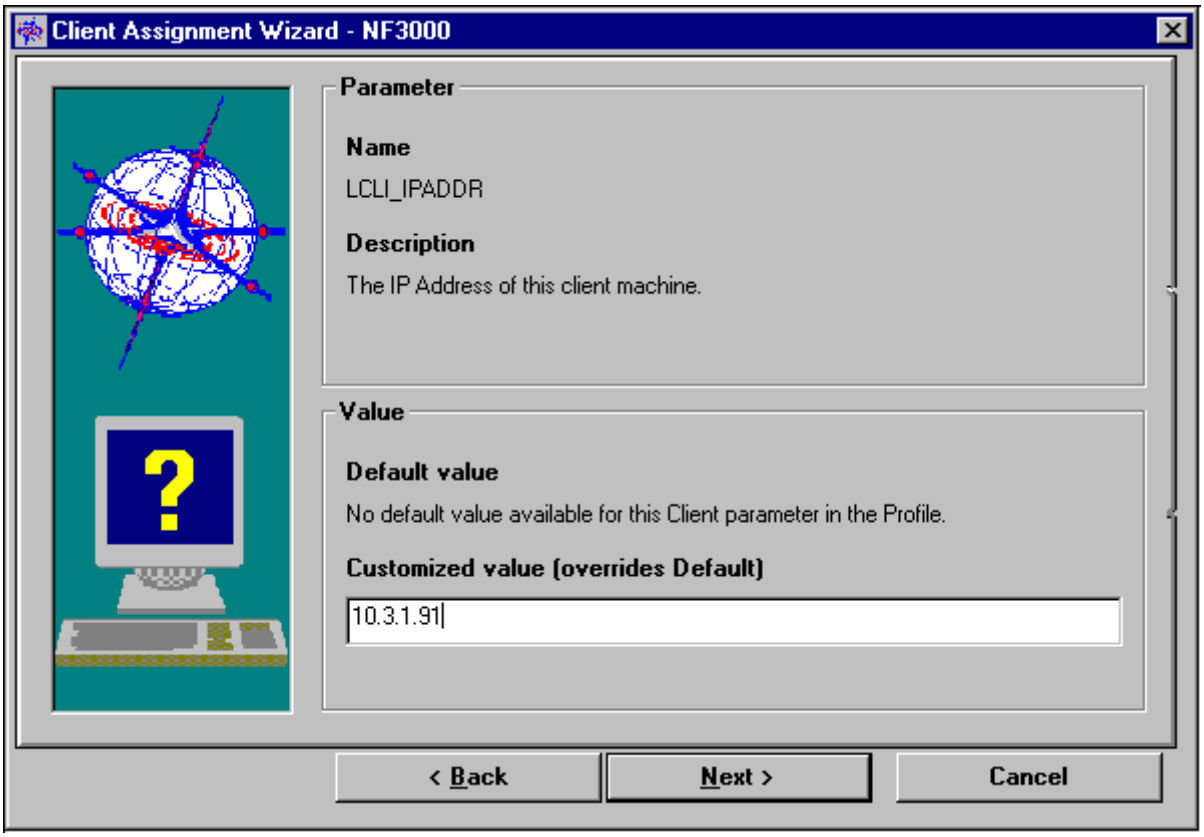
Client Assignment Wizard - Description

The Description screen allows you to give a description of a client. The default value is a blank field.



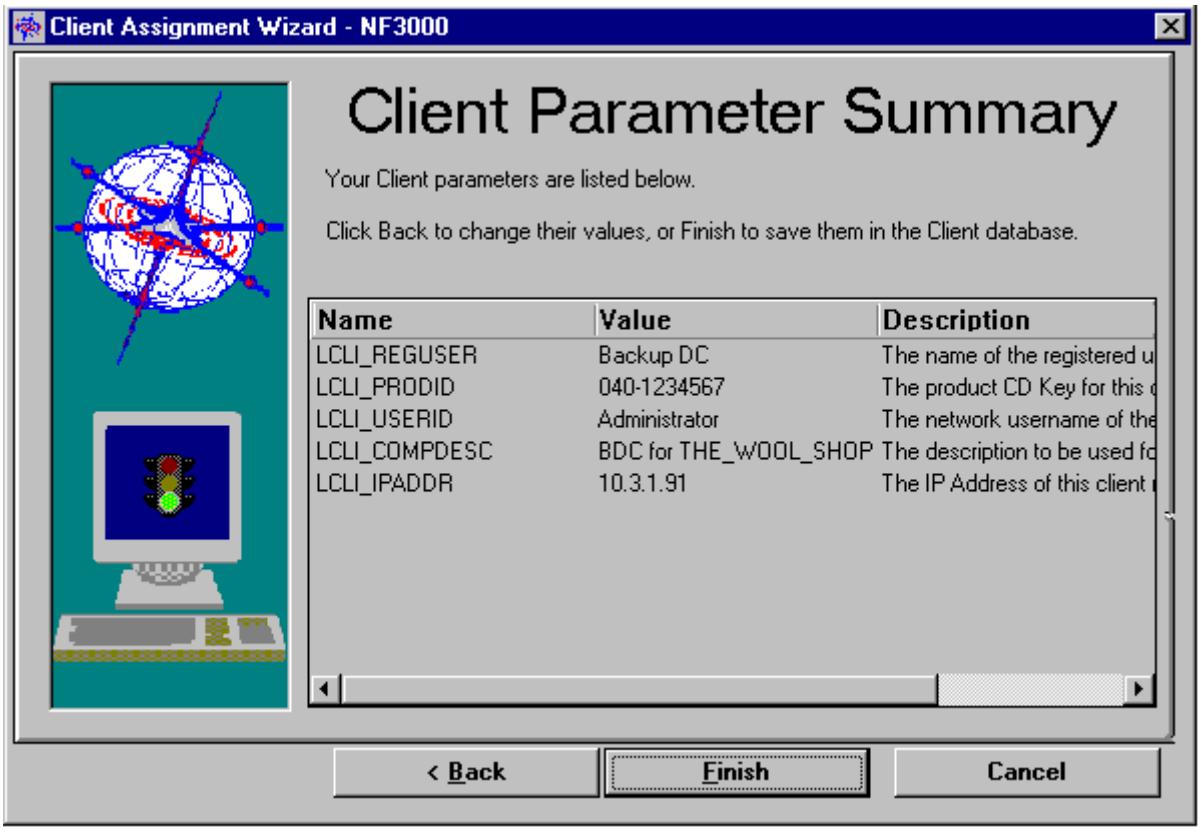
Client Assignment Wizard - IP Address

The IP address screen allows you to enter the IP address for the client. The default value is a blank field.



Client Assignment Wizard - Client Parameter Summary

The Client Parameter Summary screen provides you with a summary of your client. Changes cannot be made on this screen; it is for information and verification purposes only. To make changes, you must go back through the Client Assignment Wizard making any necessary changes as required. Once this is complete, clicking on **Finish** will start the client assignment process.



Note: Highlighted lines indicate that no values have been entered to override default values.

Assigning Clients to Software Profiles Manually

IMPORTANT: After assigning clients to software profiles, you must click on the **Process** button for the changes be processed on the clients.

To assign clients to Software Profiles:

1. Select the software profile within the Installation/Maintenance window.
2. Select the clients to be assigned in the **Unassigned Clients** column.
3. Click on the **Assign** button. The clients appear listed below the software profile you selected.
4. If the client requires additional personalization at the Individual client level (for example, a user ID, password, or IP address), open the Individual Client Details Notebook for each newly assigned client and fill in the values for each name listed on the Parameters page. For details, see Individual Client Details - Parameters Page.
5. Click on the **Process** button to save and process the changes.

You can bypass using the **Assign** button by using the drag-and-drop method. To do this, select the clients you want to assign, then drag and drop them on to the desired software profile. Next, click on the **Process** button to save and process the changes.

You can also reassign clients to new software profiles within the **Assigned Clients and Profiles** box. To do this, select the clients within the **Assigned Clients and Profiles box**. Next, select a new software

profile, and then click on the **Assign** button. (You can also drag and drop the clients on to the new software profile).

After the changes are processed, the new software profile takes effect the next time the client computer restarts (or as soon as the change is applied if the client is already waiting to start up). If the software profile is an Operating System Clone Remoteboot profile, the software is downloaded on to the hard disk drive of the client and then the client restarts. Any subsequent restarts are made from the hard disk until the client is assigned to a new profile or the software profile is changed.

De-assigning Clients From Software Profiles

De-assigning a client from a software profile changes an assigned client into an unassigned client. After you de-assign a client, the client appears in the **Unassigned Clients** box.

IMPORTANT: If a client is left in the **Unassigned Clients** box after the changes are processed (clicking on the **Process** button), the client computer will not be able to start up normally. The client computer will stop or loop at the RPL or DHCP/PXE screen. If the client has a RPL or DHCP/PXE bypass mechanism (such as the **Home** key used by some IBM Personal Computer models), the end user can bypass the RPL or DHCP/PXE screen and start the client computer from its own hard disk. On models that do not have an RPL or DHCP/PXE bypass mechanism, the only method of starting an unassigned client computer from its own hard disk is to modify the startup sequence and remove Network as a startup device.

To de-assign one or more clients from a Software Profile:

1. Select a client or multiple clients within the Profiles and Assigned Clients box.
2. Click on the **De-assign** button.

Temporarily Disabling a Client

Note: A disabled client appears gray within the listings of the Installation/Maintenance window.

To temporarily disable a client from starting:

1. Select a client or multiple clients within the Profiles and Assigned Clients box.
2. Access the Individual Client Details Notebook by doing one of the following:
   - Double-click on one of the selected clients.
   - Select **Client** from the menu bar, and then select **Configure**.
3. Select the **Details** page.
4. Check the **Client Disabled** check box.
5. Click on **OK** to return to the Installation/Maintenance window.
6. Click on the **Process** button to save and process the changes.

Note: To disable a client before downloading, uncheck the **Reload** checkbox in addition to checking the Client Disabled checkbox.

Deleting a Client

To delete one or more clients:

1. Select a client or multiple clients within the Profiles and Assigned Clients box.
2. Select **Client** from the menu bar.
3. Select **Delete**.

Secure Data Disposal Tools

The Secure Data Disposal tools are a set of utilities for performing a low level hard disk erase of all hard drives on a client for secure disposal or re-deployment of systems. It has the ability to detect all drives and partitions (even hidden partitions) and to wipe out all customer data and files so they cannot be reconstructed.

Three levels of Secure Data Disposal security are available:

- Quick - overwrites the partition table of each drive with zeros. The data on the drive is inaccessible to any normal operating system-based disk and file management tools.
- Medium - overwrites each sector with a fixed bit pattern. The data on the drive will be inaccessible to commercially available data recovery tools.
- Secure - overwrites each sector multiple times. The data on the drive will be inaccessible to any tools at any level.

Each of the above appears as a separate predefined profile.

Using the Secure Data Disposal Tools

To successfully dispose of a client, drag the client onto the particular level of the Secure Data Disposal Tree, within the Profiles and Assigned Clients box, then click on **Process**. A warning dialog box will be presented asking if you are sure that you want to proceed and that the Client data will be eradicated once processed. Once the data is eradicated the client is available for re-deployment and can be assigned to another LCCM profile.

Showing Client Mismatches

The function to show mismatches is available only to clients that have been assigned to software profiles. Clients that have configuration problems (mismatches) appear in red within the Installation/Maintenance window. Mismatch problems might prevent the client from functioning correctly.

To show configuration mismatches:

1. Select a client shown in red within the Profiles and Assigned Clients column.
2. Select **Client**.
3. Select **Show Mismatch**.

Details of the mismatch appear as part of the tree underneath the selected client. This function works on individual clients only; you cannot show mismatches for a group of clients.

Selecting How Clients Are Displayed

You can customize how clients are displayed within the boxes of the Installation/Maintenance window. You can list them according to any of the following attributes:

- Name
- Network Address

- Serial Number
- Contact
- Location
- Comment

To select how clients are displayed:

1. Select **Options** from the menu bar of the Installation/Maintenance window.
2. Select **Display Clients By**.
3. Select a value from the list that appears.

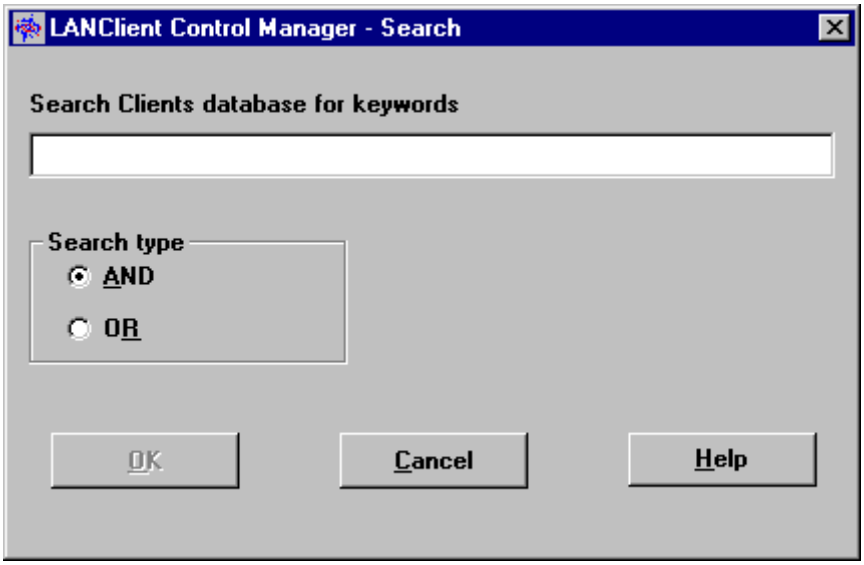
Note: The default attribute for displaying clients is Name. Of the options provided by LCCM, only Name and Network Address are guaranteed to be unique. Location or Contact might be more useful, depending on your organization.

Searching for Specific Clients

You can perform a database search for any alphanumeric values (text and numbers) stored in LCCM that might help you identify individual clients or groups of clients. For example, you can locate clients that have a specific BIOS level or video chip set. You can search for field values stored in any of the pages of the Individual Client Details Notebook (or combinations of these values). (For more information about these fields, see Individual Client Details Notebook).

To perform a search on existing clients:

1. Select **Tools** from the menu bar in the Installation/Maintenance window.
2. Select **Search For Client**. The following window appears.



3. Type the keywords you want to search for; you can also type partial words. Leave a space between each word.
4. Select one of the following search types:
   - **AND** - finds occurrences that match all the keywords typed in.
   - **OR** - finds occurrences that match any of the keywords typed in.

5. Select **OK**. Search results are displayed in the Clients Database Search box of the Installation/Maintenance window. You can then select, edit, copy, or delete individual clients or groups of clients from this window.

Modifying an Existing Client

To modify an existing client:

1. Select a client in the Installation/Maintenance window.
2. Access the Individual Client Details Notebook by doing one of the following:
   - Double-click on the selected client.
   - Select **Client** and then **Configure**.
3. Edit the desired fields of the different pages. For more details, see Individual Client Details Notebook.
4. Click on **OK** to return to the Installation/Maintenance window.
5. Click on the **Process** button to save and process the changes.

Forcing an Image Reload at Next Startup

This procedure forces an image reload on to selected clients at the next client startup. You might want to use this procedure if the software on the client has been damaged. Rather than try to diagnose the problem and replace the damaged files individually, you can save time by reloading the entire software profile.

To set a forced image reload at next startup:

1. Select a client or group of clients within the Installation/Maintenance window.
2. Access the Individual Client Details Notebook by doing one of the following:
   - Double-click on a selected client.
   - Select **Client** and then **Configure**.
3. After the Individual Client Details Notebook appears, select the **Software** page.
4. Check the **Mark Client For Reload** checkbox.
5. Click on **OK** to return to the Installation/Maintenance window.
6. Click on the **Process** button to save and process the changes.

Changing the BIOS Administrator Password for Service

The client computer BIOS settings can be password protected to help prevent unauthorized users from changing settings, such as the startup sequence. In most IBM computers, pressing **F1** while the computer is starting up normally accesses the BIOS settings.

The BIOS administrator password can be set or disabled in the Maintenance page of the Individual Client Details Notebook by checking the **Update BIOS Admin Password** check box and adding or removing a value in the **BIOS Password** field. If this field is left blank, the password is disabled. Remember, after changing or disabling the password, you must click on the **Process** button in the Installation/Maintenance window for the change to take effect.

In most environments, access to the BIOS program on a client is restricted to authorized users only. If you follow the steps below, it is not necessary to inform others of the password or to have the administrator present at the client computer to type in or disable the password.

1. Ensure that a trained or authorized user is at the client computer, ready to make the changes.
2. At the server, disable the **BIOS password** for the client.
3. At the client, restart the computer so that the change takes effect.
4. At the server, enable the **BIOS password**.
5. At the client:
    a) Restart the computer again, and press **F1** to access the BIOS settings. Make the required BIOS changes.
    b) Exit from the configuration/setup utility. The client will restart and the BIOS password will be enabled.

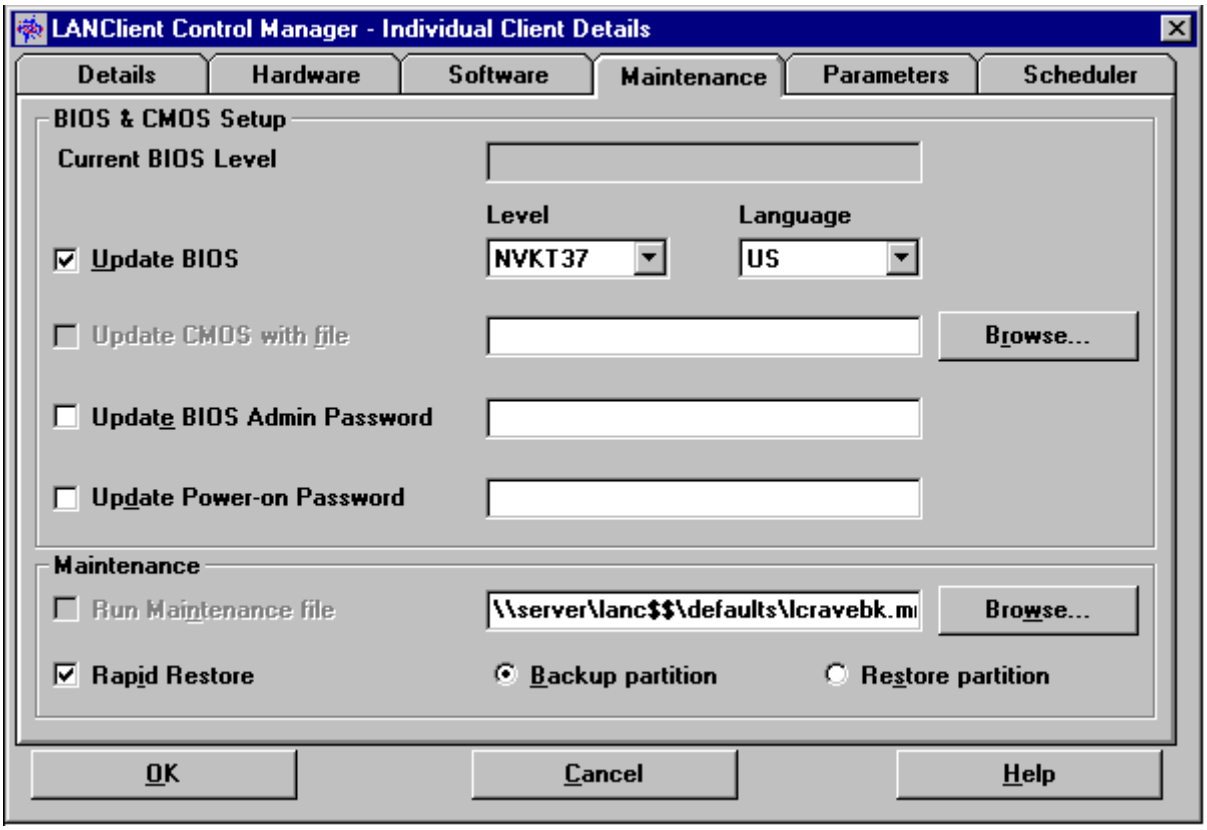
Note: Ensure that only authorized users are given access to BIOS settings. If the startup sequence of the client is changed in the BIOS settings so that network is not the first device (or the first device after diskette drive), all control of the client from LCCM is lost. If the BIOS password is changed at the client to a password that is different from the one defined within LCCM, you cannot re-establish Hybrid Remoteboot control. The BIOS administrator password code is based on the positions of the keys, not the characters typed. If any of your clients use a different language keyboard or a keyboard layout different from the keyboard you use to interact with LCCM, the BIOS administrator password might not be recognized when typed in from the client keyboard. Ensure that you use only characters that occur in the same position on all keyboards used. If the field is left blank, the password is disabled.

Changing or Deleting a BIOS Administrator Password

You can change or delete a BIOS administrator password that has already been assigned to one or more client computers.

To change or delete a BIOS administrator password:

1. Select the clients you want to update in the Installation/Maintenance window.
2. Access the Individual Client Details Notebook by doing one of the following:
    - Double-click on a selected client.
    - Select **Client** from the menu bar; then select **Configure**.
3. Select the **Maintenance** page.
4. Click on the **Update BIOS Admin Password** check box.
5. In the field to the right of the Update BIOS Admin Password check box, do one of the following:
    - To delete an existing BIOS administrator password, erase the current password and leave the field blank.
    - To change an existing BIOS administrator password, erase the current password and type in a new one.
6. Click on the **OK** button to return to the Installation/Maintenance window.
7. Click on the **Process** button to save and process the changes.



Updating the BIOS Level

To create an image before updating the BIOS level, see Creating a BIOS Update Image.

To assign the BIOS level to clients:

1. Select the clients you want to update in the Installation/Maintenance window.
2. Access the Individual Client Details Notebook by doing one of the following:
   - Double-click on one of the selected clients.
   - Select **Client** and then **Configure**.
3. Select the **Maintenance** page.
4. In the BIOS Level box, select the level for the BIOS upgrade.
5. In the BIOS Language box, select the language for the BIOS upgrade.
6. Click on the **Update BIOS** check box.
7. Select the Scheduler page of the Individual Client Details Notebook and verify the Scheduler information. For details, see Individual Client Details - Scheduler Page.
8. Click on **OK** to return to the Installation/Maintenance window.
9. Click on the **Process** button to save and process the changes.
10. The Progress and Errors Window displays. BIOS updates are not made until the client computers are switched off and restarted, or the client scheduled update time is reached.

Note: If the BIOS update fails, an error code appears in the Progress and Errors Window. The meanings of the error codes vary depending on the BIOS level. To decipher the error codes:

---

a) Insert the appropriate BIOS flash diskette into the diskette drive.

b) At a command prompt, enter:

A:\CMOSUTIL /?

or

A:\SRCMOSxx /?

where xx is a two-letter model specific designation

A list is displayed containing the error codes and their meanings.

Assigning Clients to a CMOS Settings Image

Note: If you change the client's CMOS data, you must use a CMOS level that is compatible with the client's BIOS level.

Before assigning a CMOS setting's image with LCCM, you must create the image and put it on the server. For more details, see Creating a CMOS Setting Image.

To assign clients to a CMOS settings image:

1. Select the clients you want to update in the Installation/Maintenance window.
2. Access the Individual Client Details Notebook by doing one of the following:
   - Double-click on one of the selected clients.
   - Select **Client** and then **Configure**.
3. Select the **Maintenance** page.
4. Use the **Browse** button to select the correct CMOS (.CMS) file for the clients, or type in the full path and file name directly into the field provided.
5. Check the **Update CMOS with file** check box.
6. Select the **Scheduler** page of the Individual Client Details Notebook and verify the Scheduler information. For more details, see Individual Client Details - Scheduler Page.
7. Click on **OK** to return to the Installation/Maintenance window.
8. Click on the **Process** button to process these changes.

   CMOS updates will not be made until the client computers are powered off and restarted, or the client scheduled update time is reached.

   Note: If the CMOS setting's update fails, an error code appears in the Progress and Errors Window. The meanings of the error codes vary depending on the BIOS level. To decipher the error codes:

   a) Insert the appropriate BIOS flash diskette into the diskette drive.

   b) At a command prompt, type:

   A:\CMOSUTIL /?

   or

   A:\SRCMOSxx /?

   where xx is a two-letter model specific designation

   A list is displayed containing the error codes and their meanings.

Assigning Clients a Maintenance File

To assign clients to a maintenance image:

1. **Select** the clients you want to update in the Installation/Maintenance window.
2. Access the Individual Client Details Notebook by doing one of the following:
   - Double-click on one of the selected clients.
   - Select **Client** from the menu bar; then select **Configure**.
3. Select the **Maintenance** page.
4. Use the **Browse** button to select the correct maintenance file, or type in the full path and file name directly into the field provided (beside the Run Maintenance file check box).
5. Check the **Run Maintenance File** check box.
6. Select the **Scheduler** page of the Individual Client Details Notebook and verify the Scheduler information. For details, see Individual Client Details - Scheduler Page.
7. Click on **OK** to return to the Installation/Maintenance window.
8. Click on the **Process** button to process these changes.

Scheduling a Repeat Event

You can use LCCM to perform scheduled repeat events, such as running virus scans or backing up data, on a daily or weekly basis.

To schedule a repeat event (other than re installing the image):

1. Create a maintenance-image file (.MNS) containing the commands required to accomplish your event.
2. Open the Individual Client Details Notebook for a client or group of clients on which you want to perform the repeat event.
3. On the Maintenance page:
   a) Check the **Run Maintenance File** check box.
   b) Use the **Browse** button in the Maintenance panel and select the maintenance image file you created in step 1 of this procedure.
4. On the Scheduler page:
   a) Select the **Use Client Scheduler Always** radio button.
   b) Select the **Repeat** radio button.
   c) Select either the **Daily or Weekly** radio button.

   If you selected **Repeat Weekly**, then select the day of your choice by clicking the up or down arrows within the Schedule day section**.**
5. Click on **OK**.
6. In the Installation/Maintenance window, click on the **Process** button.

The maintenance file will run on the day selected and repeat either daily or weekly, depending on your selection.

To stop the maintenance file from running:

1. Open the Individual Client Details Notebook for a client or group of clients.

2. On the Maintenance page, uncheck the **Run Maintenance File** check box.
3. Click on **OK**.
4. On the Installation/Maintenance window, click on the **Process** button.

In some situations, such as a classroom, this feature can be used to reinstall the complete image (operating system and applications) upon the completion of a course so that it is ready to be used by the next group of students.

To use the repeat Scheduler to reinstall the complete image:

1. Open the Individual Client Details Notebook for a client or group of clients on which you want to reinstall the image.
2. On the Software page, check the **Mark client for reload** check box.
3. On the Scheduler page:
    a) Select the Use **Client Scheduler Always** radio button.
    b) Select the **Repeat** radio button.
    c) Select either the **Daily or Weekly** radio button.

If you selected **repeat weekly**, select the day of your choice by clicking the up or down arrows within the Schedule day section.

1. Click on **OK**.
2. In the Installation/Maintenance window, click on the **Process** button.

Managing Settings at the Client Computer

Objective: To manage computer settings by changing information in the Configuration/Setup Utility program of each client computer.

To perform the procedures in this section, you must access the Configuration/Setup Utility program of the client computer. The settings you choose in these procedures directly affect how LCCM performs.

Allowing Local Hard Disk Startup

If you have a centralized client-configuration and maintenance area from which you send pre-configured computers out to different areas of your organization, you can run LCCM from a single server to configure your clients, set them to start up from the hard disk, and disconnect them from the LAN. LCCM stores the client-configuration details such that if the client computer comes back in for maintenance or reconfiguration, the details are readily available.

To allow local hard disk startup for clients:

1. Install the new client computer. For more information, see Adding Client Computers to the Database.
2. Scan the new client computer into the LCCM database. For more information, see Using the Scan Feature.
3. Assign the client to an Operating System Clone Remoteboot profile and process. For more information, Assigning Clients to Software Profiles .
4. Shut down the client computer.

5. Reconfigure the startup sequence:
    a) Disconnect the network cable from the client computer.
    b) Restart the client computer and enter the Configuration/Setup utility program. (On many IBM computers, you must press **F1** to enter the program. If an administrator password has been set, type it in.) Within the Configuration/Setup utility program, change the startup sequence in one of the following ways:
        - Select **Hard Disk Drive** as the first startup device.
        - If you want to maintain the ability to start the computer from a diskette, select **Diskette Drive** as the first startup device and **Hard Disk Drive** as the second startup device.
    c) Save the settings and exit from the program.

To reload, or perform any other maintenance actions from LCCM, set the startup sequence so that **Network** is the first startup device and **Hard Disk** is the second startup device. Or, if you also want the ability to start the client computer locally from a diskette, set the startup sequence so that **Diskette Drive** is the first startup device, **Network** the second startup device, and **Hard Disk** the third startup device. This allows the client to perform a remote boot at next startup.

Using Dual Startup Sequences

With some IBM computers, you can specify two startup sequences within the Configuration/Setup utility program on the client computer. (Consult your IBM User Manual for specific details.)

When using LCCM, the first startup sequence must be **Network** and **Hard Disk** second (or **Diskette Drive** first, **Network** second and **Hard Disk** third). When the user powers on the client computer, the Hybrid Remoteboot process connects and "shakes hands" with the client before allowing the client to continue starting up from it's hard disk. This very brief process allows you to maintain control of the client computer at all times. If you have image downloads or maintenance procedures scheduled to run as soon as possible, the client is processed at this time (see the Scheduler page of either the Defaults Notebook or the Individual Client Details Notebook).

The second startup sequence is used to specify how the computer starts when LCCM issues a wake-up packet over the LAN. On some IBM computers, this is called the Automatic Power On Startup sequence. You must enable Wake-on-LAN within the BIOS settings of the client computer and within the LCCM interface before the second startup sequence will operate. You must also enable the Automatic Power on sequence within the BIOS settings and ensure it is set correctly. For details about enabling Wake-on-LAN within LCCM, see Defaults Notebook - Processing Page.

Each startup sequence has four possible startup devices. If the first startup device fails, the computer automatically attempts to start up from the second, third, and then fourth device. The startup devices are:

- Diskette drive
- Network
- Hard disk drive
- CD-ROM drive

Note: If you set the first startup device to network but do not set the second, third, or fourth device, the client will not function when disconnected from the LAN. The command for starting client computers remotely is specified in the Scheduler page of the Individual Client Details Notebook. Use this function to schedule clients to be switched on automatically and processed at any time during a seven-day period, or to schedule a repeat event to take place on a daily or weekly basis. For more information, see Individual Client Details - Scheduler Page.

Using RFID and AIA Data (Asset ID) with Clients

On AIA enabled computers, data can be read and written to an onboard Electronically Erasable Programmable Read Only Memory (EEPROM), and used with LCCM. You can use AIA data fields to initialize LCCM created profiles when the scan process, based on the contents of the data first detects a client computer. Additionally, LCCUSTOM can be used to extract and incorporate AIA data (parameters) from the AIA area into batch files as an alternative to using the DEDITD utility and LCCM Parameter pages for selected fields.

- SUPPORTED SYSTEMS:
  Z PRO IntelliStation (Type:68889, Model:12Z)
  PC 300 PL (Type:6862, Model:10Z)
- AIA FIELDS THAT CAN BE USED BY LCCM ARE:
  OWNERDATA
  OWNERNAME
  DEPARTMENT
  LOCATION
  PHONE_NUMBER
  OWNERPOSITION
  NETWORKCONNECTION
  IPADDRESS
  SUBNETMASK
  GATEWAY
  SYSTEMNAME (computer name)
  PRELOADPROFILE
  IMAGE (profile name)
  IMAGEDATE (profile download date)
  USERDEVICE (5 user definable fields)
  For example:
  ADDRESS=3039 Cornwallis Rd
  CITY=RTP
  STATE=NC
  ZIPCODE=27709
  AREA=WEST

Using AIA data fields with LCCM

Read selected AIA information at scan time and add to the new client record.

On AIA enabled clients, the Scan program will read data from the AIA. This data must be available on the client, specify **no User Prompts at Scan** during the scan process. See Defaults Notebook - Scan Page for more information about user prompts.

IMPORTANT: Each field in the client record can contain up to 256 characters. However, if the combined data exceeds 256 characters, it will be truncated without warning.

Here is a sample of LCCM read AIA fields:

Note: Field names, in capitals, are not transferred but given only as a guide in this sample. If any of these fields are omitted, the corresponding line will be omitted within LCCM.

a) PRELOADPROFILE

This information is added to the Profile Name and date fields on the Software page of the Individual Client Details Notebook.

IMAGE=OS Clone Profile - 1

IMAGEDATE=00000000

b) OWNERDATA

The Name, Department, Phone and Position field values from the OWNERDATA group on the client are joined to make a single field. This information is added to the Contact field on the Details page of the Individual Client Details Notebook.

OWNERNAME=John_Smith

DEPARTMENT=Accounts

PHONE_NUMBER=919 543 7454

OWNERPOSITION=Manager

c) OWNERDATA

The location field value of the OWNERDATA group is added to Location field on the Details page of the Individual Client Details Notebook.

LOCATION=Room12, Floor 3.

d) USERDEVICE

The five user-definable fields from the USERDEVICE group are joined and added to Comment field on the Details page of the Individual Client Details Notebook.

ADDRESS = 3039 Cornwallis Rd

CITY = RTP

STATE = NC

ZIPCODE = 27709

AREA = West

Using AIA to Automatically Assign Clients to a Profile

You can set newly scanned clients to be automatically loaded with an existing image by checking the **Automatically assign and process newly scanned clients** box on the Scan page of the Defaults Notebook. Existing LCCM Profiles that you intend to download at this time must not depend on LCCM client parameters, as there will be no opportunity to set them. If auto-assign is enabled and a newly scanned client meets all the conditions and is assigned, processing will begin.

IMPORTANT: Any outstanding processing that has been set up manually will also begin at this time.

For the auto-assign process to work, the following conditions must be met:

a) The IMAGEDATE from the AIA must be set to 8 zeros, 00000000. This is a check to ensure that a profile has not already been loaded.

b) The requested IMAGE (profile name) must exist within LCCM and match perfectly with the AIA requested profile. This is position sensitive, but not case sensitive.

c) The client must meet all the hardware requirements of the profile.

If your system is equipped with the AssetID feature, the 'IMAGE' and 'IMAGEDATE' fields will be automatically updated on successful completion of profile download. (This will disable the auto-assign on scan function for the system and you should modify the 'IMAGE' and 'IMAGEDATE' fields manually).

Using AIA to Read AIA Data

You can use the AIAREAD utility to customize batch files that access the AIA data when its image is downloaded. This utility extracts specific fields from the AIA data and sets environment variables, which are then used to customize installations.

The syntax of AIAREAD.EXE is:

AIAREAD group [field] [/f=file] [/a] [/s] [/x] [/p=prefix],

where:

group	The name of the device group
field	The name of the field to read (default is all fields)
file	Name of the file to output results to (default is stdout)
/a	Append the file (default is overwrite file)
/s	Output formatted as SET statements. e.g. 'SET name=value' (default is name=value)
/x	Exclude fields that are null strings or zero values
/p	Prepend 'prefix' to the name of each field

Example: Executing AIAREAD USERDEVICE would return the values:

ADDRESS = 3039 Cornwallis Rd

CITY = RTP

STATE = NC

ZIPCODE = 27709

AREA = West

Executing AIAREAD USERDEVICE AREA would then return the value:

Area = West

Using LCCUSTOM and AIAREAD to customize LCCM batch files.

AIAREAD and LCCUSTOM can be used together to customize batch files. LCCUSTOM can replace DEDITD for most common purposes, replacing all occurrences of a parameter with its value throughout a file. DEDITD may still be required for more specialized file modifications.

In this example, AIAREAD and LCCUSTOM are used together to customize the Windows NT answer file using parameters supplied both from LCCM and the AIA area of the client computer.

Note: Remember, this process will work only on RFID enabled IBM computers.

a) At the administrator console, create a final image batch file with the following content:

```
REM get asset ID user and network data into batch files
%LCCMPATH%\AIAREAD USERDEVICE /s > %LCCMPATH%\AIAUSER.BAT
%LCCMPATH%\AIAREAD NETWORKCONNECTION /s >
%LCCMPATH%\AIANET.BAT
REM run the batch files to put the AID data into the DOS environment
```

%LCCMPATH%\AIAUSER.BAT

%LCCMPATH%\AIANET.BAT

REM customize NT answer file with user data

%TARGET%

%LCCMPATH%\LCCUSTOM %TARGET%\ANSW1.TXT

b) Save this file in the CLNTFILE directory of LCCM as:

LCCUSTOM.LCI

Using AIAREAD to output the contents of the USERDEVICE and NETWORKCONNECTION data sections of the AIA area into two files, the AIAREAD /s parameter outputs these elements as DOS SET statements. Saving the output as a .BAT file will allow this data to be incorporated into the client profile parameters as a batch file process. An example of the contents of the AIANET.BAT file would be:

SET NUMNICS = 1

SET GATEWAY = 190.67.67.9

SET IPADDRESS = 199.67.67.0

SET SUBNETMASK = 255.255.255.0

SET SYSTEMNAME = JOHN_SMITHS_PC

SET LOGINNAME = JSMITH

Running the two batch files, AIAUSER.BAT and AIANET.BAT, will SET environment variables in the client's active RAM. The environment variables already present for the client, from the Software Profile Details and Individual Client Details Notebooks, will be unaffected. These environment variables are made available for LCCUSTOM.

LCCUSTOM follows the two batch files to edit the Windows NT answer file. LCCUSTOM will edit the answer file using the environment variables that have been SET in the DOS environment during the processing of the AIAUSER.BAT and AIANET.BAT batch files. Additionally, parameters that have been specified within the Software Profile Details or Individual Client Details Notebooks for the client will also be available in the DOS environment, and will be swapped as normal.

Note: For the above to work correctly, edit the Windows NT Answer file to include the correct environment variable names where appropriate.

Using AIAWRITE to Write AIA Data

You can use the AIAWRITE to write information to the AIA area. Any data can be written, but specifically LCCM will use LCCM specific data, such as the Profile Installation date. Using the LCCUSTOM utility in conjunction with AIAWRITE allows a file to be customized is a single step replacing all instances of environment variables in the file by their values.

The syntax of AIAWRITE.EXE:

AIAWRITE group [field1=[value1]..[fieldn=[valuen]]]/f=file,

where:

group	The name of the device group.
fieldn	The name of the field to write.

Valuen: The value to assign to fieldn. For the USERDEVICE group, a blank value means delete this field, if the field already exists, or create a field with a NULL value if the field does not exist. For all others it means assign a zero or null value.

File: Name of file to get field/value pairs from. Each line in this file contains one field/value pair, separated by '='.

To change the value of the previously read AIA field, AREA, you would execute the line:

AIAWRITE USERDEVICE AREA=SOUTH

For more information about the IBM Radio Frequency Identification (RFID) chip, and the Asset Information Area (AIA), access the following IBM Web Site http://www.ibm.com/desktop/assetid.

Installing Network Adapter Device Drivers

Objective: To install device drivers for new network adapters in client computers, both in the RPL and in the DHCP/PXE environment, that will be managed by LCCM. See also Installation of OEM Devices with Windows NT 4.0 .

In order to complete this procedure, you must access the NETWORK.LST file provided by LCCM. This file is located at: LCCM\NETWORK.LST.

Note: For detailed procedures on enabling the Remoteboot to function with various device drivers, refer to the World Wide Web at http://www.pc.ibm.com/us/desktop/lccm/index.html. The information on the World Wide Web will be updated for all supported network adapters.

The following procedure applies only to RPL clients and not DHCP/PXE. To install the device drivers for network adapters:

1. Install the network adapter into the computer. Consult your computer documentation for instructions on installing adapters.
2. Insert the network adapter device driver diskette into the server diskette drive.
3. Locate the correct DOS NDIS device driver to be used.

Note: IBM cannot supply you with specific information for finding the appropriate device driver because adapter manufacturers use different methods for storing their device drivers on diskette. You might find the device driver name supplied as a parameter in the PROTOCOL.INI, PROTOCOL.SMP or (*.SMP) files on the diskette. The device driver is normally stored in a \DOS sub directory. Consult the diskette README or SETUP text files (if supplied) for information that will help you locate the correct file.

---

4. Copy the device driver from the diskette to:

   remote_boot_services_directory\BBLOCK\NDIS (your remote_boot_services_directory will be the directory in which you installed Windows NT 's Remoteboot Services; by default this would be C:\WINNT\RPL unless you have renamed this directory)

5. Make a new directory named:

   remote_boot_services_directory\BBLOCK\NETBEUI\new_adapter_name

6. Copy the files DOSBB.CNF and PROTOCOL.INI from:

   remote_boot_services_directory\BBLOCK\NETBEUI\IBMTOK

   to:

   remote_boot_services_directory\BBLOCK\NETBEUI\new_adapter_name

Note: These files are used as templates for your new adapter.

7. Edit the DOSBB.CNF and PROTOCOL.INI files in your new_adapter_name directory. Substitute the correct device driver name in the DOSBB.CNF file and supply the correct device driver information in the PROTOCOL.INI file. Consult the README file supplied with the adapter device driver and your Windows NT documentation for details about the settings used in PROTOCOL.INI.
8. Open the file NETWORK.LST which can be found in <drive>:\LCCM\NETWORK.LST into Notepad and edit the NETWORK.LST file by doing one of the following:
    - If you are using new adapters, add one line for each new adapter.
    - If you are updating an existing adapter, check that the entry is correct.

IMPORTANT: Edit the NETWORK.LST file with care. The validity of the file is dependent on the position of the spaces and the semicolons within each line. All invalid lines are ignored. Any line beginning with a semicolon is a comment line. Lines that are not comment lines contain information unique to a specific type of network adapter, and semicolons delimit fields within these lines. Field 8 can contain more than one entry, and commas delimit multiple entries. Each line that is not a "comment" line must end with a semicolon.

Note: If the first six digits of the MAC addresses of two or more adapters are identical, it might not be possible for Windows NT to detect what type of adapter is attempting the remote boot. When a new client is scanned, the only adapter information available to the network software is the 12-digit MAC address, where the first six digits of the MAC address identify the adapter type. Currently, different adapter manufacturers might assign identical MAC address types to different adapters. If you are using a limited number of adapter types on your LAN, you might not encounter a problem, but if an identification conflict does occur, you must power off conflicting adapter types during the scan process and allow only one (conflicting) type during each scan. This limitation affects only the scan process. Up to 25 addresses can be specified with an =0 (off) or =1 (on).

The following is an example of the lines listed within the NETWORK.LST file. It is not the complete NETWORK.LST file.

IBM Auto Wake
ISATokenRing;5;5;LCIBMWOL;OS2;BBLOCK\NDIS\IBMTOKW.DOS;244d107;0004acf=1,00203502=1,0006295f=1;XN2S;

IBM PCI Wake-on-LAN Token
Ring;6;6;LCIBMTRP;OS2;BBLOCK\NDIS\IBMTRP.DOS;1014003e;0004ac=0,000629=1,00203503=1,00203501=1;XN2N;

Understanding the NETWORK.LST File

The NETWORK.LST file is one of the most important files contained in LCCM. It is also the file that is most subject to change when you use a new type of network adapter, or even when you acquire a new batch of network adapters of an existing type. You, as the network administrator, must have an understanding of the NETWORK.LST file in order to troubleshoot problems and make necessary changes.

Note: The ability to modify the NETWORK.LST file to add new types of adapters does not guarantee that all network adapters will work with LCCM.

The format of the line is:

DESCRIPTION;X;Y;BOOT_BLOCK;OS2_BOOT_REC;DEVICE_DRIVER;PNP_PCI_ID;SCAN_ON_OFF;CONFIG_MEM;

where:

DESCRIPTION (field 1)	This is the description of the network adapter that appears in the Network Adapter field on the Hardware page of the Individual Client Details Notebook. All characters from the start of the line until the semicolon (;) are used as the description.
X (field 2)	This is a unique and sequential number within in the NETWORK.LST file. Each line that is not a comment line must have a unique number. Zero is not a valid number.
Y (field 3)	The program reserves this field. You MUST set this field to the same value as field 2.
BOOT_BLOCK (Field 4)	This field contains the directory name that contains the information used to build the DOS boot record for the adapter. Assuming LCCM is installed on the C drive, the directory named here is located under the C:\WINNT\RPL\BBLOCK\NETBEUI directory. The directory named in this field contains the DOSBB.CNF and PROTOCOL.INI files. If you added new adapter device drivers, you created this directory in step 5 of this procedure.
OS2_BOOT_REC (field 5)	Although you are working with Windows NT, this field must contain the value "OS2".
DEVICE_DRIVER (field 6)	This field points to the location of the NDIS DOS device driver for the network adapter. The path specified here is relative to the Windows NT Remoteboot directory (\WINNT\RPL\). Therefore, if the entry in this field is BBLOCK\NDIS\IBMTOK.DOS, the full path would be C:\WINNT\RPL\BBLOCK\NDIS\IBMTOK.DOS
PNP_PCI_ID (field 7)	This field contains the PNP (Plug and Play) or PCI ID for the network adapter. - PNP ID = First 7 digits of the PNP number - PCI ID = First 8 digits of the PCI number This field can contain a single hexadecimal number. See IDVIEW.EXE for information about viewing these ID numbers.
SCAN_ON_OFF (field 8)	This field contains the first six digits of the MAC address followed by either =1 or =0. This field is used during the scan process to identify the network adapter type and load the correct device drivers. Multiple entries are permitted in this field. **Important**: The =1 and =0 are used to enable or disable certain adapter types in the case of a conflict during a scan operation. See the following note for more details.
CONFIG_MEM	These are the settings used to call EMM386.EXE. This field

(field 9) contains four flags.

- Flag 1 can be X or N.
- Flag 2 can be X or N.
- Flag 3 can be 2 or 4.
- Flag 4 can be X, N, or S.

X use the CONFIGx.sys file in the BINFILES\IBMDOS7 directory. This file uses EMM386.EXE.

N use the CONFIGn.sys file in the BINFILES\IBMDOS7 directory. This file does not use EMM386.EXE.

S use the CONFIGs.SYS file in the BINFILES\IBMDOS7 directory. This file uses EMM386.EXE.

Flag 1 is used by the normal download process.

Flag 2 is used during the FLASH process.

Flag 3 sets the type of flash process to use.

2 indicates reboot after flash (2 stage)

4 indicates no reboot after flash.

Under most conditions, set this flag to 2.

Flag 4 is used during the Scan process. This is an optional flag.

If LCCM does not recognize a client computer that is properly configured for Remoteboot, or responds inappropriately, the trouble is most likely in the NETWORK.LST file.

When a properly configured RPL client is turned on, it broadcasts a FIND frame over the LAN every two seconds. Each FIND frame contains the 12 character hexadecimal Media Access Control (MAC) address of the network adapter. MAC addresses are typically assigned in blocks to particular types of network adapters. Therefore, it is possible to identify the type of network adapter from the MAC address.

When LCCM performs a scan operation, it uses the MAC address from the FIND frame and compares it to the information in field 8 (SCAN_ON_OFF) of the NETWORK.LST file. If the first six digits of the MAC address match the information in field 8, and the second portion of field 8 is a 1 (network adapter enabled), LCCM uses the information in field 4 (BOOT_BLOCK) and field 6 (DEVICE_DRIVER) to build a Remoteboot image to send to the client. If the first six characters of the MAC address do not match the information in field 8, LCCM does nothing and the client computer continues to broadcast the FIND frame.

Sending a Remoteboot image to the client computer does not guarantee a successful scan or Remoteboot operation. If the client hangs during the scan process, the probable cause is that LCCM incorrectly identified the network card and sent the wrong device drivers to the client. Check the NETWORK.LST file as follows:

1. Locate the line that contains the first six characters of client MAC address (in field 8).
2. Ensure that field 1 of that line correctly identifies the network adapter. If the description is not correct, the address in field 8 might have been incorrectly typed. Check to see if the address is duplicated in another line. If it is duplicated in another line:
    - The MAC address might be incorrect in one of the lines.

- You might have more than one adapter type using the same first six characters in the MAC address. This could cause a conflict that requires you to temporarily disable the conflicting adapter type during the scan operation by changing the =1 to =0 in field 8.

3. Ensure that the directory name listed in field 4 actually exists under the "C:\WINNT\RPL\BBLOCK\NETBEUI" directory and that it contains the DOSBB.CNF and PROTOCOL.INI files.
4. Open the DOSBB.CNF file and make sure that it contains the correct device driver name.
5. Open the PROTOCOL.INI file and make sure that it contains the correct device driver information. You might have to consult the README file supplied on the network adapter device driver diskette and the Windows NT documentation for details about the settings used in the PROTOCOL.INI file.

After the correct device drivers are successfully loaded at the client computer, the client logs in to the LCCM server. Next, the scan process begins on the client computer. The scan process collects information about the client computer and returns that information to the server.

One of the items that the scan process collects is the PNP/PCI Identification number of the network adapter. If the high order portion of the MAC address was not sufficient to completely identify the network adapter, a final comparison is done using field 7 (PNP_PCI_ID) of the NETWORK.LST file. If no match is found, the Network Adapter field on the Hardware page of the Individual Client Details Notebook will indicate that the adapter type is unknown. If the adapter type is unknown, you might not be able to assign a client to a profile.

To check the PNP or PCI identification number, you can use the IDVIEW.EXE utility program provided with LCCM. See IDVIEW.EXE for details.

Understanding the MACHINE.LST File

The MACHINE.LST file allows you to override field 9 of your NETWORK.LST file (CONFIG_MEM) see, Understanding the NETWORK.LST File. This file is subject to change when you want to override the LCCM default for field 9 in NETWORK.LST. For example, your client computer may require a different memory configuration for your network card. You must specify in MACHINE.LST the combination of network card PNP/PCI ID and your client computer's model number for your new memory configuration in order to override the default memory configuration for your network card in NETWORK.LST. You, as the network administrator, must have an understanding of the NETWORK.LST and MACHINE.LST file in order to troubleshoot problems and make necessary changes.

In order to complete this procedure, you must access VIDEO.LST file provided by LCCM. This file is located here: LCCM\VIDEO.LST, where LCCM is your LCCM program directory.

Note: For detailed procedures on enabling the Remoteboot to function with various device drivers, refer to the World Wide Web at http://www.pc.ibm.com/us/desktop/lccm/index.html.

The ability to modify the MACHINE.LST and NETWORK.LST files to add new types of adapters does not guarantee that all network adapters will work with LCCM.

The format of the line is:

MODEL_NUMBER;PNP/PCI_ID;CONFIG_MEM;

where:

Field 1	4-8 characters long, describing machine/model e.g. 8595AK4
Field 2	Optional. If a specific network card interacts

differently

with the same machine

Field 3 These are the settings used to call EMM386.EXE. This

field contains four flags.

- Flag 1 can be X or N.
- Flag 2 can be X or N.
- Flag 3 can be 2 or 4.
- Flag 4 can be X, N, or S.

X use the CONFIGx.sys file in the BINFILES\IBMDOS7 directory. This file uses EMM386.EXE.

N use the CONFIGn.sys file in the BINFILES\IBMDOS7 directory. This file does not Use EMM386.EXE.

S use the CONFIGs.SYS file in the BINFILES\IBMDOS7 directory. This file uses EMM386.EXE.

Flag 1 is used by the normal download process.

Flag 2 is used during the FLASH process.

Flag 3 sets the type of flash process to use.

2 indicates reboot after flash (2 stage)

4 indicates no reboot after flash.

Under most conditions, set this flag to 2.

Flag 4 is used during the Scan process. This is an optional flag.

Example 1: For the machine type 1234, use the process key

XN2S

Example 2: For the machine type 1234AJK, use the process key

NN2S

Example 3: For machine type 1234, with a network card with PCI/PNP id of AA99AA99, use the process key

NN4S

Note: That 1234AJK would match with all lines and return the first matching line, 1234 would only match the last two lines, 34 and AA99AA99 would match second line only

---

1234AJK;;NN2S;

1234;AA99AA99;NN4S;

1234;;XN2S;

IMPORTANT: Edit the MACHINE.LST file with care. The validity of the file is dependent on the position of the spaces and the semicolons within each line. All invalid lines are ignored. Any line beginning with a semicolon is a comment line. Lines that are not "comment" lines contain information unique to a specific type of network adapter, and semicolons delimit fields within these lines. Commas delimit multiple entries. Each line that is not a "comment" line must end with a semicolon.

Understanding the VIDEO.LST File

The LCCM\VIDEO.LST file allows LCCM to automatically detect supported video adapters on your client computers. The file is subject to change when you use a new type of video adapter, or even when you acquire a new batch of video adapters of an existing type.

Note: The ability to modify the VIDEO.LST file to add new types of adapters does not guarantee that all video adapters will work with LCCM.

One of the items that the scan process collects is the PNP/PCI Identification number of the network adapter. If no match is found, the **Video Chipset** field on the Hardware page of the Individual Client Details Notebook will indicate that the adapter type is unknown. If the adapter type is unknown, you might not be able to assign a client to a profile.

The format of the line is:

DESCRIPTION;PNP/PCI ID

where:

Field 1 — This description will appear in the adapter card list of LCCM. All characters from the start of the line until the semi-colon (;) will be used as the description.

Field 2 — This is the PNP (plug and play) or PCI identifier for the adapter card.

PNP ID = 1st 7 digits of the PNP number.

PCI ID = 1st 8 digits of the PCI number.

Example 1: For the video adapter type S3 Trio 64/V+ use

S3 Trio 64/V+ ;53338811;

Example 2: For the video adapter type Cirrus GD 5436/46 VGA use

Cirrus GD 5436/46 VGA;101300b8;

Example 3: For the video adapter type Matrox Millenium II PCI use

Matrox Millenium II PCI=102b0519;102b0519;

IMPORTANT: Edit the VIDEO.LST file with care. The validity of the file is dependent on the position of the spaces and the semicolons within each line. All invalid lines are ignored. Any line beginning with a semicolon is a comment line. Lines that are not "comment" lines contain information unique to a specific type of network adapter, and semicolons delimit fields within these lines. Commas delimit multiple entries. Each line that is not a "comment" line must end with a semicolon

Importing a Client Database

With LCCM, you can import some, but not all, data fields into the Client database. By importing a client database, you can use this database as a way of waking up (using Wake-on-LAN) individual or groups of client computers without using the scan feature. This import feature allows other tools to provide the data to LCCM, such as a manufacturing packing list.

Note: You can import an exported database created by LCCM. To export a client database from LCCM, see Exporting a Database.

To create database import file, several rules must apply:

- The file must contain a single header.
- Client details always follow the header.
- End each field with a comma, except for the last field which signifies the end of each client record.
- Any string values must be enclosed within double quotation marks.
- Save the file as a text file (.TXT).

To import a database into LCCM:

1. From the menu bar, select **File**, then **Import** and **Append to Clients Database.** A browse box will appear.
2. Select the .TXT file that you wish to import.

Note: When you have selected your .TXT file to import, the original LCCLIENT.DBS file is renamed as LCCLIENT.BAK automatically. If you make a mistake, or damage your database in some way, the original database can be recovered by renaming the LCCLIENT.BAK file to LCCLIENT.DBS.

The following is a listing of valid header fields that can be imported into LCCM. These fields are not case sensitive but must be labeled exactly as shown.

MODEL	Client computer model number. 15 alphanumeric characters limit.
NCARD	Network card type. 8 hexadecimal characters limit. Must also be listed in the NETWORK.LST file.
VCARD	Video card type. 8 hexadecimal characters limit. Must also be listed in the VIDEO.LST file.
CONTACT	Contact information field. Field is usually identified during the scanning for new client's process. Limit is 255 ASCII characters.
LOCATION	Location information field. Field is usually identified during the scanning for new client's process. Limit is 255 ASCII characters.
COMMENTS	Comments information field. Field is usually identified during the scanning for new client's process. Limit is 255 ASCII characters.
RAMSIZE	The amount of RAM in the client computer.

	Values are listed in 1 million byte increments up to a maximum of 32767 MB. Do not embed commas in this field.
DISKSIZE	The size of the primary hard disk in the client computer. Values are listed in 1-Megabyte increments up to a maximum of 2147483647 MB. Do not embed commas in this field.
LANGUAGE	The numeric equivalent of the BIOS language. See the field "LANGUAGE" in the Client databases export function for the language definition key.
BIOSLEVEL	The level of BIOS present on the client computer. Limited to 8 alphanumeric characters
CLIENT_TYPE	Network card protocol used by the client computer. One character only (0=RPL, 1=DHCP).
NETWORKNAME	Limit is 8 characters. For example, CLNT09. Alphanumeric only.
SERIALNUMBER	Computer serial number. Limit is 15 characters. Alphanumeric only.
PROFILE_NAME	The name of the profile you wish assigned to this client. Limited to 64 ASCII characters. Leaving this field blank forces the client into the "unassigned" client column.
NETWORKADDRESS	12 hexadecimal characters (exactly).
CLIENT_PARAM_VALUE_1 TO CLIENT_PARAM_VALUE_24	Client parameter values. Limited to 24 ASCII characters each
LCCM_CONTROLLED_STATUS	Does LCCM control this client? One character only (0=LCCM Controlled client, 1=Not by this program).

Exporting a Database

The Database Export function creates a detailed database on clients or profiles. You can use the Database Export functions to export your client or profile databases to any application that can read a (.TXT) comma-delimited file format. This file format can easily be imported into most spreadsheet programs, database applications, or word processors. The imported file can be used for reference and information purposes.

There are two Database Export options available:

1. Client database
2. Profile database

> **Note**: An exported Client Database can be imported back in to LCCM, appending itself to the existing database. See Importing a Client Database for more information.

To export an LCCM Database:

1. Select **File** and **Export**. You will be given the option to export a Client or a Profile database.
2. Select either **Clients** or **Profiles**.
3. Save the export file. The default file name is LCCLIENT.TXT for the client database and LCPROF.TXT for the profile database.

When you have saved the file, you will be able to import it into any spreadsheet, database, or word processing application that is capable of reading a comma delimited (.TXT) file.

Reading a Database Report

This example shows a client database being imported into Lotus 1-2-3. To read the database file:

1. From Lotus 1-2-3, select **File** and **Open**.
2. Select the Lotus 1-2-3 File Open Type as **Text**, **(.TXT).**
3. A Text File Options box will be displayed**.** Check **Start new column at each** and select **comma**.

To import the file directly into the current workbook, check the **Combine with current workbook** check box and click on the **Combine** button to import the file.

Client Database Report Fields

The following table details the contents of the LCCM Client database. Not all clients will have every field filled with data.

Valid	1=valid record, 2=deleted, 3=changed, 4=new record
Lastupdated	0=never been updated, 1=has been updated
Networkaddress	MAC address
Networkname	LCCM client name (for example, CLNT01)
Bootstatus	0=client not disabled, 1=; client disabled
Biospassword	client BIOS password
Serialnumber	client computer serial number
Model	type of computer; model number
Location	location; see client variables
Contact	contact; see client variables
Comments	comments; see client variables
Ncard	network card type
Vcard	video card type
Ramsize	amount of client RAM
Disksize	size of client hard disk
profile_name	profile assigned to client; see software
Personalization	0=no personalization, 1=use extra personalization**;** status of personalization check box
date_time.tim_hour	Client last updated (hour)
date_time.tm_sec	Client last updated (second)

date_time.tm_mday	Client last updated (date)
date_time.tm_mon	Client last updated (month)
date_time.tm_year	Client last updated (year)
date_time.tm_wday	Client last updated (day of the week); 0=Sunday to 6=Saturday
date_time.tm_yday	Client last updated (numerical day in a year);0 to 365
date_time.tm_idst	Client last updated (using daylight savings time); 0=not daylight savings time, 1=daylight savings time
Biosimage	Path and file name of client BIOS
Bioslevel	Client BIOS level
Language	Numerical identification of the BIOS language. Key: 0=BE; 1=BR; 2=CE; 3=CF; 4=DK; 5=FR; 6=GR; 7=IT; 8=JP; 9=LA; 10=NL; 11=NO; 12=PO; 13=SF; 14=SG; 15=SP; 16=SU; 17=SV; 18=UK; 19=US
Cmosupdatefile	Path and file name of client CMOS update
Errorcode	last error code from client processing; 0=no errors
Maintainfile	Path and file name of client maintenance file
Restart	Client shutdown for scheduled processing; 0=do not force shutdown, 1=restart operating system, 2=power off/restart
client_scheduled	Client processing schedule; 0=as soon as possible, 1=scheduled date/time, 2=repeat
Schedule	Client Scheduler defined; 0=default schedule, 1=one time Client Scheduler, 2=use Client Scheduler always
Scheddayoption	0=next 24 hours, 1=specified day; if client_scheduled=1, then 0=repeat daily, 1=repeat weekly
Schedtimeoption	Type of Scheduler clock; 0=12-hour clock, 1=24-hour clock
Schedule_days	Day of the week selected by the Event Scheduler; 0=Sunday to 6=Saturday
Schedule_hours	Hour of the day selected by the Event Scheduler
Schedule_minutes	Minutes of an hour selected by the Event Scheduler
client_param_value_1 to client_param_value_24	Client parameters
lccm_controlled_status	LCCM control of client; 0=yes, 1=no
client_type	client protocol; 0=RPL, 1=DHCP

The following table details the contents of the LCCM Profile database. Not all clients will have every field filled with data.

Valid	Validity of Profile record created in the Profiles database; 1=valid record, 2=deleted, 3=changed, 4=new record
Type	Profile type; 0=standard Remoteboot, 1=Operating System Clone, 2=Unattended Install, 3=no profile
Name	Profile name
Ncard	Specific network card type
Vcard	Specific video card type
Ramsize	Amount of client RAM required
Disksize	Amount of client hard disk space required
Userpreload	Preload check box status; 0=do not use preload, 1=use preload
Personalization	Personalization check box status; 0=do not use personalization file, 1=use personalization file
dos_fileload	File name of standard Remoteboot image
Preload_image	File name of preload image
Answerfile	File name of Operating System Unattended Install answerfile
final_image	File name of final image
nt_source	Operating System Unattended Install distribution sharepoint
Client_clone	Standard Remoteboot name
Description	Profile description
prof_param_name_1 to prof_param_name_24	Profile parameter names
prof_param_value_1 to prof_param_value_24	Profile parameter values
prof_param_describe_1 to prof_param_describe_24	Profile parameter descriptions
Client_param_name_1 to client_param_name_24	Client parameter values
Client_default_value_1 to client_default_value_24	Client parameter values
Client_param_describe__1 to client_param_describe_24	Client parameter descriptions

Configuring PXE Option 60 for MS DHCP Server

You can add DHCP option 60 to an MS DHCP server as follows:

1. Click on **Start**, **Programs**, **Administrative Tools** and **DHCP Manager**.
2. Double-click on **Local Machine** and highlight an applicable scope.
3. Click on **DHCP Options**, select Defaults, and then click on **New**.
4. In the Name field, type "LCCM PXE Client".
5. In the Data Type field, select **String**.
6. In the Identifier field, type "60" and then click on **OK**.
7. At the DHCP Options window, click **OK**.
8. Highlight the Scope.
9. Click on **DHCP Options**, click on **Global**, then select the **60 LCCM PXE Client** in the unused Options list.
10. Click on **Add**, then click on **Value**.
11. In the **String** field, type "PXEClient"

    Note: You must observe the case exactly when entering text in the **string** field.

12. Click on **OK**.
13. Exit from the DHCP Manager.

Configuring Netfinity Manager to Detect Netfinity Clients Across Routers

If you have Netfinity Services installed on a client computer which does not reside on the same subnet as your LCCM server, i.e. it is separated from your LCCM server by an IP router, then you will have to manually identify under Netfinity Manager, the subnets that you wish Netfinity Manager to have access to.

For Netfinity Manager to detect clients across a router:

1. Create/edit file C:\WNETFIN\TCPADDR.DSC. This is located on the server on which Netfinity Manager resides.
2. In file C:\WNETFIN\TCPADDR.DSC., place a valid IP address and subnet mask for every subnet that you want Netfinity Manager to be able to access.

Chapter 5. Training Exercises

Introduction

The training exercises are provided to help you become more familiar with using the Profile Wizard, Client Assignment Wizard, DiffTool Wizard and CloneIt Agent Wizard. Each exercise gives a specific example of how to use LCCM's Wizards to create operating system and software profiles to which your client computers can be assigned.

IMPORTANT: The terms and conditions of the IBM International Program License Agreement for LCCM do not grant any license to install, copy, or use any application software or operating system software mentioned in this guide that is not shipped as part of LCCM. Always ensure that you have obtained suitable licenses for any software you intend to use with LCCM.

An Unattended Install of Windows NT 4.0 Server Without Applications

This exercise remotely installs a Windows NT 4.0 Server operating system image (including Service Pack 4) on a client computer. This image can also include additional applications, installed using IBM's DiffTool (see, Using DiffTool Wizard) and supported applications such as Universal Management Agent, Netfinity Services and LCCM 2.5.1 (see, Profile Wizard - Windows NT 4.0 Server Application Selection).

- Universal Management Agent

  A common client management agent based on Tivoli's Management Agent, IBM's Netfinity Manager Services technologies and Intel's LANDesk Client Manager. The Universal Management Agent (UMA) integrates into other management applications (like Microsoft's SMS and Intel's LANDesk Management Suite) that will run on IBM and other manufacturer's desktops, mobile systems and server.

- Netfinity Services

  Enables you to monitor and manage systems remotely without interrupting work in progress. You can therefore anticipate and correct problems before they become serious.

- LCCM 2.5.1

For the purposes of this exercise, Windows NT 4.0 Server operating system (including Service Pack 4) is used.

Objective:

This exercise uses the Profile Wizard and the Client Assignment Wizard to:

- Set up a client computer
- Add the client computer to the LCCM database
- Create a Windows NT 4.0 Server operating system (including Service pack 4) image
- Create an LCCM software profile for the Windows NT 4.0 Server image
- Transport the Windows NT 4.0 Server, operating system image to the server
- Assign the client computer to the software profile using Client Assignment Wizard

- Downloads the Windows NT 4.0 Server operating system (including Service Pack 4) image to the client computer

Before you begin, you must have the following:

- A Primary Domain Controller server attached to the LAN. The server must be functioning and have LCCM 2.5.1 and Service Pack 4 already installed.
- A Windows NT 4.0 Server installation CD-ROM.
- Licenses to operate Windows NT 4.0 Server.
- A client computer. This computer must have a network card installed and meet the minimum hardware requirements to run Windows NT 4.0 Server.

To install a Windows NT 4.0 Server image (including Service Pack 4)

The first step in this exercise is to connect your client computer to the LAN and scan it into LCCM:

1. Install a client computer and connect it to the LAN. For details see, Preparing Computers for LCCM Use. The client computer will receive the Windows NT 4.0 Server operating system image (including Service Pack 4) and will be referred to as the client computer throughout the remainder of this exercise.
2. Start LCCM and start the scan process by clicking on the **Start** button in the Installation/Maintenance window.

Create a Software Profile

The next step in this exercise is to create a software profile using the Profile Wizard:

1. From LCCM's **Profile** menu select **Create New**.
2. Select the **Use the Profile Wizard** radio button and click on **OK**.
3. At the Welcome to the Profile Wizard screen:
   a) Enter a profile name.
   b) Select the **Unattended install** radio button.
   c) Select the **Windows NT 4.0 Server operating system** radio button, select **Service Pack 4** from the Service Pack Upgrade drop-down list and click on **Next**.
4. At the Unattended Operating System Files Selection screen, check the **Copy new operating system files** checkbox, enter a title for this operating system and click on **Next**.
5. At the Supported International Language Selection screen, select the appropriate operating system language from the drop-down list and click on **Next**.
6. At the RAID Adapter Setup screen, click on **Next**. For details on enabling RAID see, Profile Wizard - RAID Adapter Setup.

Note: By selecting the RAID option, you disable the Rapid Restore options on the IBM Rapid Restore Partition Setup screen

---

7. At the IBM Rapid Restore Partition Setup screen, click on **Next**. For more details on enabling Rapid Restore see Profile Wizard - IBM Rapid Restore Partition Setup.
8. At the Target Machine's Disk Setup screen, select the **Single partition using maximum available space** radio button, check the **Yes, install NTFS on all clients assigned to this profile** checkbox and click on **Next**. For details on the other partitioning options see, Profile Wizard - Target Machine's Disk Setup and for enabling Rapid Restore see, Profile Wizard - IBM Rapid Restore Partition Setup.

9. At the Profile Customization screen, enter a **Company Name** and click on **Next**.
10. At the Regional Settings screen, select the time zone you want to use for the client operating system from the drop-down list and click on **Next**.
11. At the NT Server Customization screen, select the **Standalone** radio button, select the **Server Licensing Method** appropriate to your network and click on **Next**.
12. At the Networking screen, select the **Domain** radio button and enter the NT domain name of your LCCM Server. Check the TCP/IP check box under Network Protocols and click on **Next**.
13. At the TCP/IP Configuration screen, select the **Obtain IP addresses from a DHCP Server** radio button and click on **Next**.
14. At the Profile Summary screen, use the scroll bar to ensure the details for your software profile are correct (if not, go back through the wizard to make any corrections), add a description for your profile and click on **Next**.
15. At the Image Building screen click on the **Image Building** button.
16. At the dialog box click on **Yes** to build the image of your software profile.
17. At the Locate the Windows NT Setup File screen, insert your Windows NT 4.0 Server CD-ROM and browse to <CD drive>:\I386\WINNT and click on **Open**. When the Successfully finished copying NT Server 4.0 and SP4 dialog box is displayed click on **OK**. The Profile Wizard is now ready to build service pack upgrade 4. Click on the **Yes** button to continue.
18. At the Profile Summary screen, "No more image files to build" will be displayed. Click on **Finish**.
19. Ensure that the profile that you have just created appears in the Profile and Assigned Clients column under OS Install Profiles within LCCM's main Installation/Maintenance window.

Assign a client to a Software Profile

The next step in this exercise is to assign your client computer to the software profile you have created:

1. Highlight your client computer in the Unassigned Clients column, drag and drop it onto the software profile that you have created in the Profiles and Assigned Clients column under OS Install Profiles. This will automatically start the Client Assignment Wizard.
2. At the Client Assignment Wizard screen, click on **Next**.
3. At the Registered User screen, enter a name for the registered user of your client and click on **Next**.
4. At the Product ID screen, enter the Product ID for your Windows NT 4.0 Server installation CD-ROM and click on **Next**.
5. At the Network Username screen, enter a default Network user name for your client and click on **Next**.
6. At the Description screen, enter a description for your client and click on **Next**.
7. At the Client Parameter Summary screen, ensure the details for your client are correct (if not, go back through the wizard to make any corrections) and click on **Finish**.
8. To update your client computer click on the **Process** button within LCCM's main Installation/Maintenance window.

Note: If you use the Scheduler to set a specific day and time, you must still click on the Process button and leave the program running for the scheduled changes to take place. Clicking on the Process button places the scheduled changes in the processing queue of the Progress and Errors Window; when the specific day and time arrives, the scheduled changes are processed.

An Unattended Install of Windows NT 4.0 Workstation With Applications

This exercise remotely installs a Windows NT 4.0 Workstation operating system image (including Service Pack 4) and additional applications on a client computer. Supported applications such as Universal Management Agent, Netfinity Services and LCCM 2.5.1 can be installed (see Profile Wizard - Windows NT 4.0 Server Application Selection).

- Universal Management Agent

  A common client management agent based on Tivoli's Management Agent, IBM's Netfinity Manager Services technologies and Intel's LANDesk Client Manager. The Universal Management Agent (UMA) integrates into other management applications (like Microsoft's SMS and Intel's LANDesk Management Suite) that will run on IBM and other manufacturer's desktops, mobile systems and server.

- Netfinity Services

  Enables you to monitor and manage systems remotely without interrupting work in progress. You can anticipate and correct problems before they become serious.

- LCCM 2.5.1

Objective:

This exercise uses the Profile Wizard, the DiffTool Wizard and the Client Assignment Wizard to:

- Set up a client computer.
- Add the client computer to the LCCM database.
- Create additional applications using DiffTool.
- Create a Windows NT 4.0 Workstation operating system (including Service pack 4 and a Rapid Restore partition) image and additional applications.
- Create a software profile for the Windows NT 4.0 Workstation (including Service pack 4) image and additional applications.
- Transport the Windows NT 4.0 Workstation operating system (including Service Pack 4) and additional applications image to the server.
- Assign the client computer to the software profile using Client Assignment Wizard.
- Download the Windows NT 4.0 Workstation operating system (including Service Pack 4) and additional applications image to the client computer.

Before you begin, you must have the following:

- A server attached to the LAN. The server must be functioning and have LCCM 2.5.1 and Service Pack 4 installed.
- The Windows NT Workstation CD-ROM.
- The Windows NT Service Pack 4 CD-ROM.
- Licenses to operate Windows NT 4.0 Workstation.
- A donor computer that has the additional application you want to install on your client computer.
- A client computer. This computer must have a network adapter card installed and meet the minimum hardware requirements to run Windows NT 4.0 Workstation.

To install a Windows NT 4.0 Workstation (including Service Pack 4) and additional applications image

The first step in this exercise is to connect your client computer to the LAN and scan it into LCCM:

1. Install two client computers and connect them to the LAN. For details see, Preparing Computers for LCCM Use. One client computer will become the donor computer with the additional application already installed. The other computer will receive the Windows NT 4.0 Workstation operating system image including your additional application and will be referred to as the client computer throughout the remainder of this exercise.
2. Start LCCM and start the scan process by clicking on the **Start** button in the Installation/Maintenance window.

Install an additional application using DiffTool

The next step in this exercise is to install the additional application using DiffTool:

1. Ensure that all required software is installed and functioning on the donor computer.
2. Shutdown and restart the client computer and allow it to fully restart.
3. Ensure that the Windows operating system is the only application still running. Shutdown all other running applications.
4. From the Windows Desktop double-click on the **Network Neighborhood** resource.
5. Double-click on the name of your **LCCM server**.
6. Logon to the domain with domain administrative rights.
7. From the list of NT "shares" displayed double-click on the **LCCM$ADM** share. This will open the LCCM installation program directory.
8. Double-click on **difftool.exe** to begin the installation process.
    a) At the Welcome to the DiffTool Wizard screen click on **Next**
    b) At the Locate LCCM Server screen, the LCCM server to which you are connected, will be displayed in the Server Name dialog box. Click on **Next**
    c) At the Target Application Information screen, enter the application name and path to the Setup file**.** If you do not know the path to your setup file then use the **Find App Setup File** button to browse for your setup file and click on **Open** to return to the Target Application Information screen and click on **Next**
    d) At the Ready to Begin Application Installation screen, click on **Start Installation**. If your application setup program asks you to reboot, select **NO**
    e) At the Application Installation Complete screen, click on the **Installation Complete** button once the application has been installed.
    f) At the Summary screen, click on **Finish**.

Create a Software Profile

The next step in this exercise is to create a software profile using the Profile Wizard:

1. From LCCM's **Profile** menu select **New Profile**.
2. Click on the **Use the Profile Wizard** radio button and click on **OK**.
3. At the Welcome to the Profile Wizard screen:
    a) Enter a profile name.
    b) Select the **Unattended install** radio button.
    c) Check the **Do you also want to install applications with this profile**? Checkbox.
    d) Click on the Windows NT 4.0 Workstation operating system radio button and select **Service Pack 4** from the Service Pack Upgrade drop-down list and click on **Next**.

4. At the Unattended Operating System Files Selection screen, check the **Copy new operating system files** checkbox, enter a title for your operating system dialog box and click on **Next**.
5. At the RAID Adapter Setup screen, click on **Next**. For details on enabling RAID see, Profile Wizard - RAID Adapter Setup

---

Note: By enabling the RAID option, you disable the Rapid Restore options on the IBM Rapid Restore Partition Setup screen

---

6. At the IBM Rapid Restore Partition Setup screen, check the **Yes, create a backup image of the entire operating system** checkbox and click on **Next**. For more details on enabling Rapid Restore see Profile Wizard - IBM Rapid Restore Partition Setup and How to Create a Rapid Restore Partition..

   When enabled, Rapid Restore will limit the clients to half of their available hard disk space. As Rapid Restore creates a hidden partition equal to your primary partition plus 5MB for administrative overheads. Ensure your primary partition occupies less than half the physical hard disk space on your client. With a 512MB primary partition, an extra 517MB is required. For more information, see RAVE.EXE (Using with a DOS Startup Diskette) .
7. At the Target Machine's Disk Setup screen, select the **Single partition using maximum available space** radio button, check the **Yes, install NTFS on all clients assigned to this profile** checkbox and click on **Next**. For details on the other partitioning options see, Profile Wizard - Target Machine's Disk Setup.
8. At the Profile Customization screen, enter a company name. Click on **Next**.
9. At the Regional Settings screen, select the time zone you want to use for the client operating system from the drop-down list and click on **Next**.
10. At the Networking screen, check the **Do you want to login to an NT domain?** checkbox. Enter the **NT Domain Name** of your LCCM server and check the **TCP/IP** checkbox under Networks Protocols**.**
11. At the TCP/IP Configuration screen, check the **Obtain IP addresses from a DHCP** checkbox and click on **Next**.
12. At the Application screen, click on **Next**.
13. At the Windows NT 4.0 Workstation Application Selection screen, check the checkbox for your additional application and click on **Next**.

Note: You can check the checkboxes for UMA and Netfinity Services on this screen if you want to install either application.

---

14. At the Profile Summary screen, ensure the details for your software profile are correct (if not go back through the wizard to make any corrections), add a description of your profile and click on **Next**.
15. At the Image Building screen, click on the **Image Building** button.
16. At the Dialog Box, click on **Yes** to build the image of your software profile and additional application.
17. At the Locate the Windows NT Setup File screen, insert your Windows NT 4.0 Workstation CD-ROM and browse to <CD drive>:\I386\WINNT and click on **Open**. When the Successfully finished copying NT Server 4.0 and SP4 dialog box is displayed click on **OK**.
18. At the Profile Summary screen "No more image files to build" will be displayed. Click on **Finish**.

19. Ensure that the profile that you have just created appears in the Profile and Assigned Clients column under OS Install Profiles within LCCM's main Installation/Maintenance window.

Assign a client to a Software Profile

The next step in this exercise is to assign your connected and scanned client computer to the software profile you have created:

1. Highlight your client computer in the Unassigned Clients column. Drag and drop it onto the software profile that you have created in the Profiles and Assigned Clients column under OS Install Profiles. This will automatically start the Client Assignment Wizard.
2. At the Client Assignment Wizard screen, click on **Next**
3. At the Registered User screen, enter a name for your client and click on **Next**.
4. At the Product ID screen, enter the Product ID for your Windows NT 4.0 Server installation CD-ROM and click on **Next**.
5. At the Network Username screen, enter a Username for your client and click on **Next**.
6. At the Description screen enter a description for your client and click on **Next**.
7. At the Client Parameter Summary screen, ensure the details for your Client are correct (if not go back through the wizard to make any corrections) and click on **Finish**.
8. To update your client computer click on the **Process** button within LCCM's main Installation/Maintenance window.

Note: If you use the Scheduler to set a specific day and time, you must still click on the **Process** button and leave the program running for the scheduled changes to take place. Clicking on the Process button places the scheduled changes in the processing queue of the Progress and Errors Window; when the specific day and time arrives, the scheduled changes are processed.

A Clone Install of Windows 98

This exercise remotely installs a Windows 98 operating system image and applications cloned from a donor computer to a client computer with an identical hardware setup.

Objective:

This exercise:

- Sets up a client computer and a donor .
- Adds the client computer to the LCCM database.
- Creates a Windows 98 donor image from the donor computer.
- Creates a software profile for the Windows 98 image.
- Transports the Windows 98 operating system image to the server.
- Assigns the client computer to the software profile.
- Downloads the Windows 98 operating system image to the client computer.

Before you begin, you must have the following:

- A server attached to the LAN. The server must be functioning and have LCCM 2.5.1 installed
- The Windows 98 installation CD-ROM

- A client computer. This computer must have a network adapter card and meet the minimum hardware requirements to run Windows 98.
- A donor computer that is compatible with the new client computer you will be managing.
- The appropriate number of licenses for Windows 98.

To Clone Install Windows 98

The first step in this exercise is to connect your client computer and donor computer to the LAN, scan them into LCCM, install Windows 98 and use CloneIt Agent to clone an image from the donor computer:

1. Install two client computers and connect them to the LAN. For details see, Preparing Computers for LCCM Use. One client computer will become the donor computer with Windows 98 already installed. The other computer will receive the Windows 98 operating system image and will be referred to as the client computer throughout the remainder of this exercise.
2. Start LCCM and start the scan process by clicking on the **Start** button in the Installation/Maintenance window.
3. Install Windows 98 on the donor computer using a Windows 98 installation CD-ROM.
4. Connect the donor computer to the LAN to which your LCCM server belongs.
5. Ensure that all required software is installed and functioning on the donor computer.
6. Shutdown and restart the donor computer and allow it to fully restart.
7. Ensure that the Windows 98 operating system is the only application still running. Shutdown all other running applications.
8. From the Windows Desktop double-click on the **Network Neighborhood** resource.
9. Double-click on the name of your **LCCM server.**
10. Logon to the domain with Domain Administrative rights.
11. From the list of NT "shares" displayed double-click on the **LCCM$ADM** share. This will open the LCCM installation program directory.
12. Double-click on **cloneitagent.exe**.
13. Click on **OK** to begin the cloning process.
14. At the CloneIt Agent screen, click on **Next**.
    a) At the Cloned Image Name screen, enter a name for your Cloned Image.
    b) At This Workstation, click on **Next**.
    c) At the Begin Cloning screen, click on **Finish** to start the cloning process.
    d) The Cloning in Progress screen will allow you to monitor the progress of the cloning process.
    e) At the Cloning Complete dialog box click on **OK**.

Create a Software Profile

The next step in this exercise is to create a software profile using the Profile Wizard:

1. From LCCM's **Profile** menu select **Create New**.
2. Select the **Use the Profile Wizard** radio button and click on **OK**.
3. At the Welcome to the Profile Wizard screen:
    a) Enter a profile name.
    b) Select the **Clone install** radio button.

c) Select the radio button applicable to the operating system you wish to install. In this case Windows 98, and click on **Next**.

4. At the Clone Image Selection screen, click on **Next**.
5. The options available for the RAID Adapter Setup screen, the IBM Rapid Restore Partition Setup screen, the Target Machine's Disk Setup screen, the Profile Customization screen and the TCP/IP Configuration screen will be determined by the software, hardware and network setup and configuration of the donor computer on which your software profile is to be based. The resulting clone image will be an exact copy of the donor computers software, hardware and network setup and configuration. Therefore, click on **Next** to progress through these screens. As the options on these screens will be grayed out and cannot be edited.
6. At the Profile Summary screen, ensure that the details for your software profile are correct (if not go back through the wizard to make any corrections), add a description of your profile and click on **Finish**.

Note: As the resulting clone image will be an exact copy of the donor computer's software, hardware and network setup and configuration, if the details for your software profile are incorrect you may have to create a new clone from another donor computer with the correct software, hardware and network configuration.

---

7. Ensure that the profile that you have just created appears in the Profile and Assigned Clients column under OS Clone Profiles within LCCM's main Installation/Maintenance window.

Assign a client to a Software Profile

The next step in this exercise is to assign your client computer to the software profile you have created:

1. Highlight your client computer in the Unassigned Clients column, drag and drop it onto the software profile that you have created in the Profiles and Assigned Clients column under OS Clone Profiles. This will automatically start the Client Assignment Wizard.
2. At the Client Assignment Wizard screen, click on **Next**.
3. At the Registered User screen, enter a Username for your client and click on **Next**.
4. At the Product ID screen, enter the first part of the Product ID for your Windows 98 installation CD-ROM in the format displayed and click on **Next**.
5. At the Product ID screen, enter the second part of the Product ID for your Windows 98 installation CD-ROM in the format displayed and click on **Next**.
6. At the Network Username screen, enter a Network Username for your client and click on **Next**.
7. At the Description screen, enter a description for your client and click on **Next**.
8. At the Client Parameter Summary screen, ensure that the details for your Client are correct (if not go back through the wizard to make any corrections) and click on **Finish**.
9. To update your client computer click on the **Process** button within LCCM's main Installation/Maintenance window.

Note: If you use the Scheduler to set a specific day and time, you must still click on the **Process** button and leave the program running for the scheduled changes to take place. Clicking on the Process button places the scheduled changes in the processing queue of the Progress and Errors Window; when the specific day and time arrives, the scheduled changes are processed.

Appendix A. Assistance

LCCM Support Form

Support for IBM LCCM is provided by e-mail for registered users only. Response time varies on support queries. You may access the support form through your Web browser at the following IBM Web site:

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

LCCM Users Forum

For new and advanced users of LCCM, an LCCM Forum Web site is available. This Forum is monitored by IBM personnel and will discuss and answer many of the common questions relating to LCCM and its implementation. You may access the Forum from the LCCM home page at:

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

Appendix B. Utilities Provided with LCCM

Utilities Used in Image Batch Files

All of the utilities described in this section, with the exception of FDISK, are found in the LCCM\CLNTFILE directory, where LCCM is your LCCM program directory.

AIAREAD.EXE

Objective: To use the AIAREAD.EXE utility to output the contents of the Asset Information Area (AIA) of the Radio Frequency Identification (RFID) chip. This chip is battery maintained and contains asset data specific to each client computer.

Note: This utility will work only with IBM client computers that are RFID/AIA enabled.

The syntax of the command is:

AIAREAD group [field] [/f=file] [/a] [/s]] [/x] [/p=prefix],

Options for the command are:

group	The name of the device group.
field	The name of the field to read (default is all fields).
file	Name of file to output results to (default is stdout).
/a	Append the file (default is overwrite file).
/s	Output formatted as SET statements. e.g. 'SET name=value' (default is name=value)
/x	exclude fields that are null strings or zero values.
/p	Prepend 'prefix' to the name of each field

Example 1: You want to display one of the AIA fields on the client.

At the client, execute the following command line:

AIAREAD ownerdata

The client displays:

OWNERNAME=jim smith
DEPARTMENT=219
LOCATION=Room 315
PHONE_NUMBER=3765
OWNERPOSITION=Manager

Example 2: You want to create a .BAT file that will SET variables in RAM on a client computer.

At the client, execute the following command line:

AIAREAD /s ownerdata > OWNER.BAT

The created OWNER.BAT file would contain these lines:

SET OWNERNAME=jim smith

SET DEPARTMENT=219

SET LOCATION=Room 315

SET PHONE_NUMBER=3765

SET OWNERPOSITION=Manager

AIAWRITE.EXE

Objective: To input contents to the Asset Information Area (AIA) of the Radio Frequency Identification (RFID) **chip**. This **chip** is battery maintained and contains asset data specific to each client computer.

Note: This utility will work only with IBM client computers that are RFID/AIA enabled.

The syntax of the command is:

AIAWRITE group field1=[value1]..[fieldn=[valuen]]|/f=file,

Options for the command are:

group The name of the device group.

fieldn The name of the field to write

valuen The value to assign to fieldn. For the USERDEVICE group, a blank value means delete this field, if the field already exists, or create a field with a NULL value if the field does not exist. For all others it means assign a zero or null value.

file Name of file to get field/value pairs from. Each line in this file contains one field/value pair, separated by '='.

BSEDIT.EXE

Objective: Backs up or restores the active boot partition.

The syntax of the command is:

BSEDIT /f=filename /d=[A|C|D] /m=[r|w] [/v]

Options for the command are:

/f=filename File to read boot sector from or write boot sector to

/d=A|C|D Device containing boot sector to read or write

/m=R|W R is Read boot sector from device and write to specified file (This is the default)

W is Write boot sector contained in the specified file to the device

/v Verbose switch - if present diagnostic output is displayed

Example: The following command line makes a copy of the boot sector into a file.

BSEDIT /f=copy.bb /d=C /m=r

Note: This utility correctly handles FAT32 and FAT boot partitions.

DEDITD

Objective: To use the DEDITD.EXE utility that replaces, inserts, or appends strings within text files.

The syntax of the command is either :

DEDITD /I[L]A │/I[L]B│/R│/AE│/AS [/N=number] target [search] replace

Options for the command are either:

/IA│B	Insert after, before search
/ILA│B	Insert in the line after, before search
/R	Replace search with target throughout the file
/AE │S	Append or replace to a line at the end or start of the file
/N	Perform an action

(Default is to do it once, as in /N1)

number	Perform action this number of times

/N0 inserts/replaces all occurrences)

target	Full path and name of the text file to edit
search	Optional string to search for
replace	String to substitute/append on search string

Example: The following line replaces the first 5 occurrences of the string LOADHIGH in the file C:\AUTOEXEC.BAT with the string LOAD.

DEDITD /R /N5 C:\AUTOEXEC.BAT LOADHIGH LOAD

DISKDOS.EXE

Objective: To save (read) and restore (write) the boot record using the DISKDOS utility.

The syntax of the command is:

DISKDOS [/V] /F=filename /D=drive [/R=R³W]

Options for this command are:

/V	For debug output
/F=filename	File to read/write from/to
/D=drive letter	Logical drive to read/write
/R=R │W	R for read, W for Write

DOSLFNBK.EXE

Objective: To use the DOSLFNBK utility to back up and restore Windows 95 long file names so that DOS archive programs can save and restore Windows 95 installations. By default, the long file name records in the named directory and sub-directories are saved to or restored from a file called BACKUP.LFN, but another file name can be specified.

The syntax of the command is:

DOSLFNBK drive:directory [options]

Options for the command are:

/F file name	Back up to this file (default .LFN extension)
/L	List contents of backup file
/R	Restore from existing backup
/S directory	Skip directory
/V	Give running status report
/D file name	Write a detailed debugging log to file name

The /S parameter can be used if you want to back up and restore several directory trees separately. By doing this, an installation image can be divided into several separate archives that can be restored optionally.

DYNALOAD.COM

Objective: To use the DYNALOAD utility to load a device driver dynamically after the boot process has completed.

DYNALOAD is part of PC-DOS 7 and is used in batch files to load a device driver dynamically after the boot process has completed. LCCM automatically uses DYNALOAD to load ServeRAID drivers (when needed) to download the RAID configuration to your ServeRAID adapter. To use DYNALOAD to load another device driver within your batch files refer to your PC-DOS 7 documentation.

FAT32.EXE

Objective: To allow access to FAT32 disk partitions from PC-DOS.

The syntax of the command is:

FAT32 [/S]

Options for the command are:

/S	Display the current status of FAT32 support.

If a hard disk has been partitioned using FDISK32 (so that partitions greater than 2047MB can be supported) it is necessary to load the FAT32 TSR so that these partitions can be accessed. However, the FORMAT32.COM command can use FAT32 partitions without the FAT32 TSR.

See FDISK32.EXE for an example of the use of FORMAT32.COM and FAT32.EXE.

FDISK.COM

The FDISK command is used to partition a hard disk and prepare it for a format operation. When using FDISK, start from a known disk configuration by deleting all partitions. The utility LCBTRDEL.EXE resets the hard disk to a known state by deleting the master boot record. For more details, see LCBTRDEL.EXE.

Note: LCCM is currently restricted to managing client computers with a maximum of two DOS drives. You can create more partitions, but no more than two can be primary or logical DOS drives.

The version of FDISK that is provided with LCCM can be used with command-line arguments or a response file. For information about creating, using, or modifying a response file, see Response Files for the FDISK Command. Using command-line arguments provides more flexibility and can provide standardized partition sizes regardless of the hard disk capacity.

Typically, within LCCM the required keyboard input to the FDISK.COM command is provided by a redirected file:

%LCCMPATH%\FDISK < %TMPPATH%\LCFDISK.DAT

The LCFDISK.DAT file is prepared using the LCFDISK.EXE utility.

FDISK Command-Line Arguments

You can use DOS FDISK command-line arguments in LCCM batch files as an alternative to creating binary response files.

The syntax for the DOS FDISK command is:

[d:][path]FDISK d [/PRI:m] | [/EXT:n] | [/LOG:o]

The options for the command are:

d: The drive on which the FDISK program is located

path The path to the directory of specified drive where the FDISK program is located

d The drive (1 or 2) on which the FDISK operation is to be performed

/PRI:m The size of the primary DOS partition to create (in MB)

/EXT:n The size of the extended DOS partition to create (in MB)

/LOG:o The size of the logical drive to create (in MB) in the extended partition

PC DOS can handle a maximum of two partitions: one primary and one extended. The maximum primary partition size recognized by PC DOS is 2048MB. The maximum extended partition size is 8064MB. The largest logical drive that can be contained within the extended partition is 2048MB, but you can have multiple logical drives. If you specify a partition size that is larger than the amount of available disk space, the FDISK command will create a smaller partition to use whatever amount of disk space is available. Therefore, you can create a single pre-load image batch file specifying the /EXT:8064 parameter and use it on any client computer regardless of the hard disk capacity.

Note: Be aware that the LCBTRDEL utility program provided with the LCCM program numbers the first physical hard disk drive as 0 and the second physical drive as 1. The DOS FDISK command numbers the first physical hard disk as 1 and the second physical drive as 2.

In the following examples, the lines in the batch files that are shown in bold type are the FDISK command lines. The batch file is designed to work in both an RPL and DHCP/PXE environment. The INTER.EXE command is required in the RPL environment, but not in the DHCP/PXE environment. LCCM determines the environment and uses the appropriate FDISK command line.

Example 1: You have a single 5GB hard disk and you want to partition it as follows:

- 2GB primary partition
- 2GB extended partition
- 1GB unused

Your pre-load image batch file (.LCP file) would look like the following:

```
@echo off
%LCCMPATH%\LCBTRDEL 0 /S
IF "%CDWNTYPE%"=="0" GOTO RPL
%LCCMPATH%\FDISK 1 /PRI:2048  /EXT:2048 /LOG:2048
GOTO NEXT
:RPL
%LCCMPATH%\INTER.EXE %LCCMPATH%\FDISK 1 /PRI:2048 /EXT:2048 /LOG:2048 :NEXT
```

If you use this same pre-load image batch file on a client computer with a 3GB hard disk, the result would be a 2GB primary partition and a 1 GB Extended partition.

Example 2: You have a single 5GB hard disk and want to partition it to have a 2GB primary partition and a 3GB extended partition containing two logical drives (2GB and 1GB respectively).

Your pre-load image batch file (.LCP file) would look like the following:

```
@echo off
%LCCMPATH%\LCBTRDEL 0 /S
IF "%CDWNTYPE%"=="0" GOTO RPL
%LCCMPATH%\FDISK 1 /PRI:2048  /EXT:3076 /LOG:2048
%LCCMPATH%\FDISK 1 /LOG:1024
GOTO NEXT
:RPL
%LCCMPATH%\INTER.EXE %LCCMPATH%\FDISK 1 /PRI:2048 /EXT:3076 /LOG:2048
%LCCMPATH%\INTER.EXE %LCCMPATH%\FDISK 1 /LOG:1024
:NEXT
```

Response Files for the FDISK Command

Two response files are provided by LCCM to run the FDISK command unattended.

- LC5050FD.DAT contains the responses for FDISK to process a disk with no partitions defined and to create one primary and one secondary partition, each taking 50% of the disk space.

  IMPORTANT: If the size of the client computer hard disk is 4GB or greater, you cannot use LC5050FD.DAT. LC5050FD.DAT creates a primary DOS partition that is 50% of the hard disk space, and this partition cannot exceed 2GB.

- LCFDISK.DAT contains the responses for FDISK to process a disk with no partitions defined and to create a single partition, 100% of available disk space.

The following shows the sequence of responses found in the LC5050FD.DAT file:

ENTER	Create DOS partition
ENTER	Create Primary DOS partition
N ENTER	Do not use all disk space
50% ENTER	Use 50% of disk space
ESC	Return to FDISK Options

ENTER	Create DOS partition
2 ENTER	Create extended DOS partition
ENTER	Use maximum available space
ESC	Go to create logical DOS drives
ENTER	Use all available space
ESC	Return to FDISK options
2 ENTER	Set active partition
1 ENTER	Partition 1
ESC	Return to FDISK options
ENTER	Reboot

The most likely variation would be to create one or more partitions of fixed size. To do this, change the text **50%** to the size of the partition required.

You can easily modify one of the existing response files as follows:

1. Copy the LC5050FD.DAT file provided with LCCM under a new name. Make sure you keep the .DAT extension.
2. Open the newly created response file using WordPad or NotePad. Not all of the characters will be readable.
3. Locate the 50%.
4. Change the 50 to any value from 1 to 100. Do not change any other characters. The value you choose will determine the percentage of the hard disk that will be used for the primary partition.
5. Save and close the file.

If you want to create your own response file you must first go through the FDISK procedure to partition the hard disk and write down every keystroke you use. Be sure to include the final keystroke to restart the computer. Next, use an editor to prepare a binary file with the ASCII codes for the keystroke characters. (ENTER is 13 decimal, 0D hex. ESC is 27 decimal, 1B hex.)

A pre-load image batch file (.LCP file) using the LC5050FD.DAT response file looks similar to the following:

```
ctty con
%LCCMPATH%\LCBTRDEL 0 /S
%LCCMPATH%\INTER.EXE FDISK < %LCCMPATH%\LC5050FD.DAT
```

Additional ready made response files and other supplemental files are available through the World Wide Web at:

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

FDISK32.EXE

Objective: To allow hard disk partitions larger than 2047Mb to be created.

The syntax of this command is exactly the same as FDISK.COM.

Example: The following command line will create a primary partition of size 4096Mb.

```
FDISK32 1 /PRI:4096
```

As with FDISK.EXE, the machine must be re-booted after changes have been made to the partition table before it can be used. After a re-boot, the following command line can be used to prepare the partition for use:

FORMAT32 C:

Finally, before using any other PC-DOS commands the FAT32 TSR must be loaded thus:

FAT32

Typically, within LCCM the required keyboard input to the FDISK32.EXE command is provided by a redirected file:

%LCCMPATH%\FDISK32 < %TMPPATH%\LCFDISK.DAT

The LCFDISK.DAT file is prepared using the LCFDISK.EXE utility.

FORMAT.COM

Objective: To prepare a disk partition for use with PC-DOS.

The syntax for this command is:

FORMAT drive: [/V[:label]] [/Q] [/U] [/F:size] [/B | /S] [/C]

FORMAT drive: [/V[:label]] [/Q] [/U] [/T:tracks /N:sectors] [/B | /S] [/C]

FORMAT drive: [/V[:label]] [/Q] [/U] [/1] [/4] [/B | /S] [/C]

FORMAT drive: [/Q] [/U] [/1] [/4] [/8] [/B | /S] [/C]

Options for the command are:

drive: Specifies the drive to format.

/V[:label]	Specifies the volume label.
/Q	Performs a quick format.
/U	Performs an unconditional format.
/F:size	Specifies the size of the floppy disk to format (such as 160, 180, 320, 360, 720, 1.2, 1.44, 2.88).
/B	Allocates space on the formatted disk for system files.
/S	Copies system files to the formatted disk.
/T:tracks	Specifies the number of tracks per disk side.
/N:sectors	Specifies the number of sectors per track.
/1	Formats a single side of a floppy disk.
/4	Formats a 5.25-inch 360K floppy disk in a high-density drive.
/8	Formats eight sectors per track.
/C	Revert to less conservative handling of bad blocks.

Example: The following command line prepares the primary partition on a drive.

FORMAT C:

Note: This is the standard PC-DOS FORMAT.COM.

Typically, within LCCM the required keyboard input to the FORMAT.COM command is provided by a redirected file:

%LCCMPATH%\FORMAT %TARGET% < %LCCMPATH%\FORMAT.DAT

FORMAT32.COM

Objective: To prepare a FAT32 disk partition for use with PC-DOS.

The syntax for this command is:

FORMAT32 drive: [/V[:label]] [/Q] [/B] [/AUTOTEST]

Options for the command are:

drive:	Specifies the drive to format.
/V[:label]	Specifies the volume label.
/Q	Performs a quick format.
/B	Allocates space on the formatted disk for system files.
/AUTOTEST	Run FORMAT without prompts.

Example: The following command line prepares the primary partition on a drive.

FORMAT32 C:

Note: FORMAT32.COM should only be used to format FAT32 partitions, i.e. partitions that were created by FDISK32.EXE.

Typically, within LCCM the required keyboard input to the FORMAT32.COM command is provided by a redirected file:

%LCCMPATH%\FORMAT32 %TARGET% < %LCCMPATH%\FORMAT.DAT

Response File for the FORMAT Command

The FORMAT command can be used to define areas of the hard disk that can receive and store data. A response file is provided with LCCM to run the FORMAT command unattended.

FORMAT.DAT contains the responses for FORMAT to create DOS FAT16-based tracks and sectors within the specified partition.

IMPORTANT: The FORMAT command prompts the user to define a volume label as a part of its process. LCCM will not create a bootable partition if a volume label is named.

Example: The following sequence of responses are found in the FORMAT.DAT file.

y ENTER	Format existing partition
ENTER	No volume label assigned

Do not create variations of this response file.

HDDSIZE.EXE

Objective: To provide a utility that determines the hard drive size of a client computer while a software profile image is being downloaded to it.

The utility file is :

HDDSIZE /DHCP or /RPL /F = filename

/DHCP if DHCP is used to remote boot the client.

/RPL if RPL is used to remote boot the client.

Filename is the name of the batch file which sets the environment variable HDDSIZE.

INTER.EXE

Objective: Redirects standard INT 13 disk operations for use in the RPL environment.

The syntax for this command is:

INTER file.exe

IPSSEND.EXE

Objective: To use the IPSSEND utility to remotely perform tasks on an IBM ServeRAID Adapter. These tasks include viewing the current configuration, rebuilding a dead drive, initializing and/or synchronizing logical drives, plus many more.

To install the utilities on Windows NT:

1. Insert the diskette into the primary floppy drive.
2. Make a directory on your hard drive.

   Type **MD \IPSADM**
3. Copy the files from the floppy drive onto your hard drive.

   Type **COPY A:\NT\IPSSEND.EXE \IPSADM**
4. Change into the directory you created.

   Type **CD \IPSADM**
5. Run the utility.

   Type **IPSSEND**

The IPSSEND utility runs from an operating system command line. Simply type 'IPSSEND' and press 'Enter' while in the proper directory to run the utility.

When you run the utility with no command-line parameters, a list of available functions and their specific parameters are provided. All functions require a minimum set of parameters to execute the command. If you run the utility with a specific function, but without its required parameters, specific help for that function is displayed.

For more information, see the README.TXT on the supplemental diskette supplied with your IBM ServeRAID Adapter.

LCATTRIB.EXE

Objective: To back up and restore, hidden and system file attributes that are not transferred using (DOS) XCOPY.

LCATTRIB.EXE saves the attributes in a file and resets them. The file is saved in the present working directory. Restore them on your donor computer after transporting the image. Restore them on the target client computer after the image has been received.

The syntax for the command is:

LCATTRIB drive:directory [options]

Options for the command are:

Directory	Full path of directory to start from
/S	Recurse sub-directories
/A	Alter file attributes
/R	Restore file attributes

Example, to back up the attributes for drive C, type.

LCATTRIB C: /A /S

To restore attributes for drive C, type:

LCATTRIB C: /R /S

LCBTRDEL.EXE

Objective: To use the LCBTRDEL.EXE utility to delete the master boot record of a physical disk drive. This action destroys all partitions on the disk and, for normal purposes; all data saved on it. Use this utility only if you want to partition the disk using FDISK.

The syntax of the command is:

LCBTRDEL n /S

where n is the disk drive number and /S is a safety flag to prevent accidental use.

After using LCBTRDEL.EXE, you would normally call FDISK.

LCCLEND.EXE

Objective: To complete the processing of a client machine after a clone image has been downloaded.

The syntax for this command is:

LCCLEND [clone.lcc] /CHANGES=changes.reg [/DELETE=c:\lccm]

[/RESTORE=c:\autoexec.bak] [/WAIT[=60]] [/VERBOSE]

Options for the command are (only the first letter of options necessary):

clone.lcc	Clone control file for this image - required for FAT32 clones
/C=changes.reg	File containing changes to Registry
/D=c:\lccm	Delete this directory (containing temporary LCCM files)
/R=c:\autoexec.bak	Restore the named backup of AUTOEXEC.BAT
/W[=60]	Wait for 60 (default) seconds before starting processing
/V	Verbose switch - if present diagnostic output is displayed

Typically, this utility is added to a client machine's AUTOEXEC.BAT to complete the clone download processing.

Example: The following line will add a LCCLEND to then end of an AUTOEXEC. When the AUTOEXEC.BAT is run this will apply the changes contained in NEW.REG and replace the AUTOEXEC.BAT with BACKUP.BAT.

echo C:\LCCLEND /C=C:\NEW.REG /R=C:\BACKUP.BAT>> %TARGET%\AUTOEXEC.BAT

LCCLONE.EXE

Objective: Restores the contents to a cloned image file.

The syntax for this command is:

LCCLONE clone.LCZ [/START=C:\] [/EMPTYDIR=empty.dir] [/NET=S: /DOSBOOT=clone.BB] [/VERBOSE]

LCCLONE clone.LCC [/START=C:\] [/EMPTYDIR=empty.dir] [/DOSBOOT] [/VERBOSE]

Options for the command are (only the first letter of options necessary):

clone.LCZ	Name of the compressed clone image
clone.LCC	Name of the clone control file
/S=C:\	Extracted the compressed files to "C:\" (Default is current directory)
/E=empty.dir	Recreate empty directories listed in EMPTY.DIR file
/N=drive:	LCCM utilities are on network drive drive:

/D[=clone.BB] Update the boot sector with information in clone.BB. If a .LCC file is specified the name of the boot sector file is optional

/V Verbose switch - if present diagnostic output is displayed

Example: **The following line will restore the clone defined by the control file %CLONEFILE% to the drive specified as %TARGET% including writing the boot sector information.**

%LCCMPATH%\LCCLONE %LCCMPATH%\%CLONEFILE% /S=%TARGET%\ /D

Typically, within LCCM, the LCCLONE.EXE command is called from a .LCI file.

LCCMEND.EXE

Objective: Signals to the server that a client has reached end of a phase of processing.

The syntax for this command is:

LCCMEND result

Options for the command are:

result The DOS error level to return to server (0 means success)

Typically, within LCCM, this is called in the main control batch files _LCCM.BAT and _LCCMD.BAT. It is not normally necessary to change these.

LCCUSTOM.EXE

The LCCUSTOM.EXE utility substitutes DOS environment variables with values within batch files. In most cases, the LCCUSTOM utility can be used to replace the DEDITD utility. LCCUSTOM is more powerful than DEDITD, in that it cannot only substitute the environment variables of a batch file based on parameters supplied from LCCM client and profile parameter pages, but it can also substitute environment variables from parameters stored in a text file (which DEDITD cannot do).

Variables within files must be enclosed within % characters, as they are in LCCM batch files. If a string enclosed within % characters is the name of an environment variable, the string, including the % characters, will be replaced by the actual value of the environment variable.

The syntax for the command is:

LCCUSTOM infile [=outfile] [variable_file] [/v]

The options for the command are:

infile the name of the file to be modified.

outfile (optional) the name of the modified copy of the file.

If omitted or set to "=", the infile is modified.

variable_file (optional) a file containing variables to be modified.

If used, outfile must be specified as "=".

/v (optional) verbose output for debugging.

When using LCCUSTOM.EXE, note the following:

1. A value set in **variable_file** takes precedence over a value for the same variable SET in the DOS command line environment.
2. Environment variables within the output file can be given a blank value. For example, the statement SET USERNAME=, would remove the parameter %USERNAME% completely from a Windows NT Answer file.
3. LCCUSTOM can replace DEDITD for the most common purposes, replacing all occurrences of a parameter with its value throughout a file. DEDITD might still be required for more specialized file modifications.
4. LCCUSTOM does not use the current directory for work files, so it can be run from a read-only directory.
5. LCCUSTOM modifies one line at a time. The maximum line length is 8KB. Lines that are longer than 8KB may not be fully converted.

Example: Use LCCUSTOM to edit the Windows NT unattended installation answer file.

1. Edit the answer file to include environment variables.

```
; Sample NT Workstation Answerfile for use
; with LCCM.


[Unattended]
OemPreinstall = yes
OemSkipEULA = yes
NoWaitAfterTextMode = 1
NoWaitAfterGUIMode = 1
FileSystem = LeaveAlone
ExtendOEMPartition = 0
ConfirmHardware = no
NtUpgrade = no
Win31Upgrade = no
TargetPath = *
OverwriteOemFilesOnUpgrade = no
KeyboardLayout = "US-International"
```

[UserData]
OrgName = "%COMPANY%"
Fullname="%USERNAME%"
Computername = %CNAME%
ProductId="%PRODUCTID%"
[GuiUnattended]
OemSkipWelcome = 1
OEMBlankAdminPassword = 1
TimeZone = "(GMT) Greenwich Mean Time"
[Display]
ConfigureAtLogon = 0
BitsPerPel = 8
XResolution = 640
YResolution = 480
VRefresh = 60
AutoConfirm = 1
[Network]
InstallAdapters = SelectedAdaptersSection
InstallProtocols = ProtocolsSection
InstallServices = ServicesSection
JoinDomain = "%DOMAIN%"
[SelectedAdaptersSection]
ibmtok = IBMTOKParamSection, \OEM\NET\IBMTOK
[IBMTOKParamSection]
IOBaseAddress = 1
NetworkAddress = %CADDRESS%
[ProtocolsSection]
NBF = NBFParamSection
[NBFParamSection]
[ServicesSection]

2. Create a variable file.

   For the purpose of this example, save this file as LCCM_NT.DAT.

   - SET COMPANY=IBM
   - SET PRODUCTID=AG94949-87243
   - SET DOMAIN=AMD0012

Note: You can still use the parameter pages of the Details and Individual Client Details Notebooks to enter parameters for the client. These will be placed into the DOS environment by LCCM when the image is downloaded and will be swapped within batch files by the LCCUSTOM utility, in a similar manner to DEDITD. The environment variables CNAME, CADDRESS, and CSERIAL are always present in the Remoteboot environment at the client, and therefore do not have to be specified by the user.

3. Create a final image batch file.

   During the Remoteboot process, the unattended answer file is always renamed as ANSW1.TXT; therefore, you must use this name as the output file name in your batch files. Save the batch file below using a unique name, within the \LCCM\CLNTFILE directory, where LCCM is your LCCM program directory. Specify this batch file, as the final image batch file for your required Operating System Unattended Install Remoteboot profile.

   SET batch file would create the file ANSW1.TXT, from the UNATTEND.TXT file, with the following lines modified USERNAME=JOHN_SMITH

   %LCCMPATH%\LCCUSTOM %LCCMPATH%\UNATTEND.TXT %TARGET%\ANSW1.TXT

   %LCCMPATH%\LCCM_NT.DAT

   The above using LCCM_NT.DAT:

   [UserData]

   OrgName = IBM

   Fullname=JOHN_SMITH

   Computername = CLNT_10

   ProductId=AG94949-87243

   [IBMTOKParamSection]

   NetworkAddress = 006094A5BBBB

LCFDISK.EXE

Objective: To create a keystroke input file for FDISK.COM or FDISK32.EXE.

The syntax for this command is:

LCFDISK /FILE=out.dat [/PRI=nnnn] [/RESTORE] [/ALL] [/DHCP] [/VERBOSE]

Options for the command are (only the first letter of options necessary):

/F=out.dat	Full path of the output file
/P=nnnn	Create a primary partition of size nnnn MB
/R	Allow space for a Rapid Restore partition
/A	Use all of the remaining disk as a single partition
/D	Specify if this command is being run under DHCP/PXE
	(Default is RPL environment)
/V	Verbose switch - if present diagnostic output is displayed

Example: T,he following line will create a command file that will create a primary partition of 512MB and allow space for a Rapid Restore partition.

LCFDISK /F=TEST.DAT /P=512 /R

This command file can then be used with FDISK thus:

FDISK < TEST.DAT

Typically, within LCCM, the LCFDISK command is generated from the responses given in the Profile

LCNETSEL.EXE

Objective: To append the appropriate [SelectedAdaptersSection] to an existing NT unattended answerfile.

The syntax for this command is:

LCNETSEL unattended.txt [/VERBOSE]

Options for the command are (only the first letter of options necessary):

unattended.txt	Full path of the existing answer file
/V	Verbose switch - if present diagnostic output is displayed

This command makes use of the LCCMNETWK environment variable set during LCCM processing. This variable will contain the number used to identify a client's network card within the NETWORK.LST file. The NET*n*NT.LCA file, where *n* is the network card's number, from the Defaults directory will be appended to the given answerfile.

Typically, within LCCM, the LCNETSEL command is used within the internal batch files which are responsible for building an NT unattended image prior to the installation.

LCPNPSN.EXE

Objective: To identify and flag Plug and Play serial numbers in the Windows 95 exported registry of the donor computer and substitute the correct Plug and Play serial numbers on the target client computer.

Windows 95 identifies each Plug and Play adapter by its serial number and PNP ID. When an image is transported from a donor computer to the server, then transported to a target client computer, Windows 95 identifies each Plug and Play adapter installed in the target client computer as a new device (because of the different serial number) and adds a default configuration for each Plug and Play adapter. For example, if a network setup was created on the donor computer for a Plug and Play network adapter, Windows 95 does not transfer this setup to the network adapter installed in the target client computer.

To remedy this problem, you must use the LCPNPSN utility program. LCPNPSN is run on the donor computer to identify and flag serial numbers in the Windows 95 registry, then run on the target client computer to substitute the correct serial numbers in the registry.

To read the Plug and Play serial numbers on the donor computer, the syntax of the command is:

LCPNPSN /S /F=filename

where "S" is the save attribute and "filename" is the name of the exported registry.

LCPNPSN supports up to eight Plug and Play adapters. For each Plug and Play adapter found, the LCPNPSN program searches the exported registry for key entries under the "HKEY_LOCAL_MACHINE\Enum\ISAPNP" branch that match the serial number of the adapter. The serial number is then replaced by the string "%LCCMpnpid", where "pnpid" is the first 7 hexadecimal digits of the PNP ID. The last digit is dropped.

To substitute the Plug and Play serial numbers on the target client computer, the syntax of the command is:

LCPNPSN /R /F=filename

where "R" is the restore attribute and "filename" is the name of the exported registry.

During the restoration process, the LCPNPSN program constructs a table of the IDs and serial numbers for all Plug'n'Play adapters installed in the target client computer. The program then searches the exported registry for the string "%LCCMpnpid" and replaces the string with the serial number that corresponds to the PnP ID.

LCUNCSPL.EXE

Objective: To split the contents of an environment variable containing a UNC path.

The syntax for this command is:

LCUNCSPL.EXE %UNC_ENV% ENV1 ENV2

Options for the command are:

UNC_ENV The name of the environment variable containing a UNC path

ENV1 The name of an environment variable to output the server and sharename part of the contents of UNC_ENV

ENV2 The name of an environment variable to output the remainder of the contents of UNC_ENV

Example 1: The following line will split the contents of the environment variable LCSHAREPT.

LCUNCSPL %LCSHAREPT% SHARENAME DIRECTORY

Assuming that LCSHAREPT contained "\\SERVER\LANC$$\DIR1\DIR2", the following will be output:

set SHARENAME="\\SERVER\LANC$$"

set DIRECTORY="DIR1\DIR2"

Typically, this output is redirected to a batch file which is then executed to set these variables.

Example 2:

%LCCMPATH%\LCUNCSPL %LCSHAREPT% SHARE DIR > %TMPPATH%\SETUNC.BAT

call %TMPPATH%\setunc.bat

MERGEINI.EXE

Objective: To merge two (.INI) or (.INF) files together.

The syntax of the command is:

MERGEINI file1 file2

The contents of file1 are merged with the contents of file2 and the results written to file2.

RAVE.EXE (Using with a DOS Startup Diskette)

Rapid Restore is a backup/recovery mechanism that allows the backup of the primary partition of a client, when it is in a known good state to a hidden partition on the client hard drive. In the case of a failure due to a corrupted or missing file, a Rapid Restore can be made to restore the client's primary partition to a known good state. When enabled, Rapid Restore will limit the client/user to only half of their available Hard Disk space on the Primary Partition (the second half being used for the Rapid Restore partition).

The Rapid Restore program can be run manually on any client computer type, using any type of hard drive. It is not limited to any specific type of operating system. The Rapid Restore program is also fully integrated into the Profile Wizard, where you can setup options easily, and have the Rapid Restore partition created automatically on clients assigned to Rapid Restore enabled Profiles.

IMPORTANT: When enabled, Rapid Restore will limit the clients to half of their available hard disk space as Rapid Restore creates a hidden partition equal to your primary partition plus 5MB for

administrative overheads. Ensure your primary partition occupies less than half the physical hard disk space on your client. With a 512MB primary partition, an extra 517MB is required.

Minimum Requirements of the Recovery Partition.

The Rapid Restore program that creates the Universal Recovery partition will first check the size of the client's primary partition. It will then check for enough space on the client's hard drive to equal the size of the primary partition + 1 sector (the extra sector is required to store Rapid Restore information). You must have at least this space remaining on the client's hard drive available in order to create the Rapid Restore partition.

The physical size of the extra disk cylinder will vary according to the type of hard drive your clients are using, but cannot exceed 4MB.

Note: It will only be as much as 4096512 bytes if your hard disk exceeds 2GB.

If you wish to run the Rapid Restore program manually, you must create a DOS boot diskette and copy the RAVE.EXE program onto the diskette. RAVE.EXE can be found in <drive>:\LCCM\CLNTFILE\. Do not use AUTOEXEC.BAT or CONFIG.SYS on this diskette, nor use HIMEM.SYS or SMARTDRV.EXE, as they will not improve Rapid Restore's performance.

To create a DOS boot diskette using IBM DOS 7, from the command line type the following:

FORMAT A: /s

To create a DOS boot diskette using Windows 95, Windows 95 OSR2 or Windows 98 do the following:

1. Insert a diskette into your floppy disk drive.
2. From Windows Desktop, double-click on **My Computer**.
3. Right click on the **3½2 Floppy** icon.
4. Select **Format**.
5. Select the **Capacity** for your diskette from the drop-down list.
6. Enable the **Full** radio button from Format type. This will erase any data on your diskette.
7. Check the **Copy system files** from Other options.
8. Click on **Start**.

You can also create a DOS boot diskette from a DOS command line by typing the following:

FORMAT A: /s

Note: You cannot create a DOS boot diskette using Windows NT 4.0 Server or Workstation. Therefore use any of the above methods to create your DOS boot diskette.

Objective: To perform a system backup or restore using a hidden partition at the end of the drive.

Startup your client computers using the diskette you created above, to create a Rapid Restore partition.

The syntax of the command is:

RAVE [/b|/DATA|/MBR|/ALL|/d|/v|/t] [/i] [/f]

Options for the command are:

/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 RAVE 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

Example: Your client has a 1.2GB hard drive, which has a 500MB Primary Partition. You want the entire Partition backed up to a hidden Rapid Restore partition.

RAVE /b /i

You want to restore the Partition when running Rapid Restore manually on the client

RAVE /DATA /i

Enter **RAVE** with no parameters to see a full description of all parameters.

I MPORTANT: Always run Rapid Restore after creating, modifying or deleting partitions. Otherwise the created extended partition including any **data** will be removed by subsequent restore operations, unless the **/DATA** is used (restore data sectors only).

REBOOT.COM

Objective: To cause a client to reboot.

The syntax for this command is:

REBOOT

There are no command line options.

This command will cause a client machine running the DOS environment to reboot immediately.

SCRUB.EXE

The SCRUB utility is part of LCCM's Secure Data Disposal tool and as such, it is strongly recommended that you do not use this utility.

SENDSLIM.EXE

Objective: To send a service processor command file to the system processor.

The syntax of the command is:

SENDSLIM outfile.PKT

Note: The command file must be generated using the SERVPROC.EXE utility (see below).

SERVPROC.EXE

Objective: To generate a service processor command file from a plain text INI file.

The syntax of the command is:

SERVPROC infile.INI outfile.PKT

Note: The input (.INI) file must be in the correct format. Please see the supplied SERVPROC.INI file.

SLEEP.EXE

Objective: Causes processing to halt for a specified number of seconds.

The syntax of the command is:

SLEEP seconds

WAIT.EXE

Objective: Waits for a specified file to be deleted.

The syntax of the command is:

WAIT filename

Other Utilities

The utilities provided in this section can be found in the <drive>:\LCCMTEMP\UTILS directory. Where LCCMTEMP is the directory to which LCCM was originally uncompressed.

IDVIEW.EXE

Objective: To identify Plug and Play and PCI devices in a specific client computer.

This information is useful when adding new video and network adapter details to LCCM or editing the NETWORK.LST file.

To run the program, type "IDVIEW" at a DOS prompt; then click on **Enter**.

The program displays any Plug and Play or PCI devices that it detects. The following is an example of the output.

PCI Vendor/Device ID	Card Class
80867030	Host/PCI Bridge
80867000	PCI/ISA Bridge
101300B8	VGA Compatible Controller

PnP ID's Detected

0E63E93

244D000

WATCHDOG.EXE

There might be circumstances where LCCM clients encounter problems in completing a download from the server. Typically, this happens when a client has started to scan, and the scan is stopped at the server before the client has completed the scan process. This can also happen during the execution of a software profile download if processing is stopped or another server error occurs. In these circumstances, the client is stopped at an error condition, and manual intervention would normally be required.

To recover from these situations, a utility that performs a watchdog type function for the client is provided by LCCM. The watchdog program reboots the client after the default time (3 minutes) has expired. The default time can be overridden by issuing a command within any batch file used by LCCM.

The watchdog utility consists of two programs:

- WATCHDOG.EXE
  A DOS device driver that monitors the timer and reboots the client when the timeout expires. The driver sets an initial timeout value of 3 minutes.
- WDSET.EXE
  A DOS program that sets a new value in minutes for the timeout period of the watchdog timer.

To use the watchdog utility under the Windows NT platform, you must add the following line to the end of the DOSBB.CNF file for each adapter that you are using.

DRV BBLOCK\WATCHDOG.EXE

Place the WATCHDOG.EXE file in the directory RPL\BBLOCK, where RPL is the directory in which the Remoteboot service was installed.

Place the WDSET.EXE file in the RPL\RPLFILES\BINFILES\IBMDOS7 directory.

WINWAKE.EXE

Objective: To power on clients remotely using Wake-on-LAN.

WINWAKE.EXE is a stand-alone program that uses the Wake-on-LAN feature to power on clients remotely. The MAC addresses (addresses of the network adapters) of the clients can be specified either on the command line or in an INI file. Either the TCP/IP protocol or the IPX protocol must be installed and configured on the local computer for WINWAKE.EXE to work.

The syntax for the command to use MAC addresses from an INI file is:

WINWAKE [/D delay] /F filename

The syntax for the command to specify MAC addresses on the command line is:

WINWAKE [/D delay] address1 [address2 [...]]

Options for the command are:

address1, address2, ...	12 hexadecimal digit MAC addresses
delay	Delay between transmission of packets in milliseconds (default is 1 ms.)
filename	INI file containing MAC addresses

The INI file can contain individual MAC addresses and ranges of MAC addresses. Individual MAC addresses are specified one per line, at the beginning of the line as follows:

001122334455

Ranges of MAC addresses are specified by their beginning and ending addresses as follows:

001122334455-001122334466

A sample WAKEUP.INI file is provided with WINWAKE.EXE.

Appendix C. Error Messages

Error Messages

Error, Cannot Access BOOTCONF.SYS file

The client is trying to edit the BOOTCONF.sys file on the LAN server but is unable to access it.

Check that the server is running and that the network connection is OK.

Error, Client Timed Out

The client has failed to complete a part of the process within the time out limit stated in the system defaults.

Please check that the client is OK. If there are no problems, increase the time out limit through the Systems Default function.

Error, Rename of Client Named Directory Failed

The renaming of the client failed.

Check that the server is running and that the network connection is OK.

Error, Cannot Find the Preload File

The client was unable to find the pre-load image file specified in the software profile.

Check that you have specified the correct file name and path and that the specified file exists. Check that the server is running and that the network connection is OK.

Error, Cannot find the final image file

The client was unable to find the final image file specified in the software profile.

Check that you have specified the correct file name and path and that the specified file exists. Check that the server is running and that the network connection is OK.

Error, Cannot Find the Client's Personality File

The client was unable to find the personality file specified on the Software form of the LCCM Details.

Check that you have specified the correct file name and path and that the specified file exists. Check that the server is running and that the network connection is OK.

Error, Cannot Find Reflash

The client was unable to find the BIOS flash image file specified on the Hardware form of the LCCM Details.

Check that you have specified the correct file name and path and that the specified file exists. Check that the server is running and that the network connection is OK.

Error, Cannot Make Client Directory

The client requires a directory for itself on the server before processing but it has been unable to create this.

Check that the server is running and that the network connection is OK. Check that the server name specified in the LCCM's Default form is correct.

Error, Cannot Find DOS Image

LCCM was unable to find the DOS image specified.

Check that you have specified the correct path name and that the path and the required file exist. Check that the server is running and that the network connection is OK.

Error, Cannot Find Maintenance Image

LCCM was unable to find the Maintenance image.

Check that you have specified the correct file name and that the path and specified file exists. Check that the server is running and that the network connection is OK.

Error, Cannot Find Diagnostics Image.

LCCM was unable to find the Diagnostics image.

Check that you have specified the correct file name and that the path and specified file exists. Check that the server is running and that the network connection is OK.

Error, Cannot Find CMOS Image

LCCM was unable to find the CMOS image.

Check that you have specified the correct file name and that the path and specified file exists. Check that the server is running and that the network connection is OK.

Error, Bad Return Code From Attempted BIOS Update

A BIOS update was attempted on the client, but an Error Code has been returned by the BIOS update program.

On the original BIOS flash diskette, or in the LCCM\CLNTFILE\BIOS\BIOS_Flash_Name directory, where LCCM is your LCCM program directory, you will find a help file containing the error code and a description of the error. Alternatively, type the name of your BIOS update program, adding "/? | MORE" to the end of the command line.

Error, Bad Return Code From Attempted CMOS Update

A CMOS update was attempted on the client, but an Error Code has been returned by the CMOS update program.

On the original BIOS flash diskette, or in the LCCM\CLNTFILE\BIOS\BIOS_Flash_Name directory, where LCCM is your LCCM program directory , you will find a help file containing the error code and a description of the error. Alternatively, type the name of your CMOS update program, adding "/? | more" to the end of the command line.

Error, Bad Return Code From the Final Image File

A program within your Final Image File has failed with a bad return code.

Run the image batch file on a donor computer until you find the error. Check the error code against the appropriate help file for the program in the image batch file, which is not working. Correct the error and click the **Process** button again.

Error, Bad Return Code From the Maintenance File

A program within your Maintenance File has failed with a bad return code.

Run the maintenance file on a donor computer until you find the error. Check the error code against the appropriate help file for the program in the maintenance file, which is not working. Correct the error and click the **Process** button again.

Error, Bad Return Code From the Personality File

A program within your Personality File has failed with a bad return code.

Run the personality file on a donor computer until you find the error. Check the error code against the appropriate help file for the program in the personality batch file, which is not working. Correct the error and click the **Process** button again.

Error, Bad Return Code From the Preload Image

A program within your Preload Image batch file has failed with a bad return code.

Run the pre-load image batch file on a donor computer until you find the error. Check the error code against the appropriate help file for the program in the pre-load image batch file, which is not working. Correct the error and click the **Process** button again.

Error, Bad Return Code From Attempted BIOS Password Change

A BIOS password change was attempted on the client, but an Error Code has been returned by the update program.

On the original BIOS flash diskette, or in the LCCM\CLNTFILE\BIOS\BIOS_Flash_Name directory, where LCCM is your LCCM program directory, you will find a help file containing the error code and a description of the error. Alternatively, type the name of your BIOS password update program, adding "/? | MORE" to the end of the command line.

Error, Incorrect Operating System

This application can only be run under the Windows 95 and 98 operating systems.

This application will now terminate

Error, Insufficient Privileges

Insufficient privileges to run this process. You must be logged in as an Administrator to perform the cloning operation.

This process will now terminate.

Error, Unknown Registry Error

Unknown error while trying to read computer's Registry.

Please contact Technical Support.

This process will now terminate.

Error, LCCM Server not Located

This application has been unable to locate your LCCM server. Please type the name of the server in the following text box.

Note: Choosing Cancel will cause this application to terminate.

Error, Name Already in Use

A LCCM Clone already uses the given name.

Please try another name.

Error, Reading Clone Control File

There was a problem reading the Clone Control File "%1", it has not been possible to validate the given clone name.

Please correct the problem with the file "%1".

Error, Reading During Cloning

It was not possible to read information from this computer's Registry. This may occur if you have insufficient privileges to run this process.

Consult the online help for more information on how to solve this problem.

Error, Writing During Cloning

Problem writing information to the Clone Control File.

Consult the online help for more information on how to solve this problem.

Error, Creating Directory During Cloning

Failed to create directory on the LCCM server to store clone information. This may occur it you have insufficient privileges on the server.

Consult the online help for more information on how to solve this problem.

Error, Changing Donor Registry

Failed to create a file containing the list of changes to donor Registry.

Consult the online help for more information on how to solve this problem.

Error, Failure to Create Backup Filename

Failed to create backup of long filename information.

Consult the online help for more information on how to solve this problem.

Error, Failure to Compress Donor Image

Failed to create compressed image of donor computer. This may occur if there are active applications on the donor.

Consult the online help for more information on how to solve this problem.

Error, Failure to Copy Boot

Failed to copy boot information.

Consult the online help for more information on how to solve this problem.

Error, Unknown Problem During Cloning

An unknown or unexpected problem caused the cloning process to terminate.

Please contact Technical Support.

Error, This workstation has old COMCTL32.DLL

This workstation has an old version of CMCTL32.DLL installed. You must upgrade this by running PRECLONE.EXE before this workstation can be cloned.

This application will now terminate.

Error, Insufficient Disk Space

Insufficient free disk space on the server to clone an image. This machine could require up to %1KB to hold its image. Free some disk space on the server and try again.

This application will now terminate.

Error, Not LCCM server

The server supplied does not seem to be a LCCM server.

Please verify that you have typed the server name correctly.

Error, Registry Backup Failed

Failed to backup donor registry.

Consult the online help for more information on how to solve this problem.

Error, No Network Adapter Card

Could not detect this machine's network adapter card. This may be because the network is not installed properly or does not use 32 bit drivers. It is not possible to clone this machine until its network adapter card can be detected.

This process will now terminate.

Error, Disk Configuration Save Failed

Failed to obtain this machine's disk configuration.

Consult the online help for more information on how to solve this problem.

Error, Image Disk Size Failed

Failed to store the compressed image of this machine on the server free space.

Consult the online help for more information on how to solve this problem.

Error, This workstation has existing WINNT.INI

This machine has an existing WINNT.INI file. Typically, this is used by an installation program for processing at the next reboot.

This process will now terminate. Please reboot the machine before attempting to clone it.

Appendix D. Example User-Created Batch Files

Introduction

The files in this section are provided as examples that can be used with LCCM. These examples are only recommended for use by experienced LCCM users.

Comments are provided to help explain the overall function of each example and the specific utilities that are used. In most cases, each comment applies to the line of code that follows it. Comments are marked by REM statements.

Environment for Operating System Clone Remote Boot

Before LCCM can run the various batch files, it must set up a temporary operating system environment at the client. It is important that you understand this environment before you develop any batch files. This information is

- IBM PC DOS 7 is loaded on the client (the DOS software is not copied to the hard disk of the client; it is resident in memory only).
- Drive C of the client is temporarily renamed drive D. However, with LCCM you can use predefined variables in the batch files to minimize the confusion associated with drive mapping. %TARGET% is the variable used to identify the primary partition of the client-computer hard disk drive.

The server C:\LCCM\CLNTFILE directory is mapped as C:\LCCM, where LCCM is your LCCM program directory. Therefore throughout the Training & Procedures Guide paths, directories and subdirectories will be in the form of <Drive Letter>:\DIRECTORY NAME\SUBDIRECTORY NAME\FILENAME as appropriate e.g. C:\LCCM\CLNTFILE\. However, when creating batch files, you must use the predefined variable %LCCMPATH% to access the \CLNTFILE directory. This is the directory where all the required utility programs are stored. For details see Appendix B.

A Word about Drive Mapping and Drive Variables

Because drive-mapping assigns drive letters to directories and subdirectories of a server, keeping track of the drive letters and subdirectories can be difficult. For this reason, LCCM has built-in variables to use as drive designators in pre-load image batch files (.LCP), final image batch files (.LCI), personalization batch files (.LCR), and maintenance batch files (.MNS). It is very important that you understand the concepts of drive mapping and understand the use of the drive variables built into LCCM before you create your batch files.

- "%LCCMPATH%" points to the LCCM\CLNTFILE directory.
- "%TARGET%" points to the primary partition of the client hard disk drive.

For example, assume you have created a Windows 95 image for Bob's marketing team and placed it under the server's LCCM\CLNTFILE\WIN95 directory. In your (.LCP), (.LCI), (.LCR), and (.MNS) batch files, you would use the string "%LCCMPATH%\WIN95" to point to this directory, and "%TARGET%" to point to the client hard disk.

These predefined variables are valid anytime LCCM is executing (.LCP), (.LCI), (.LCR), or (.MNS) batch files. When you develop your final image batch file, the statement to copy the image to the client computer would be:

XCOPY %LCCMPATH%\WIN95*.* %TARGET%*.* /S

The backup batch files (.BAT) used to transport images from the donor computer to the server are run outside of the Hybrid Remoteboot process. Therefore, these variables cannot be used in the backup batch files; you must use the following drive designations:

- C:\LCCM\CLNTFILE .
- D: points to the primary partition of the client hard disk drive.

Donor Computers

The process of controlling computers is much easier if you use a donor computer to write and test your batch files first, then migrate the image to every client on the LAN. A donor computer is a requirement for creating a CMOS image and developing a Hybrid Remoteboot image.

The donor computer must be compatible (feature-by-feature) with the client computers you plan to use. In most cases, it is advisable that the donor computer and target client computers are identical models to ensure that the correct device drivers are present and configured correctly. Ensure that you have adequate access to a suitable client computer for use as a donor for writing batch files and testing changes before you make these changes on the entire network. You will find it much easier to find and fix problems on a single donor client first. Then migrate new or changed batch files to every client on your LAN.

Backup Batch File - DOS/Windows Image

```
REM     Your donor computer should be connected to the
REM     network and server where LCCM
REM     has been installed.
%TARGET%
CD \


REM     Save the boot record to a file using DISKDOS.EXE.


\LANCLI\DISKDOS /F=%TARGET%\LANCLI\DOS7.BB /D=%TARGET% /R=R


REM     Change all files to be normal files with read/write
REM     access using LCATTRIB.EXE.  This is necessary because
REM     the batch files use XCOPY to transport the files.
REM     All attributes are saved to a file.


\LANCLI\LCATTRIB %TARGET%\ /A /S
```

```
REM     Create the directory on the server into which you will
REM     store the image.  Then, change into that directory.

%LCCMPATH%
MD DOS70
CD DOS70

REM     Use XCOPY to transport the contents of the donor computer
REM     hard disk to the directory you created on the server.

XCOPY %TARGET%\*.* %LCCMPATH%\DOS70\*.* /S /E

REM     Restore the hidden and system file attributes on the donor
REM     computer using LCATTRIB.EXE.

%TARGET%
CD \
\LANCLI\LCATTRIB %TARGET%\ /R /S
```

Backup Batch File: Windows 95 Image

```
REM     Your donor computer should be connected to the
REM     network and server where LCCM
REM     has been installed.  You also must have the program
REM     PKZIP.

D:
CD \

REM     Save the boot record to a file using DISKDOS.EXE.

\LANCLI\DISKDOS /F=%TARGET%\LANCLI\W95BT /D=%TARGET% /R=R

REM     Change all files to be normal files with read/write
REM     access using LCATTRIB.EXE.  The attributes are saved
REM     in a file.
```

```
\LANCLI\LCATTRIB %TARGET%\ /A /S

REM     Save the long file names using the utility DOSLFNBK.EXE.
REM     Copying files to the client is done from a DOS startup,
REM     and since DOS does not recognize long file names, it is
REM     necessary to back up and restore them.

\LANCLI\DOSLFNBK %TARGET%\

REM     Create the directory on the server into which you will
REM     store the image.  Then, change to that directory.

%LCCMPATH%
MD WIN95
CD WIN95

REM     Use PKZIP (or another archive program) to transport the
REM     Windows 95 image to the directory you created on the
REM     Windows NT Server.

%LCCMPATH%\PKZIP %LCCMPATH%\WIN95\WIN95.ZIP -r -P %TARGET%\*.*

REM     Restore the hidden and system file attributes on the
REM     donor computer using LCATTRIB.EXE.

%TARGET%
CD \
\LANCLI\LCATTRIB %TARGET%\ /R /S
```

Pre-load Image Batch File

```
 REM    This file deletes all existing partitions and creates
REM     a single 2GB partition. The remainder of the hard disk
REM     is unused.  LCBTRDEL deletes the original disk
REM     partitions.  This file can be used in either a DHCP/PXE
REM     or RPL environment.  The RPL environment requires the
REM     use of INTER.EXE; the DHCP/PXE environment does not.
```

```
@echo off
%LCCMPATH%\LCBTRDEL 0 /S
IF "%CDWNTYPE%"=="0" GOTO RPL
%LCCMPATH%\FDISK 1 /PRI:2048
GOTO NEXT
RPL
%LCCMPATH%\INTER.EXE %LCCMPATH%\FDISK 1 /PRI:2048
:NEXT
```

The INTER.EXE, FDISK.COM, and LCBTRDEL.EXE files are supplied with LCCM. These files are automatically downloaded to the client during the Hybrid Remoteboot process. To create additional partitions, or a partition of a different size, see Appendix B.

Final Image Batch File: DOS/Windows Image

During the Remoteboot process, drive C of the client is renamed to drive D and the server \LCCM\CLNTFILE directory is mapped as C:\LCCM. To minimize the confusion associated with drive mapping, LCCM has two built-in variables for use in the final image batch file:

- %LCCMPATH% points to the server \LCCM\CLNTFILE directory.
- %TARGET% points to the primary partition of the client hard disk.

After the image is installed and the client restarted, the client hard disk is named drive C, as normal.

```
REM     The following FORMAT command is required only if you are
REM     using a pre-load image batch file.  Otherwise, it is
REM     optional.

%LCCMPATH%\FORMAT %TARGET% < %LCCMPATH%\FORMAT.DAT

REM     Transport the image from the server to the client
REM     computer, but copy IBMBIO.COM and IBMDOS.COM
REM     first to ensure they are positioned correctly.

XCOPY %LCCMPATH%\DOS70\IBMBIO.COM %TARGET%\
XCOPY %LCCMPATH%\DOS70\IBMDOS.COM %TARGET%\
XCOPY %LCCMPATH%\DOS70\*.* %TARGET%\ /S /E /V

REM     Set the boot record at the client computer
REM     using DISKDOS.EXE.
```

```
%TARGET%
CD \
\LANCLI\DISKDOS /F=%TARGET%\LANCLI\DOS7.BB /R=W /D=%TARGET%

REM     Restore the hidden and system file attributes at the
REM     client computer using LCATTRIB.EXE.

\LANCLI\LCATTRIB %TARGET%\ /R /S

REM     If passing parameters is required, type in lines using
REM     the DEDITD.EXE utility.  For details, see
REM

%TARGET%
CD \
\LANCLI\DEDITD /R /N0 %TARGET%\LANCLI\MOCKINI.TXT dummy_Org %ORGNAME%
\LANCLI\DEDITD /R /N0 %TARGET%\LANCLI\MOCKINI.TXT dummy_Username %USERNAME%
\LANCLI\DEDITD /R /N0 %TARGET%\LANCLI\MOCKINI.TXT dummy_Domain %DOMAIN%
\LANCLI\DEDITD /R /N0 %TARGET%\LANCLI\MOCKINI.TXT dummy_Caddress %CADDRESS%
```

Final Image Batch File: Windows 95 Image

```
REM     The variable %TARGET% points to the client hard disk.
REM     The variable %LCCMPATH% points to the server
REM     LCCM\CLNTFILE directory.

The following FORMAT command is required only if you are
REM     using a pre-load image batch file.  Otherwise, it is
REM     optional.

FORMAT %TARGET% < %LCCMPATH%\FORMAT.DAT

REM     Use PKUNZIP to transfer the files to the
REM     client as it unpacks the "zipped" image.

%TARGET%
```

```
CD \
%LCCMPATH%\PKUNZIP -d %LCCMPATH%\WIN95\WIN95.ZIP %TARGET%

REM     Use DOSLFNBK to restore long file names on the client.

\LANCLI\DOSLFNBK %TARGET%\ /R

REM     Use DISKDOS to restore the boot record on the client.

\LANCLI\DISKDOS /F=%TARGET%\LANCLI\W95BT /R=W /D=%TARGET%

REM     Use LCATTRIB to restore the hidden and system
REM     attributes on the client.

\LANCLI\LCATTRIB %TARGET%\ /R /S

REM     USE DEDITD to modify the working copy of the registry
REM     file (CLONE.REG).  The environment variables, for example
REM     %WORKGROUP%, are set up as parameters in LCCM.

REM     Software Profile parameters (common):

CD \WINDOWS
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_DomName %DOMAIN%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_Wkgrp %WORKGROUP%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_NameServ %NAMESERVER%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_IPMask %IPMASK%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_DefGate %GATEWAY%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_RegName %REGNAME%

REM     Software Profile parameters (unique to client):

%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_CName %COMPNAME%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_IPAddr %IPADDR%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_Hname %HOSTNAME%
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_IDNum %PRODUCTID%
```

```
%TARGET%\LANCLI\DEDITD /R /N0 CLONE.REG dummy_user %USERNAME%
```

Appendix E. Notices and Trademarks

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Subject to IBM's valid intellectual property or other legally protectable rights, any functionally equivalent product, program, or service may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the responsibility of the user.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing

IBM Corporation

500 Columbus Avenue

Thornwood, NY 10594

USA

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact IBM Corporation, Department 80D, P.O. Box 12195, 3039 Cornwallis, Research Triangle Park, NC 27709, U.S.A. Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

IBM	LANClient Control Manager
IntelliStation	Streamer
Netfinity	Wake-on-LAN
PC 300	EtherJet
Ether Streamer	

Lotus, Lotus SmartSuite, and 1-2-3 are trademarks of Lotus Development Corporation, an IBM company.

Microsoft, Windows, Windows NT, and MS are trademarks or registered trademarks of Microsoft Corporation.

Intel is a trademark or registered trademark of Intel Corporation.

Other company, product, and service names may be trademarks or service marks of others.

Index

A

B

C

D

E

F

G

H

I

L

M

N

O

P

R

S

T

U

V

W