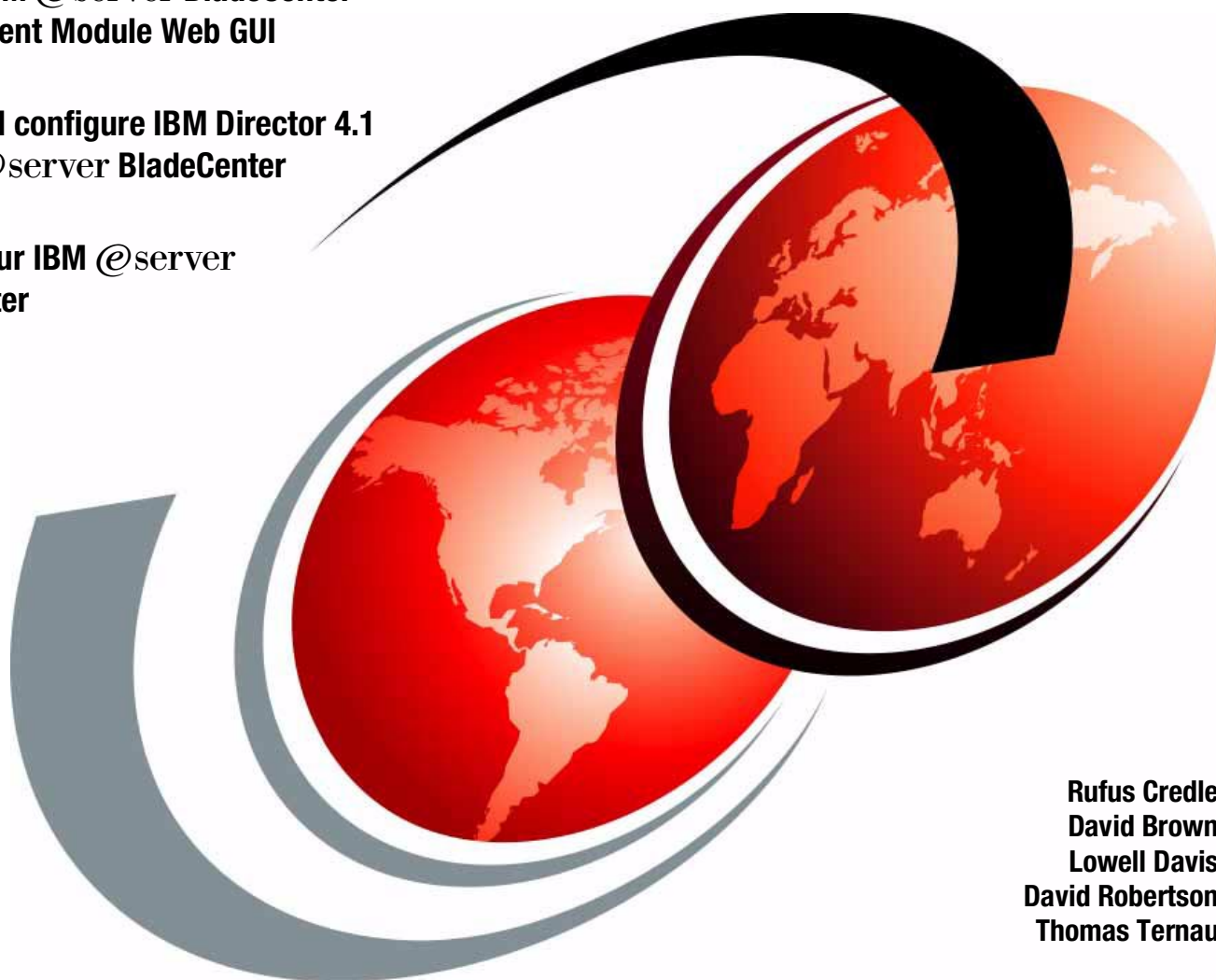


IBM server BladeCenter Systems Management

Explore IBM server BladeCenter
Management Module Web GUI

Install and configure IBM Director 4.1
for IBM server BladeCenter

Deploy your IBM server
BladeCenter



Rufus Credle
David Brown
Lowell Davis
David Robertson
Thomas Ternau



International Technical Support Organization

IBM eServer BladeCenter Systems Management

November 2002

Note: Before using this information and the product it supports, read the information in “Notices” on page v.

First Edition (November 2002)

This edition applies to IBM eServer BladeCenter (8677-1xx), IBM eServer BladeCenter HS20 (8678-21x and 8678-41x) and IBM Director V4.

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Preface

This Redpaper provides an overview of the IBM eServer BladeCenter management tools. It describes the management module integrated Web GUI, including details on connecting and accessing the Web GUI. We provide an explanation of the GUI menus and details and explain how to navigate within this tool. In addition, we discuss managing the IBM eServer BladeCenter with IBM Director V4 and its new features.

The team that wrote this Redpaper

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



Figure 0-1 The team, left to right: (standing) Rufus Credle, Lowell Davis, David Robertson, (seated) Thomas Ternau and David Brown

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Introduction to systems management

In this chapter, we will look at what systems management is and why it is so important in today's business environments. We will also look at how IBM has approached systems management considering the increasing complexity of current IT environments.

1.1 What is systems management?

The definition of systems management has changed a lot over the years, but today, the term is typically used to describe a complex set of tools, policies, procedures, and reports which provide information on your entire network infrastructure.

Systems management encompasses almost all aspects of your IT environment, ranging from gathering information on your current systems and your future requirements to purchasing new updated equipment and software, distributing and deploying it to where it is to be used, configuring and maintaining it with enhancement and service updates, not to mention setting up problem-handling processes and procedures to determine whether these objectives are being met.

1.1.1 Why is systems management important?

In today's current business climate, where IT environments are becoming increasingly complex to manage and support due to expanding business needs, it is even more important that you have processes, procedures and tools that allow you to track and maintain your infrastructure. However, with all these different systems, you need a smart tool to manage your hardware effectively and efficiently, one that can reduce the Total Cost of Ownership (TCO) for your business and save you time as well as money.

TCO is a calculation which originated with the Gartner Group several years ago. It was designed to help consumers and IT managers assess the overall costs and benefits of purchasing IT equipment.

The overall cost includes the initial purchase of the equipment, repairs, maintenance, and upgrades, not to mention service and support, networking, security, user training, and software licensing, which can increase the overall cost dramatically. That's why IBM produced these smart tools that can now automate a lot of these tasks, removing some of the strain off the systems administrator and moving it back on to the servers, thereby reducing the TCO for your systems.

You can find more information about TCO at the following Web site:

<http://www.pc.ibm.com/us/solutions/tco/>

1.2 IBM's approach to systems management

Because systems management covers so much, it often means that technical staff must be trained in multiple systems or technologies to at least bridge the gap between the experts within your IT department. This is why IBM provides many tools to help you get the most out of your equipment, combining both hardware and software to make it easier for you to manage your IT infrastructure. These software tools are:

- ▶ IBM Director
- ▶ Server Plus Pack
- ▶ Real-Time Diagnostics
- ▶ Remote Deployment Manager
- ▶ ServerGuide
- ▶ System Migration Assistant
- ▶ UpdateXpress

For more information about these tools, visit the following Web site:

http://www-1.ibm.com/servers/eserver/xseries/systems_management/xseries_sm.html

IBM's integrated hardware tools are:

- ▶ Predictive Failure Analysis (PFA)
- ▶ Integrated System Management Processor (ISMP)
- ▶ IBM Remote Supervisor Adapter
- ▶ Light Path Diagnostics
- ▶ Hot-swap/hot-add components

For more information on these tools, visit the following Web site:

http://www-1.ibm.com/servers/eserver/xseries/systems_management/hardware_manageability.html

All of these tools have been designed with an eye toward getting your business up and running faster and keeping it running longer.



IBM eServer BladeCenter Management Module Web GUI

In this chapter, we discuss the management module Web GUI that is available for managing your IBM eServer BladeCenter; we also describe how to connect and configure the BladeCenter unit. In addition, we will provide an overview of the navigation menu and describe what functions are available in each of the four main sections of the menu.

2.1 BladeCenter management

Effectively managing your hardware is important, especially if you want to get the most out of your equipment, but this can be a time-consuming task, which is why IBM has provided two methods of managing your IBM eServer BladeCenter. The first is a simple to use Web GUI that is integrated into the BladeCenter Management Module, allowing remote connection from any terminal that is connected to the same network as the management module. The alternative to the Web GUI is the IBM Director V4, which is discussed in “Overview of IBM Director V4” on page 17.

2.2 Management Module Web GUI

In this section, we will describe how to access the management and configuration program in the management module. The first step is to connect the ethernet port of the management module to the network with a standard CAT 5 cable or use an ethernet cross-over cable for a point-to-point connection. After doing this, you should open a Web browser. In the address or URL field, type the IP address of the management module. The management module has a default static IP address of 192.168.70.125, which you must use if connecting directly or if a DHCP server is not present on the network. If a DHCP server is present, type the address or host name which has automatically been assigned. At this point, you will be presented with the Enter Network Password window.



Figure 2-1 Enter Network Password window

The management module also has a default user name and password which you can use for your initial logon:

- ▶ User Name: USERID
- ▶ Password: PASSWORD

Note: The user name and password are both uppercase, password has been spelled with the number 0 (zero) and not the letter O.

For security reasons, we would recommend that you set up a new login profile and disable the default. Once you have logged in successfully, you will see a window similar to Figure 2-2.

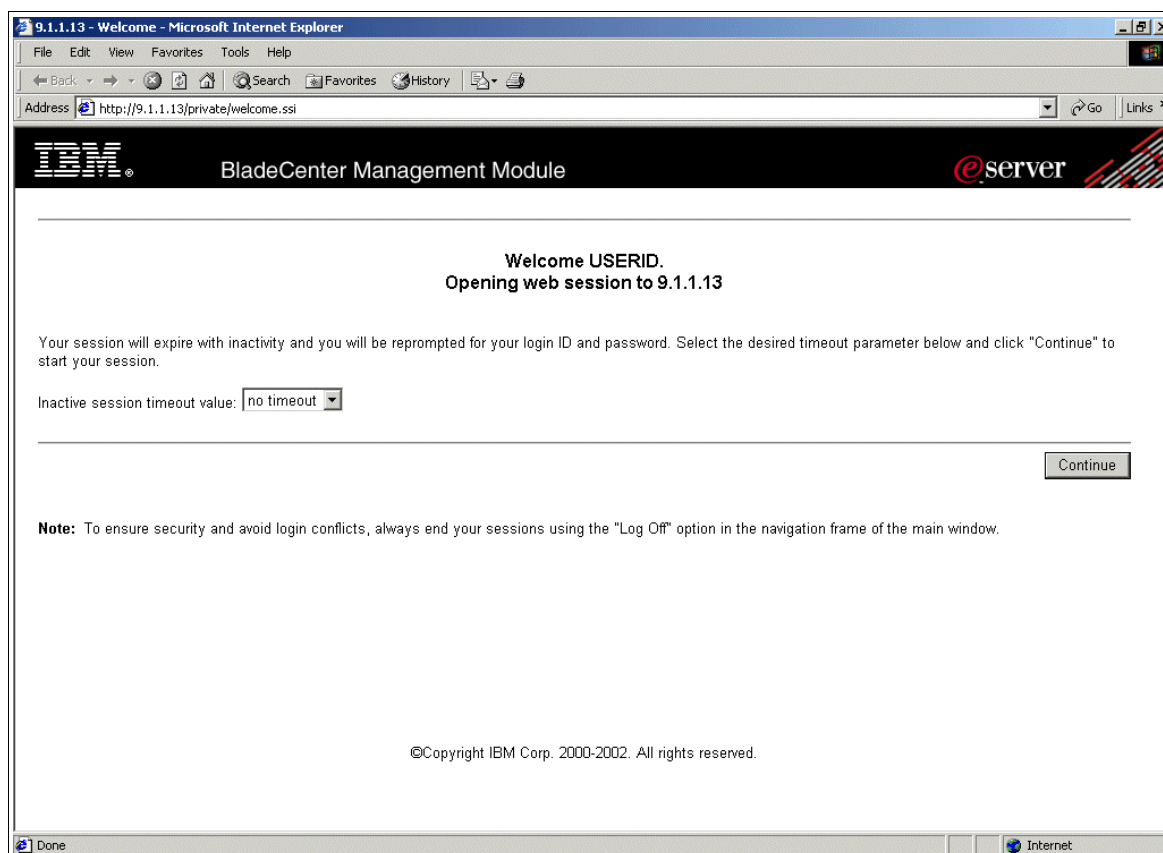


Figure 2-2 BladeCenter Management Module welcome window

Click **Continue** to advance to the main menu. You will see a window similar to Figure 2-3.

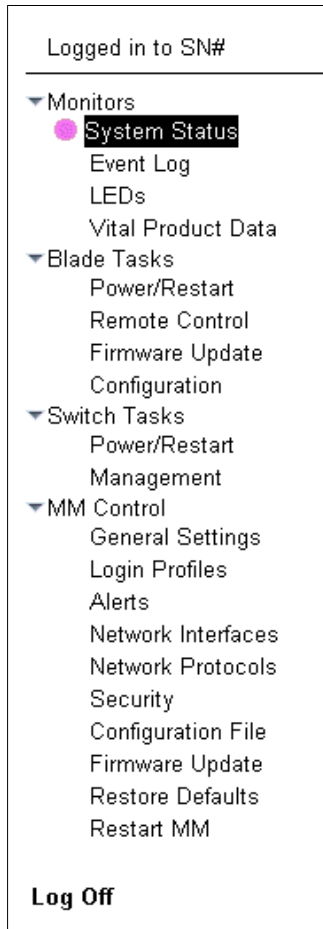


Figure 2-3 Main menu panel

The menu will appear in the left-hand frame of your browser. The menu is divided into four main sections for easy navigation; these sections are: Monitors, Blade Tasks, Switch Tasks and MM Control. In the following section, we will look at the navigation menu in greater detail and provide a description of each function.

2.2.1 Monitors

The Monitors section (shown in Figure 2-4) allows you to view the status, settings and other information for each of the key components within your IBM eServer BladeCenter. Listed are the Monitor components and their function:

System Status	This feature allows you to view the overall status of all blades, modules blowers and the front panel which enables you to easily see any events that may require attention.
Event Log	This feature allows you to view any entries that are currently stored in the management module's event and error log. This log also contains any events or errors from the blade server logs.
LEDs	This feature simply allows you to turn off the information LED after taking appropriate action and also allows you to easily identify the IBM eServer BladeCenter and an individual blade server by controlling the identity LED.

Vital Product Data This feature allows you to view the Vital Product Data (VPD) for all blades and modules. The VPD includes the slot number, serial number, machine type and firmware of each component, along with other important information.

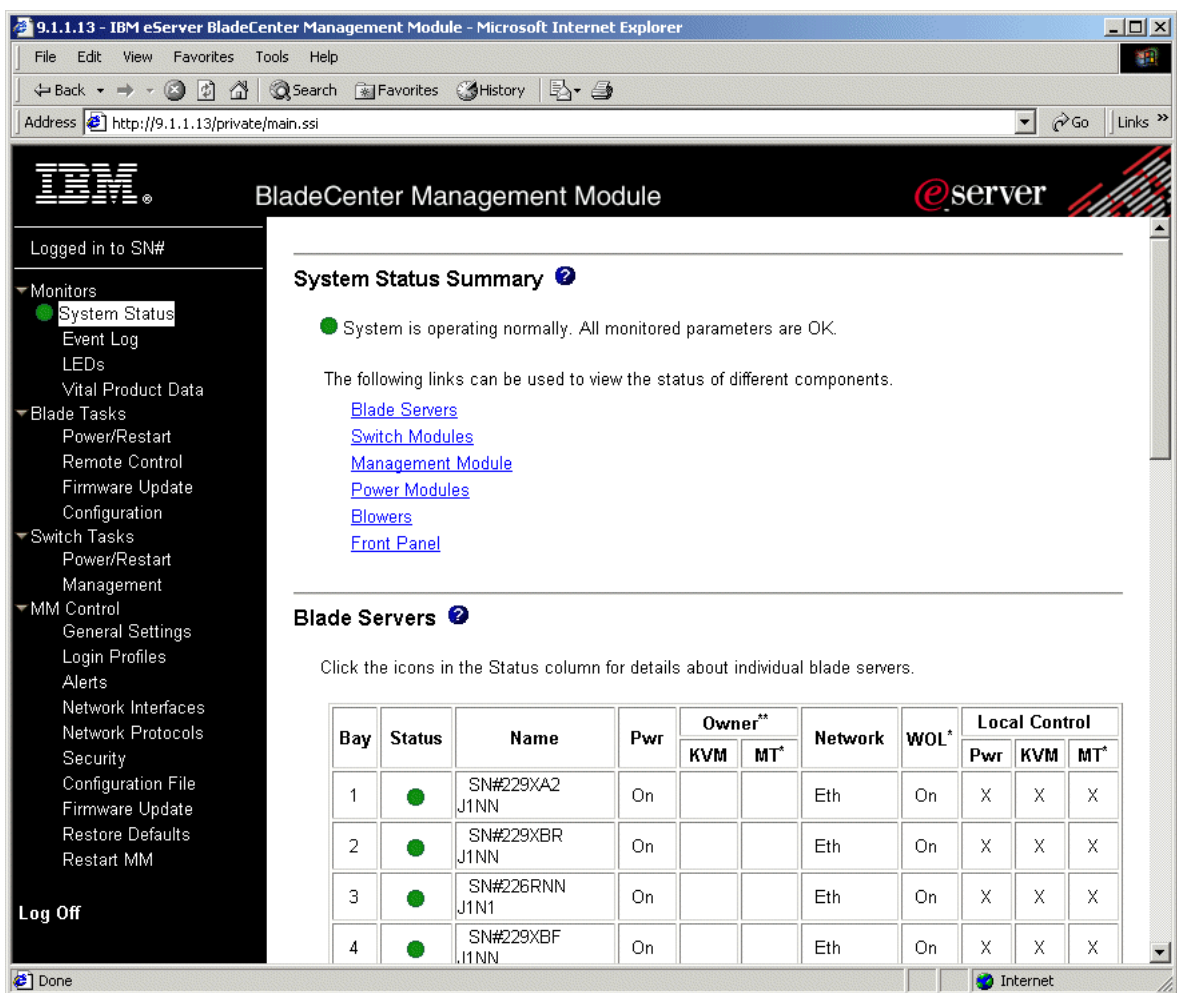


Figure 2-4 System Status Summary window

The highlights of the Monitors menu are shown below:

Monitors

- ▶ System Status
 - Blade Servers
 - Switch Modules
 - Management Modules
 - Power Modules
 - Blowers
 - Front Panel
- ▶ Event Log
 - Filter
 - Disable Filter
 - Reload Log
 - Clear Log
 - Save Log as Text File

- ▶ LEDs
 - Front Panel LEDs
 - Information Off
 - Identity On/Off/Blink
 - Blade Server LEDs
 - Information Off
 - Identity On/Off/Blink
- ▶ Vital Product Data
 - Blade Server Firmware VPD
 - Switch Module Firmware VPD
 - Management Module Firmware VPD

2.2.2 Blade Tasks

The Blade Task section (shown in Figure 2-5) is primarily used for controlling and changing the settings or configurations of your blade servers. The choices under this section are: Power/Restart, Remote Control, Firmware Update and Configuration.

Power/Restart	This feature allows you to power on and off, restart the service processor, and enable or disable the local power control and Wake on LAN for each blade server.
Remote Control	This feature not only allows you to remote control an individual blade server as if you were local, but also allows you to view which blade server has ownership of the keyboard, video and mouse (KVM) and the media tray. You can also enable or disable the local switching of the KVM console and media tray.
Firmware Update	This feature is self-explanatory; it allows you to update the firmware of an individual blade.
Configuration	This feature allows you to again enable or disable local power, KVM, media tray control and Wake on LAN, as well as set the boot sequence for each blade server.

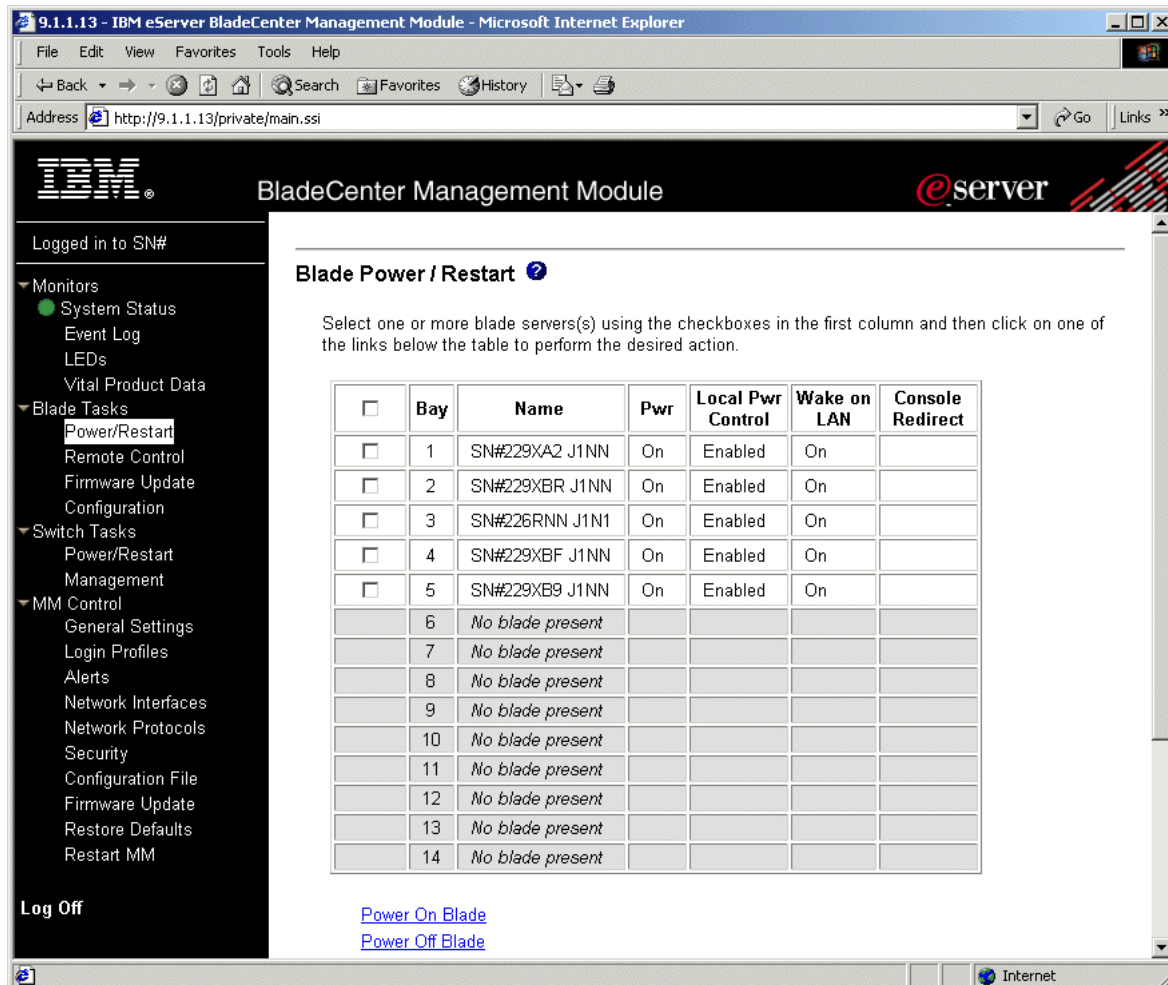


Figure 2-5 Blade Tasks Power/Restart window

Below are the highlights of the Blade Tasks menu:

Blade Tasks

- ▶ Power/Restart
 - Power On Blade
 - Power Off Blade
 - Restart Blade
 - Enable Local Power Control
 - Disable Local Power Control
 - Enable Wake on LAN
 - Disable Wake on LAN
 - Restart Blade System Mgmt Processor
- ▶ Remote Control
 - Remote Control Status
 - Redirect Server Console
 - Disable local KVM switching
 - Disable local media tray switching

- ▶ Firmware Update
 - Target
 - Firmware file
 - Update
- ▶ Configuration
 - Blade Information
 - Name
 - Blade Policy Settings
 - Local power control - Disable/Enable/Not Set
 - Local KVM control - Disable/Enable/Not Set
 - Local media tray control - Disable/Enable/Not Set
 - Wake on LAN - Disable/Enable/Not Set
 - Boot Sequence
 - ▶ 1st Device
 - ▶ 2nd Device
 - ▶ 3rd Device
 - ▶ 4th Device

2.2.3 Switch Tasks

The choices in the Switch Tasks section (shown in Figure 2-6) are used to manage and change the settings or configurations of the switch modules in the IBM eServer BladeCenter. There are two choices in this section: Power/Restart and Management. Power/Restart allows you to reset and turn the switch modules on or off. Management allows you to view or change the IP configuration of the switch modules.

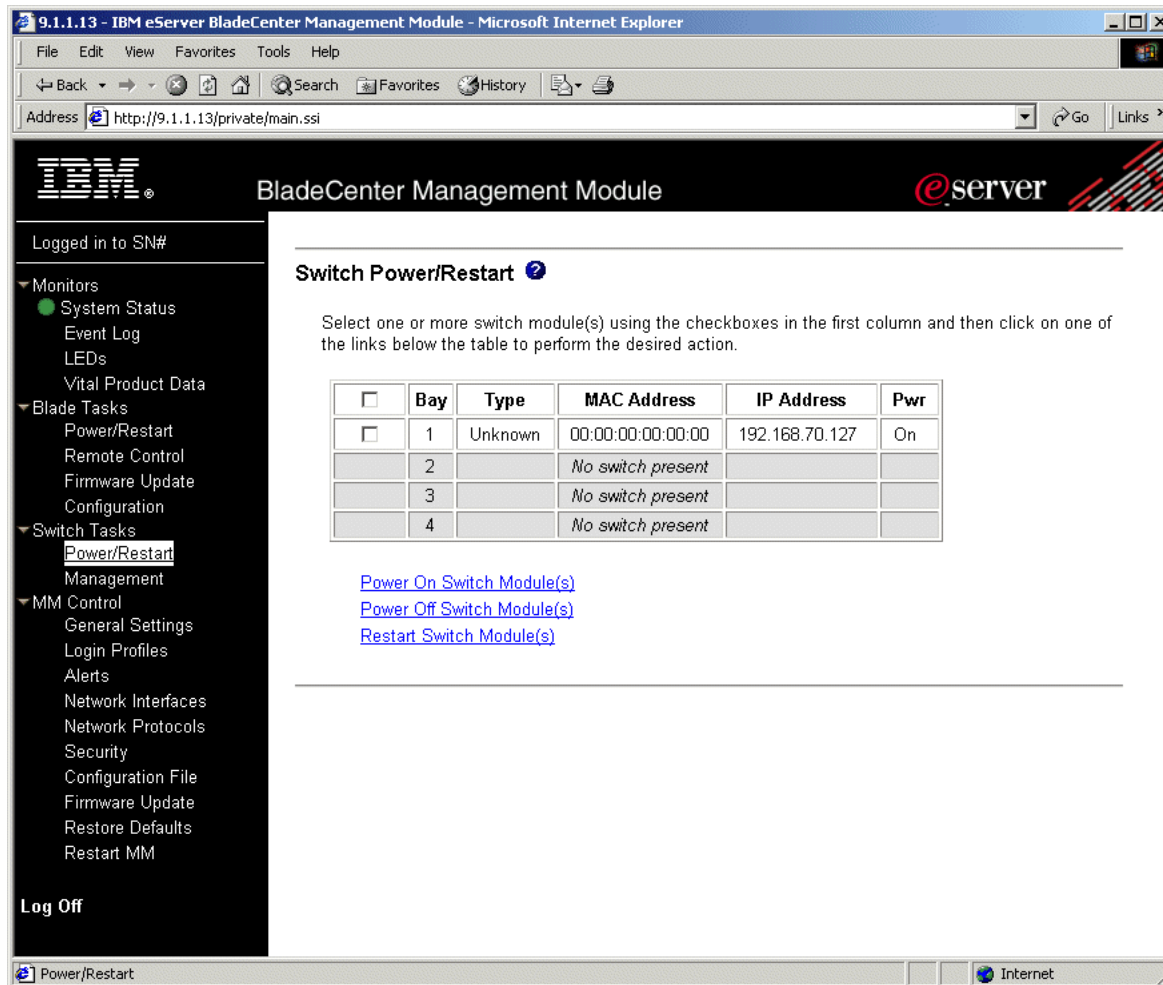


Figure 2-6 Switch Tasks Power/Restart window

The highlights of the Switch Tasks menu are shown below:

Switch Tasks

- ▶ Power/Restart
 - Power On Switch Module
 - Power Off Switch Module
 - Restart Switch Module
- ▶ Management
 - Switch Management
 - Switch Module 1
 - IP address
 - Subnet mask
 - Gateway address
 - Switch Module 2
 - Switch Module 3
 - Switch Module 4

2.2.4 MM Control

The MM (Management Module) Control section (shown in Figure 2-7) is used to change the settings or configurations of the BladeCenter management module.

This includes the following choices:

General Setting	Setting the name of the management module, as well as the management module date and time.
Login Profiles	Creating login profiles.
Alerts	Managing alerts.
Network Interfaces	Configuring the management module ethernet connections for remote console and for communicating with the switch modules.
Network Protocols	Settings for the SNMP, DNS, and SMTP network protocols.
Security	Settings for secure socket layer (SSL) security.
Configuration File	Backing up and restoring the management module configuration.
Firmware Update	Updating the management module firmware.
Restore Defaults	Restoring the default configuration.
Restart MM	Restarting the management module.

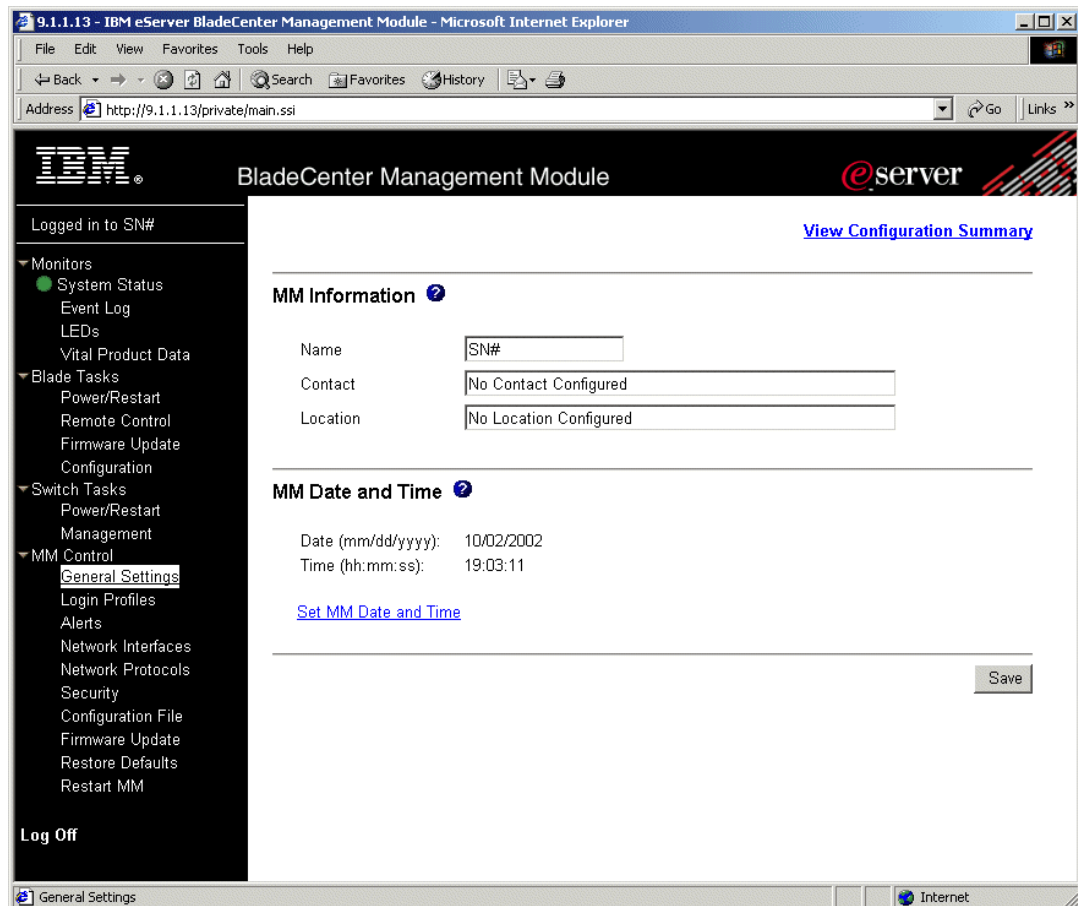


Figure 2-7 MM Control General Settings window

The highlights of the MM Control menu are shown below:

MM Control

- ▶ General Settings
 - Name
 - Set MM Date and Time
- ▶ Login Profiles
 - Login Profiles
 - Login ID
 - Authority Level Read only/Read and Write
 - Password
 - Confirm password
 - Global Login Profiles
 - Lockout period
- ▶ Alerts
 - Remote Alert Recipients
 - Receives critical alerts only
 - ▶ Status
 - ▶ Notification Method - SNMP over LAN/E-mail over LAN/IBM Director over LAN
 - IP address or hostname
 - e-mail address
 - Global Remote Alert Settings
 - Remote alert retry limit
 - Delay between retries
 - Include event log with e-mail alerts
 - Monitored Alerts
 - Critical Alerts
 - ▶ Select all critical alerts
 - ▶ Hard disk drive
 - ▶ Multiple blower failure
 - ▶ Power failure
 - ▶ Temperature
 - ▶ VRM failure
 - ▶ Multiple switch module failure
 - ▶ Invalid configuration
 - Warning Alerts
 - ▶ Select all warning alerts
 - ▶ Single blower failure
 - ▶ Temperature
 - ▶ Voltage
 - ▶ KVM/media tray switching failure
 - ▶ Redundant module failure
 - System Alerts
 - ▶ Power off
 - ▶ Inventory
 - ▶ Log 75% full
- ▶ Network Interfaces
 - External Network Interface
 - Interface - Disable/Enable
 - DHCP - Disable - Use static IP configuration/Enable - Obtain IP config. from DHCP server/Try DHCP server. If it fails, use static IP config.
 - Hostname
 - IP address
 - Subnet mask
 - Gateway address

- Advanced Ethernet Setup
 - ▶ Data rate - 10Mb/100Mb/Auto
 - ▶ Duplex - Full/Half/Auto
 - ▶ Maximum transmission unit
 - ▶ Locally administered MAC address
 - ▶ Burned-in MAC address
 - IP Configuration Assigned by DHCP Server
- Internal Network Interface
 - Interface - Disable/Enable
 - IP address
 - Subnet mask
 - Gateway address
 - Advanced Ethernet Setup
 - ▶ Data rate - 10Mb/100Mb/Auto
 - ▶ Duplex - Full/Half/Auto
 - ▶ Maximum transmission unit
 - ▶ Locally administered MAC address
 - ▶ Burned-in MAC address
- ▶ Network Protocols
 - Simple Network Management Protocols (SNMP)
 - SNMP agent - Disable/Enable
 - SNMP traps - Disable/Enable
 - Community Name
 - Host name or IP address
 - Domain Name System (DNS)
 - DNS - Disable/Enable
 - DNS Server IP address 1
 - DNS Server IP address 2
 - DNS Server IP address 3
 - Simple Mail Transfer Protocol (SMTP)
 - SMTP server host name or IP address
- ▶ Security - (Install SSL, Download installation key, save and install)
- ▶ Configuration File
 - Backup MM Configuration
 - Restore MM Configuration
 - Restore
 - Modify and restore
- ▶ Update MM Firmware
 - Select/Update
- ▶ Restore Defaults
 - Restore Defaults
- ▶ Restart MM
 - Restart MM



Overview of IBM Director V4

In this chapter, we will provide you with an overview of IBM Director V4 and some of the new function and features that are available relating to IBM eServer BladeCenter servers.

3.1 IBM Director V4

IBM Director is a comprehensive workgroup hardware manager designed for use with IBM eServer xSeries servers, PCs, notebooks and now IBM eServer BladeCenter.

IBM Director V4 includes support for your IBM eServer BladeCenter server, enabling you to manage, deploy and monitor your system much more efficiently. IBM Director includes features such as self-management and proactive and predictive tools which provide higher levels of availability and reliability. The IBM Director software is made up of three components:

- ▶ IBM Director Server
- ▶ IBM Director Agent
- ▶ IBM Director Console

A different combination of these components is required for each of the hardware groups in your IBM Director environment. The management server must contain all three of these components. The IBM Director Console must be installed on the management console or any system from which a system administrator will remotely access the management server. The IBM Director Agent must be installed on each system you intend to manage.

3.1.1 IBM Director Server

The IBM Director Server is the main component of IBM Director software. The server component contains the management data, the server engine, and the application logic. IBM Director Server provides basic functions such as:

- ▶ Discovery of the managed systems
- ▶ Storage of configuration and management data
- ▶ Inventory database
- ▶ Event listening
- ▶ Security and authentication
- ▶ Management console support
- ▶ Administrative tasks.

IBM Director comes with the Microsoft Jet database engine however other database applications can be use in larger IBM Director management solutions. The IBM Director Console and IBM Director Agent are automatically installed when you install the IBM Director server. Every IBM eServer xSeries comes with an IBM Director Server license.

3.1.2 IBM Director Agent

The IBM Director Agent allows the Director server to communicate with systems on which it is installed. The agent provides the server with management data which can be transferred using TCP/IP, NetBIOS and IPX protocols. The IBM Directors Agent Web-based access can only be enabled on Windows operating systems. All IBM systems come with an IBM Director Agent license. Additional licenses can be purchased for non-IBM systems.

3.1.3 IBM Director Console

The IBM Director Console enables systems administrators to manage all systems which have an agent installed. This is done easily via the graphical user interface (GUI) by either a drop-and-drag action or a single click. Unlike the agent, the console and server communicate and transfer data using TCP/IP. The IBM Director Console does not require the Director agent to be installed unless you want to manage this system as well, in which case the agent must be installed separately. IBM Director Console does not require a license and can be installed on as many systems as needed.

3.2 New features of IBM Director V4

There are many new features to IBM Director V4, but most of all it is the support for your IBM BladeCenter servers and its features. This includes new options under Groups and Tasks of the IBM Director Management Console.

In the Groups pane (shown in Figure 3-1), you are able to discover your BladeCenter chassis and chassis members, which are then displayed under the Group Contents pane in the center of the console. In the Tasks pane is a new section headed BladeCenter, which has options for configuring, managing and deploying your IBM eServer BladeCenter.

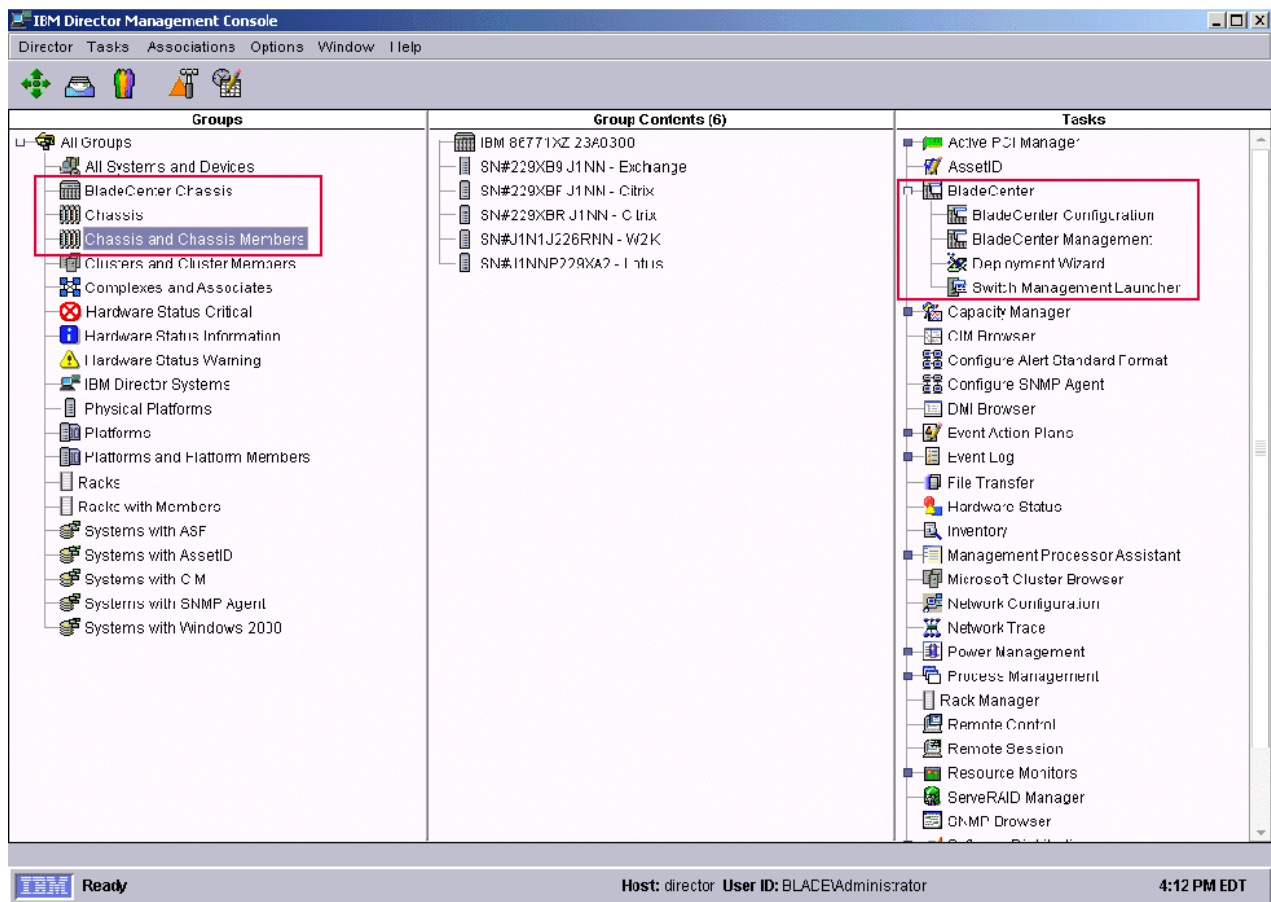


Figure 3-1 IBM Director Management Console

Note: If your IBM eServer BladeCenter appears in the Group Contents window with a lock symbol beside it, you will need to request access to it. This can be done by right-clicking the blade icon, which should bring up a menu. Scroll down to Request Access. Type in a valid user ID and password for the blade management module.

3.2.1 Real Time Diagnostics for IBM eServer BladeCenter

Real Time Diagnostics (RTD) is a manageability tool from IBM that runs on your IBM eServer xSeries system to help prevent or minimize downtime, thereby increasing your system's availability.

Running diagnostics on your servers previously required them to be taken down first, which could greatly disrupt users' productivity and your business. With Real Time Diagnostics, administrators can run industry-standard diagnostic utilities on servers while they are running. This enables proactive server maintenance while maximizing server availability and by doing this, you can resolve server issues before they become critical, enabling your server to stay up and running.

The Real Time Diagnostics tool includes:

System Event Log	Gathers event logging information maintained by the management module.
I2C Bus Test Results	Reports the status of the Inter-IC communication connected to the Management Module.
SelfTest Results	Several devices within the BladeCenter chassis perform their own internal SelfTest. The SelfTest subtask of Chassis Diagnostics gathers the results of these and suggests corrective actions.
Light Path Diagnostics	The Chassis Light Path Diagnostics subtask provides information about active LEDs on the front panel of the BladeCenter chassis.
Centerplane Connectivity	Verifies RS485 operation of the BladeCenter ePlane.

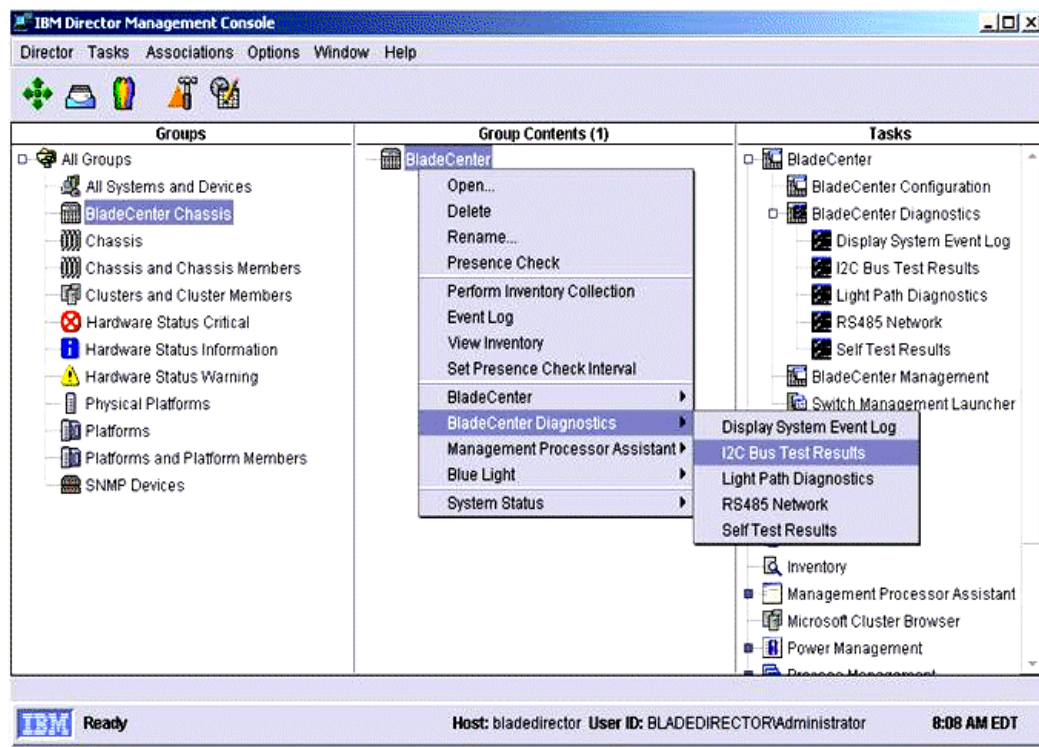


Figure 3-2 IBM Director Management Console

When Real Time Diagnostics for BladeCenter systems are installed, they will be located under the BladeCenter option in the Tasks frame. To run any of the diagnostics, make sure your IBM eServer BladeCenter has been discovered and is located in the Group Contents frame. There are two ways of running the diagnostics:

1. On your BladeCenter chassis in the Group Contents frame, right-click and scroll down the menu to BladeCenter Diagnostics; select the required diagnostic as shown in Figure 3-2.
2. If using the Task Item in the Tasks Pane, select the appropriate diagnostic and drag it to the BladeCenter system to be diagnosed.

Once you have selected the diagnostic to be run, a window will appear asking if you want to Schedule or Execute Now. If you want to schedule, follow the screen instructions and select **Execute Now** to run diagnostics immediately. The status of each diagnostic test is stored in the Event Log in the Tasks frame.

Note: At the time of publication, the above information was accurate. However, the final names of these diagnostics may change as the product is still in development. This should not affect the functions.

3.3 IBM Director Server Plus Pack

The Director Server Plus Pack was available for IBM Director 3.1, but it now incorporates support for BladeCenter servers. IBM Director Server Plus Pack consists of five additional tools for advanced server management to help optimize performance and maximize availability. These tools are tightly integrated with the IBM Director for consistent management from a single console, as shown in Figure 3-3.

The Server Plus pack includes:

Capacity Manager	Capacity Manager helps monitor resource utilization and keeps track of various levels of existing or future bottlenecks. It can also make recommendations to improve performance by predicting potential bottlenecks and proactively alerting IBM Director.
Software Rejuvenation	Software Rejuvenation predicts potentially costly software failures before they occur, which allows systems administrators to schedule a software refresh for optimal operation.
System Availability	This tracks overall systems availability, which includes uptime as well as downtime, to allow you to measure the effectiveness of your systems management processes and tools. This information is provided in graphical form.
Rack Manager	Rack Manager allows you to build a realistic graphical representation of your rack suite and manage it via a logical, drag-and-drop graphical tool. It also provides detailed information on the health status of the rack and its components and helps you to prioritize the resources allocated to each application.
Active PCI	This optimizes server throughput and performance by determining the best configuration of PCI cards and buses. You can also analyze the current configuration of cards and PCI buses to see if they are being used in the most optimal way. Active PCI Manager works with the xSeries 235, 245, 345, 360, and 440 servers, as well as the RXE-100 Remote Expansion Enclosure. This feature cannot be utilized with BladeCenter servers.

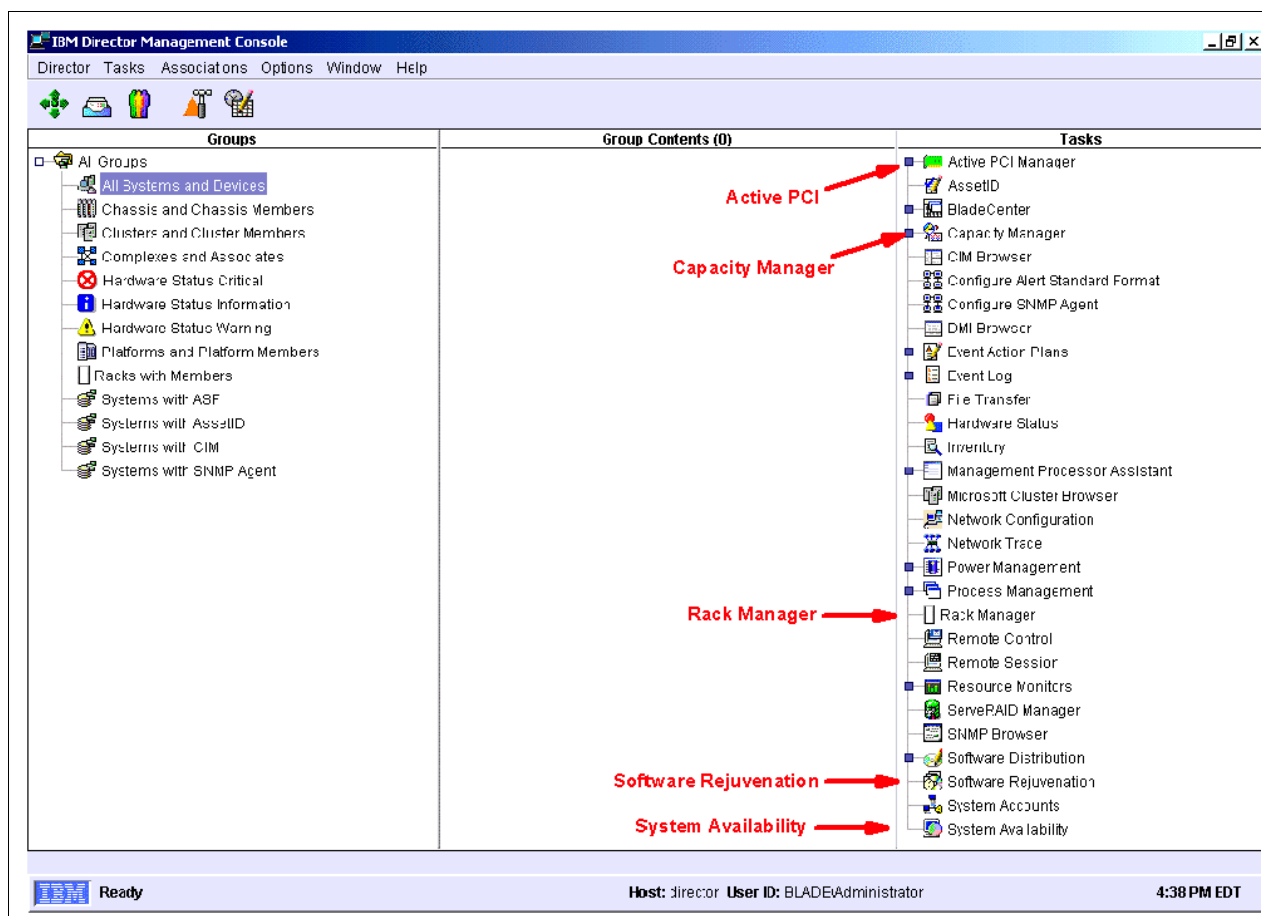


Figure 3-3 IBM Director Management Console

Utilizing these tools, you can diagnose performance problems, apply recommended fixes and forecast future performance with the built-in artificial intelligence. The systems performance is displayed graphically for easy analysis of the server's current workload and its capacity. With these tools, IBM Director can be alerted to future bottlenecks on the server, allowing corrective actions to be taken to prevent or minimize server downtime.



Installing and configuring IBM Director V4

In this section, we will describe and guide you through the IBM Director and Real Time Diagnostics installation process; we will also look at the hardware and software requirements for running each of the IBM Director components.

4.1 IBM Director requirements

Prior to installing IBM Director or any of its components, you should check that the system meets both the hardware and the software requirements of IBM Director.

4.1.1 Hardware requirements

Table 4-1 lists the hardware requirements for the IBM Director server, agent and console.

All of the IBM Director components will run on any vendor hardware that meets the Wired for Management (WFM), Version 2.0 specifications.

Table 4-1 Minimum hardware requirements

	IBM Director Server	IBM Director Agent	IBM Director Console
CPU	Pentium 266+ MHz	Pentium 266+ MHz	Pentium 266+ MHz
Memory (RAM)	256 MB	128 MB	128 MB
Disk space	300 MB	220 MB	160 MB

Note: The above values are the minimum hardware requirements; for performance reasons and depending on the size of your Director management solution, these values may need to be increased. These requirements are in addition to any other software requirements that may be running on the system.

4.1.2 Software requirements

The IBM Director components are supported on different operating systems. In Table 4-2, you see a comprehensive list of what operating systems are currently supported with each of the IBM Director components.

Table 4-2 Operating system requirements

	IBM Director Server	IBM Director Agent	IBM Director Console
Operating systems supported	<p>Microsoft Windows 2000 Server</p> <p>Windows 2000 Advanced Server</p>	<p>Windows XP Professional</p> <p>Windows 2000 Professional, Server, Advanced Server, and Datacenter Server</p> <p>Red Hat Linux, versions 7.1, 7.2, 7.3</p> <p>Red Hat Linux Advanced Server, version 2.1</p> <p>SuSE Linux, versions 7.2, 7.3, 8.0, 8.1</p> <p>Novell NetWare 6.0</p> <p>Caldera Open UNIX 8.0</p> <p>VMware ESX 1.5</p>	<p>Windows XP Professional</p> <p>Windows 2000 Professional, Server, and Advanced Server</p>

4.2 Installation of IBM Director

In this section, we will guide you through the process of installing each component of the IBM Director and the installation of the Real Time Diagnostics.

4.2.1 IBM Director Server install

To install the Director components (Console, Agent, and Server), use the following procedure:

1. Place the Director CD in the CD-ROM drive of the system where you will be installing. If autorun is enabled, the Director startup window should open. If your system is not configured for autorun or you are not installing from CD, navigate to the appropriate drive or directory and double-click the **Setup.exe** file. You will see a window similar to Figure 4-1.



Figure 4-1 IBM Director startup window

2. Select **INSTALL DIRECTOR**. The IBM Director Installation window opens (see Figure 4-2).



Figure 4-2 IBM Director Installation window

3. Click **Server Install**.
4. From the Welcome window, click **Next** to execute the InstallShield Wizard for IBM Director Server. You will see a window similar to Figure 4-3.

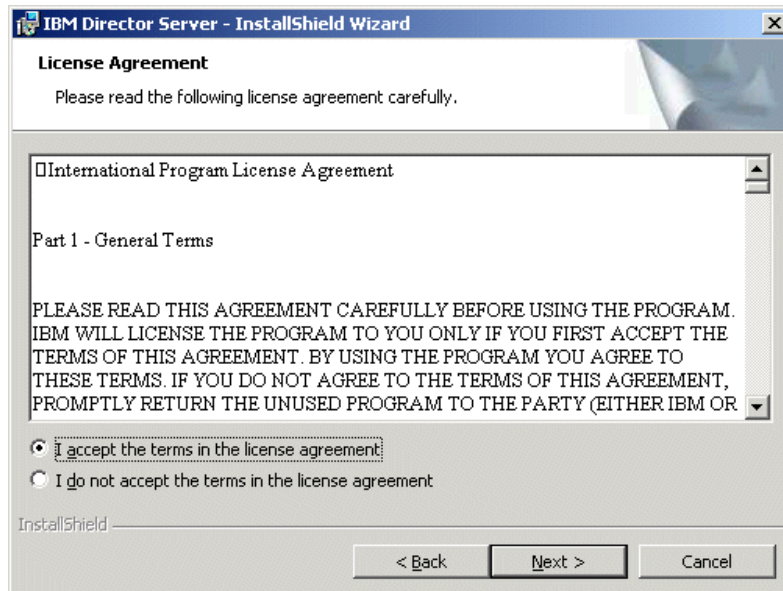


Figure 4-3 License Agreement window

5. Select **I accept the terms in the license agreement** and click **Next**. You will see a window similar to Figure 4-4.

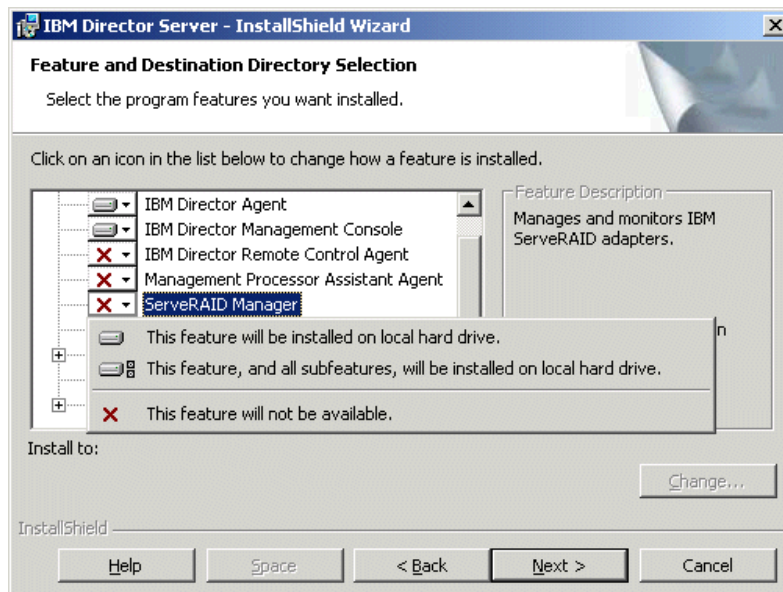


Figure 4-4 Feature and Destination Directory Selection window

6. From the Feature and Destination window, select the required features to be installed; features marked with a red cross will not be installed. To install any of the uninstalled features or extensions, click the icon to the left of the feature name and then click one of the install options that appears as shown in Figure 4-4. In our example, we accepted the default.
7. If you are satisfied with the installation directory, click **Next**, otherwise click **Change** and specify a new directory.

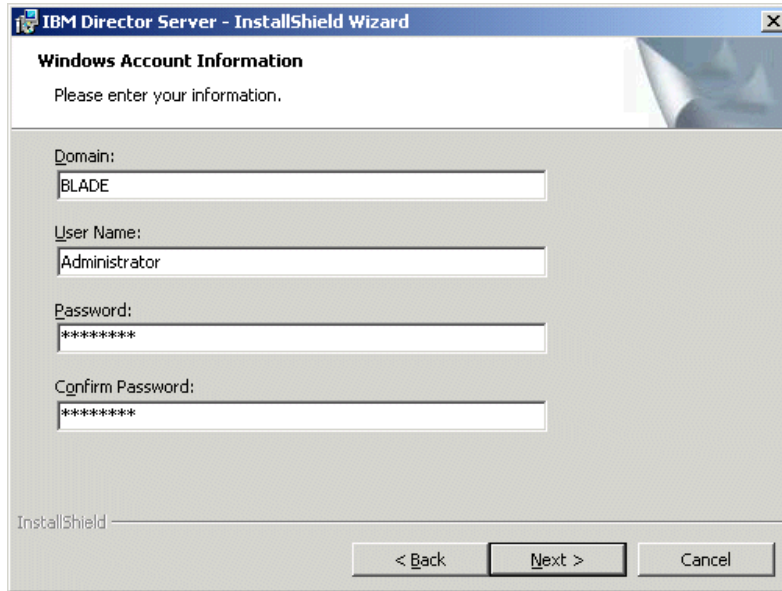


Figure 4-5 Windows Account Information window

8. For a Windows installation, enter information in the Windows Account Information window and click **Next**. You will see a window similar to Figure 4-6. For our example, our domain name is BLADE, our user name is Administrator and our password is password.



Figure 4-6 Encryption Settings window

9. Select the encryption setting and click **Next**. You will see a window similar to Figure 4-7. In our example, we accepted the default.

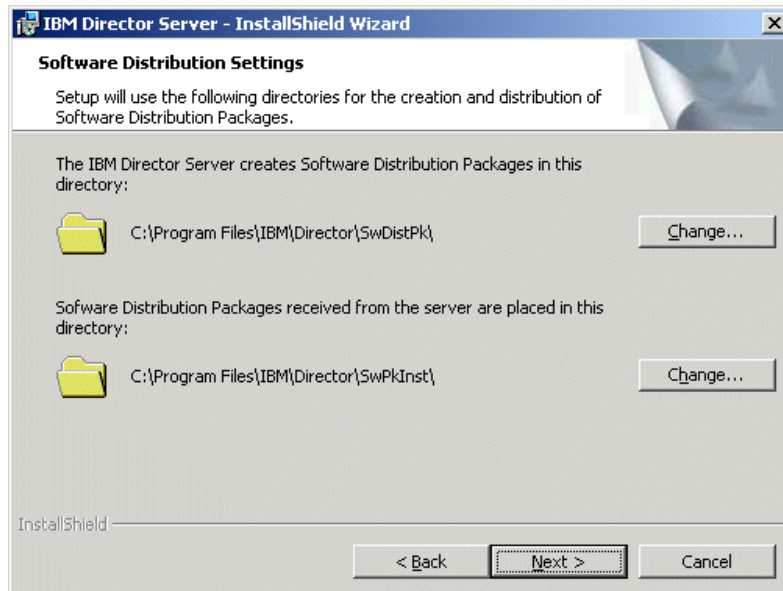


Figure 4-7 Software Distribution Settings window

10. If you want to change the software distribution directory where IBM Director creates the packages, click **Change** and select a new directory. Likewise, for the directory where software distribution packages that the server receives, click **Change** and select a new directory. For our example, we accepted the defaults. Therefore, click **Next**. You will see a window similar to Figure 4-8.

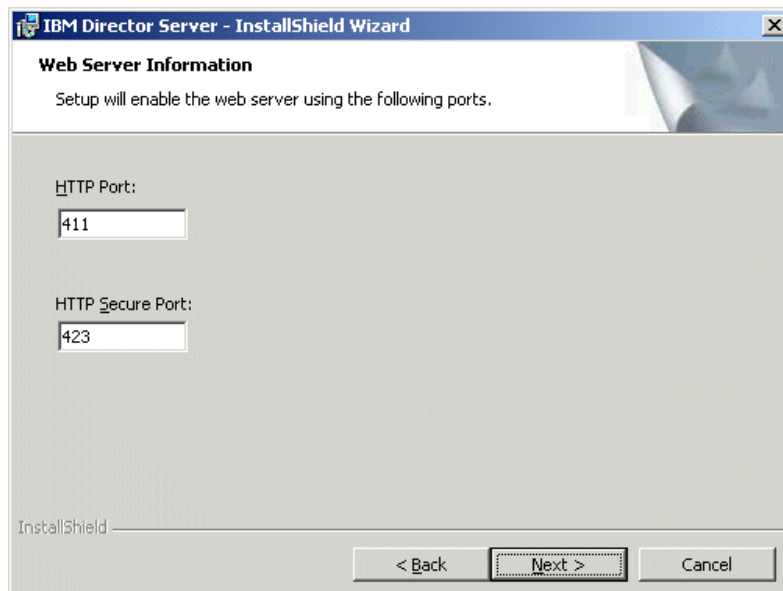


Figure 4-8 Web Server Information window

11. In the Web server information window, accept defaults by clicking **Next**. You will see a window similar to Figure 4-9.

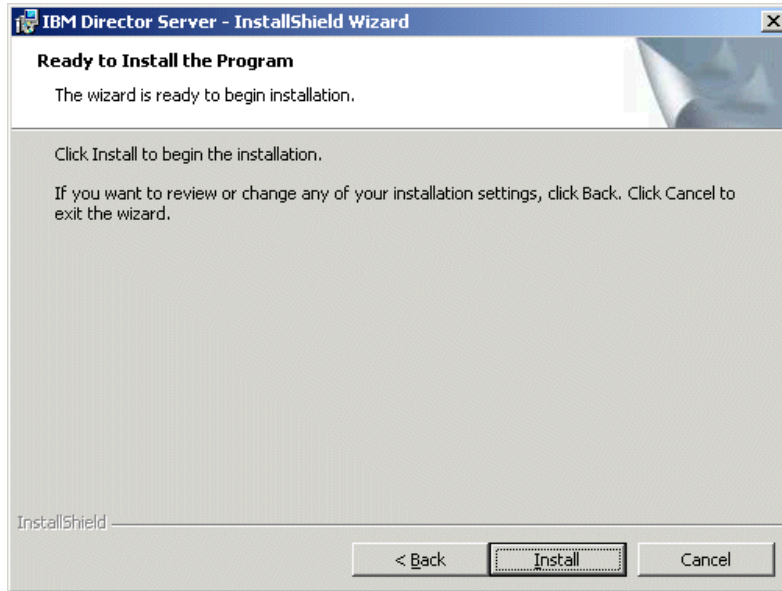


Figure 4-9 Ready to Install the Program window

12. From the Ready to Install the Program window, click **Install**. You will see a window similar to Figure 4-10.

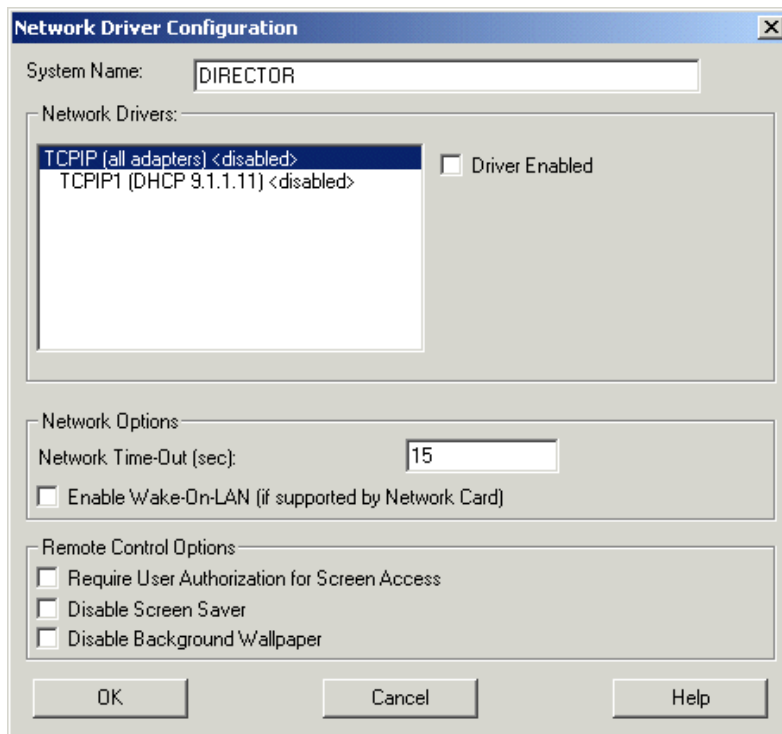


Figure 4-10 Network Drive Configuration window

13. On the Network Drive Configuration window, amend settings as needed and click **OK**. You will see a window similar to Figure 4-11. For our example, we enabled the TCP/IP driver.

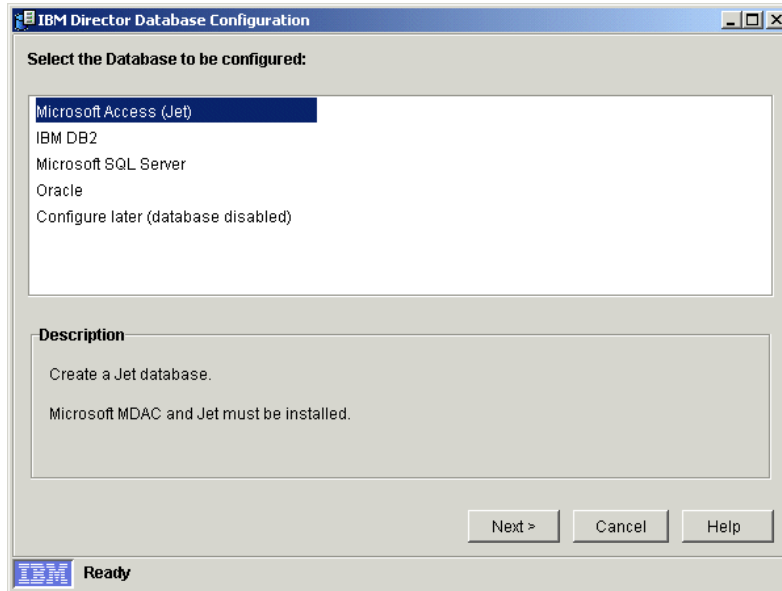


Figure 4-11 Database Configuration window

14. Select the appropriate database and click **Next**. You will see a window similar to Figure 4-12. For our example, we selected **Microsoft Access (Jet)**.

If you select either the IBM DB2, Microsoft SQL or Oracle database, make sure this has been previously installed.

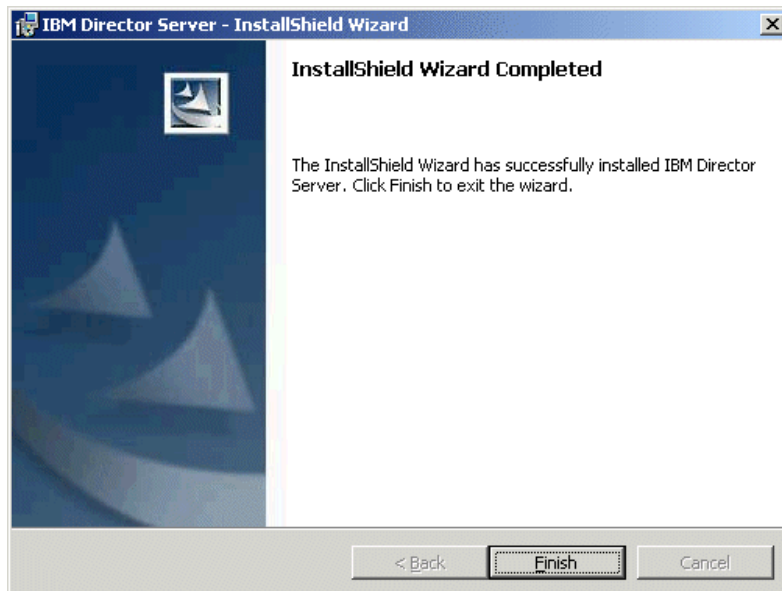


Figure 4-12 InstallShield wizard Complete window

15. Click **Finish**. You will see a window similar to Figure 4-13.

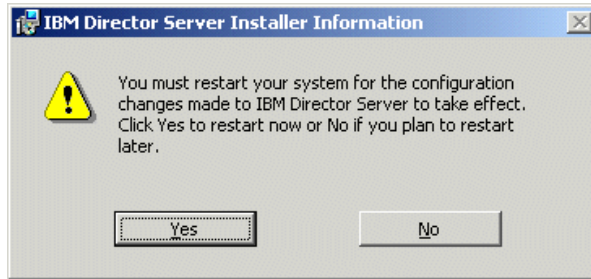


Figure 4-13 Reboot window

16. Click **Yes** to reboot the server.

Once the server reboots, the installation is complete.

4.2.2 Director Console install

In this section, we list the steps that will guide you through the installation of the IBM Director Console component on any system which the systems administrator will use to access the IBM Director server remotely.

1. Place the Director CD in the CD-ROM drive of the system where you will be installing. If autorun is enabled, the Director startup window should open. If your system is not configured for autorun or you are not installing from the CD, navigate to the appropriate drive or directory and double-click the **Setup.exe** file. You will see a window similar to Figure 4-1.
2. Select **INSTALL DIRECTOR**. The IBM Director Installation window appears (see Figure 4-14).



Figure 4-14 IBM Director Installation window

3. Click **Console Install**.
4. When the Welcome to the InstallShield Wizard window appears, click **Next**.

5. Now the License Agreement window will appear. Click **I accept the terms in the license agreement** and then click **Next**.
6. The Server Plus Pack window appears; click **Next**.
7. The Feature and Destination Directory Selection window opens. As in the server install, select the required components and click **Next**. In our example, we accepted the default features and destination directory.
8. Now the Ready to Install the Program window opens; click **Install**.
9. When the InstallShield Completed window appears, click **Finish**.

4.2.3 Director Agent install

In this section, we list the steps that will guide you through the installation of the IBM Director Agent component on all systems that are to be managed.

1. Place the Director CD in the CD-ROM drive of the system where you will be installing. If autorun is enabled, the Director startup window should open. If your system is not configured for autorun or you are not installing from the CD, navigate to the appropriate drive or directory and double-click the **Setup.exe** file. You will see a window similar to Figure 4-1.
2. Select **INSTALL DIRECTOR**. The IBM Director Installation window opens.
3. From the InstallShield wizard, click **Agent Install**.
4. The Welcome to the InstallShield Wizard window appears; click **Next**.
5. The License Agreement window opens. Click **I accept the terms of the license agreement** and click **Next**. You will see a window similar to Figure 4-15.

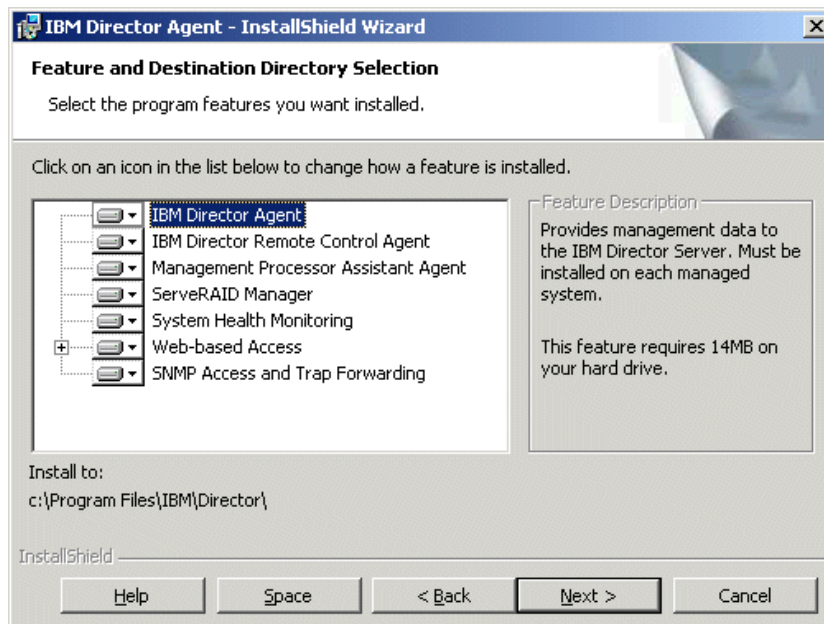


Figure 4-15 Features and Destinations window

6. The Feature and Destination Directory Selection window opens. To install any of the uninstalled features, click the icon and then click the hard disk drive icon.
7. To change the installation directory listed under Install to, if shown, click **Change** and select a new directory from the window. To accept the default directory or once you have changed the default director, click **Next**. You will see a window similar to Figure 4-16.

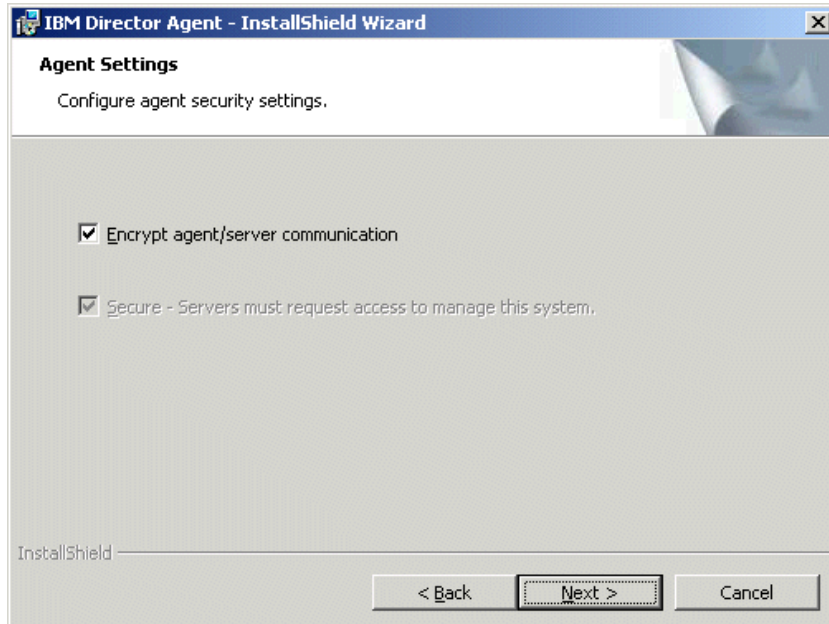


Figure 4-16 Agent Settings window

8. The Agent Settings window opens. Select the appropriate security setting and click **Next**. You will see a window similar to Figure 4-17.

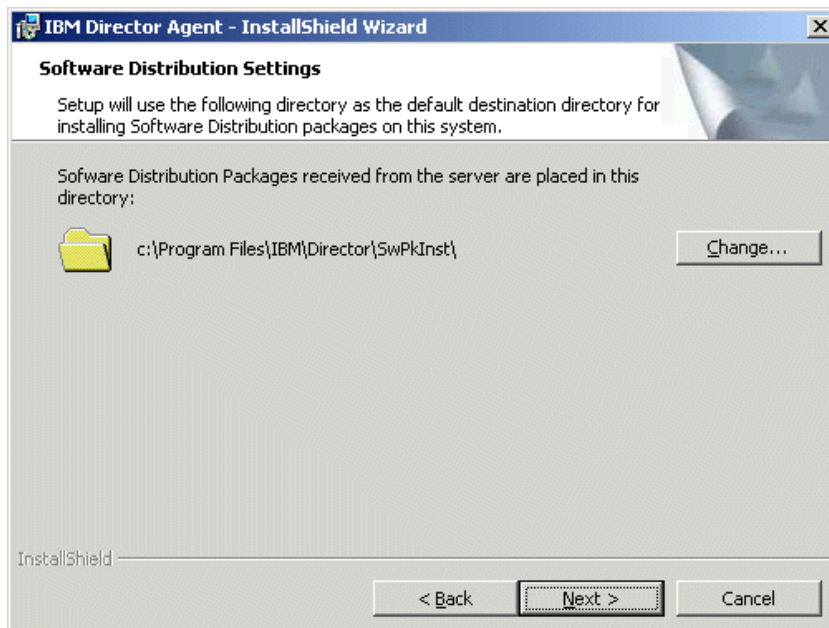


Figure 4-17 Software Distribution Settings window

9. The Software Distributions Settings window opens; accept the default directory and click **Next**.
10. The Web Server window opens. Accept the defaults for the HTTP port numbers and click **Next**. You will see a window similar to Figure 4-18.

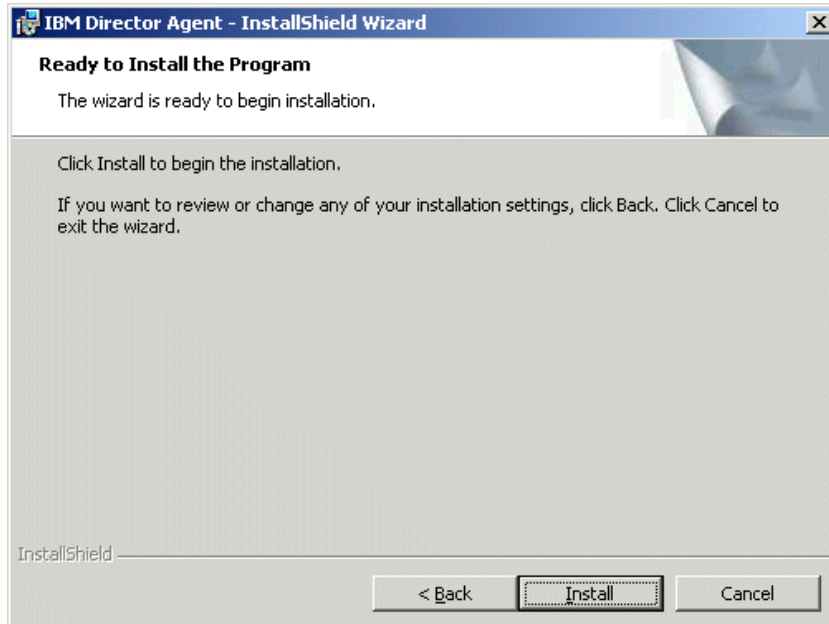


Figure 4-18 Ready to Install the Program window

11. From the Ready to Install Program window, click **Install**.
12. In the Network Drive Configuration window, amend settings as needed and click **OK**.
13. When the InstallShield Wizard Completed window opens, click **OK** to complete the installation.

4.2.4 Real Time Diagnostics

In this section, we will execute the steps to install the Real Time Diagnostics for IBM Director, using the following procedure:

1. Locate the RTD installation file by navigating to the appropriate drive or directory and double-clicking the executable file.

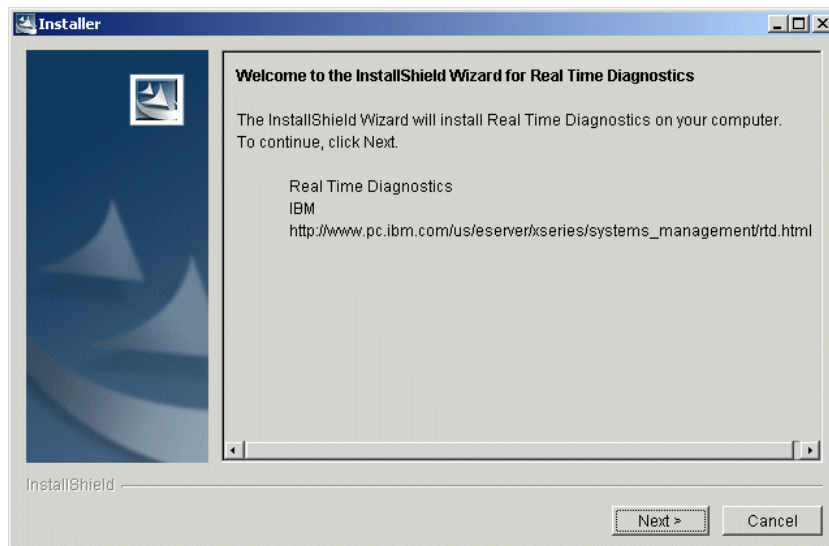


Figure 4-19 Real Time Diagnostics installation wizard window

2. When the welcome screen appears, click **Next**. You will see a window similar to Figure 4-20.

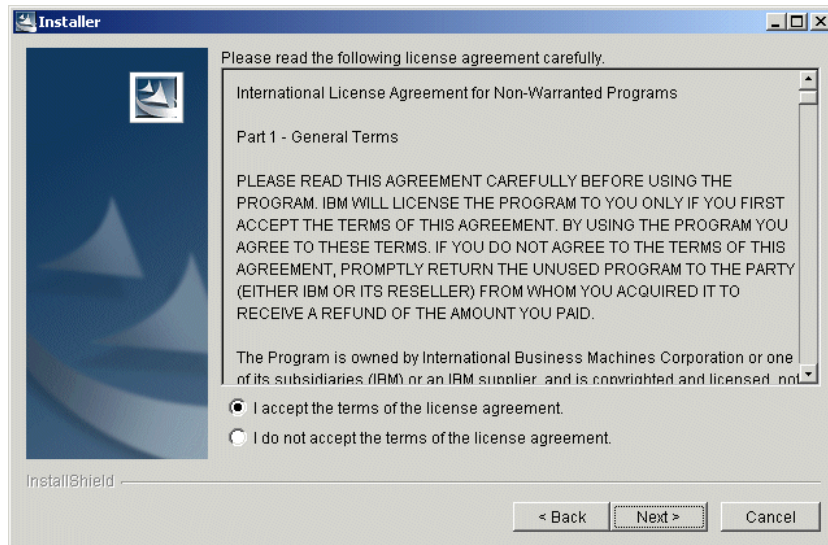


Figure 4-20 RTD License agreement window

3. Click **I accept the terms of the license agreement** and click **Next**. You will see a window similar to Figure 4-21.

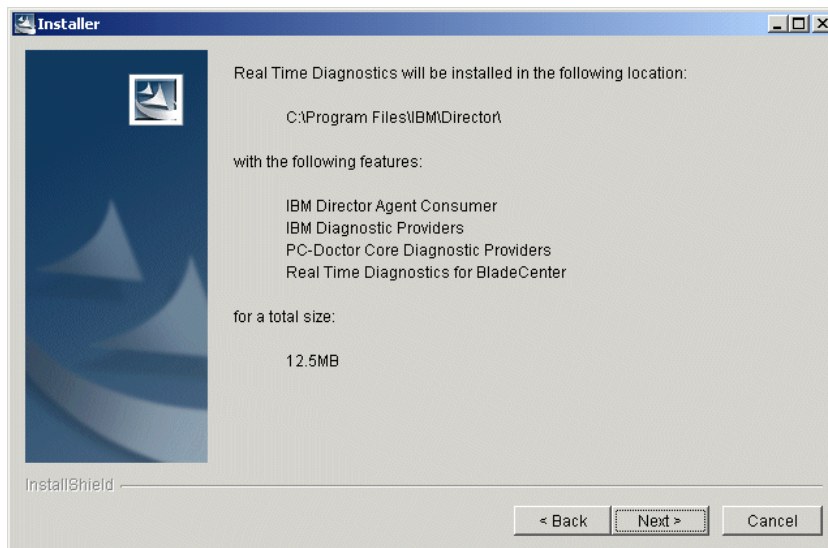


Figure 4-21 Destination and Features window

4. Accept the defaults and click **Next**.
 5. When the InstallShield Wizard window appears and indicates a successful installation, click **Finish**.
- The installation is now complete.



Deploying your IBM eServer BladeCenter

There are various methods of deploying your IBM eServer BladeCenter, including installing it locally from the CD or remotely using Remote Installation Service (RIS) or the IBM System Installation Tool Kit with Remote Deployment Manager (RDM).

5.1 Installation considerations

Because of the design of the IBM eServer BladeCenter, there are some considerations that you have to keep in mind when you install an operating system onto one of the blade servers. At present time, the following operating systems are supported on the IBM eServer BladeCenter:

- ▶ Microsoft Windows 2000 Server with SP3
- ▶ Microsoft Windows 2000 advanced server with SP3
- ▶ Red Hat Linux 7.3
- ▶ SuSE Linux 8.0

This chapter will cover how to install Windows 2000 Server or Windows 2000 Advanced server. In the examples, we will use d:\images as the example directory and will install Windows 2000 Advanced server.

5.2 Installing Windows 2000 on the IBM eServer BladeCenter

In this section, we will install Windows 2000 Advanced Server on an IBM eServer BladeCenter server using a CD-ROM, the remote installation service (RIS), and the Remote Deployment Manager (RDM).

5.2.1 Installation from the CD-ROM

When installing Windows 2000 Advanced Server on a blade server from a CD-ROM, you have to modify the CD-ROM to include Service Pack 3. This is because the operating system cannot be installed from the original CD-ROM or diskette drive, since they reside on a USB bus. To create a bootable CD-ROM with Service Pack 3, complete the following steps:

1. Download and extract the service pack with the /x option to the directory d:\images\sp3\. This will unpack the service pack without installing it.
2. Copy the i386 directory from the W2K Advanced Server CD to the machine with the CD-writer to the directory d:\images\bootcd\i386.
3. Apply the service pack with the /s option to the d:\images\bootcd\ directory.
4. Extract the boot sector from the Windows 2000 Advanced Server installation CD-ROM using an appropriate application. Several CD-writing applications have this functionality.

Note: At the time this Redpaper was written, an official Microsoft Windows 2000 Server with integrated Service Pack 3 CD-ROM was not available. Check the World Wide Web for numerous procedures on how to create a bootable Windows 2000 Server CD-ROM with Service Pack 3.

5. Copy the boot sector to the machine with the CD-writer to the directory d:\images\bootsect\.

6. Make sure the following files are located in the d:\images\bootcd\ directory; the files not present should be copied to d:\images\bootcd directory from the original CD-ROM.
 - CDROM_NT.5
 - CDROM_IA.5, CDROM_IS.5 or CDROM_IP.5, depending on the version of Windows 2000 (Advanced, Standard or Professional).
 - CDROMSP3.TST
 - Optionally, copy the following files: Autorun.inf, Read1st.me, readme.doc and setup.exe from the original CD-ROM.
7. Use a CD-writer software capable of creating bootable CD-ROMs.
8. Use the following settings in your CD-writer application. Your settings might look slightly different or may not exist at all, depending on the CD-writer application used.
 - Set the load segments to 07C0.
 - Set the sector count to 4.
 - Set the emulation-mode to no emulation.
 - Enable Joliet extensions.
 - Set the CD format to mode 1.
 - Set the file/directory length to ISO level 2.
 - Set the file system to ISO9660.
 - Use **disc-at-once** as the recording method.
 - Select the Bootsector file located in d:\images\bootsect\.
9. Write the CD-R and finalize the disc.

5.2.2 Remote Installation Service (RIS)

When doing an RIS installation, you need a separate machine to install the operating system onto a blade server. Also, you need Service Pack 3 on that server to get support to use the RIS functionality with Windows 2000 Server or Windows 2000 Advanced Server. There are a few considerations to take into account for the RIS server:

- ▶ The RIS images cannot be located on the system drive.
- ▶ The file system has to be NTFS 5.
- ▶ The installation has to be run over the network via PXE-boot.
- ▶ Trying to boot the machine from a RIS-start disk will result in the following error.

Example 5-1 Error from RIS bootfloppy

Windows 2000 Remote Installation Boot Floppy

Error: Could not find a supported network card. The boot floppy currently supports a limited set of PCI based network cards for use with the Windows 2000 Remote Installation Service. Ensure this system contains one of the supported network cards and try the operation again. For assistance, contact your system administrator.

To create an RIS installation image of Windows 2000 Server, perform the following steps:

1. Download and extract the service pack with the /x option to d:\images\sp3. This will unpack the service pack without installing it.
2. Apply the service pack to the RIS-server and reboot by running the update.exe file located in d:\images\sp3\i386\update.

3. Copy the information from the installation directory on the CD-ROM onto the RIS-server using directory d:\images\w2kadv\i386.
4. Run the update.exe application from the unpacked service pack with the /s option located in d:\images\sp3\i386\update. The command should look like this:

```
update.exe /s:d:\images\w2kadv\.
```
5. Install the Remote installation service.
 - a. Click **Start -> Settings -> Control Panel**.
 - b. Click **Add/Remove Programs**.
 - c. Click **Add/Remove Windows Components**.
 - d. Scroll down to Remote Installation Services (Figure 5-2).

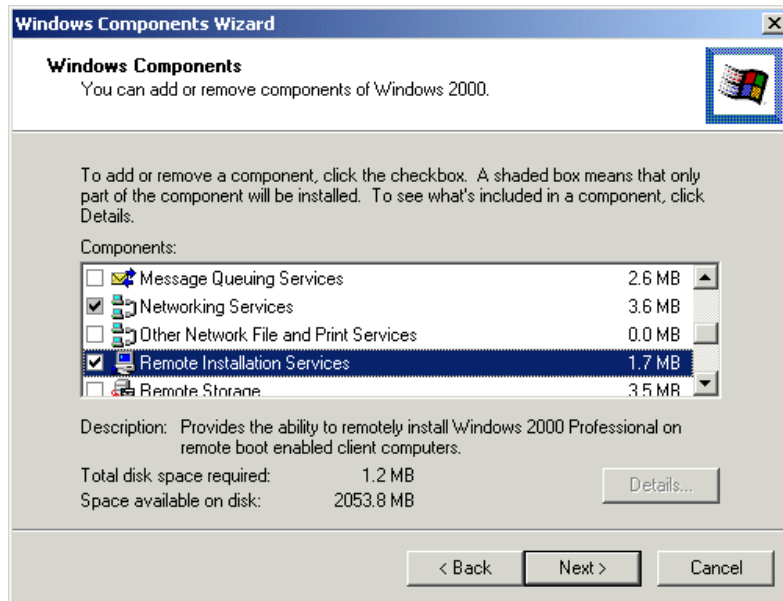


Figure 5-1 Installation of RIS onto a Windows 2000 Server

- e. Select **Remote Installation Services**.
 - f. Click **Next**.
 - g. Click **Finish**.
 - h. Restart the server.
6. Run **RISSETUP** to create an installable image of the operating system

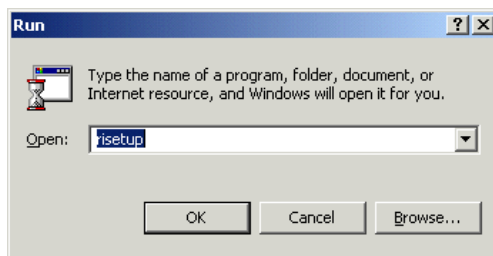


Figure 5-2 Starting Remote installation setup

7. Click **OK**.

8. Click **Next**.
9. Choose a folder for the RIS installation. It must be an NTFS volume and cannot be the system drive (for example, e:\remoteinstall).
10. Select **Respond to client computers requesting service** (Figure 5-3) and click **Next**.

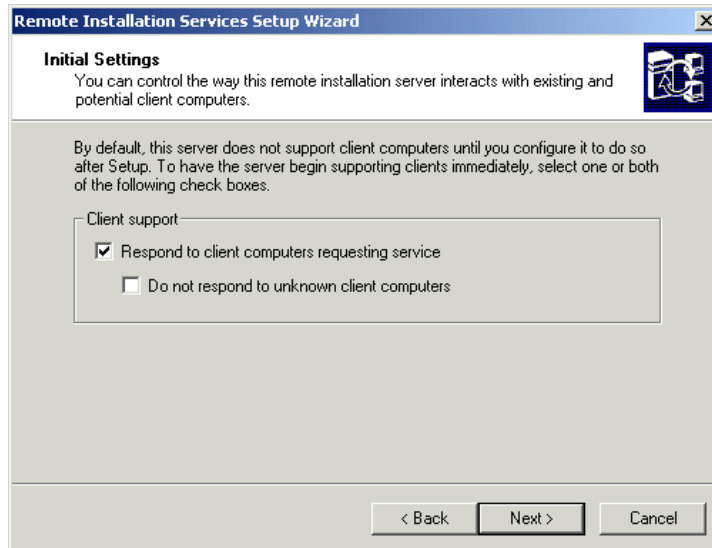


Figure 5-3 Settings for RIS-installation

11. Enter the directory where the i386 directory resides: d:\images\w2kad\i386.
12. Enter an appropriate name for the installation, for example, win2000.adv.
13. Click **Next -> Next -> Finish**.
14. Wait for the installation to complete and click **Finish**.
15. Download the driver for the Broadcom gigabit network interface and unpack it.
16. Copy the .inf file and the .sys file to the i386 directory located in d:\remoteinstall\setup\english\win2000.adv\i386.
17. Start a command prompt and restart the RIS-server (see Example 5-2):

```
net stop binlsvc
net start binlsvc
```

Example 5-2 Restarting the RIS service

Microsoft Window 2000 [Version 5.00.2195]
<C> Copyright 1985-2000 Microsoft Corp.

```
C:\>net stop binlsvc
The Boot Information Negotiation Layer service is stopping.
The Boot Information Negotiation Layer service was stopped successfully.
```

```
C:\>net start binlsvc
The Boot Information Negotiation Layer service is starting.
The Boot Information Negotiation Layer service was started successfully.
```

```
C:\>
```

18. Installing a blade server with this configuration will result in our having two unknown drivers in Device Manager which are the Broadcom drivers. To modify the installation to avoid this, see 5.3, “Modifying the installation to incorporate network drivers” on page 53.

19. Boot the blade server and press **F12** during startup. When the Broadcom network card prompts you, you will be able to choose **PXE-boot** (Example 5-3) . Booting from the network has to be enabled in the BIOS.

Example 5-3 Booting from the network

Broadcom UNDI, PXE-2.1 (build 082) v2.2.10
Copyright (C) 2000-2002 Broadcom Corporation
Copyright (C) 1997-2000 Intel Corporation
All rights reserved.

CLIENT MAC ADDR: 00 09 6B 00 12 60 GUID: 82A30F31-48B4-4A12-A86E-30C4F887C967
PXE-E51: No DHCP or proxyDHCP offers were received.

PXE-MOF: Exiting Broadcom PXE ROM.

Broadcom UNDI, PXE-2.1 (build 082) v2.2.10
Copyright (C) 2000-2002 Broadcom Corporation
Copyright (C) 1997-2000 Intel Corporation
All rights reserved.

CLIENT MAC ADDR: 00 09 6B 00 12 61 GUID: 82A30F31-48B4-4A12-A86E-30C4F887C967
CLIENT IP: 9.1.1.16 MASK: 255.0.0.0 DHCP IP: 9.1.1.1
GATEWAY IP: 9.1.1.11

Press F12 for network service boot

20. Choose the operating system you want to transfer to the server, if several RIS images have been created.
21. Enter the User ID/Password/Domain information.
22. A warning will be displayed indicating that you are about to delete everything on drive 1.

5.2.3 Remote Deployment Manager (RDM)

RDM is a manageability tool that runs on your IBM xSeries server. This beneficial tool simplifies and automates the deployment, redeployment, lower-level management and disposal of xSeries servers. RDM uses imaging technology from industry leader PowerQuest to provide high performance cloning, recovery, and re-provisioning solutions.

Because Remote Deployment Manager gains control of a PC before it starts its local operating system, many of the lower-level tasks that previously required a visit to each computer can now be performed over the network. Using Remote Deployment Manager, a network administrator can remotely flash a selected system's BIOS, modify CMOS settings, perform automated installation of Microsoft Windows 2000 and back up and recover the primary partition.

Remote Deployment Manager will save the user time wasted by running around from system to system. It helps make systems management simpler and less time-consuming.

When imaging a Windows 2000 Server, you need to consider the following:

- ▶ Which components will be deployed to the Windows 2000 Server?
- ▶ What tool will be utilized to image the server?
- ▶ What tool will be used to generate a new SID?

We utilized RDM to capture an image, then deployed the image to a blade server. The steps are outlined in the following sections.

Note: We disabled the RIS service to allow RDM to PXE boot the servers.

Capture an image

In this section, we describe the process used to capture an image of a server. Perform the following steps:

1. From the server which is having its image captured, create a sysprep directory and copy sysprep.exe and setupcl.exe. These files were extracted from the support/tools/deploy.cab file located on the Windows 2000 Server CD.
2. From the RDM console, click **Start**.
3. Run the sysprep.exe from the server which is being imaged; the server will reboot. The server must boot from the network adapter.
4. When the server has been recognized in RDM, it will appear in the unassigned systems section. Click **Stop**.
5. Drag and drop the server onto the Deploy Center in the Profiles and assigned systems section.
6. Enter the name of the profile, the type of Operation System, and then click **Next**.

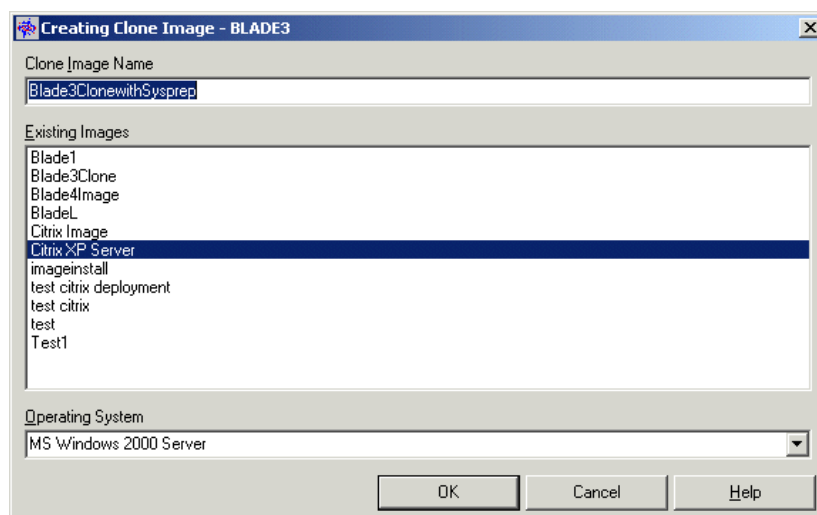


Figure 5-4 Creating clone profile

7. Click **Process** on the RDM console.
8. Reboot the server which is to be imaged.
9. A screen similar to the following will be displayed when the image is being captured.

```

T:\3600127F>ECHO Running GetDIP.LCI to create CLONE011.PQI from BLADE3. >> T:\3600127f.LOG

T:\3600127F>
T:\3600127F>NET USE M: \\director\PQImages
The command completed successfully.

T:\3600127F>NET USE N: \\director\PQID
The command completed successfully.

T:\3600127F>
T:\3600127F>N:

N:\>
N:\>IF EXIST PQImgCtr.EXE GOTO FULL

N:\>
N:\>PQIDplyZ /CMD=N:\PQSTORE.SCR /IMG=M:\CLONE011.PQI /ERR=T:\3600127f.ERR /LOG:
T:\3600127f.RUN
PQIDeployZ DOS (IBM Custom Edition)
Copyright (C) 1994-2001 PowerQuest Corporation
Build 024 on Sep 04, 2001 10:59:34

0:07   Store:0%   Copying data:0%   Checking user file entries:10%

```

Figure 5-5 Imaging Server screen

Deploy image

In this section, we describe the process used to deploy an image to a server. Perform the following steps:

1. From the RDM console, select **Profile**.

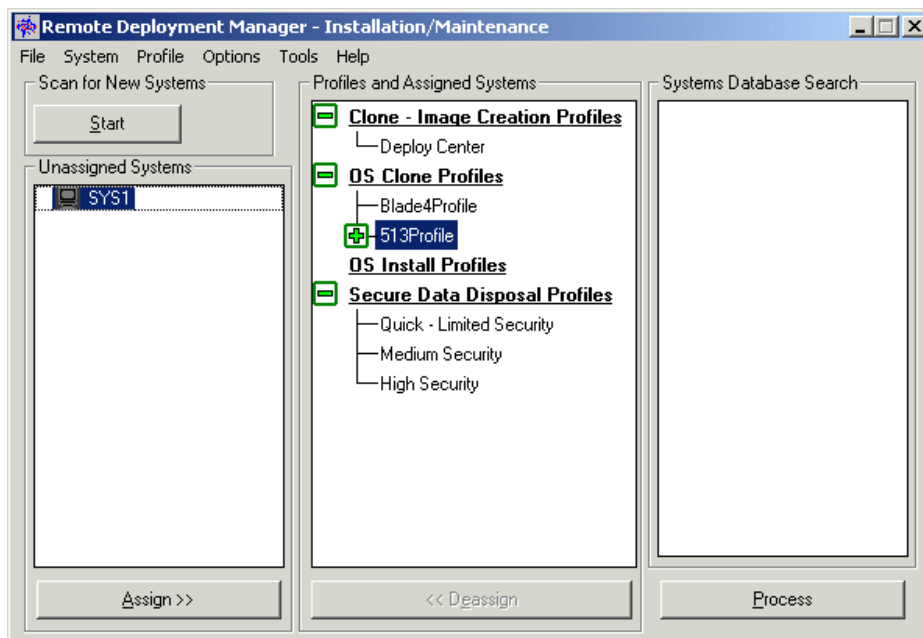


Figure 5-6 RDM Console

2. Create a new profile.



Figure 5-7 Create New Profile window

3. Select **Use the Profile Wizard** and click **OK**.

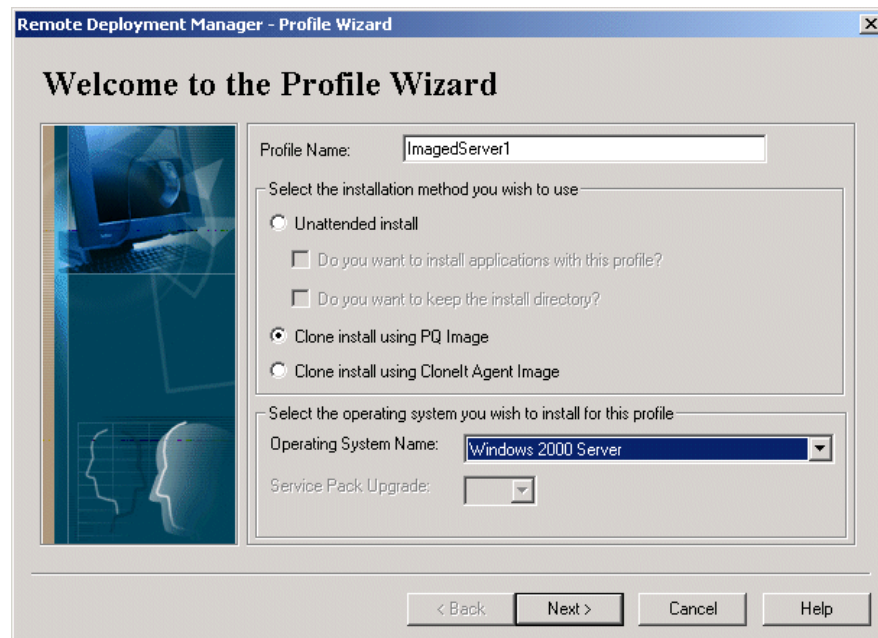
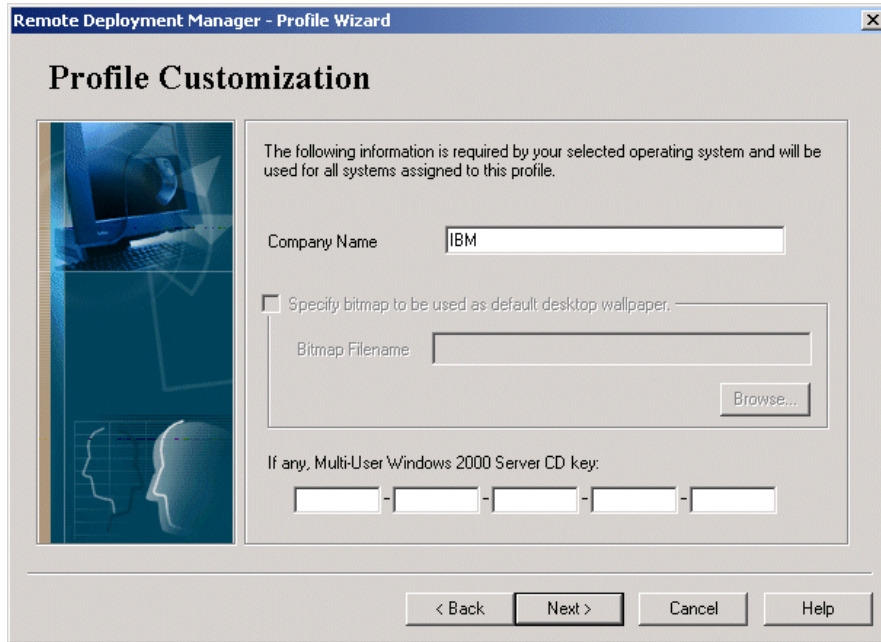


Figure 5-8 Profile Wizard

4. Enter the name of the Profile, select **Clone install using PQ image**, specify the operating system name and then click **Next**.
5. Select the image that was created earlier, then click **Next**.
6. There is no Raid adapter so click **Next**.
7. We did not install the power restore partition, so click **Next**.



Remote Deployment Manager - Profile Wizard

Profile Customization

The following information is required by your selected operating system and will be used for all systems assigned to this profile.

Company Name:

☐ Specify bitmap to be used as default desktop wallpaper.

Bitmap Filename:

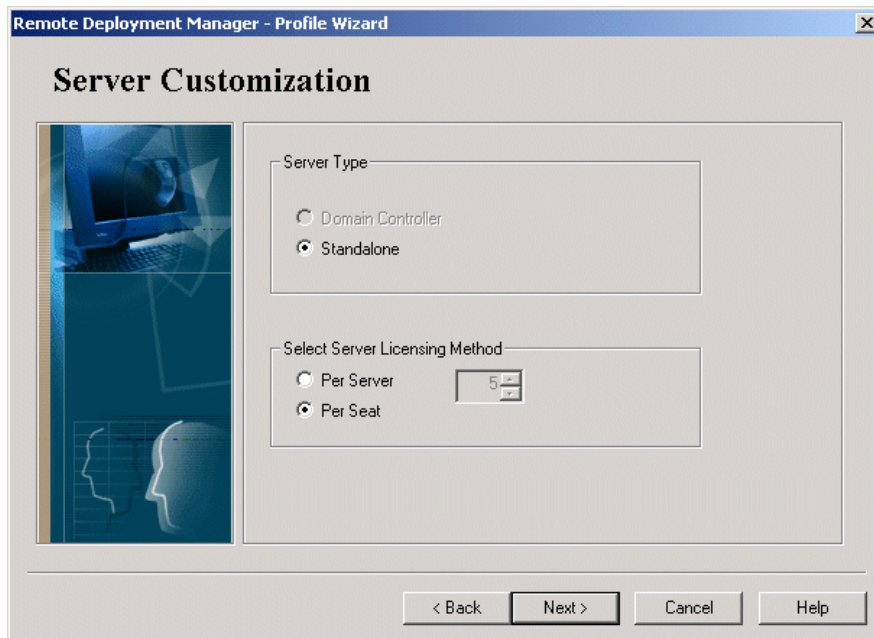
If any, Multi-User Windows 2000 Server CD key:

- - - -

< Back **Next >** Cancel Help

Figure 5-9 CD license key

8. Enter the company name and the Windows 2000 Server CD key and click **Next**.
9. Enter the region setting and click **Next**.



Remote Deployment Manager - Profile Wizard

Server Customization

Server Type

☐ Domain Controller

☒ Standalone

Select Server Licensing Method

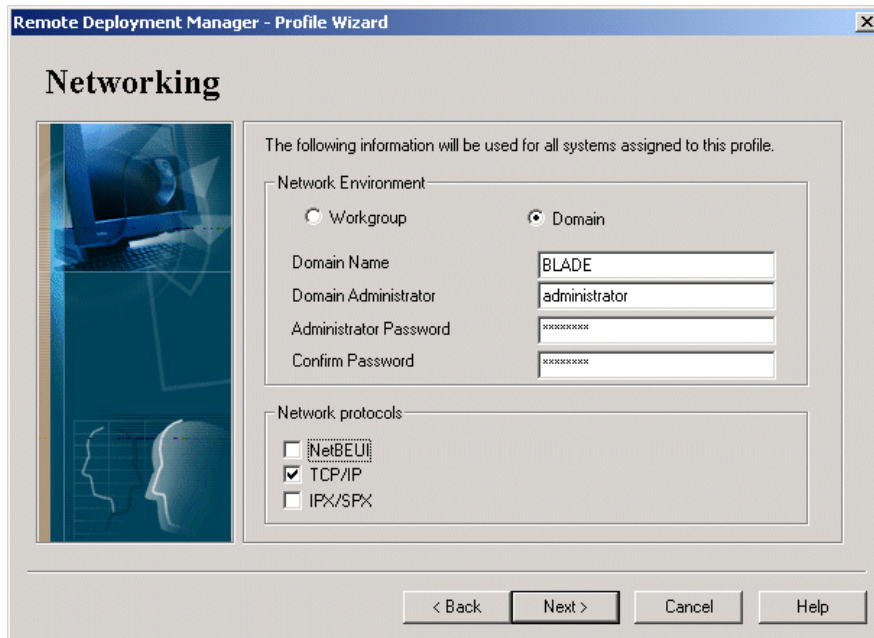
☐ Per Server

☒ Per Seat

< Back **Next >** Cancel Help

Figure 5-10 Server Customization window

10. In the Server Type section, we selected **Standalone**. For the Server Licensing method, select **Per Seat** and click **Next**.



Remote Deployment Manager - Profile Wizard

Networking

The following information will be used for all systems assigned to this profile.

Network Environment

☐ Workgroup
 ☒ Domain

Domain Name:
 Domain Administrator:
 Administrator Password:
 Confirm Password:

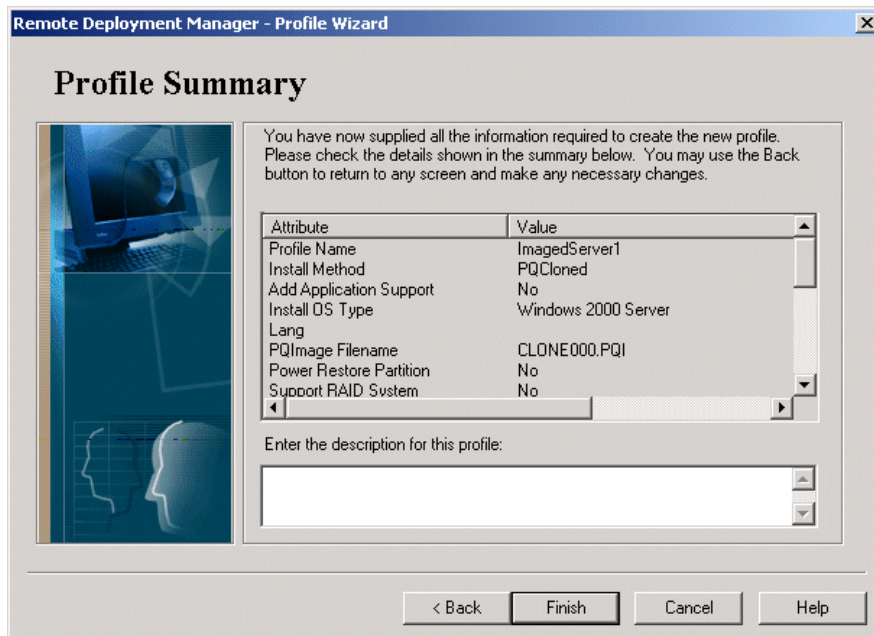
Network protocols

☐ NetBEUI
☒ TCP/IP
☐ IPX/SPX

< Back Next > Cancel Help

Figure 5-11 Domain and protocol details

11. Specify whether the server will belong to a domain or a workgroup. In our example, we selected **Domain** and typed BLADE in the Domain Name field. In the Domain Administrator field, we typed administrator. Specify the protocol; in our example, we selected **TCP/IP**. Click **Next**.
12. Specify how you want the IP address to be configured. We specified TCP/IP to use DHCP; click **Next**.



Remote Deployment Manager - Profile Wizard

Profile Summary

You have now supplied all the information required to create the new profile. Please check the details shown in the summary below. You may use the Back button to return to any screen and make any necessary changes.

Attribute	Value
Profile Name	ImagedServer1
Install Method	PQCloned
Add Application Support	No
Install OS Type	Windows 2000 Server
Lang	
PQImage Filename	CLONE000.PQI
Power Restore Partition	No
Support RAID System	No

Enter the description for this profile:

< Back Finish Cancel Help

Figure 5-12 Profile Summary

13. Enter a description of the profile and click **Finish**.

14. Drag and drop the server to the new profile and click **Next**.

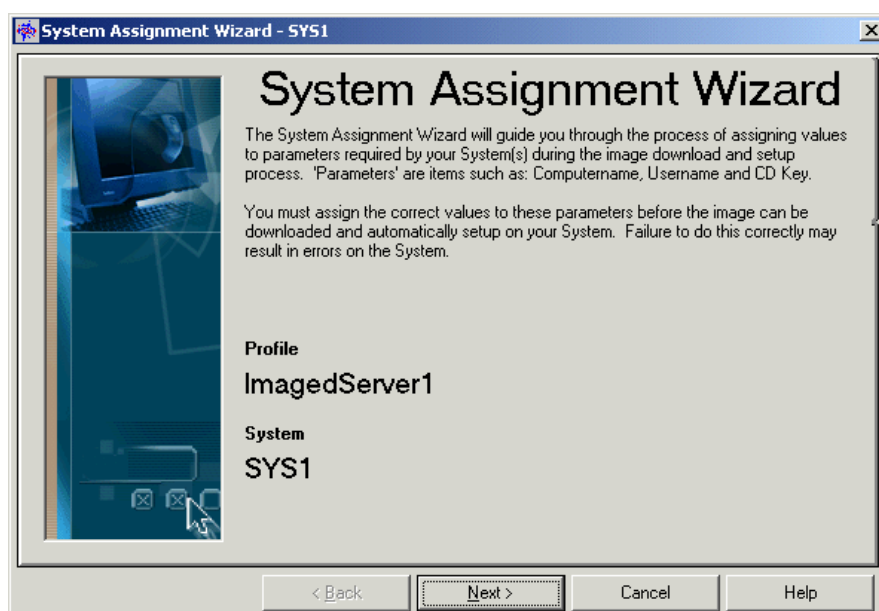


Figure 5-13 System Assignment Wizard

15. We did not add any custom values, therefore click **Next**.



Figure 5-14 License key

16. Enter the first section of the license key, then click **Next**.

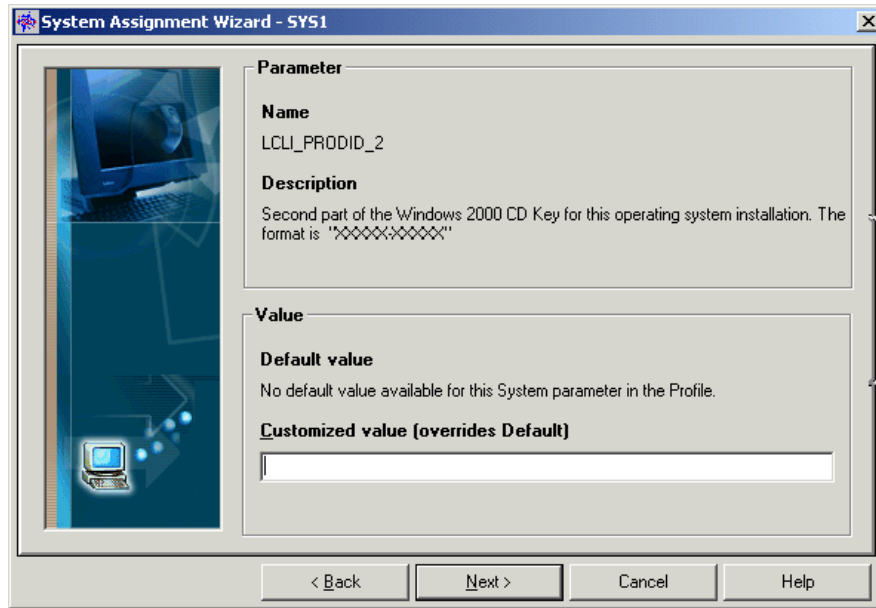


Figure 5-15 Section half of the license key

17. Enter the second section of the license key, then click **Next**.

18. Click **Next**.

19. Click **Next**. The message shown in Figure 5-16 appears.

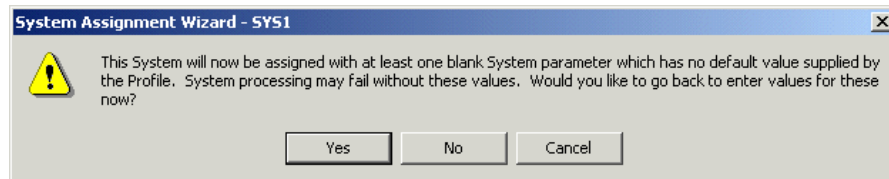


Figure 5-16 System assignment wizard

20. Click **No**. You will see a window similar to the one shown in Figure 5-17.

f

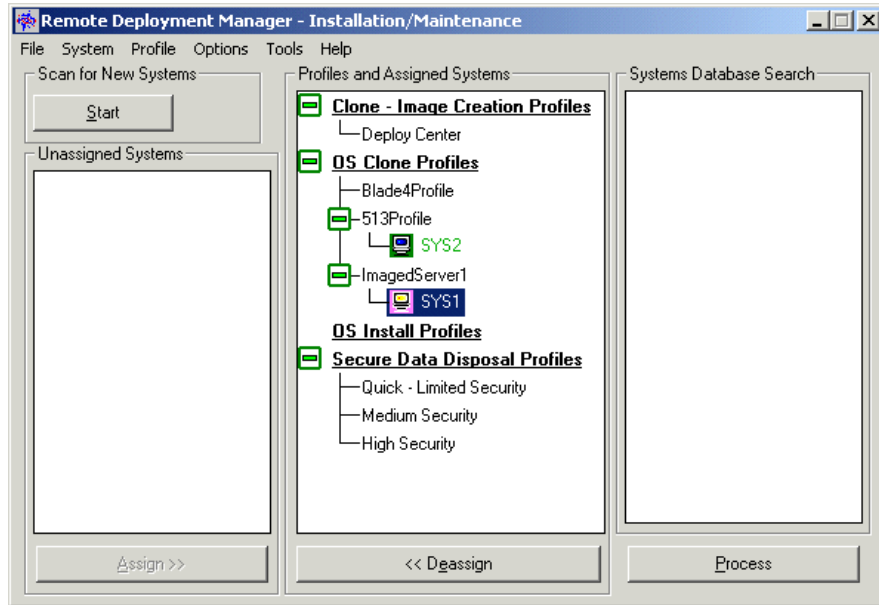


Figure 5-17 Executing the deployment

21. Click **Process**.

22. On the Server which is receiving the image, you will see the following content.

Example 5-4 Imaging deploying

```
Broadcom UNDI, PXE-2.1 (build 082)v2.2.10
Copyright (C) 2000-2002 Broadcom Corporation
Copyright (C) 1997-2000 Intel Corporation
All rights reserved.
```

```
CLIENT MAC ADDR: 00 09 6B 00 12 7D  GUID: 163AE2D8-FA1D-B211-829B-20BEF58548A6
PXE-E51: No DHCP or proxyDHCP offers were received.
```

```
PXE-M0F: Exiting Broadcom PXE ROM.
```

```
Broadcom UNDI, PXE-2.1 (build 002) v2.2.10
Copyright (C) 2000-2002 Broadcom Corporation
Copyright (C) 1997-2000 Intel Corporation
All rights reserved.
```

```
CLIENT MAC ADDR: 00 09 6B 00 12 7F  GUID: 163AE2D8-FA1D-B211-829B-20BEF58548A6
CLIENT IP: 9.1.1.17  MASK: 255.0.0.0
DHCP IP: 9.1.1.1  PROXY IP: 9.1.1.11
GATEWAY IP: 9.1.1.11
```

```
Auto-select:
  Remote Deployment Manager
UD 9.1.1.11.\
```

5.3 Modifying the installation to incorporate network drivers

The Broadcom gigabit ethernet adapter is not included on the Windows 2000 installation, which means that the installed server will have two unknown devices, one for each network interface. To avoid this, you need to modify the installation file `risstndrd.sif` in the RIS installation.

RIS-based installation

Below are the steps we followed to update the Windows 2000 Service Pack 3 RIS installation with the Broadcom drivers included.

1. Download and unpack the Broadcom driver from the IBM home page.
2. Copy *.inf and *.sys from the unpacked Broadcom driver directory to the `d:\remoteinstall\setup\english\win2000.ad\i386` directory.
3. Modify the [unattended] section of `risstndrd.sif` located in `d:\remoteinstall\setup\english\win2000.ad\i386\templates:`
 - Add the line: `OemPreinstall = no`
 - Add the line: `OemPnpDriversPath = “\pnprvs”`
4. Copy all the information from the unpacked Broadcom directory to `d:\remoteinstall\setup\english\win2000.ad\%oem%\$1\pnprvs`.
5. Restart the RIS server by starting a command prompt. Click **Start -> Run** and type `cmd` in the window. Click **OK -> Run**. Next, execute the following commands (see Example 5-2).
 - `net stop binlsvc`
 - `net start binlsvc`

5.4 Other hardware considerations

The blade servers can be fitted with either a SCSI adapter or a Fibre adapter. The SCSI adapter is a LSI 53C1020 SCSI controller and the Fibre card is a Qlogic 2300 HBA. You will need drivers for these adapters when you install the operating system. Download them from the IBM Web site:

<http://www.pc.ibm.com/support>

If these drivers are not available at the previous site, go to:

http://www.qlogic.com/support/drivers_software.asp (FC Card)

<http://www.lsillogic.com/support/index.html> (LSI SCSI card)

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this Redpaper.

IBM Redbooks

For information on ordering these publications, see “How to get IBM Redbooks” on page 56.

- ▶ *The Cutting Edge: IBM eServer BladeCenter*, REDP3581
- ▶ *Deploying Citrix MetaFrame on IBM eServer BladeCenter*, REDP3583
- ▶ *Deploying Lotus Domino on IBM eServer BladeCenter*, REDP3584
- ▶ *Deploying Microsoft Exchange on IBM eServer BladeCenter*, REDP3585
- ▶ *Implementing IBM Director Management Solutions*, SG24-6188
- ▶ *Integrating IBM Director with Enterprise Management Solutions*, SG24-5388

Referenced Web sites

These Web sites are also relevant as further information sources:

- ▶ IBM sites
 - http://www.pc.ibm.com/us/eserver/xseries/bladecenter_family.html (Main support)
- ▶ Systems management
 - http://www.research.ibm.com/high_avail96/home.html (High Availability systems)
 - <http://w3c102.southbury.ibm.com/services/its/ism/> (IBM Global Services and Systems Management Services)
 - http://www-1.ibm.com/servers/eserver/xseries/systems_management/xseries_sm.html (xSeries Systems Management)
- ▶ Microsoft
 - <http://www.microsoft.com> (Main support)
 - <http://www.microsoft.com/windows2000/technologies/terminal/default.asp> (Terminal Services)
- ▶ DABCC.COM
- ▶ <http://www.dabcc.com> (NFuse and Project in a Box)

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IBM BladeCenter Systems Management



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This Redpaper provides an overview of the IBM eServer BladeCenter management tools. In it, we describe the management module integrated Web GUI, including details on connecting and accessing the Web GUI. We provide an explanation of the GUI menus and details and describe how to navigate within this tool.

In addition, we discuss management of the IBM eServer BladeCenter with IBM Director V4 and its new features.

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