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# IBM LANClient Control Manager

## Information Brief

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### Worth remembering

- IBM LANClient Control Manager (LCCM) is an easy-to-use, graphical windows application for Windows NT Server, OS/2 Warp Server, and NetWare which supports, over the network, the setup, configuration, rollout and on-going management of IBM PCs and IBM IntelliStations.
- LCCM, a key component of IBM's strategy to deliver a highly manageable family of client products, is an offering made possible, in part, because of the IBM and Intel Advanced Manageability Alliance (AMA). Under the AMA, IBM and Intel work to ensure that their products will have the features and best-of-breed management capabilities so customers can spend more of their time running their business and less on managing PCs.
- LCCM enables network administrators to perform a wide range of tasks that previously required end-user or helpdesk personnel to be physically present at the desktop. Now, administrators, by exploiting new IBM PC and IntelliStation enablements like Wake on LAN, enhanced BIOS, DMI instrumentation and more, can schedule and remotely set up and configure new IBM clients. After initial installation and setup, LCCM, with properly enabled IBM PCs and IntelliStations, can perform a wide range of maintenance tasks, such as flashing BIOS and updating CMOS.
- LCCM incorporates a "push" instead of a "pull" approach to new client setup, configuration and maintenance.

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### Overview

LANClient Control Manager provides network administrators with the tools to simplify adding IBM PCs to an existing local area network (LAN). Once a client has been added to the LCCM database, the administrator can remotely install, maintain, and perform various updates to the IBM PC and IntelliStation system. Other features of LCCM enable the administrator to:

- modify a system's CMOS settings.
- update or flash a system's BIOS code.
- lock the keyboard from user input as needed.
- copy predefined configuration/setup settings (i.e., operating system and applications) to one or more client workstations.
- assign or change the administrator password on one or more client workstations to protect the BIOS settings against unauthorized end-user changes.
- start client Wake on LAN enabled PCs or workstations when they are powered off.
- schedule events to take place unattended on a specific date and at a specified time, such as complete or partial system backups.

LCCM operates by establishing LAN communications between the IBM PC and the managing server *before* the IBM PC starts loading its operating system from its local hard disk. In this

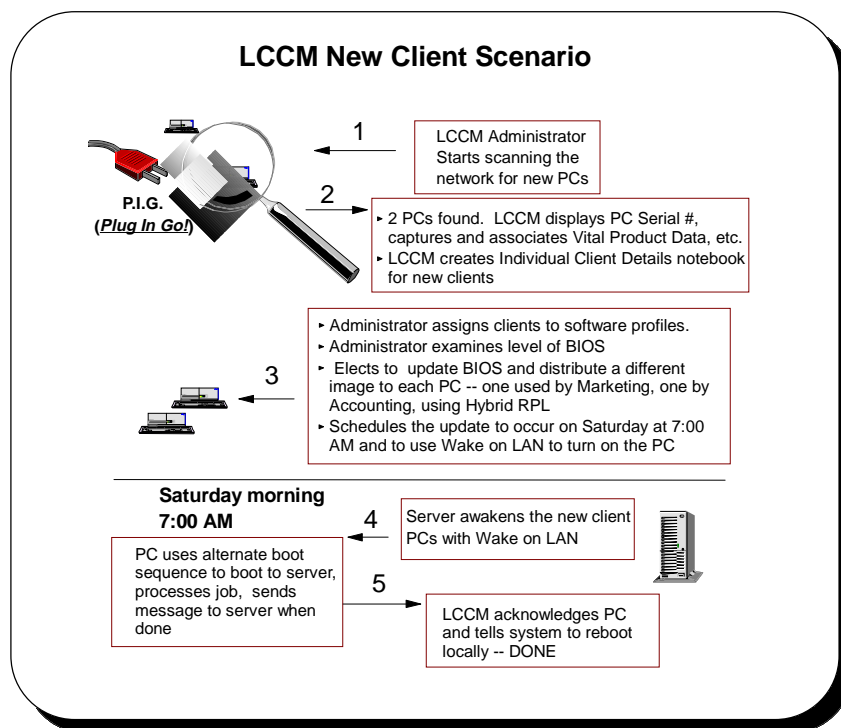
way, low level maintenance tasks like re-installing an operating system or modifying the BIOS can be performed without end-user involvement, even if the client operating system is unable to boot. If no management action is scheduled, the client continues to boot from its local hard disk after a quick “handshake,” placing very little, if any, additional load on the network. LCCM is able to initiate a boot of the IBM PC remotely as opposed to a boot initiated by the end-user, and the IBM PC can recognize the difference. LCCM and the IBM PC can distinguish which type of boot has occurred — a standard boot or an alternate boot — and execute specific actions that correspond to the event.

## Basic operation

LCCM’s scan feature searches the LAN for new clients who are sending a Remote Program Load (RPL) (see the following discussion on RPL) broadcast message or frame on the network. LCCM recognizes the RPL frame, “finds” the IBM PC and then interrogates the client for information such as the serial number and network address. LCCM captures the information and assigns a name to the client, and optionally prompts the end-user to enter more specific information such as location, department number, user phone number, etc. This data is entered automatically into an *Individual Client Details* notebook. The Individual Client Details notebook contains the name of the client and the information that was detected during the scan.

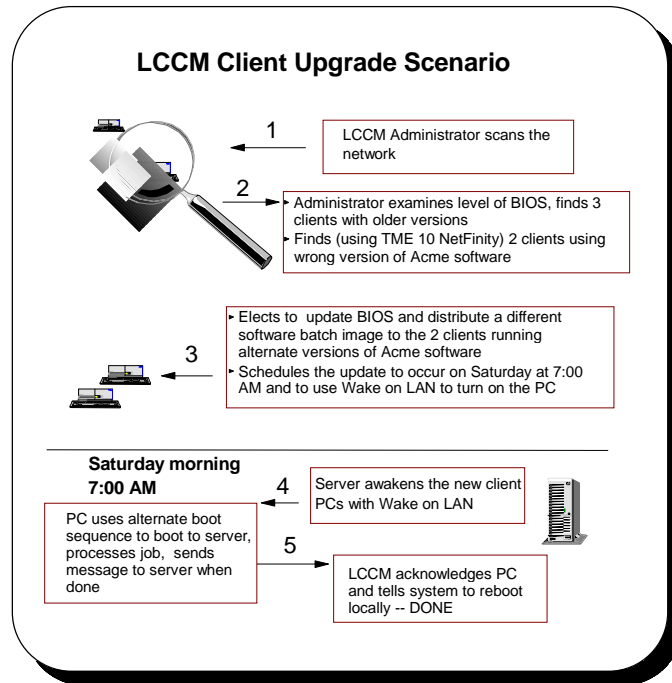
Once LCCM has recognized a new client, the LCCM administrator assigns the client to a software *profile*. Each profile has an associated *image* (set of software, like OS and Applications) on the server. When the server contacts the client, the client performs one of the following actions when it restarts:

- If a *Standard RPL Profile* is assigned, the client downloads a standard RPL image (or instruction) from the server into its memory, starts up, and is ready to run the software made available to it through the LAN.



- If a *Hybrid RPL Profile* (see the following discussion on HRPL) is assigned, the client runs one or more batch files which download a preload image batch file and final image batch file onto

its hard disk from the server. Using HRPL enables LCCM to have the client perform a variety of maintenance tasks without loading the operating system from the local hard drive. On subsequent restarts, the IBM PC receives a bootstrap load instruction from the LCCM server which instructs the IBM PC to start from its own hard disk. This instruction has virtually no impact on network traffic, and the “handshake” has no significant impact on the standard client boot time.



### Remote Program Load (RPL)

The remote program load (RPL) process was originally designed for client workstations with no local storage to be able to start up from the LAN — i.e., a medialess PC. Many IBM Token Ring cards have had RPL support as a standard feature to support this environment. RPL has been used for years, but with the increasingly complex operating systems and applications, RPL has not been popular because of the network traffic generated to boot from the network. However, with LCCM, RPL is used as a “signal” or network frame/message which is transmitted by an IBM PC over the LAN which LCCM recognizes so that the Administrator can gain control of the client. RPL is not a routable protocol so its usage is limited to LANs and not WANs. DHCP (Dynamic Host Connect Protocol) is a routable protocol (and includes BootP as a subset) that does the same thing as RPL but can be passed along through routers. Many new IBM PCs with integrated Ethernet support both RPL and DHCP. LCCM support for DHCP is planned, but it is not available in Version 1.0.

The steps of a basic RPL with LCCM are:

1. The client workstation starts and sends an RPL request to the network.
2. A program such as LCCM detects the client request and downloads the appropriate image or instruction from the server to the client.
3. If an image or a maintenance or diagnostic program is designated to be downloaded, it is sent to the client and processed.
4. If an instruction is downloaded, it might be a command telling the client to continue startup from its local hard drive as normal.

The steps described above are referred to as a *standard RPL*. When you assign a client to a Standard RPL Profile, the object (image or instruction) associated with that profile (the specific IBM PC) is downloaded from the server each time the client workstation is switched on or restarts (boots).

An advantage of a standard RPL is that the object downloaded to the client is controlled by the server and LCCM. Also, a client assigned to a Standard RPL Profile does not need a diskette drive or hard disk drive to start up; all that is required from the client is enablement for RPL and a proper LAN connection.

A disadvantage of standard RPL is that if too many clients assigned to Standard RPL Profiles try to switch on at the same time, a heavy load on the LAN might occur. This load could reduce server and network performance while large images (with operating system and application software) are transferred to multiple client workstations. LCCM allows you to avoid this problem by performing a variation using an IBM-patented version of the standard RPL called a *Hybrid RPL* (HRPL).

### *Hybrid Remote Program Load (HRPL)*

A hybrid RPL provides you with a powerful technique for controlling networked clients. As with a standard RPL, the network interface card and client BIOS settings must be enabled for RPL when using HRPL. When a client is assigned an HRPL Profile, the following two-part process occurs the first time the client starts up:

1. The client starts up from the server:
  - a. LCCM downloads an installation program to the client.
  - b. The installation program copies the image (as defined by the preload image batch file and final image batch file) from the server to the local hard disk of the client.
  - c. After the image is copied, LCCM sends a signal to the client to restart.
2. The client restarts:
  - a. The client starts up from the network.
  - b. The server recognizes that this is a client assigned to an HRPL Profile and responds by downloading a bootstrap load instruction, instead of downloading the complete image. The bootstrap load instruction is a small program and causes very little network load.
  - c. The bootstrap load instruction then initiates the startup process from the hard disk of the client. The end-user sees a delay of only a few seconds while the client “shakes hands” with the server. To the end-user, the workstation apparently starts normally from the hard disk. However, that handshake gives the server effective control over the client workstation.

### *RPL vs. HRPL*

There are distinct advantages to assigning clients to an HRPL Profile over a Standard RPL Profile. Some of the advantages are:

- The network load associated with downloading the complete image from the server to every client at startup is avoided.
- End-users never need to load software onto their client workstations.
- You do not need to take diskettes to the client workstation to update or repair end-user software.
- End-users are discouraged from keeping unauthorized or unlicensed software on their workstations since the administrator can clean the hard disk drive and re-install 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 start-up sequence of the client BIOS. Also, you can control the BIOS administrator password, which prohibits end-users from altering the startup sequence.
- Backing up client data to the network can be scheduled and automated.

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## Prerequisites

The LANClient Control Manager requires the following at the server/console:

- Network Operating System with RPL function enabled and sufficient available user accessible disk space to store the number of images required
- Ethernet or token ring support

LCCM functions with three different network (server) operating systems:

- The network operating system running on the server (Windows NT, OS/2 Warp, or NetWare Server)
- The network console operating system (Windows 95, Windows NT, or OS/2Warp)
- The client operating system that will be downloaded to the PCs (DOS/Windows 3.1, Windows 95, Windows NT, or OS/2Warp)

LCCM can be downloaded by IBM PC customers via the Internet and is supported when used with IBM PC Servers and all IBM IntelliStation and select PC models.

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## Benefits

LCCM is a setup and rollout tool for new clients and a low level maintenance tool after installation. LCCM is a powerful and complementary offering to IBM customers using CID (Configuration, Installation and Distribution), as well as IBM's TME 10 and NetFinity products, Intel's LANDesk® suite of software management tools, and Microsoft's SMS.

LCCM incorporates a "push" approach to client configuration. In the "pull" approach, the end-user is prompted to define their function, department or other characteristic, and download a configuration tailored for their use. In other words, the end-user or help desk personnel must be present at the PC and request or "pull" the software from the server. In the LCCM "push" approach, the network administrator defines the environment for the client and sets up the client environment remotely. If the client is enabled with Wake on LAN, the administrator can turn on and boot the computer and then "push" information to the PC, making this a "one-person" task.

LCCM can save companies and IBM remarketers significant cost and time by eliminating the need to preconfigure IBM PCs and IntelliStations prior to their distribution or rollout. LCCM is a key component in IBM's strategy to extend our family of highly manageable PCs. Now, you can easily configure a client's PC by simply dragging and dropping the selected PC onto a predefined software profile. Once configured, the IBM PC boots and functions as a regular PC for end-user personal computing needs.

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## For more information

For information via the World Wide Web

<http://www.pc.ibm.com/desktop/lccm>

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For dealer information

1-800-426-2968

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To access the IBM PC Company Bulletin Board

1-919-517-0001

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For product information sent directly to your fax machine

1-800-IBM-3395  
(1-800-426-3395)

ThinkPad Catalog—Select FaxDoc #11078  
IBM PC Product Guide Directory (to specific product sections)—Select FaxDoc #12745  
TME 10 NetFinity Information Brief—Select FaxDoc #14916.

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