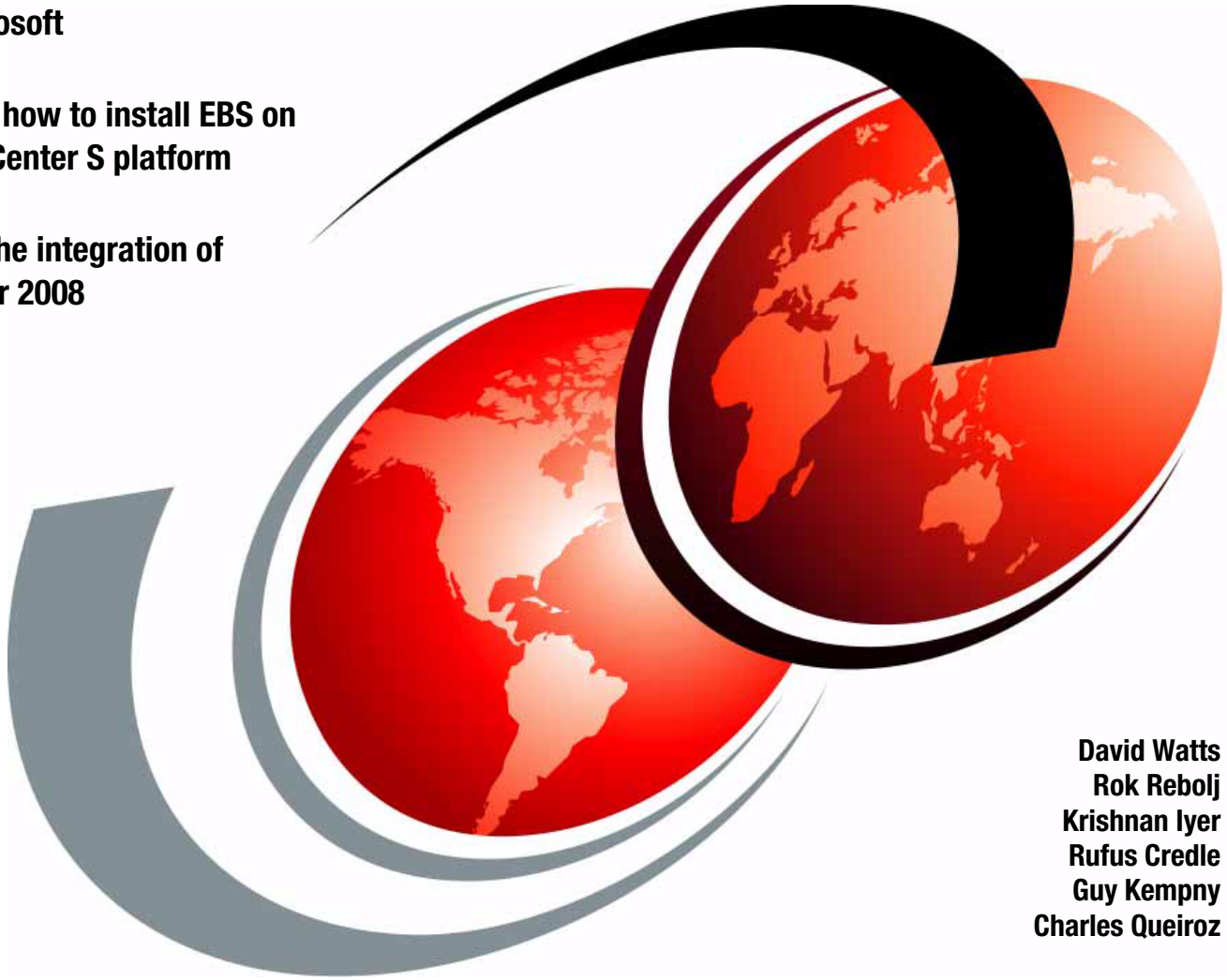
IBM

Implementing Windows Essential Business Server on IBM BladeCenter S

- Introduces the new server offering from Microsoft
- Describes how to install EBS on the BladeCenter S platform
- Includes the integration of SQL Server 2008



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International Technical Support Organization

Implementing Windows Essential Business Server on IBM BladeCenter S

May 2009

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

First Edition (May 2009)

This edition applies to Microsoft® Windows Essential Business Server 2008 and IBM® BladeCenter S.

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Contents

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Preface

Medium-sized businesses today require the same level of IT services as enterprises, but do not have the IT departments available in enterprise environments. In these mid-size businesses, it is usually a single technician or a small group with general IT knowledge taking care of the network environment. Often, this group lacks the time and specialist knowledge required for planning and implementing a complete environment.

The new Microsoft® Windows Essential Business Server 2008 solution is targeted at businesses without enterprise-size resources. It enables them to use the latest technologies designed for the enterprise. Windows Essential Business Server is a solution that tightly integrates a messaging server, a management server, and a security server based on the Microsoft Windows® Server 2008 family. This solution includes the integration of Microsoft SQL.

IBM® BladeCenter® is a hardware platform that is based upon a modular chassis design. The platform is a radical departure from existing server architectures in that it uses universal components, shared with servers contained with a chassis, that can be upgraded or replaced over time. Through the use of blade-style server slots and I/O expansion bays, servers within the chassis can connect to a vast array of networking and storage options.

The IBM BladeCenter S is the latest addition to the IBM BladeCenter family. It is unique from the rest of the BladeCenter family, because it is specifically designed to be used outside of the datacenter. It is designed to operate in the office environment, operating in either a 110 V or 220 V AC power environment. It includes highly energy-efficient power supplies, new integrated storage, and the most advanced management capabilities available.

This IBM Redpaper™ is intended to provide planning recommendations and installation instructions to deploy the Microsoft Essential Business Server 2008 on IBM BladeCenter S infrastructure.

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

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Overview

Medium-sized businesses today require the same level of IT services as enterprises, but do not have the IT department resources found in enterprise environments. In these mid-size businesses, it is usually a single technician or a small group with general IT knowledge taking care of the network environment. These teams often lack the time and specialist knowledge required for planning and implementing a complete environment. The new Windows Essential Business Server 2008 solution is targeted at businesses without enterprise-size resources. It enables them to use the latest technologies designed for the enterprise.

This IBM Redbooks publication provides prescriptive guidance on getting a Windows Essential Business Server solution up and running on the IBM BladeCenter S platform. This overview chapter will help set the context of the software solutions offered by Microsoft and the hardware solutions offered by IBM. It will help you understand where Windows Essential Business Server fits in the Windows Essential Solution Server space and why you should choose to run Windows Essential Business Server in your network. It will also walk through specific hardware configurations for Windows Essential Business Server and help you understand some of the licensing solution pathways that exist, if you own another Windows server family product (such as Windows Small Business Server).

The overview chapter is followed by an examination of the configuration of the BladeCenter S in Chapter 2, “Configuration” on page 21. Chapter 3, “Windows Essential Business Server preinstallation wizards” on page 67, and Chapter 4, “Windows Essential Business Server installation” on page 85 help you prepare, plan, and walk through an installation of Windows Essential Business Server. Chapter 5, “Postinstallation steps” on page 133 identifies the steps to finalize the installation of Windows Essential Business Server. Chapter 6, “Database Server setup” on page 135 describes the installation steps to install and configure a Microsoft SQL database environment to support the Windows Essential Business Server solution.

Topics in this chapter are as follows:

1.1 Understanding the Windows Essential Server solutions

Today's small and midsize businesses have many of the same needs as large companies: security, up-to-date technology, and remote capabilities. Typically, enterprise products are too complex and costly for smaller entities, and require large staffs and expertise to manage them. Windows Essential Server Solutions is a family of integrated server software designed to help overcome these challenges. Based on innovations that simplify the deployment, ongoing management, and use of server technology, Windows Essential Server Solutions provide an integrated IT infrastructure, saving you time and money and significantly increasing productivity.

Windows Essential Server Solutions is comprised of two products:

- Windows Small Business Server
- Windows Essential Business Server

The benefits of Windows Essential Server Solutions is outlined in Table 1-1.

Table 1-1 Business needs solved by Windows Essential Server Solution Family

Business need	Benefits of solution
Designed and priced for small and midsized businesses	► Simplified purchasing and licensing ► Standardized, extensively platform ideal for line of business application ► Integrated technologies configured in best practice deployment
Less complexity and more control	► Fewer IT fires and more predictability ► Streamlined setup, deployment, maintenance, and management ► Simplified managment with a unified administration console
Drive business growth	► Freedom to work from virtually anywhere with an Internet-connected PC or Windows Mobile® phone ► Reliable, scalable platform to help enable growth and lessen downtime ► Cost savings compared to standalone products for lower cost of acquisition

1.1.1 Features of Windows Essential Business Server

Windows Essential Business Server 2008 is an infrastructure solution designed specifically for the needs of midsize businesses with up to 300 computers. It simplifies your environment by bringing together Microsoft product technologies into a single solution with a fully integrated installation and administration experience.

Windows Essential Business Server eliminates guesswork by offering a standardized configuration that is preconfigured and installed according to best practices. You can have confidence in a more secure and reliable environment that adheres to the suggested guidelines for networking, security, collaboration, and remote access.

The benefits of Windows Essential Business Server include the following:

- Designed and priced for midsize businesses
  - Simplify your daily activities with a unified administration console that gives you a single point of access to your IT environment.
  - Be productive while working both in and away from the office with remote access, antispam and antivirus protection, and improved messaging technologies.
  - Significant cost savings compared to stand-alone products.
- Less complexity, more control
  - Automate your routine tasks and proactively manage your IT environment from a single point of access.
  - Reduce installation steps from days to hours with an integrated setup that includes workloads optimized out of the box for enhanced security, performance, and reliability.
  - Simplify your licensing with a single server license and client access for all included products.
- Integrated and predictable platform
  - Easy plug-in of your line-of-business applications. View, deploy, manage, and administer your third-party applications from one starting point.
  - Reduce your vulnerabilities that create havoc with an infrastructure set up to Microsoft best practices.
  - Proactively manage and address security concerns from a dedicated security page in the administration console.

1.1.2 Comparing Windows Essential Business Server 2008 with Windows Small Business Server 2008

Windows Small Business Server 2008 is an all-in-one server solution designed to help you keep your data more secure and your company more productive. Designed for companies with up to 75 computers, it simplifies server management by bringing together and optimizing key business technologies into a single product. It provides many of the features used by larger companies (such as e-mail, Internet connectivity, internal Web sites, remote access, support for mobile devices, file and printer sharing, backup, and restore) at one affordable price.

With its remote access capabilities, you can respond to customers and vendors faster and more professionally. You can be confident that your data is more secure with superior data and system protection. Windows Small Business Server gives you the tools you need to help grow your business. Figure 1-1 on page 4 illustrates the difference between Windows Small Business Server and Windows Essential Business Server solutions. In Windows Small Business Server standard, all three roles are on one server. In the Windows Essential Business Server standard each role has been given its own separate server.

Note the size recommendation of Windows Small Business Server for 5–75 users and Windows Essential Business Server at 25–300 users.

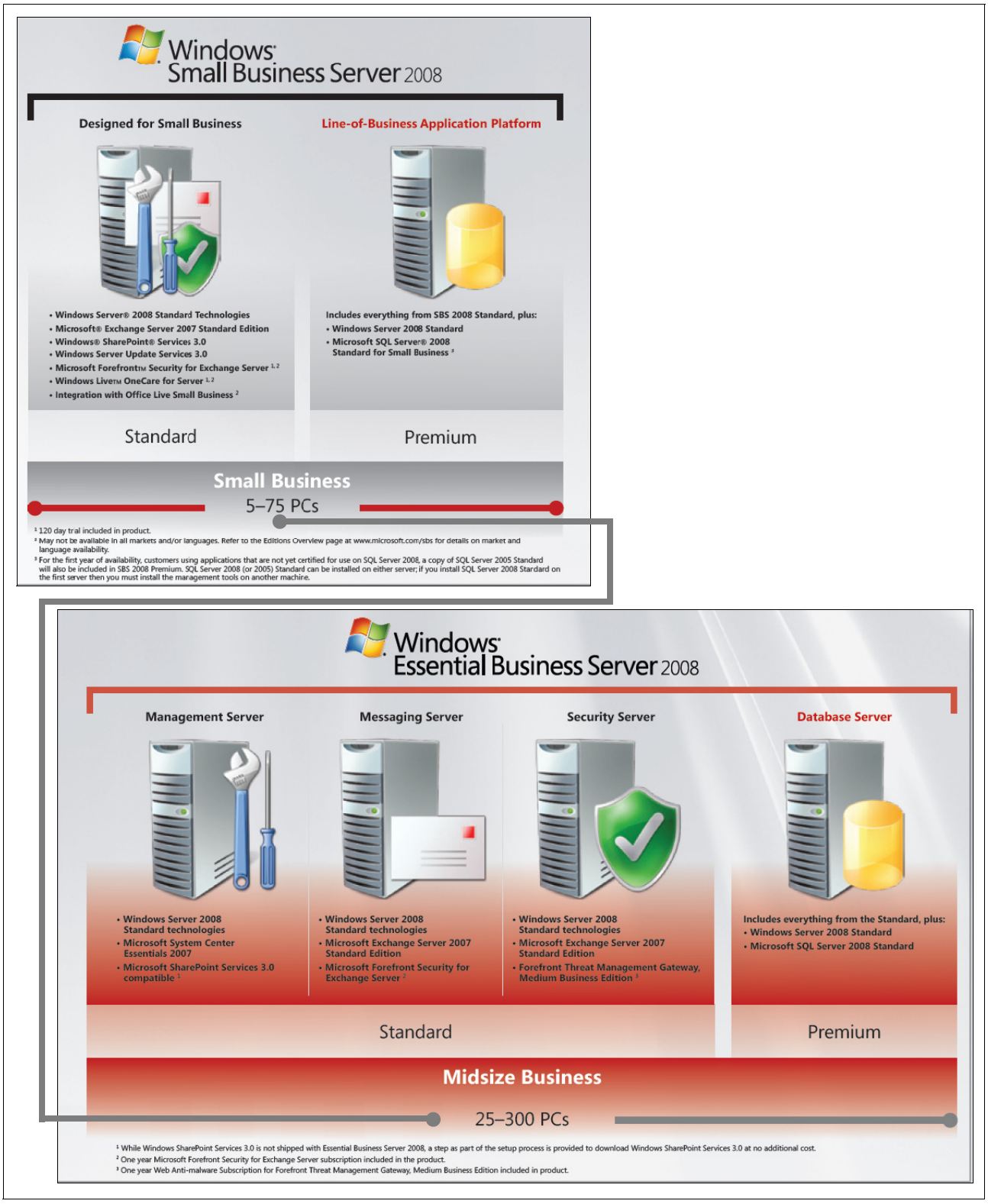

Figure 1-1 Comparing Windows Small Business Server 2008 and Windows Essential Business Server 2008

Table 1-2 on page 5 lists the specific scale differences between Windows Small Business Server and Windows Essential Business Server. Use this table to decide which product is most applicable to your situation.

Table 1-2 Comparing Windows Small Business Server 2008 and Windows Essential Business Server 2008

Solution	Typical customer scenarios	Typical workloads	Benefits
Windows Small Business Server 2008 (Designed for up to 75 PCs)	► Upgrade from peer to peer network ► Need a more reliable e-mail solution ► Need right server solution to build business capacity ► No IT staff	► File/print ► Messaging ► Security ► Remote access ► Mobility ► Branch office connectivity ► Collaboration	► Reliable and predictable IT foundation ► Affordable and designed to help small businesses safeguard data and grow business capacity ► Easy to install and manage
Windows Essential Business Server 2008 (Designed for up to 300 PCs)	► Need to standardize and consolidate disparate IT infrastructure ► Companies on a high growth trajectory ► Outgrown Windows Small Business Server 2008 ► On-site IT staff	All of the above, and: ► Integrated edge security ► Management of infrastructure and devices ► Extensible platform for third-party applications	► Reliable and predictable IT foundation ► Affordable with simplified licensing ► Increased efficiency ► More control over IT environment ► Supports more users
Comparable Solution Built on Stand-alone Product (For companies with more than 300 PCs)	Larger companies with complex IT environments	► Large-scale identity and access management ► Advanced data storage and analysis	► Maximum control over IT environment ► Unlimited scalability

Windows Essential Business Server 2008 has the following features:

- Affordable, integrated solution
  - Share resources and equipment, such as Internet access, printers, and fax machines, to get the most value from your technology investments.
  - As your business needs change, Windows Essential Business Server can change with you by easily adding users, servers, and applications, or expand into other Microsoft technologies.
  - Work more efficiently and add more value to your business with an integrated administrative console and easy interfaces to get control of your data, PCs, and network.
- Business data protection
  - Back up your PCs and servers in your network automatically, and recover accidentally deleted files.
  - Use antivirus and antispam protection to help protect your information from malicious attacks, viruses, and spam.
  - Keep your computers and servers current and your network healthy and up-to-date with the latest updates.
  - Control your business information with easy-to-read *green check* reports alerting you on the health and security of your Microsoft software, PC, and server status.

- Business capacity growth
  - Have remote access to your business desktop (including e-mail, files, business applications, and more).
  - Create an internal company Web site to share, update, and access documents and collaborate on projects.
  - Improve day-to-day efficiency with a central repository for storing and sharing information.
  - Connect with customers, vendors, and suppliers easily and professionally, even when you are away from the office.

For information regarding the specific licenses by the Windows Small Business Server 2008, visit the following Web page:

http://www.microsoft.com/sbs/en/us/default.aspx

For information regarding the specific licenses by the Windows Essential Business Server 2008, visit the following Web page:

http://www.microsoft.com/ebs/en/us/default.aspx

1.1.3 Migrating from your current small business solutions

Microsoft recognizes a need to migrate from Windows Small Business Server for small business customers to Windows Essential Business Server for its mid-sized business customers.

The path to do so can be a move within the Windows Essential Server Solutions (WESS) family of products or to standalone server products. Solutions Pathway offers a tiered discount that will be applicable to all mobility scenarios (for example, into, within, and out of the WESS family of products). Additional details can be found at the following Web page:

http://www.microsoft.com/wess/en/us/solutions-pathway-overview.aspx

1.2 Top ten reasons to use Windows Essential Business Server

Windows Essential Business Server 2008 is an enterprise-class server solution designed and priced for midsize businesses. Windows Essential Business Server 2008 provides a centralized administration console to manage an integrated IT infrastructure with the latest versions of management, messaging, and security server technologies. Windows Essential Business Server 2008 turns your IT infrastructure into a strategic asset, boosting your productivity and growth.

1. Designed for midsize businesses

   Windows Essential Business Server 2008 makes it easy to select the software components required for your network. It brings together the Microsoft product technologies that midsized businesses need most into a single solution with additional features and capabilities unique to Windows Essential Business Server. These technologies are integrated into one product making Windows Essential Business Server easy to install and manage.

2. Priced for midsize businesses

   Windows Essential Business Server 2008 integrates product technologies at a significantly reduced cost compared to standalone products. Several flexible licensing options allow for complete scalability of your cost in relation to your usage, including

various Client Access License (CAL) quantities and version suites to suit your specific needs.

3. Simplified set up and management

   Windows Essential Business Server 2008 simplifies your IT environment and reduces the complexity of implementing and managing disparate software applications. The administration console provides a centralized view of your network and its status, so you can easily manage your IT infrastructure and focus on business.

4. Administration console for ease of management

   Simplify routine tasks with best practices and proactively manage your IT environment with the administration console, which centrally monitors and manages your IT infrastructure (including PCs, servers and devices). Software, including third-party applications, can be integrated into the administration console. Patching, software provisioning, remote diagnosis, and troubleshooting can all be done through the management console. Common tasks are streamlined through wizards.

5. Improved IT and user productivity

   The administration console offers up-to-date IT information in a unified view to help you keep systems up and running, proactively managing your IT before a problem occurs. Windows Essential Business Server 2008 enables employees to be productive locally and remotely.

6. Streamlines planning, deployment, and configuration

   Windows Essential Business Server 2008 streamlines the planning and deployment. This ensures a quick and reliable operational infrastructure deployment. Integrated setup reduces installation steps from days to hours with workloads optimized out-of-the-box for security, performance, and reliability. Built-in migration and planning tools ensure core workloads are migrated intact and business continuity is maintained. Planning worksheets, centralized planning tools, and best practices configuration are also available.

7. Simplifies IT purchasing and licensing

   The integrated solution requires only a single CAL for all Windows Essential Business Server 2008 technologies. Licenses are managed through the administration console. This includes license ordering, assignment and reassignment, enforcement, monitoring, activation, purchasing, and the ability to back up and restore the licensing database.

8. Optimized for confidence and security

   Windows Essential Business Server 2008 integrates multi-level security for a secure and reliable environment. It adheres to the suggested guidelines and best practices for networking, security, collaboration, and remote access.

9. Extensible platform for third-party applications

   Windows Essential Business Server 2008 is extensible, for easy integration of other applications (such as line-of-business applications). View, deploy, manage, and administer third-party applications from one starting point.

10. Tools for proactive security management

    Windows Essential Business Server 2008 provides a consolidated view of your security state across the network so you can proactively manage and address concerns. Anti-spam and multiple industry-leading anti-virus engines help protect you from threats. All events are logged to a separate database for reporting and monitoring. Windows Essential Business Server 2008 simplifies patching by giving you control over desktop, server, and application patch levels.

1.3 Windows Essential Business Server overview

Windows Essential Business Server is a solution that tightly integrates the following infrastructure servers from Microsoft Windows Server 2008 family:

- Management Server

  Management Server uses the features of Microsoft Windows Server 2008 Standard, with Microsoft System Center Essentials 2007 functionality, and runs key roles and services in the network.

- Security Server

  Security Server manages all security aspects using the Forefront Threat Management Gateway Medium Business Edition (that builds on top of ISA Server functionality).

- Messaging Server

  Messaging Server provides messaging functionality through Microsoft Exchange Server 2007.

Two Windows Essential Business Server versions are available:

- Standard

  The standard version is made up of the above three servers,

- Premium

  The premium version includes a Database (SQL2008) Server in addition to the three servers. The Microsoft SQL Server Add-in for Windows Essential Business Server 2008 is available at the following Web page:

  http://go.microsoft.com/fwlink/?LinkID=132717

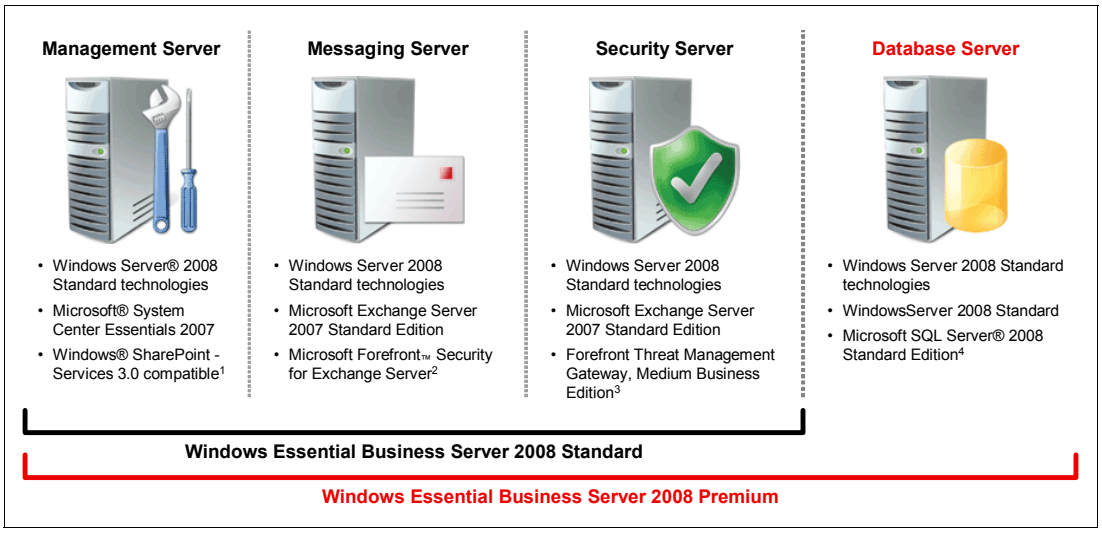

Figure 1-2 Two Windows Essential Business Server versions with corresponding components

The Windows Essential Business Server product is targeted at customer environments with up to 300 user accounts or client computers. To ensure adequate performance for computing workloads of such environment, the three infrastructure roles are deployed across three physical servers.

Integrated deployment is used to plan for and install all three servers in specific order. During the process, wizards check servers, network compatibility, and health, and provide tools to plan the environment to be installed. The deployment process includes the following steps:

1. Windows Essential Business Server Preparation Wizard checks existing system health and compatibility.
2. Windows Essential Business Server Planning Wizard documents existing network settings and provides planning choices to include Windows Essential Business Server in the existing network.
3. Windows Essential Business Server Installation Wizard runs on each of the three servers, applying the information supplied in the planning wizard.
4. A set of guided configuration and migration steps complete the deployment.

For more information about deployment and installation: For detailed descriptions of the preparation and planning wizards, see Chapter 3, “Windows Essential Business Server preinstallation wizards” on page 67. For a description of installation steps, see Chapter 4, “Windows Essential Business Server installation” on page 85.

After deployment, the Windows Essential Business Server Administration Console enables the system administrator to monitor every asset in the network. Different tabs on the administration console present users, groups, computers, and their security, licensing, or usage properties.

Integrated Licensing subsystem uses CALs to enable users access to all Windows Essential Business Server services. If certain users require access to the Database (SQL) Server, Premium CALs need to be added for those users.

As the administration console is extensible, Independent Software Vendors (ISVs) can provide Windows Essential Business Server-aware solutions through custom add-ins.

1.4 Server requirements for Windows Essential Business Server

Table 1-3 displays the minimum hardware requirements that must be met by the servers where Windows Essential Business Server will be installed:

Table 1-3 Minimum hardware requirements

Hardware	Minimum Requirement
Physical servers	Three
Processor architecture	64-bit (x64)
Processor type	Single Core processor with a 2.5 GHz minimum clock speed Multi Core processor with a 1.5 GHz minimum clock speed Multiple physical processors with a 1.5 GHz minimum clock speed
System memory	Management Server 4 GB Security Server 2 GB Messaging Server 4 GB

Hardware	Minimum Requirement	
Storage capacity	Server | Partition	Minimum Partition Size
	Management Server | system volume	50 GB
	Management Server | data volume	30 GB
	Security Server | system volume	50 GB
	Security Server | data volume	10 GB
	Messaging Server | system volume	50 GB
	Messaging Server | data volume	20 GB
Network adapters	One for the Management Server One for the Messaging Server Two for the Security Server	
DVD drive	One per server (can be USB external DVD drive, or DVD drive in the BladeCenter Media Tray)	

When determining the appropriate disk space for your application data partition, consider all aspects of storage needs, including the Exchange Server 2007 databases, the redirection of a user's folders, and other application data. Figure 1-3 is a sample server disk drive configuration.

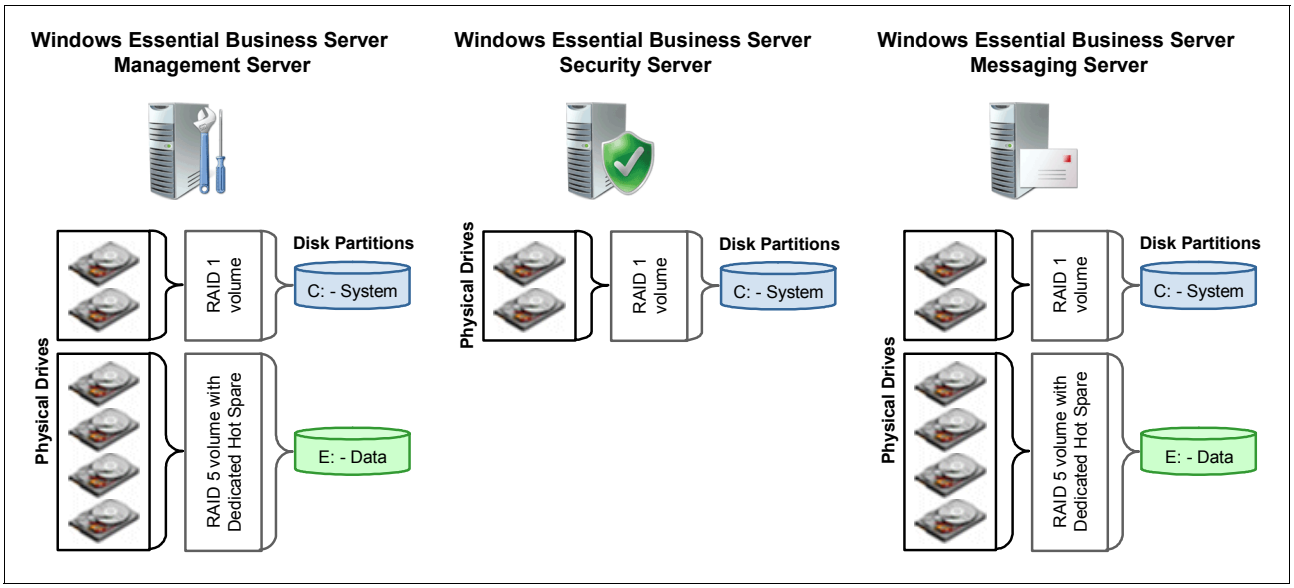

Figure 1-3 Windows Essential Business Server servers disk drives configuration example

1.5 IBM BladeCenter S overview

The BladeCenter S is the latest addition to the IBM BladeCenter family. It is unique from the rest of the BladeCenter family because it is specifically designed to be used outside of the datacenter.

The chassis brings with it years of rigorously tested and datacenter-proven blade technology, highly energy-efficient power supplies capable of running on 110 V or 220 V power, integrated storage, and an advanced management module with the most sophisticated systems management capabilities available.

The BladeCenter S is the perfect complement to the BladeCenter family, and the ideal solution for offices where the controlled environmentals of a formal datacenter might not be possible.

The key features on the front of the BladeCenter S are indicated in Figure 1-4.

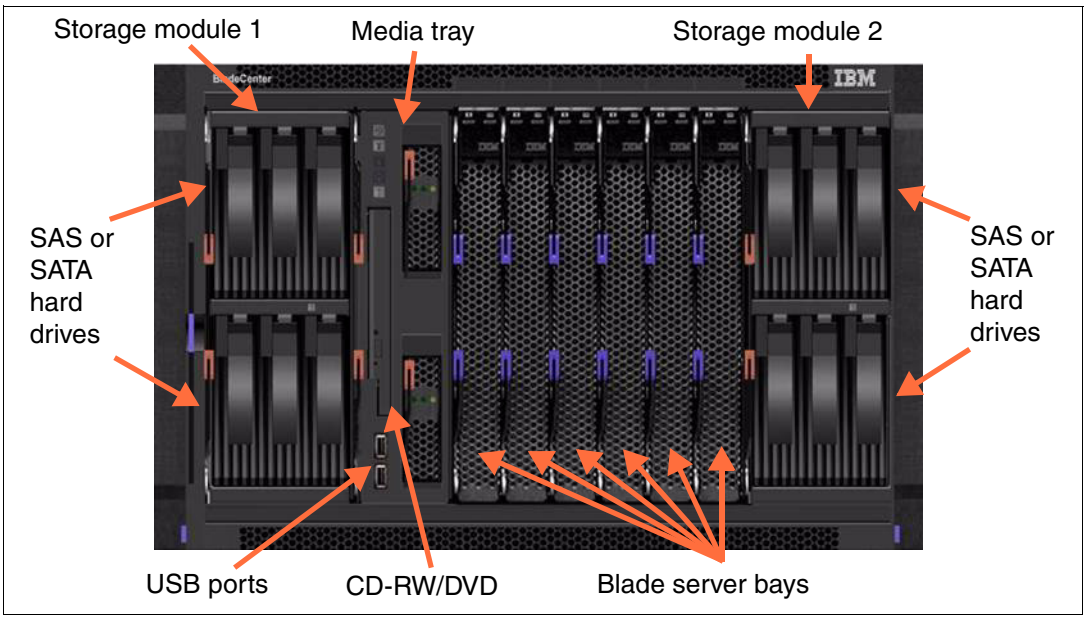

Figure 1-4 The front of the BladeCenter S chassis

The following features are the key features on the front of the BladeCenter S:

- Six hot swap blade server bays supporting different blade server types.
- Two bays for disk storage modules. Each storage module can house up to six 3.5-inch disk drives of internal storage. No storage modules are standard with the BladeCenter S chassis.
- A media tray at the front, with a DVD drive, two USB 2.0 ports, and a system status LED panel. The two additional front bay slots are used for the battery-backed up caching modules when the Serial Attached SCSI (SAS) RAID Controller option is installed.

1.5.1 BladeCenter concepts and terminology

Shortly after its release, the blade server concept took on a life of its own and was quickly mimicked by its competition. As a result, the concepts and terminology used to describe the IBM BladeCenter have become convoluted and difficult to understand.

To simplify the confusion, here is a list of the main terms and concepts used in this book: (See Figure 1-5 on page 13 for illustrations.)

- Chassis

  The chassis is the physical frame of the BladeCenter. For the purposes of this book it also encompasses the interconnects contained within the frame (that is, midplane), power supply, and blower modules. Although the chassis does not posses any inherent intelligence, it does contain a significant amount of circuitry. This circuitry is often referred to as paths within the chassis. These paths comprise the backbone of the BladeCenter and allow it to share the servers, switches, and power.

- Blade servers

  Any server, which is designed in the standard BladeCenter form factor, is considered to be a blade server, or blade. Blades are universal in size and shape, and are capable of being inserted in any of the existing BladeCenter portfolios. Note that processor power demands might prevent their usage in all chassis, however. A blade consists of a motherboard, processors, memory, expansion ports, and two redundant midplane connections. They do not contain a power supply, cooling fan, or any directly accessible I/O connections. Blades rely upon the chassis to provide all necessary power, cooling, connectivity, and management.

- Midplane

  The midplane is the physical circuit board that is responsible for providing all power and connectivity to the chassis' blades. The midplane is set up so that there is a series of upper connection points and an identical set of lower connection points, both of which provide power and redundancy. On the opposite side of the midplane are other connection points, which allow for power supply, blower, and expansion module bay connectivity. The power supply and blower connections on the midplane function independently of their upper or lower status. The expansion bays, however, have unique paths to upper or lower connections points as they relate to blades. The midplane does not possess any intelligence and is strictly a pass-through mechanism for blade, module bay, and power connectivity.

- Module bays

  There are several expansion module bays, power supply bays, and management module bays on all BladeCenter models. In the case of BladeCenter S, there is a serial pass-through bay. These bays are all directly connected to the midplane. They do not necessarily correlate to the upper or lower connections of the blade servers, however. Power supply and blower modules are independent of blade connectivity, and the management module bay can communicate to a blade through the upper or lower midplane connection. The expansion module bays have committed communication paths that are mapped directly to upper or lower connections for the blade slots in the chassis.

- Advanced Management Module (AMM)

  The AMM is the center point for the BladeCenter's infrastructure intelligence. It is the primary means of management for the chassis. It controls all aspects of power, connectivity, and communication. It uses an upgradeable firmware and Web user interface to perform all routine hardware-based management tasks for blades, expansion modules, and configuration of storage modules. The AMM also acts as a proxy for expansion modules, allowing access through direct (that is, IP address) or indirect (that is, internal chassis) methods for specific module management.

- Serial Pass-thru Module

  When installed in a BladeCenter S, the Serial Pass-thru Module provides direct serial console access to each blade slot in a BladeCenter S. If purchased, the optional module can only be installed in the Serial Pass-thru Module bay of a BladeCenter S. The module has six external RJ45 console access ports on it, each of which has a physical path directly to a blade slot. The module was designed for serial console access only. It is not intended for use by modems or other serial port devices.

- Expansion card

  In order to provide access to the expansion bays in a BladeCenter, it is sometimes necessary to install an expansion card (sometimes referred to as a *daughter card*) on the motherboard of a blade server. When installed in a blade server, the card enables additional paths to specific expansion bays. Although the card typically provides two paths (one to each expansion bay), both expansion modules do not need to be present for non-redundant connectivity. Note that when two expansion modules are used, they must

be identical. For example, when a SAS Expansion Card is used in a blade within the BladeCenter S, a SAS module must be installed in module bay 3. As a result, only another SAS module can be installed in bay 4. This is because an expansion card uses two predetermined paths to communicate with the expansion modules. In addition, you must install two redundant SAS RAID Controller Modules, one in bay 3 and one in bay 4.

- Storage module

  The concept of a chassis with a self-contained disk subsystem or storage module is unique to the BladeCenter S. The module is fundamentally a collection of disk drives that are made accessible through a SAS module and a SAS daughter card. The SAS module is responsible for both the provisioning of physical disk drives through zoning and for failover redundancy. When installed, the SAS Expansion Card acts as an additional RAID controller for the blade server. The expansion card can address only those disks assigned to it from the SAS module and can create arrays only from those disks.

Figure 1-5 shows an illustration of the internal components of the BladeCenter S.

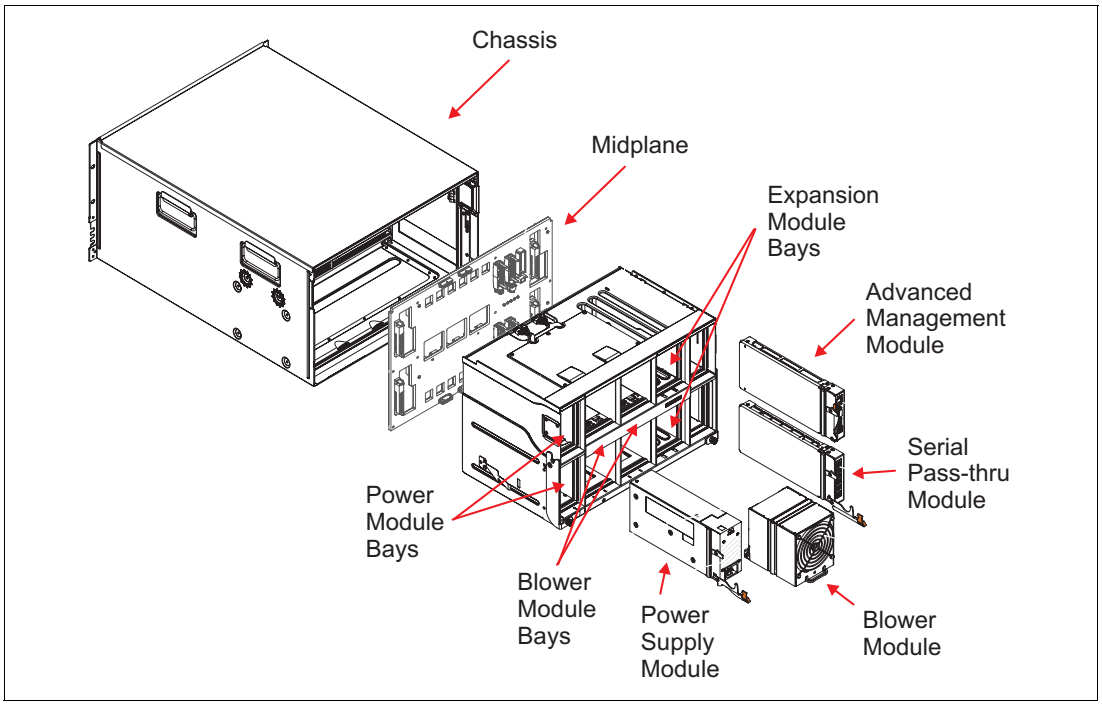

Figure 1-5 Exploded view of BladeCenter S components

Figure 1-6 shows an illustration of the storage module for the BladeCenter S.

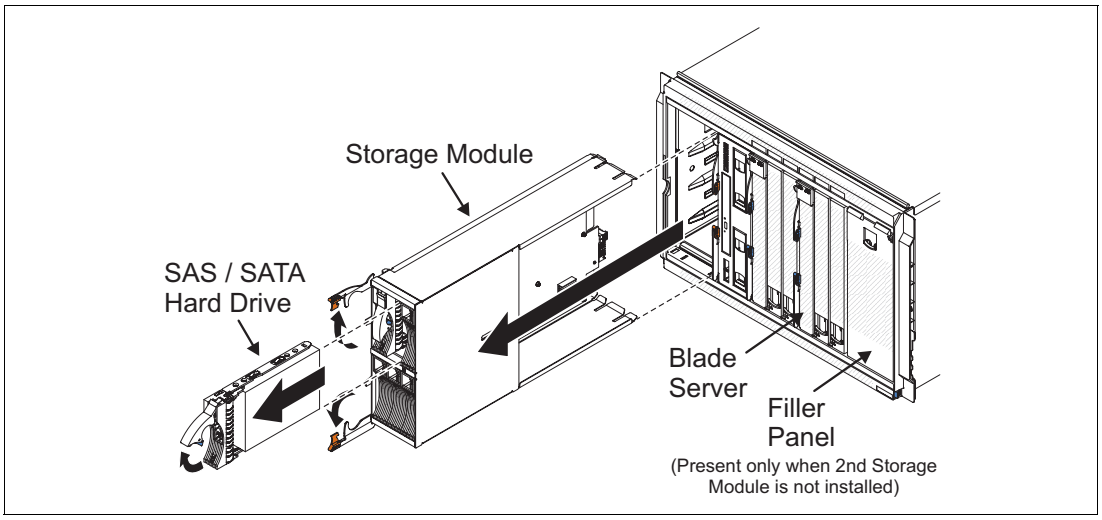

Figure 1-6 Exploded view of a storage module for BladeCenter S

1.5.2 IBM BladeCenter S

The IBM BladeCenter S (machine type 8886) is a departure from the rest of the BladeCenter family, because it is specifically designed to be used outside of the datacenter.

IBM BladeCenter S deploys a newly designed media tray. It is a hot swappable module that consists of the system LED panel, CD-RW/DVD drive, two v2.0 USB ports, and two battery backup module bays. The system LED panel provides light path diagnostic LEDs, as well as power and location indicators.

The CD-RW/DVD-ROM drive is a compact optical drive that is available to any blade server in the chassis (but to only one at a time). The drive can be used to install operating systems, update drivers, or to archive data to a recordable CD media. For blade servers to access the drive, it needs to be assigned to a specific blade bay. You can do this by either pressing the media tray assignment button on the front of the desired blade server, or through the drop-down menu in the AMM remote control interface. When assigned, the drive is exclusively available to the blade server to which it is assigned. If a media tray assignment button is pressed on another blade or assigned to another blade server through the AMM, ownership and exclusive access of the drive is transferred to the destination blade server.

The USB ports provided on the front of the media tray enable blade servers within the chassis to access external USB devices. Access to the USB ports is achieved by pressing the media tray assignment button on the front of the desired blade server, or through the drop-down menu in the AMM remote control interface.

Important: The media tray assignment button on the front of blade servers or the media tray owner in the AMM remote control interface includes both the CD-RW/DVD drive and the two USB ports on the front of the BladeCenter S. When the media tray button is pressed on another server (or reassigned in the AMM), all access from the original blade server immediately terminates.

One unique aspect of the BladeCenter S is its onboard SAS/SATA storage capability. The chassis can accommodate up to six 3.5-inch hard drives in its standard storage module and six more with an additional storage module. The disks can easily and quickly be assigned directly to blades using built-in predefined configurations or through user-definable custom configurations.

Both storage modules are accessible to all blades through a single SAS module. However, with the addition of a second SAS module, you can achieve higher levels of availability. When two SAS modules are present, the modules provide redundant functionality with each module able to access all hard drives in both storage modules. This enterprise-class redundant architecture allows for transparent data protection of all storage contained within the storage modules, and it provides the ability to conduct the online replacement of either module.

Another new feature introduced with the BladeCenter S is the ability to use 110 V electrical power, which is of particular interest to U.S.-based clients. Previously, all BladeCenter chassis required 220 V connections, which is readily available in most data centers. Most small to medium-size offices in the U.S. operate on standard 110 V power only, and although 220 V power is available, it is typically available only at circuit breakers. To accommodate the growing diversity of office locations and facility amenities, the BladeCenter S was designed with the ability to operate on either 110 V or 220 V power using its autosensing power supplies.

Although the BladeCenter S has many unique features, its ultimate strength lies in its ability to use almost all of the existing BladeCenter blade servers and I/O modules. Due to this unprecedented interoperability, BladeCenter S can be configured to provide enterprise level functionality and availability in virtually any environment.

Figure 1-7 shows the key features on the back of the chassis.

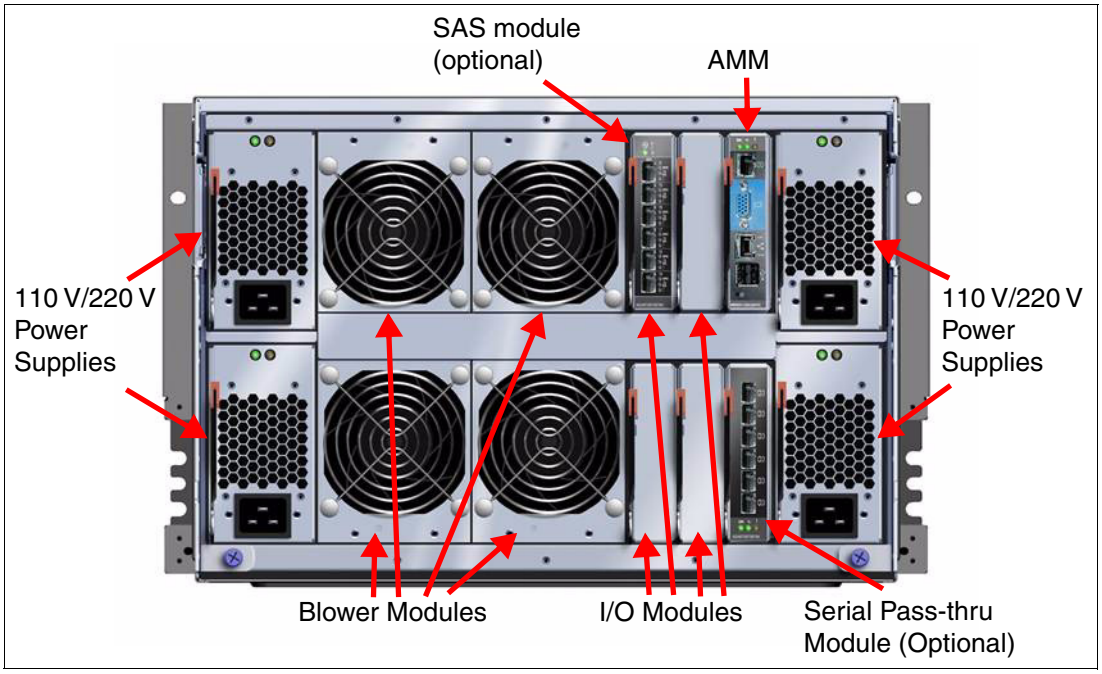

Figure 1-7 The rear of the BladeCenter S chassis

The BladeCenter S chassis allows for either six single-slot blade servers or three double-slot blade servers. However, several blade server models and widths can be intermixed in one chassis simultaneously to support virtually any requirement (subject to power and cooling requirements).

Table 1-4 highlights the major features of the IBM BladeCenter S. Two models are available in specific countries, where the only difference is the input connectors on the power supplies.

Table 1-4 BladeCenter S features at a glance

Feature	Specification	
Machine type	8886-1MX	8886-1NG
Availability	World-wide	Denmark, Switzerland, Sweden, China, Taiwan
Rack form factor (H x D)	7U x 28.9 inches (733.4 mm)	
Disk storage modules (std/max)	1/2	
DVD/CD drives standard	1 CD-RW / DVD-ROM (in media tray)	
USB ports standard	2 USB 2.0 ports (in media tray)	
Serial pass-through capability	Yes	
Number of blade server slots	6 (30 mm blade servers)	
Number of I/O switch module bays	4 hot-swap	
Switch modules standard	None	
Power supply size standard	950 Watts AC (110 V) or 1450 Watts AC (220 V)	
Power input connectors	IEC 320 C20	IEC 320 C14
Number of power supplies (std/max)	2/4	
Number of blowers (std/max	4/4	
Dimensions	Height: 12.0 inches (306 mm) Width: 17.5 inches (444 mm) Depth: 28.9 inches (733 mm)	

1.5.3 BladeCenter HS12 server

The BladeCenter HS12 server (machine types 8028 and 8014) is the first single CPU socket blade server offered by IBM. With the increase in performance of dual and quad core CPUs, single socket servers today have enough processing power to run most single application server workloads.

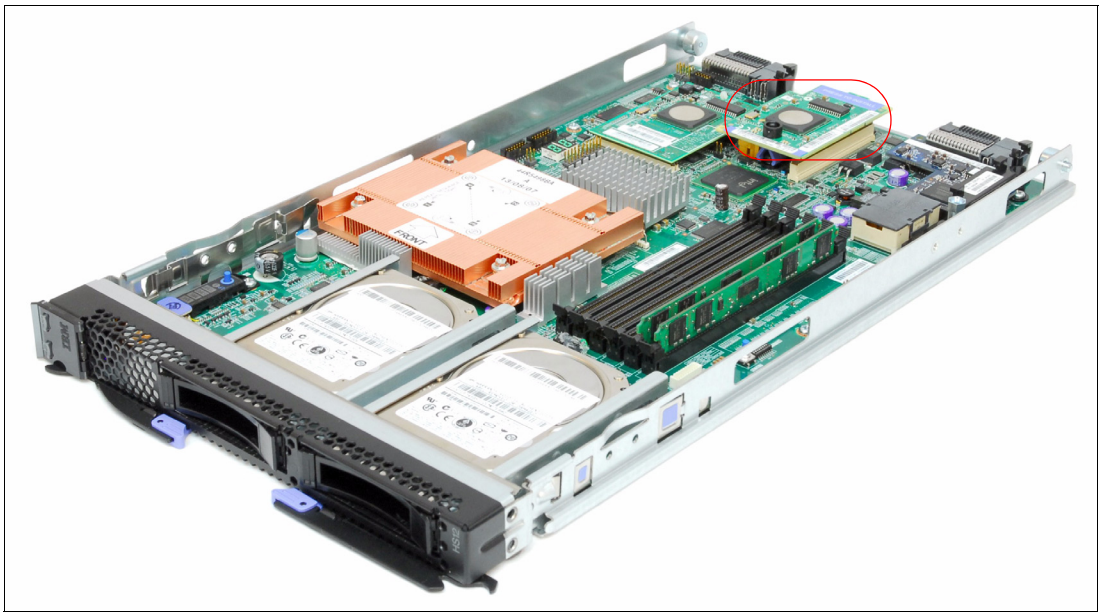

Figure 1-8 The BladeCenter HS12 with SAS RAID Controller Module highlighted

The HS12 is a single socket Intel-based blade with the reliability, accessibility, and serviceability features that clients expect from IBM BladeCenter, at a lower price point than a two socket blade server. This makes the HS12 an affordable blade server option for customers looking to replace aging tower and rack servers. The HS12 is supported in all of the current IBM BladeCenter chassis, but when combined with the BladeCenter S chassis, it provides a true cost effective blade server platform.

Features of the HS12 are as follows:

- Single processor socket supporting either dual core or quad core Intel Xeon® 3000 series processors in type 8028 models.
- Up to 24 GB of system memory in six DIMM sockets
- Dual Gigabit Ethernet connections
- Support for PCI-X or PCI-Express I/O expansion cards
- Two 2.5-inch small form factor (SFF) drive bays
  - Machine type 8028: hot-swap SAS or solid state drive bays
  - Machine type 8014: non-hot-swap SATA or solid state drive bays
- Support for RAID-0 or RAID-1 on internal disks (machine type 8028)
- Support for the Storage and I/O (SIO) expansion unit blade with an additional three 2.5-inch SAS HDD bays and RAID support.
- Optional concurrent keyboard, video, mouse support with the addition of the IBM BladeCenter Concurrent KVM (cKVM) feature card.
- Integrated systems management processor
- Warranty:
  - Three years, customer replaceable unit (CRU), and on-site limited warranty on the type 8028 models
  - One year, CRU, and on-site warranty on type 8014 models.

1.5.4 SAS RAID Controller Module

The SAS RAID Controller Module (part number 43W3584) enables new functionality in the BladeCenter S disk subsystem by providing redundant SAN shared storage capability, RAID 5 support in addition to RAID 0,1 and 0+1, as well as a battery-backed cache to the controllers for higher reliability. The SAS RAID Controller Module should be used when maximum performance, reliability, and storage allocation flexibility is required.

The SAS RAID Controller Module includes two built-in subsystems:

- A RAID Controller subsystem for management of disks
- A SAS Switch subsystem for management of zone configuration information

The SAS RAID Controller Module is only supported in a dual controller configuration. Therefore, you must populate I/O bays 3 and 4 with a SAS RAID Controller Module. Each SAS RAID Controller Module is also shipped with a battery backup unit, which must be installed at the time of installation as well.

Unlike the SAS Connectivity Module that allocates entire physical disks to Blades, the SAS RAID Controller Module allocates storage by grouping disks into arrays and mapping them as volumes to blade servers. Volumes are basic units of storage that are presented to blade servers.

Allocation of disks to blades

The high level process is as follows:

1. One or two disks are assigned specifically as global spares. This is not a requirement but provides additional redundancy to your storage configuration.
2. The remaining disks are grouped together to form one or more storage pools. You may form multiple storage pools if you have a sufficient number of disks. The RAID level selected determines the minimum number of disks required per storage pool at time of creation.
3. The storage pool is carved up into volumes meeting your sizing requirements. Volumes are the basic unit of storage that are presented to blade servers.

   Note: You must have a SAS expansion card installed in each blade server to which you want to map to volumes. No further configuration of the SAS expansion card is required. Part number is 39Y9187.

4. New volumes are mapped to a single or multiple blade servers if shared storage is required between the blade servers. It is not necessary to map a volume to a blade server at time of creation, but the blade server will have access to this volume until the mapping process is completed.
5. The volume is formatted by the operating system running on the respective blade server.

SAS RAID Controller Module administration tools

You can administer the SAS RAID Controller Module using a number of management tools.

Note: You must assign unique static IP addresses for each SAS switch subsystem and RAID controller subsystem before you can manage the SAS RAID Controller Module. Assign these IP addresses through the AMM. The IP addresses you choose must be on the same subnet as the AMM.

The management tools available to administer the SAS RAID Controller Module are as follows:

- AMM browser interface
- SAS RAID Controller Module browser interface
- Storage Configuration Manager
- Telnet and the command line interface (CLI)

Note: The command line interface through telnet is the most comprehensive tool for pure functionality, but we suggest using the Storage Configuration Manager due to its mixture of rich functionality and ease of use.

1.6 Why BladeCenter S is a perfect fit for Windows Essential Business Server and the midmarket

IBM BladeCenter S is the ideal platform for Windows Essential Business Server because it was designed specifically for the mid-sized customer. The BladeCenter S offers a hardware platform that integrates servers, disk storage, networking, and I/O into a single office-ready chassis. It is small enough to fit under a desk, uses standard office power plugs with 110–240 V, and is quiet and power efficient.

With the BladeCenter SAS RAID Controller Module, hard drive space can be shared to all IBM blade servers. This gives peace of mind by providing redundant SAN shared storage capacity, several RAID configuration options for reliability, and a battery-backed cache for performance. All in one chassis.

IBM BladeCenter S offers a mid-sized customer the opportunity to deploy Windows Essential Business Server (and or other technologies) in various configurations.

- Three Windows Essential Business Server roles on three different blades sharing the two storage bays
- Three Windows Essential Business Server roles on two different blades using virtualization
- Three Windows Essential Business Server roles on one blade using virtualization

IBM BladeCenter S offers a mid-sized customer the ability to invest in the IBM BladeCenter platform as they grow their infrastructure investments over time.

2

Configuration

In this chapter, we configure the BladeCenter S chassis and its features. Tools and utilities required for configuring the BladeCenter S chassis are as follows:

- Start Now Advisor (latest version)
- IBM Storage Configuration Manager (latest version)
- BIOS and firmware updates for the blade servers and IBM SAS RAID Controller Module
- Subsystem Device Driver Device Specific Module (SDDDSM) drivers for the IBM BladeCenter S RAID SAS Switch Module (RSSM)

Note: The BladeCenter S plug-in for the Windows Essential Business Server Administration Console and the Director agents was not available when this Redbooks publication was written.

This chapter contains the following topics:

2.1 Standard configurations

This chapter lists the preferred configuration and the tools needed to get the IBM BladeCenter S ready for the Windows Essential Business Server installation.

2.1.1 Suggested BladeCenter S configuration for Windows Essential Business Server

This list is a suggested configuration or guideline for the standard Windows Essential Business Server install. Many variations can be used, including other blades that support Windows 2008. IBM Blade Server HS12 model was selected because it provides two Hot-Swap drives with front access, which enhances serviceability. The Intelligent Copper Pass-thru Module is proposed because it requires little or no configuration, and allows the Windows Essential Business Server Security server to be easily configured for two separate networks, which is an Windows Essential Business Server requirement. The additional Storage required by the Management and Messaging server is enhanced with the presence of the IBM BladeCenter S SAS RAID Controller Modules (RAID modules), as opposed to the standard SAS switches. The RAID modules provide full multipath support and the ability to provision storage to the blades in a granular manner.

Table 2-1 lists the minimum required hardware. Depending on storage requirements a second Disk Storage Module (DSM) may be necessary as well as more drives or drives of larger sizes.

Table 2-1 Suggested BladeCenter S Hardware Configuration

Part number	Description	Count
88861MU	IBM BladeCenter S Chassis with 2x9 50/1450 W PSU, Rackable	1
43W3581	IBM BladeCenter S 6-Disk Storage Module	1
43X0802	IBM 300 GB 3.5in 15 K HS SAS HDD	0
43W7524	IBM 146 GB 15K 3.5-in. HS SAS HDD	6
43W3582	IBM BladeCenter S 950 W/1450 W Auto-Sensing Power Supplies 3 and 4	1
43W3584	IBM BladeCenter S SAS RAID Controller Module	2
44W4483	Intelligent Copper Pass-thru Module for IBM BladeCenter	1
802845U	HS12, Xeon Quad Core X3353 80 W 2.66 GHz/1333 MHz/12 MB L2, 2 × 1 GB, O/Bay SAS	3
46C0512	4 GB (2 × 2 GB) PC2-5300 CL5 ECC DDR2 667MHz SR VLP RDIMM	3
43W7535	IBM 73 GB 10K SAS 2.5-in. SFF Slim-HS HDD	6
39Y9190	SAS Expansion Card (CFFv) for IBM BladeCenter	3

2.1.2 BladeCenter S configuration in the test environment

In our test environment, we used the following variation of the configuration listed in Table 2-1 on page 22:

- Each Blade used its own internal disk drive for the operating system. For shared storage, we used 8 × 300 GB SAS disks. Six were located in storage bay 1, and two were located in storage bay 2.
- IBM SAS RAID Controller Module instead of Intelligent Copper Pass-thru Module.

Note: Appendix A, “IP addresses used in the lab” on page 171 is a summary of all the IP addressees used for this Redbooks publication. It is provided to understand the network configuration we used for the Windows Essential Business Server solution. This includes the internal and external addressing used to manage the BladeCenter S remotely.

2.2 Configuring the BladeCenter S chassis and AMM

The Advanced Management Module (AMM) is a hot-swap module used for initial configuration and for ongoing management of installed BladeCenter components.

When powering on the BladeCenter S for the first time, or in most cases after replacing an existing AMM, the module will require an initial setup. Accomplish this either by using the standard AMM interface options, the AMM Configuration Wizard, or the Start Now Advisor.

For initial deployment of a brand new BladeCenter S chassis, it is suggested to use the Start Now Advisor. It provides step-by-step instructions and enables you to configure the AMM, SAS modules, and storage options quickly and easily.

Note: For detailed explanation of the BladeCenter S architecture and the AMM role, see the Redbooks publication *Implementing the IBM BladeCenter S Chassis*, SG24-7682.

2.2.1 Configuring the chassis using the Start Now Advisor

When Start Now Advisor is run, it will discover and configure the AMM and other components of each BladeCenter S chassis found in the network. During the deployment procedure, you must configure an IP address for the AMM itself. Make sure to configure an address accessible from the computer on which you will perform the following configuration steps.

To configure the chassis using the Start Now Advisor, perform the following steps:

1. Connect your laptop or management workstation to the AMM Ethernet port. It is located on the back of the BladeCenter S chassis, as shown in Figure 2-1.

   Note: You can connect to the AMM Ethernet port through a network hub or switch. This method is preferred if you plan to keep your AMM on the network for remote management. If you do not plan to have your AMM accessible on the network, you can connect your laptop directly to AMM using a regular Ethernet cable.

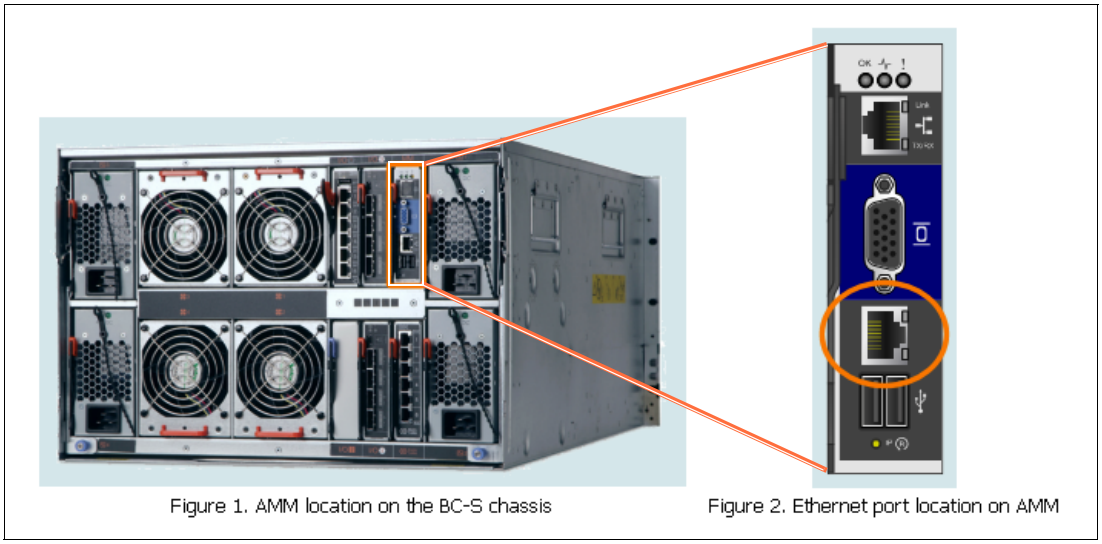

Figure 2-1 AMM and its Ethernet port location in BladeCenter S chassis

2. Launch the Start Now Advisor by running the executable you downloaded from the following Web page, or by inserting the supplied DVD. It is suggested to check the following Web page to ensure you have the latest version.

   http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5076842

3. Accept the license agreement, and proceed to the Welcome window (Figure 2-2) where you will have two connection options. Select the one that best fits your environment.

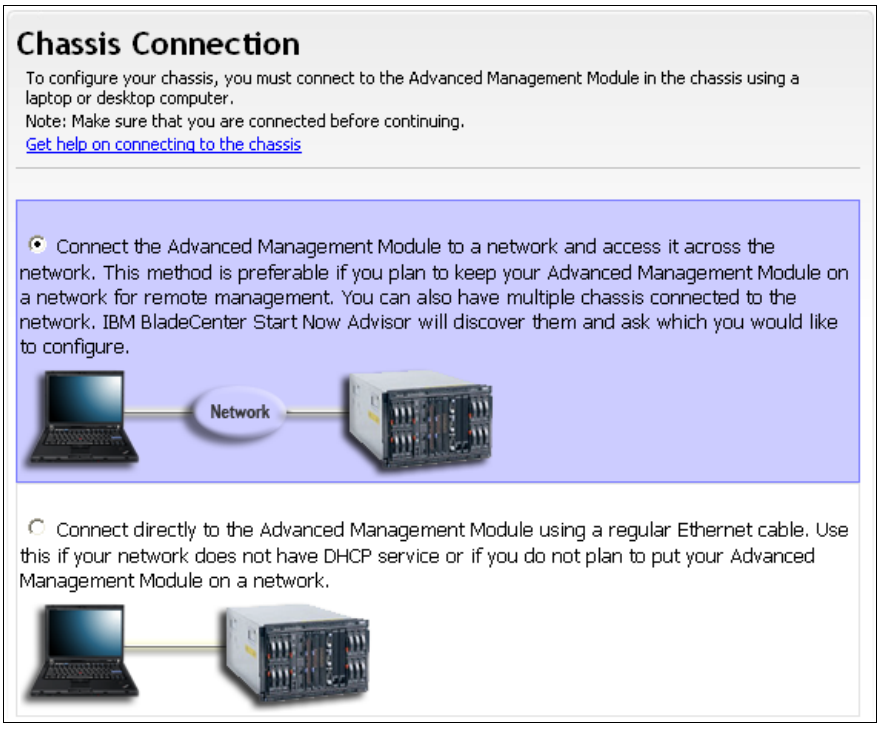

Figure 2-2 AMM connection options

If you have multiple chassis connected to the network select the first option. Start Now Advisor will discover them and ask which one you would like to configure (Figure 2-3). For this Redbooks publication, when we connected to the BladeCenter through a switch, the **Use a discovered chassis** radio button was selected.

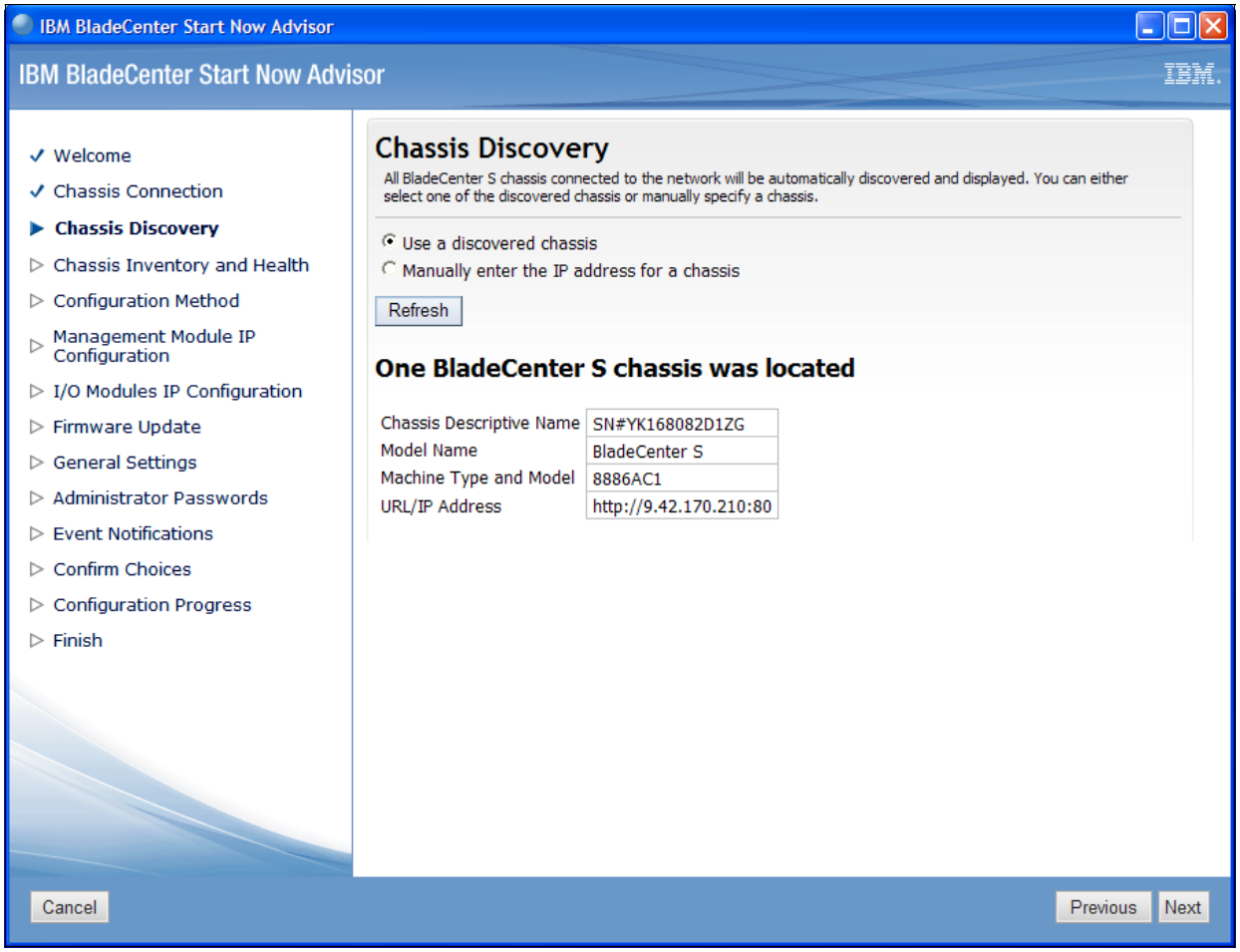

Figure 2-3 Selecting the chassis to deploy

Note: The default IP address of the AMM is 192.168.70.125.

4. Review the chassis inventory and health, displayed in the “Chassis Inventory and Health” panel (Figure 2-4). Before the Start Now Advisor configures the chassis, ensure that all components are functioning normally. Any error detected will stop Start Now Advisor from continuing. Click **Next**.

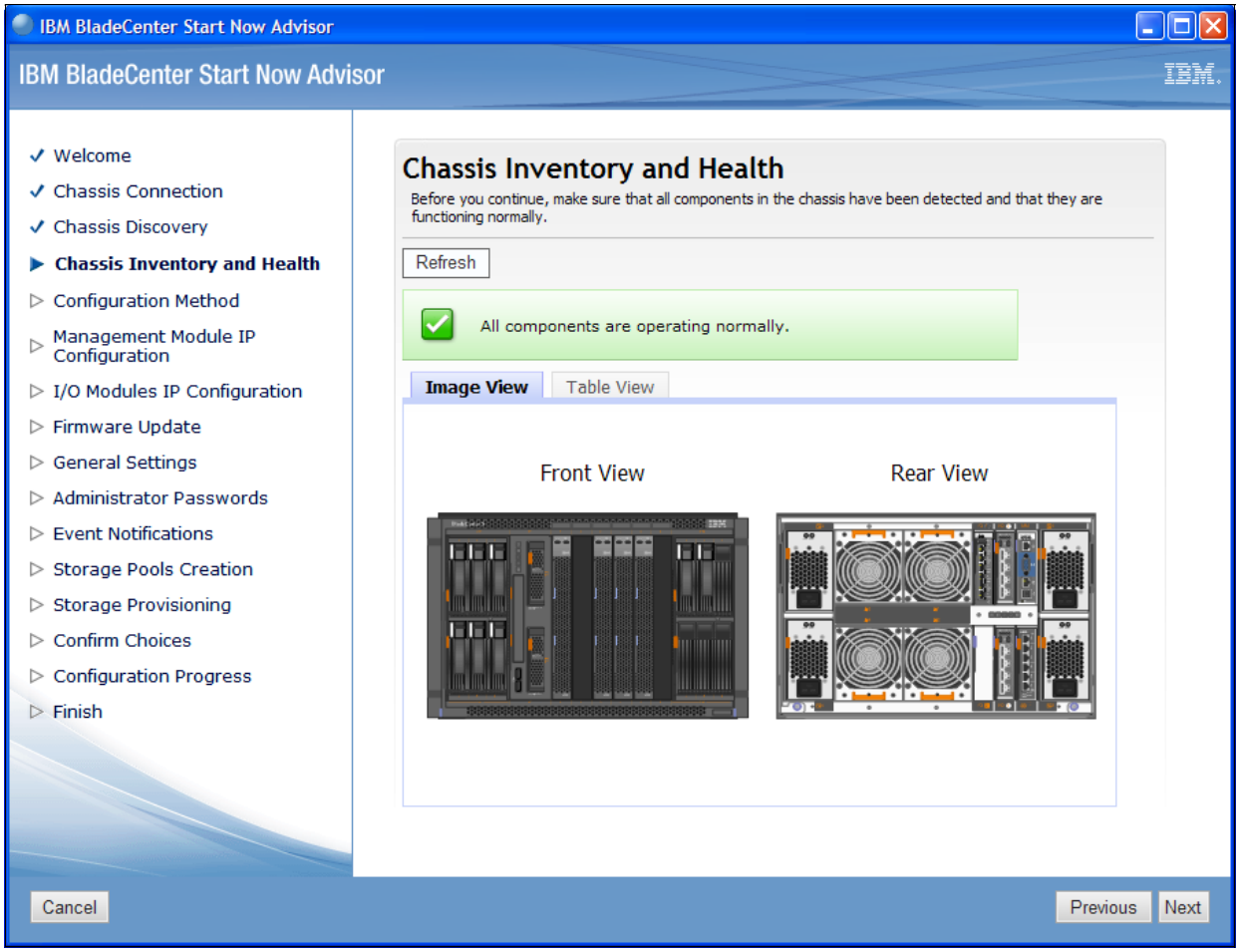

Figure 2-4 Chassis inventory and health

5. Configure the BladeCenter. Select from the three options in the “Configuration Method” panel (Figure 2-5). An explanation of each option follows Figure 2-5.

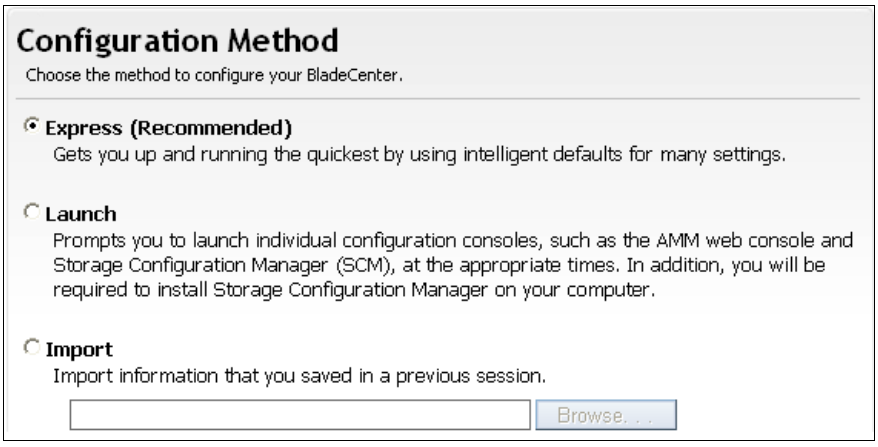

Figure 2-5 Choosing the configuration method

The configuration method options are:

– Express

  This option uses defaults to make configuration easier:

  - Enables you to easily specify basic information for your chassis components, including IP addresses, event notifications, and descriptive names for your AMM and blade servers.
  - Synchronizes the date and time for certain chassis components. This ensures accurate date and time stamps for chassis events, and makes it easier to compare events across components.
  - Synchronizes account passwords for consoles of certain chassis components. This facilitates administration by reducing the number of passwords that you are required to maintain.
  - Guides you through selecting the best predefined storage zoning configuration based on the blade servers, hard disk drives, and SAS RAID Controller Modules installed in the chassis. You can quickly set up the integrated shared storage.

– Launch

  The launch configuration option provides launch points to the Web consoles for selected components in the chassis. This is suggested only for users with more advanced needs.

– Import

  When you are repeating deployment and you have a saved configuration file from previous deployments, you can import this file. This is the fastest option to deploy a BladeCenter S chassis, but you need to be sure not to deploy the same IP addresses to different IO Modules.

> **Note:** If you choose the Express configuration option, no software is installed on your computer when you run BladeCenter Start Now Advisor. If you choose the Launch configuration option, Storage Configuration Manager will need to be installed on your local computer.

As we are deploying the BladeCenter S chassis for the first time for this Windows Essential Business Server installation, we will select the **Express (Recommended)** configuration option. Click **Next** to proceed.

6. In the “Management Module IP Configuration” window (Figure 2-6), enter a host name and IP address that you want to assign to the AMM. The host name field on this window is what will be registered with DNS after the AMM is rebooted. The suggested practice here is to use a static IP assignment for the AMM.

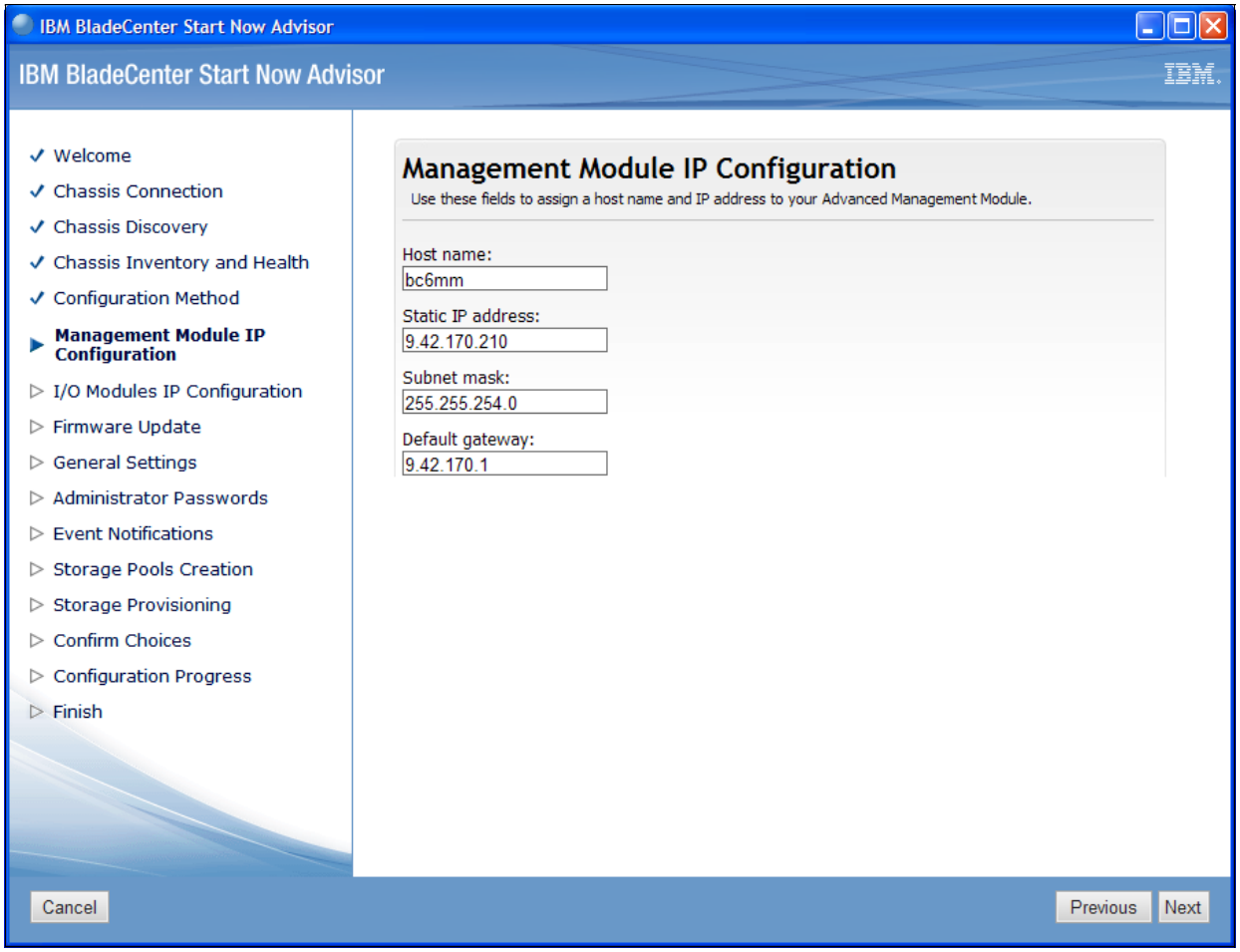

Figure 2-6 IP configuration for the AMM

Be sure to double-check the IP address information, because these settings will be active when AMM restarts. If you configure the AMM remotely, ensure that you can access the subnet in which the AMM IP address is configured.

Important: Changes to the AMM network configuration are only activated after the module restarts. When making changes to the AMM, you can undo or change any settings up until you restart the AMM.

7. Enter network settings in the “I/O Modules IP Configuration” window (Figure 2-7).

   This window gathers network setting information for the I/O Expansion Modules currently installed in the BladeCenter S chassis. Enter network settings as appropriate. The network settings specified in this window are used for the individual administrative access interfaces (typically Web-based or telnet-based) of the modules. Configuring the modules through their administration interface is optional and not a requirement for normal operation, but they offer detailed information and additional configuration capabilities for the module. In our case, we have specified the static IP addresses for both SAS RAID Controller card modules.

   Each module needs two IP address for each of the following subsystems:

   a. SAS Switch subsystem
   b. RAID Controller subsystem

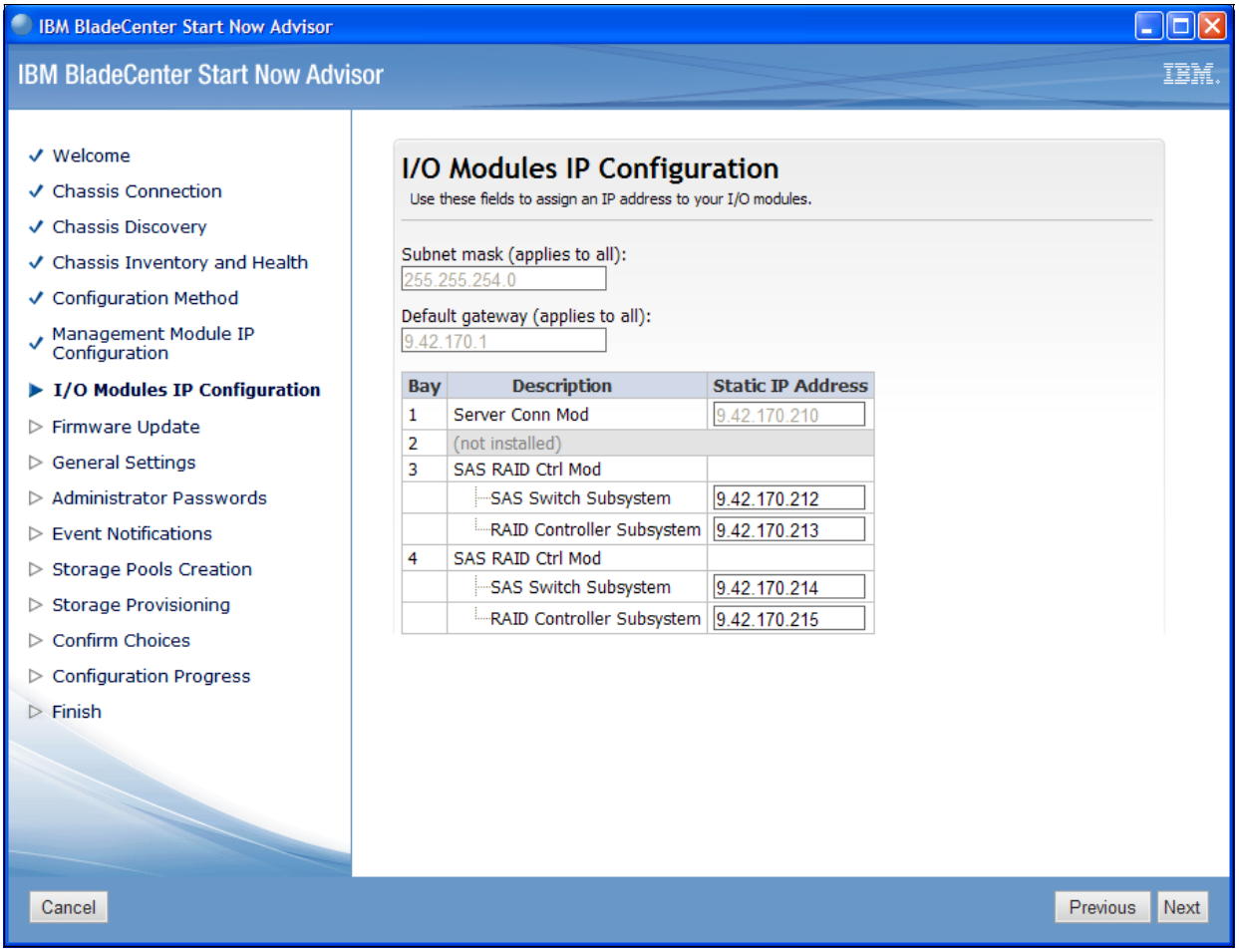

Figure 2-7 IP configuration for the I/O modules

After you have entered the network settings, click **Next**. You can modify I/O module information further after the initial AMM configuration has completed.

8. Review the installed AMM and firmware version information on the “Firmware Update” panel (Figure 2-8). This panel shows the installed AMM and firmware version and lets you update it automatically if necessary.

   You have the option to update the firmware of the AMM during the deployment. Updating the firmware for the SAS RAID Controller modules requires the use of a telnet session. See the SAS RAID Controller firmware documentation. In addition, the configuration of (and firmware updates for) blade servers must be performed using tools such as IBM ServerGuide.

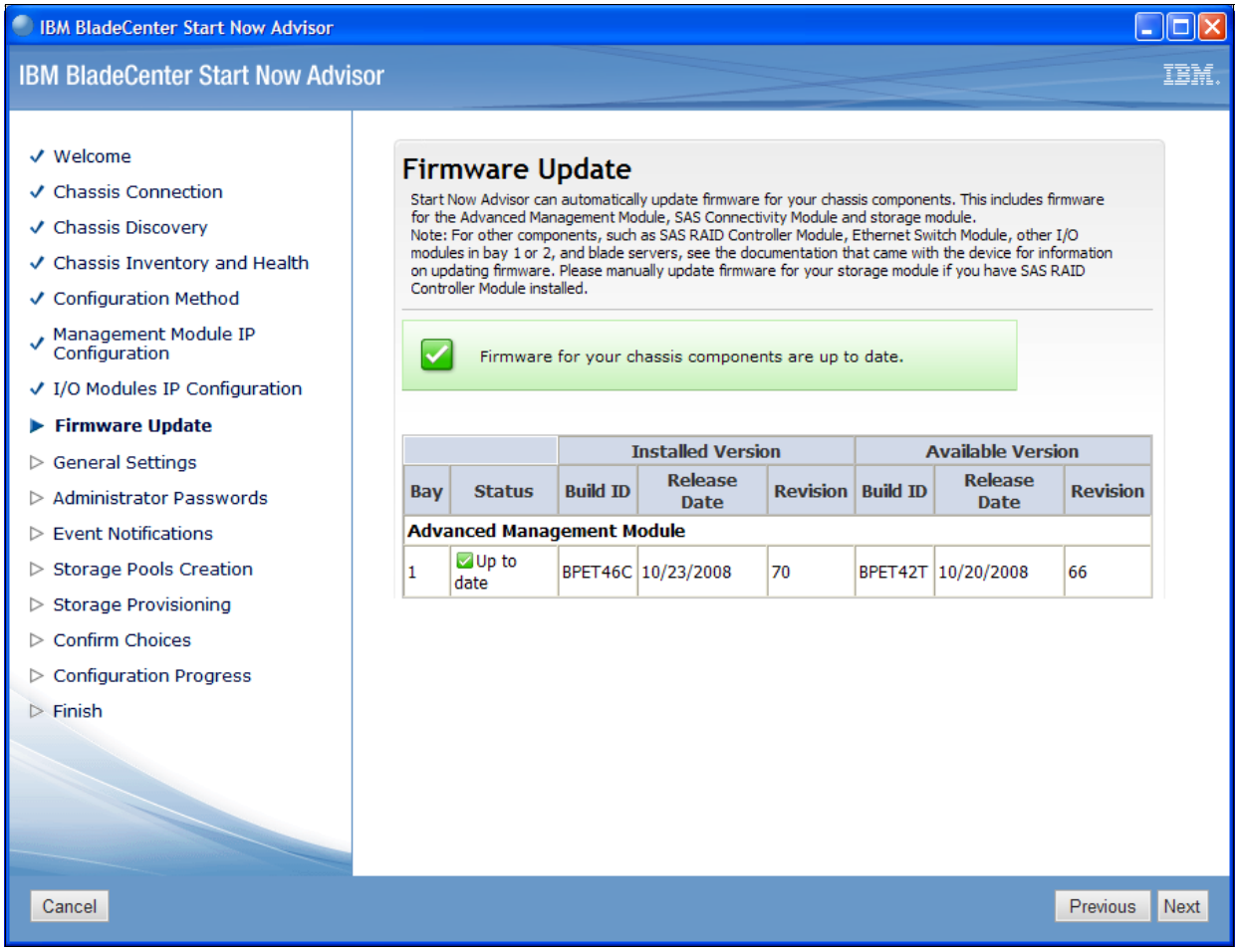

Figure 2-8 Firmware status and update availability

9. Enter the AMM name, location, and contact information in the “General Settings” panel, (Figure 2-9). Information in these fields is intended for administrative purposes only and is not used by the AMM for host name or alert notification. Another option in this step is to enter the Descriptive Name of each blade server currently present in the BladeCenter S chassis.

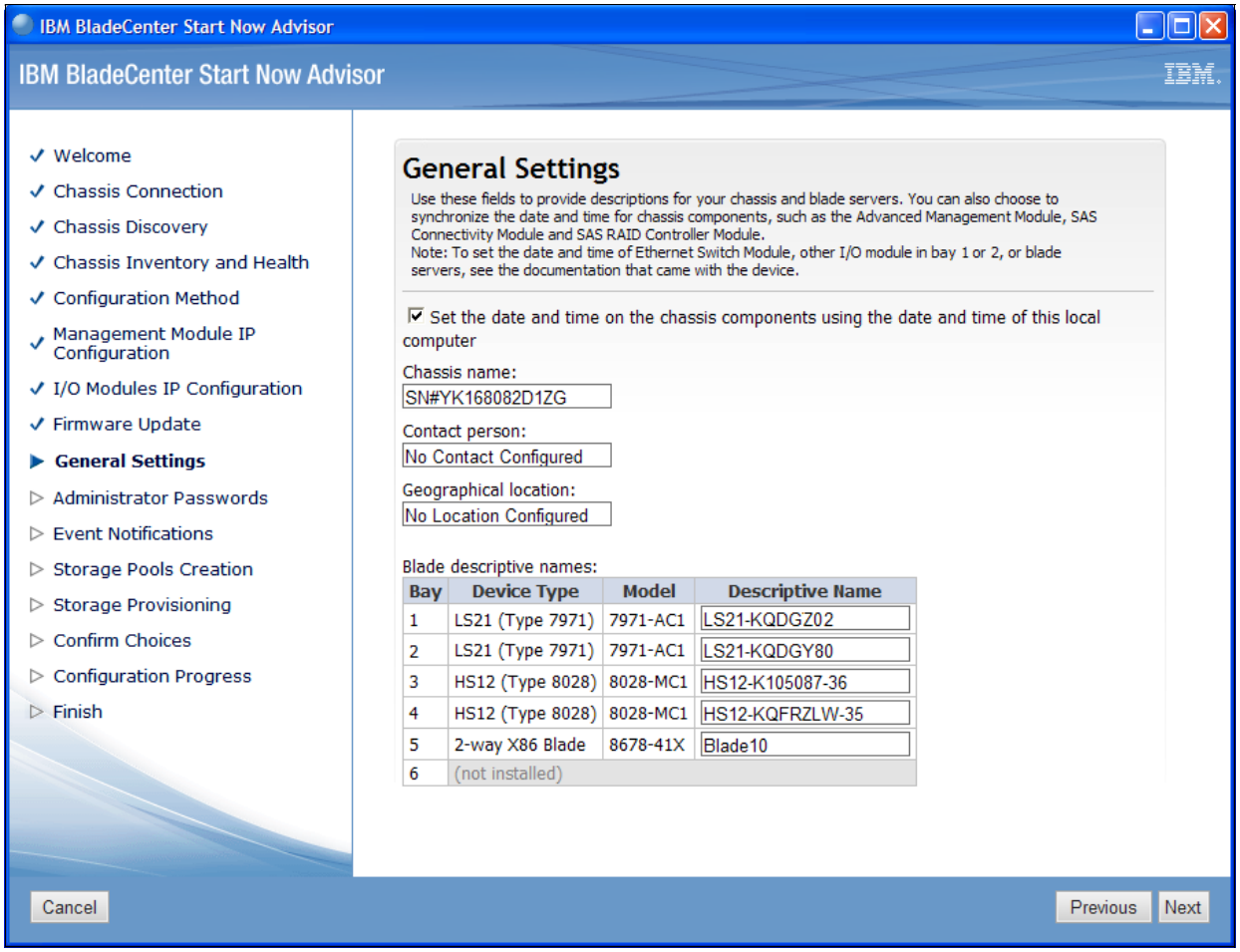

Figure 2-9 General settings for BladeCenter S AMM

Enter a reference name for the AMM (which is typically the same as the host name), the specific location of the BladeCenter S chassis, and the administrator contact information, and click **Next**.

10. (Optional) In the “Administration Passwords” window (Figure 2-10), change the default password of all applicable components in the chassis (including the AMM and SAS RAID Controller Module). It is suggested to change the password. Additional accounts can be created after the initial AMM configuration has been completed.

Important: The default user name and password for the AMM (USERID and PASSW0RD) have been used for years and are well known by anyone who has worked with BladeCenter or System x servers. Change at least the password to prevent unauthorized access to the AMM.

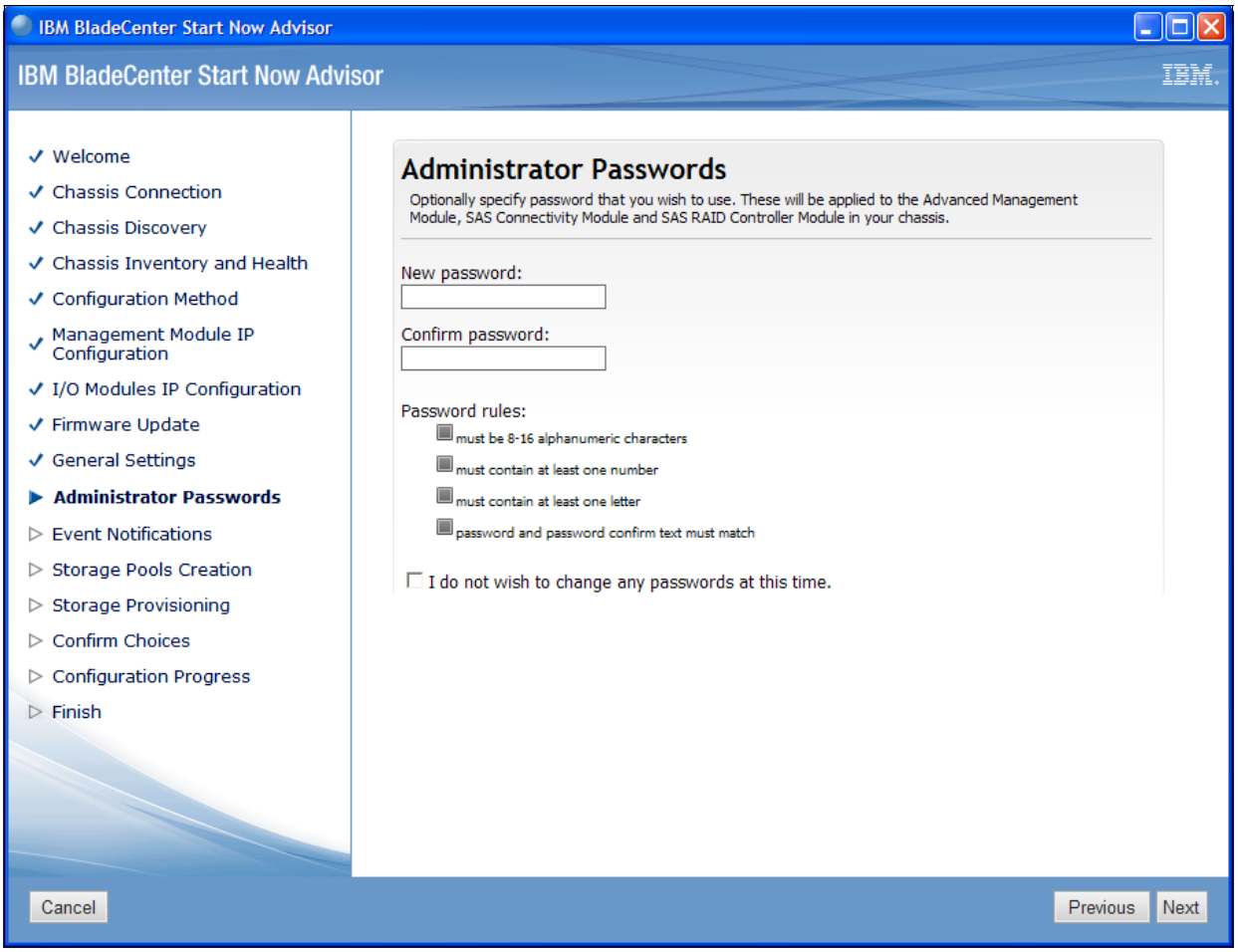

Figure 2-10 Changing the AMM administrator password

After you have changed the AMM password, click **Next**.

11. In the “Event Notifications” panel (Figure 2-11), specify the recipient’s e-mail address and server for event notification. A test of alert notification can be sent from the Alerts menu of the AMM Web interface after the AMM has been restarted.

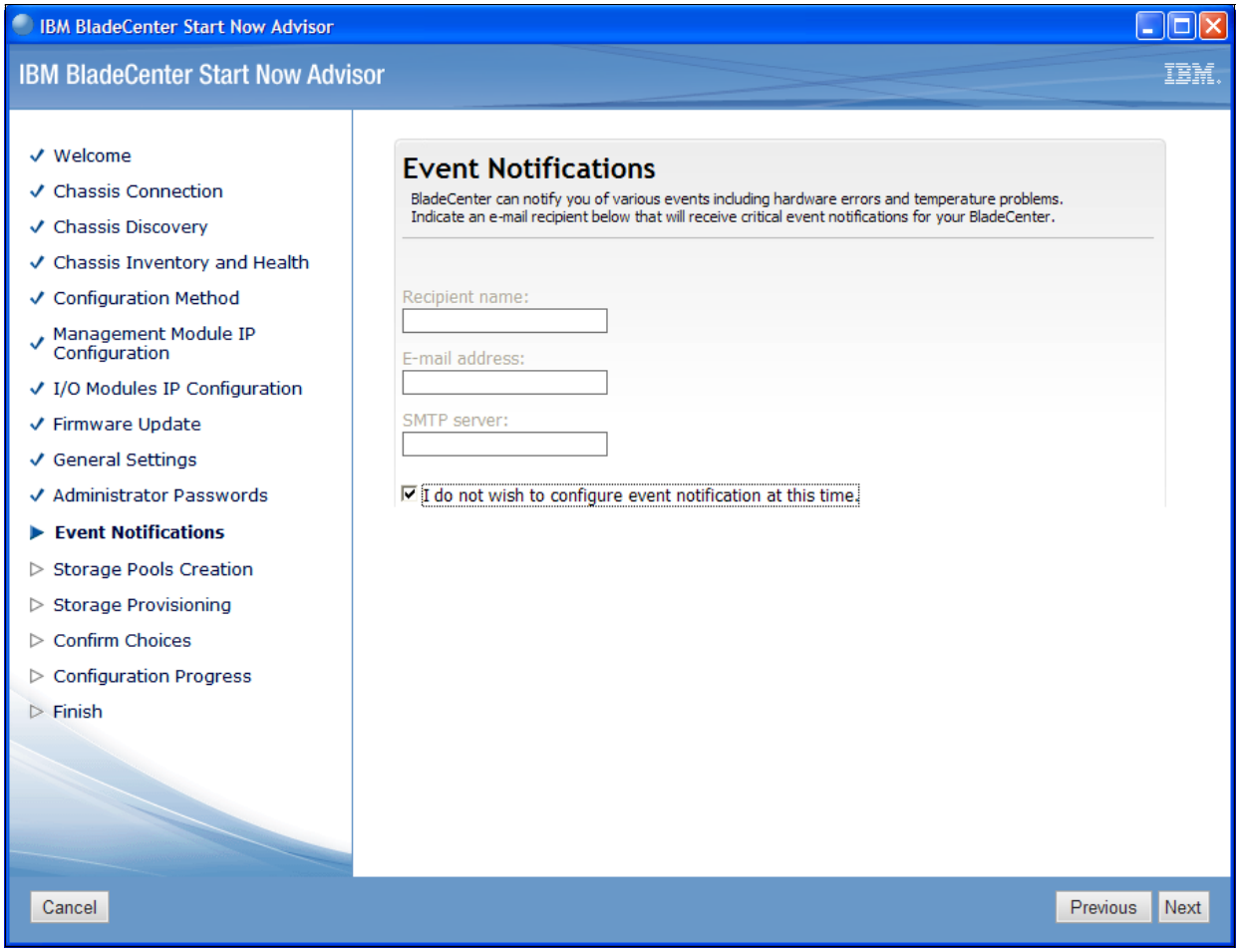

Figure 2-11 Configuring the event notification recipient

12. In the “Storage Zone Configuration” panel (Figure 2-12), define how the blade servers are going to access the disks in the BladeCenter S chassis. The options are explained in the list following Figure 2-12.

    A storage zone configuration is a set of rules that describe the permissions and provisioning of a blade server connecting to a particular disk or a group of disks. A collection of all six blade server configurations is a *zone*, and the process of applying the configurations to SAS modules is called *zoning*.

    Note: For a detailed explanation of storage zoning and a complete overview of all predefined storage zone configurations, see IBM Redpaper *Implementing the IBM BladeCenter S Chassis*, REDP-4357.

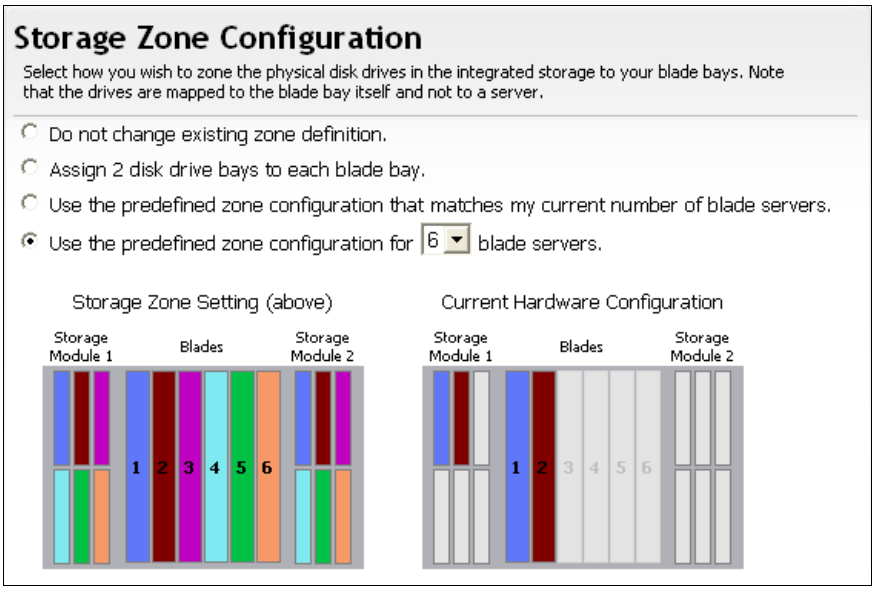

Figure 2-12 Storage zone configuration

With the Start Now Advisor, you have the following four options.

– Do not change existing zone definition

  If you plan to allocate the disks using another tool like the Storage Configuration Manager, you should select this radio button. I this is the first time you configure the BladeCenter S chassis and you click this option, there will be no disks mapped to the blade servers at this point.

  This is the option that we selected. Detailed step-by-step instructions to configure the storage are provided in 2.6, “Configuring the storage” on page 47.

– Assign two disk drive bays to each blade bay

  Selecting this radio button allocates two disks for each of the six blade bays in the chassis. If you have two Storage Modules in the BladeCenter S chassis, then for purposes of redundancy, the Start Now Advisor selects one disk in each storage module. This option is equal to the Predefined Configuration 6, available in the AMM Configuration Wizard.

– Use the predefined zone configuration that matches my current number of blade servers.

  Selecting this radio button allocates hard disks drives based on the quantity of blade servers and hard disk drives you have inserted in the BladeCenter S chassis.

– Use the predefined zone configuration for *n* blade servers

The BladeCenter Start Now Advisor can let you manually choose the quantity of blades to have access to the hard disk drives in the Storage Modules.

Important: The Storage Zone Configuration allocates the disk drives to the blade bays itself, not to the blade server. Moving one blade server from one bay to another may result in failure to access the disks located in the storage modules previously configured.

13. Review the information on the “Summary and Confirmation” panel (Figure 2-13).

If you need to make any changes, click **Previous** to revise the appropriate section. Click **Export** to export your configuration into a file. This file can be used to deploy another BladeCenter S chassis with the same hardware configuration using the BladeCenter Star Now Advisor. If all settings are correct, click **Begin Configuration**.

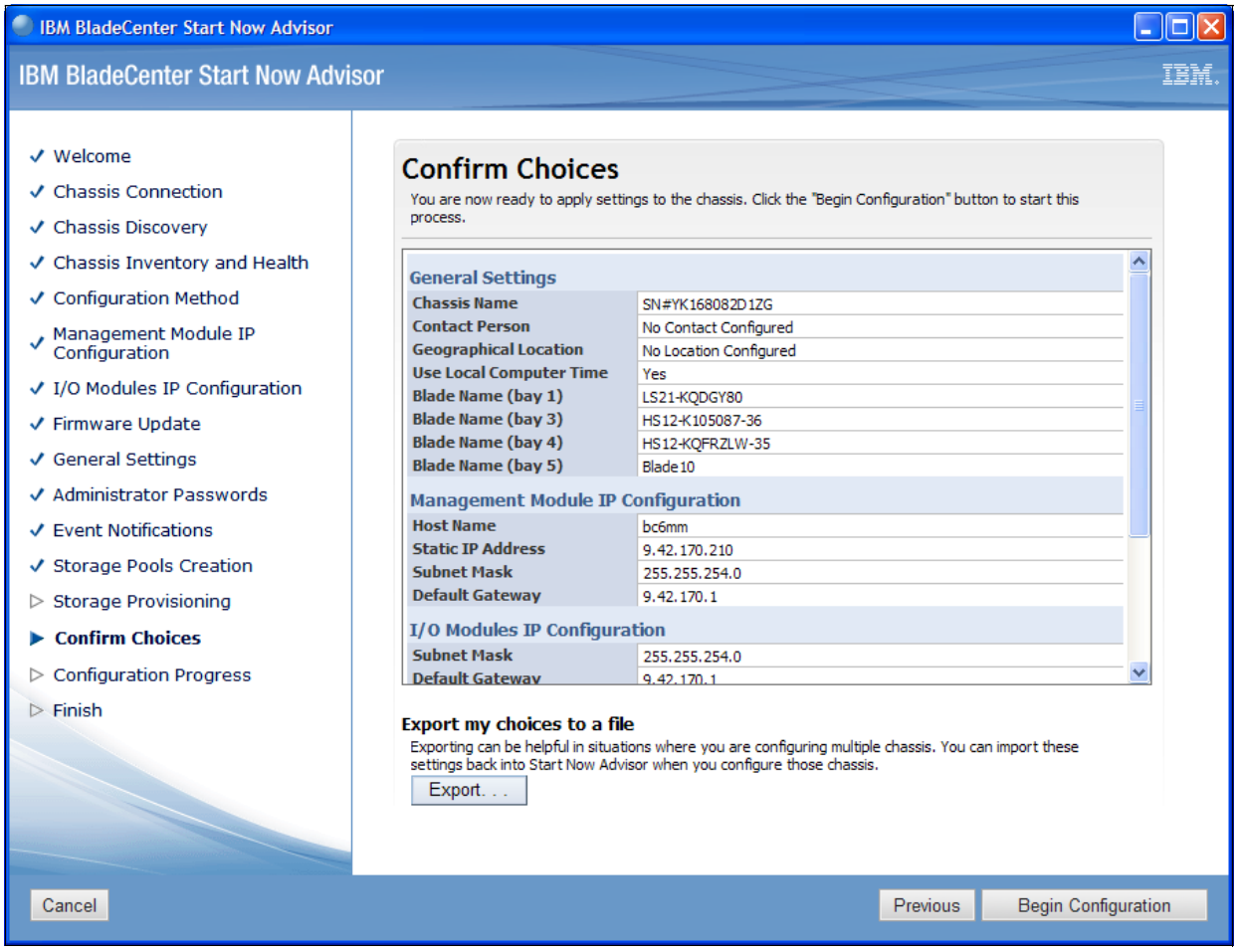

Figure 2-13 Confirm the configuration settings

The “Configuration Progress” panel displays (Figure 2-14).

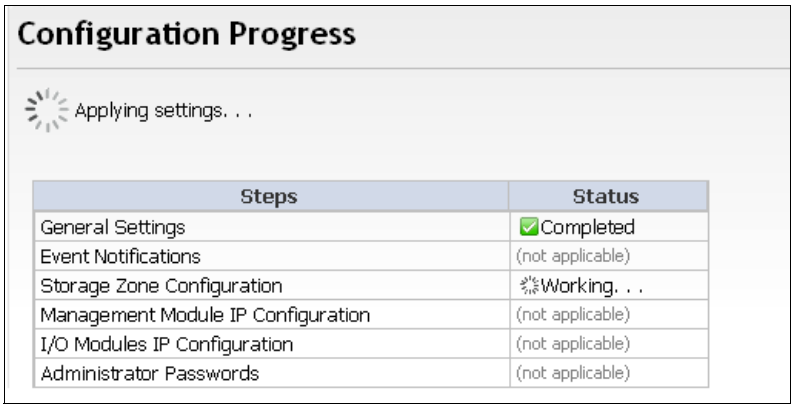

Figure 2-14 Applying the configuration settings

14. Once the configuration is completed, the “Configuration Progress” panel will look like Figure 2-15.

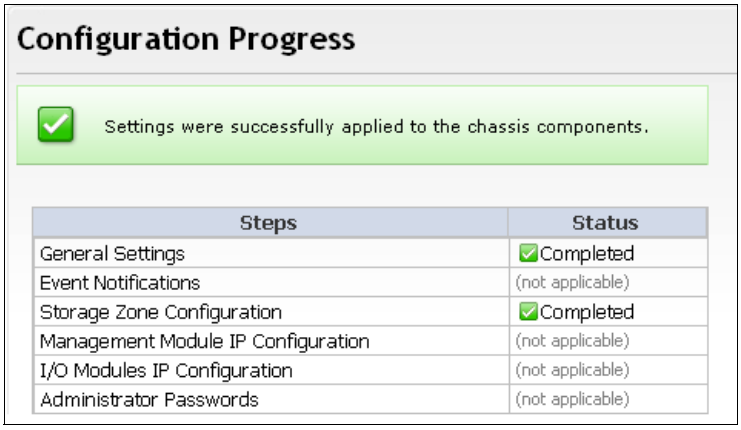

Figure 2-15 Configuration progress

AMM will be automatically restarted to commit and activate the new settings. A “Chassis Configuration Complete” window (Figure 2-16) displays.

Tip: Restarting the AMM does not affect the operation of the blade servers or the disk storage modules. The fans will spin up to 100% for several seconds but will return to normal speed and sound volume.

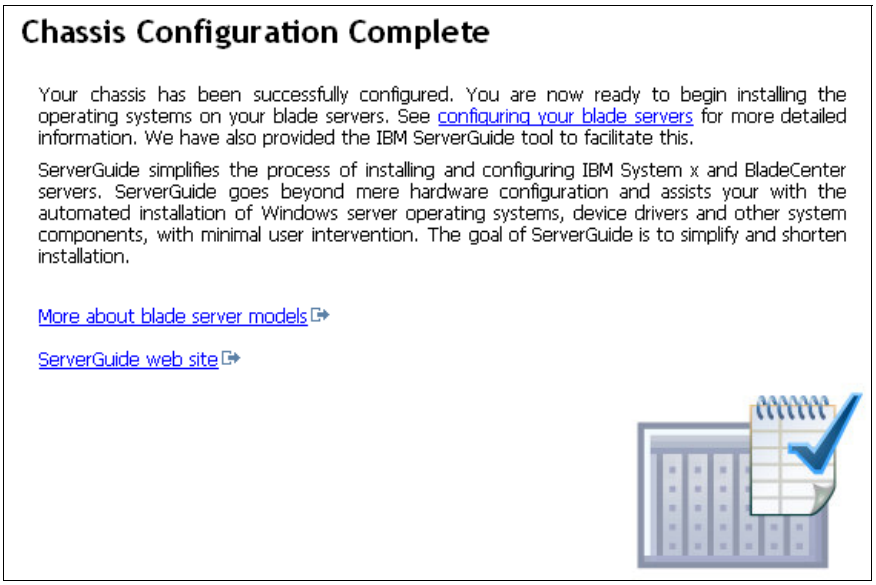

Figure 2-16 Chassis configuration complete

Tip: To track the progress of an AMM reboot, ping its new IP address using the **`-t`** option:

```
ping -t 192.168.70.125
```

This will begin a continuous ICMP PING of the AMM every second. When you see replies being returned from the address of the AMM, you can log in. Press Ctrl+C to terminate the ping.

2.3 Configuring SAS RAID Controller Module

Each IBM BladeCenter S SAS RAID Controller Module (RAID module) must have an IP address for the SAS switch component of the switch, and another one for the RAID controller component of the switch. Valid IP addresses need to be assigned, so IBM Storage Configuration Manager (SCM) can be used to configure the RAID module.

Note: At the time of writing this document, Start Now Advisor did not support the configuration of IBM BladeCenter S SAS RAID Controller Module. To configure the RAID modules in bays 3 and 4, we used the standard AMM interface.

To provide the necessary RAID module IP information, perform the following steps:

1. Open a Web browser and enter the IP address of your AMM that you provided during the Start Now Advisor configuration procedure detailed in 2.2.1, “Configuring the chassis using the Start Now Advisor” on page 23.
2. Log into the AMM interface using default login credentials USERID and PASSW0RD (or whichever combination was entered in step 10 of the Start Now Advisor configuration procedure detailed in 2.2.1, “Configuring the chassis using the Start Now Advisor” on page 23, if AMM login credentials were changed).
3. From the left pane of the main page, select **I/O Module Tasks**.
4. Select **Configuration**.
5. Select **Bay 3** (first RAID module).
6. Provide different IP addresses for the SAS switch and for the RAID controller in the first RAID module. The configuration should look similar to Figure 2-17.

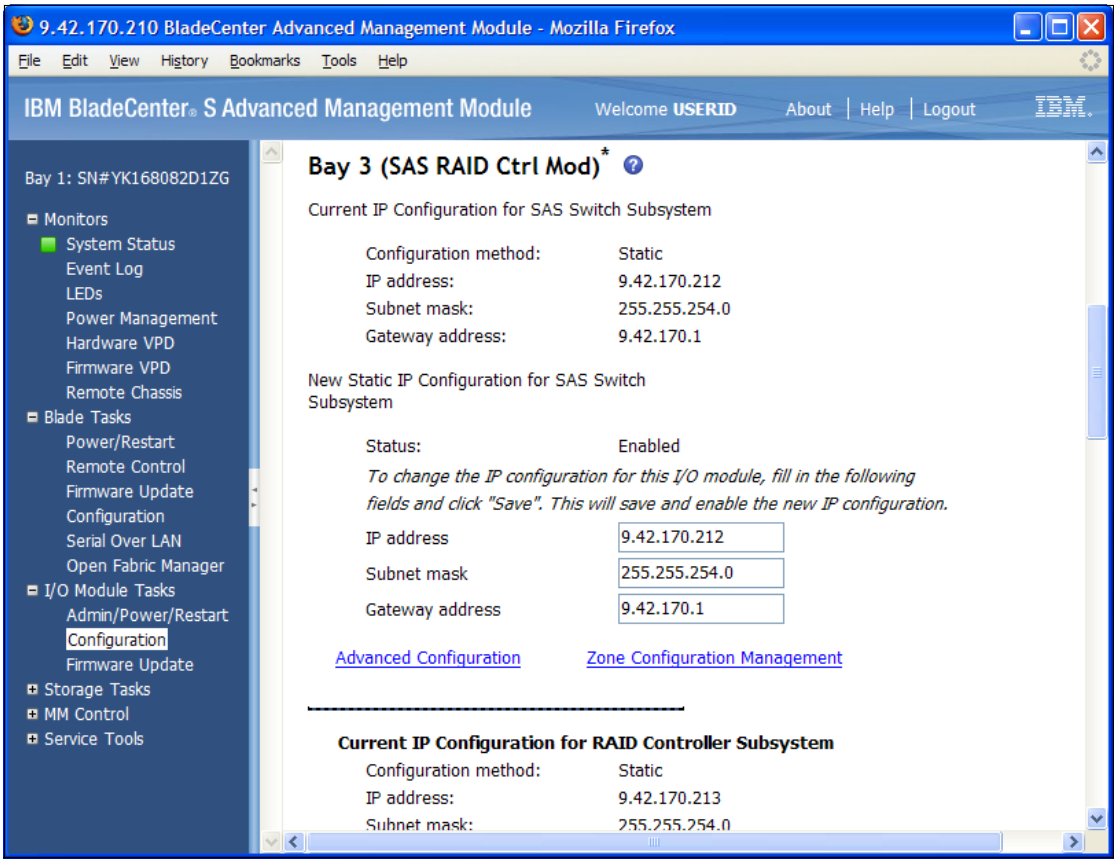

Figure 2-17 IBM BladeCenter S SAS RAID Controller Module IP configuration

7. Once the settings have been modified for both the SAS switch and RAID controller, click **Save**.

> **Important:** Be sure to assign unique IP addresses to both SAS switches and both RAID controllers. Ensure all of these addresses are within the same subnet. This will help simplify the network configuration. Do one bay at a time, and click **Save** before proceeding to the next one.

8. Select **Bay 4** (second RAID module).

9. Provide different IP addresses for the SAS switch and for the RAID controller in the second RAID module.

For detailed step-by-step instructions, see the Redbooks publication *Implementing the IBM BladeCenter S Chassis*, SG24-7682.

Note: If the configuration has a network switch instead of a pass-thru module, ensure that it has an IP address assigned as well.

2.4 Preparing the blade servers

The blades should be the latest BIOS and firmware versions before you start the Windows Essential Business Server installation and the SAS daughter card on the blade server motherboard. If you are using older equipment, make sure that you use appropriate tools (for example, IBM UpdateXpress) to update the components to the latest versions of the code.

The system used for this Redbooks publication consists of two LS21blades and two HS12 blades. Both HS12 blades contain two Hot-Swap disk drives. One LS21 blade has a single drive, the other LS21 blade contains two Hot-Swap disk drives. To install the operating system for each Windows Essential Business Server on a mirrored volume, you need to mirror the disks before starting the Windows Essential Business Server installation. To create a mirrored volume, perform the following steps:

1. Power on (or restart) the blade server and wait until the server boots through the POST and initiates the LSI BIOS, as shown in Figure 2-18.

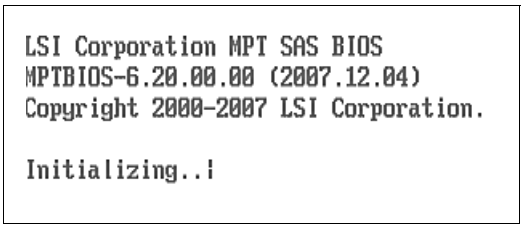

Figure 2-18 Blade server boot

2. When prompted by the LSI BIOS, press Ctrl+C to start the LSI Configuration Utility (Figure 2-19).

Figure 2-19 Invoking the LSI Configuration Utility

3. In the LSI Configuration Utility, select the onboard controller. For HS20 blade servers, it is the controller marked as SAS1064E, as displayed in Figure 2-20. Press Enter to proceed.

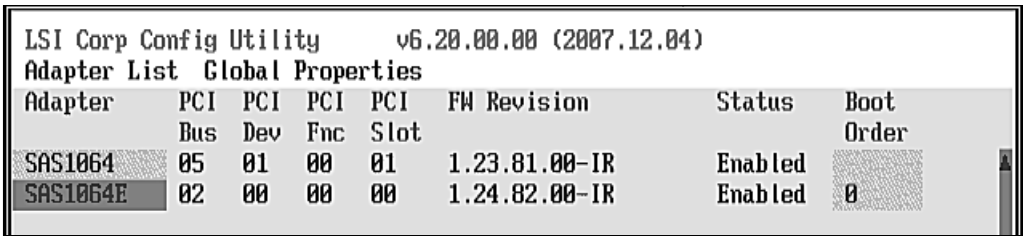

Figure 2-20 Selecting the onboard SAS controller

4. Select the RAID properties and press the Enter key.

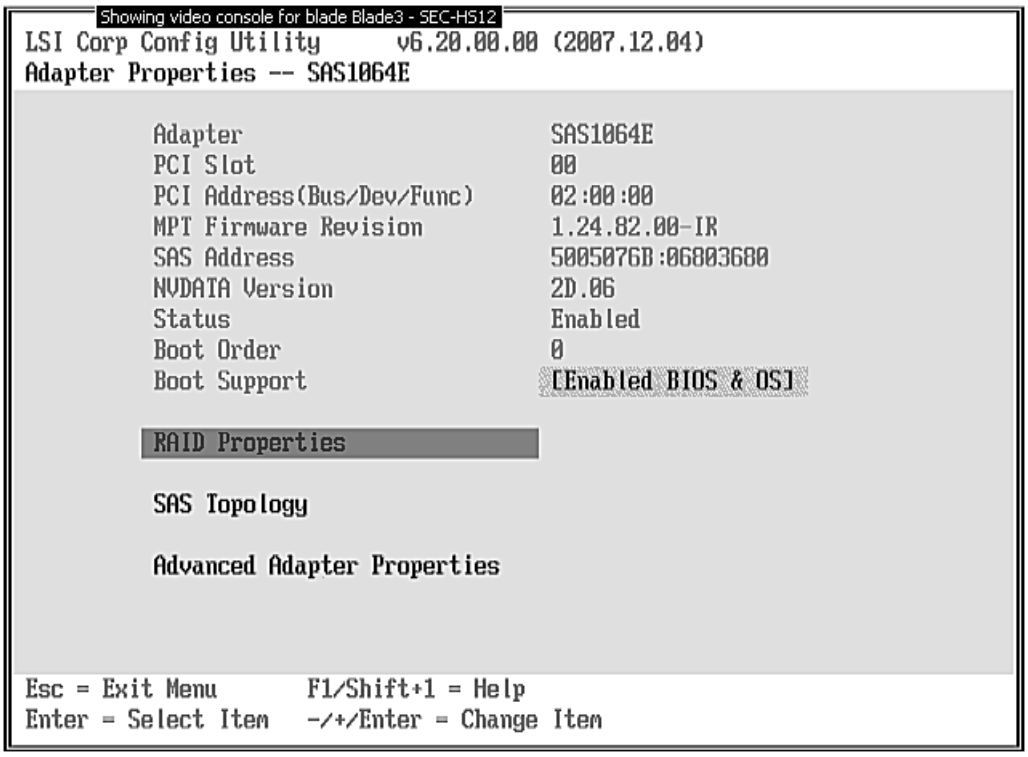

Figure 2-21 Onboard RAID controller —RAID properties

5. Select **IM Volume** to create an integrated mirror with two internal disks in the blade server, as shown in Figure 2-22.

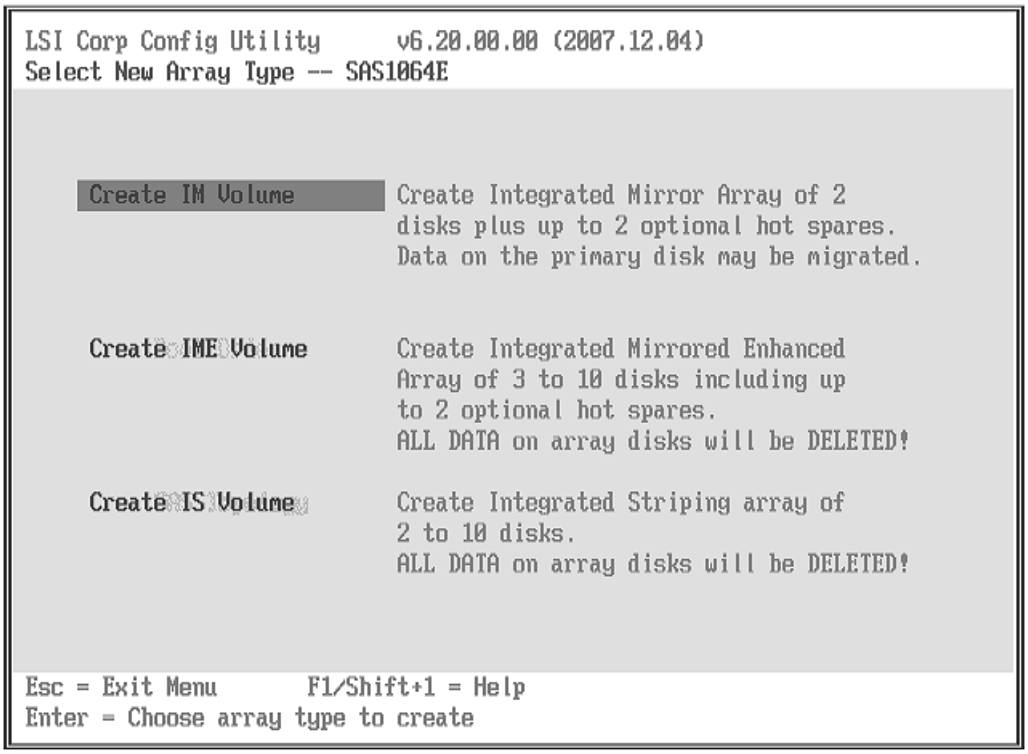

Figure 2-22 Creating IM volume

6. Select the first internal disk. Do this by positioning the selection on the disk entry under the RAID Disk heading, as shown inFigure 2-23. Press the + key.

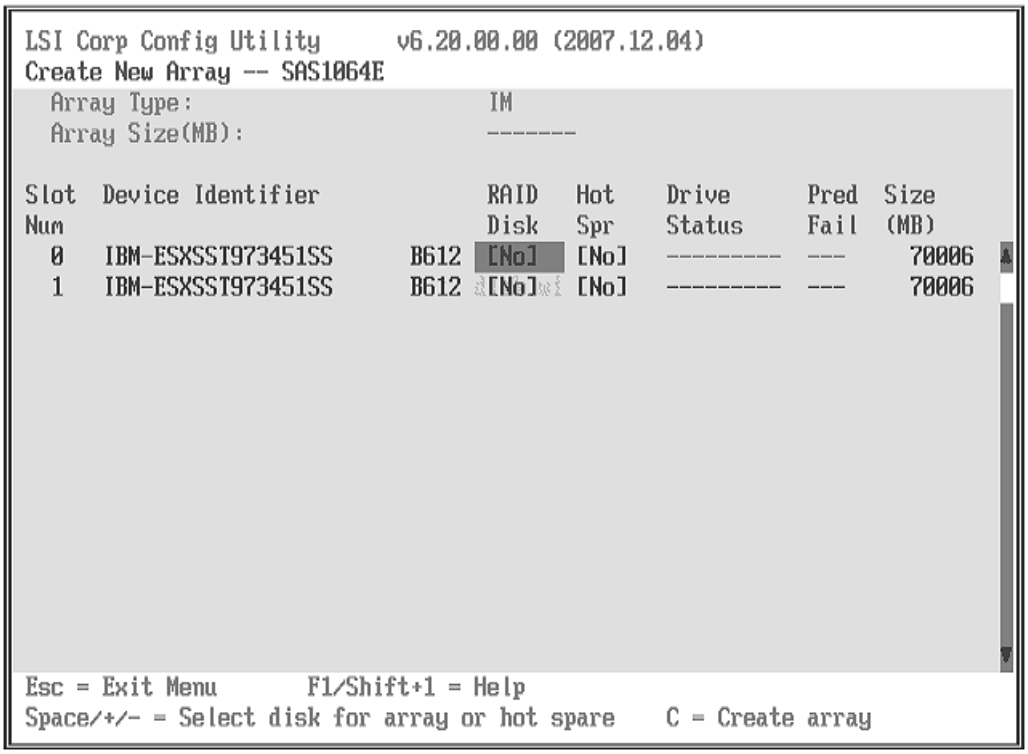

Figure 2-23 Defining disk as part of a mirror

7. Make the appropriate selection in the window shown in Figure 2-24.

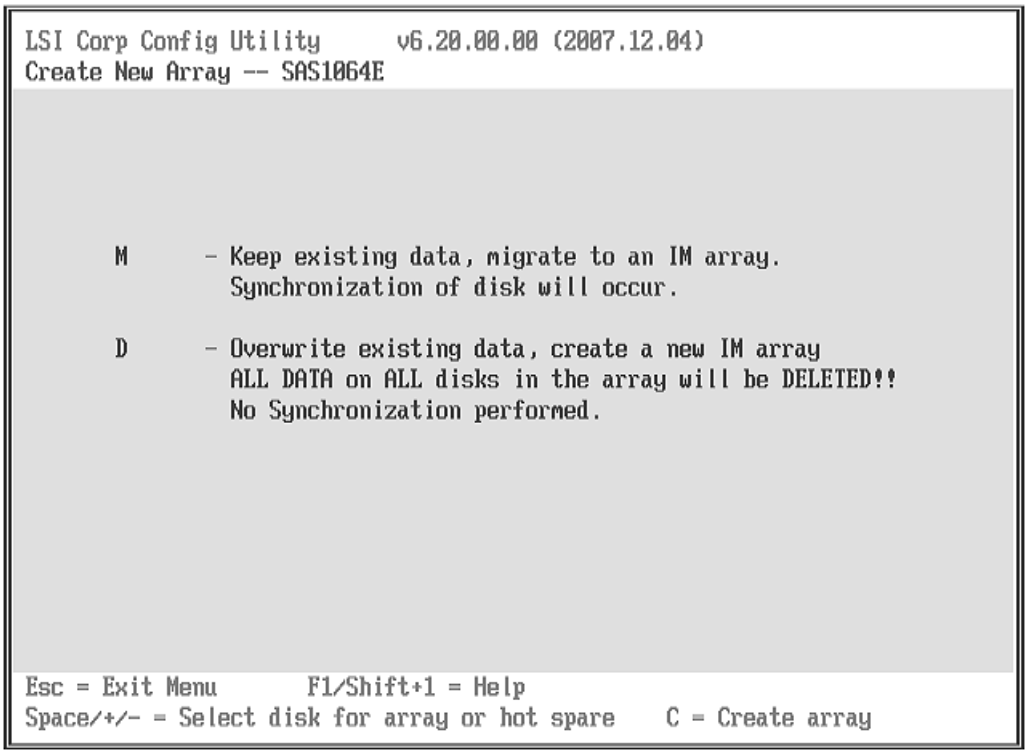

Figure 2-24 Keep or discard the existing data

8. Confirm your selection by pressing the C button to create the new array, as shown in Figure 2-24 on page 43.
9. Select the second disk to be part of the new array and repeat the confirmation steps.
10. When you have complete the confirmation steps for the second disk, the corresponding RAID status of both disks will display that they are now part of the new array. One drive is shown as Primary and the other as Secondary (Figure 2-25).

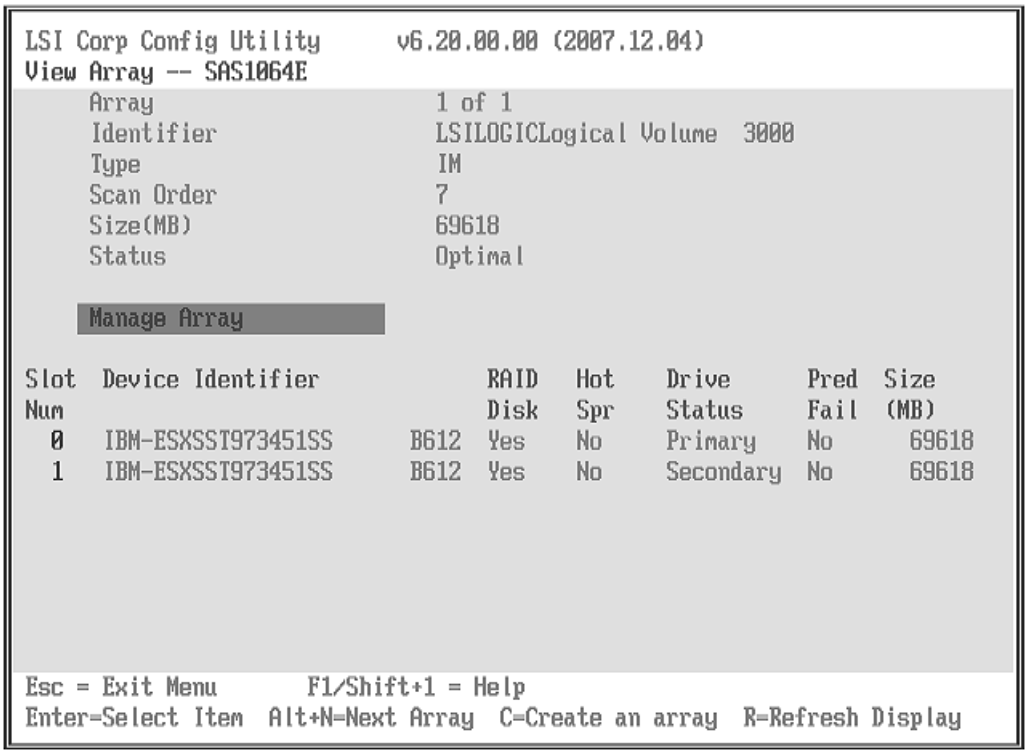

Figure 2-25 New array created

11. Save the changes and exit the configuration utility. The server will reboot with the new array being recognized and displayed in the LSI BIOS message.
12. Repeat the steps on the other two servers.

> **Note:** Complete all of the RAID configurations for each server before starting the Windows Essential Business Server installation.

The blade servers are now prepared for the Windows Essential Business Server installation.

2.5 Creating the network connections

In this section, we will discuss the creating of the network connections for the BladeCenter S.

2.5.1 Suggested BladeCenter S configuration

This configuration includes the Intelligent Copper Pass-thru Module (ICPM) for Ethernet connectivity. ICPM (part number 44W4483) is a low-cost solution, ideal for clients who want to use their existing switching infrastructure with IBM BladeCenter S. It does not require any configuration and so is easy to use. The pass-thru module is almost like a traditional network patch-panel. It routes internal blade ports to the outside of BladeCenter S chassis. The ICPM provides a single connection from each blade to one RJ45 connector, which can be connected directly to an external switch or patch panel. It thus connects each of the six blade servers in the chassis to the network.

If you are using servers in blade slots 1, 2, and 3, make the following physical connections from the ICPM to your network switch using standard Ethernet cables:

- Port 1 internally connected to NIC 1 of blade server 1 (The Windows Essential Business Server Management Server)
- Port 2 internally connected to NIC 1 of blade server 2 (The internal NIC for the Windows Essential Business Server Security Server)
- Port 3 internally connected to NIC 1 of blade server 3 (The Windows Essential Business Server Messaging Server)
- Port 7 (used for management of RAID module in Bay 3)
- Port 14 (used for management of RAID module in Bay 4)

Important: Ports 7 and 14 of the ICPM must be connected for the RAID modules to be managed with IBM Storage Configuration Manager or the command line interface.

Connect ICPM Port 13, which is internally connected to NIC 2 of blade server 2 (the external NIC for the Windows Essential Business Server Security Server), to your existing gateway device, or directly to the Internet.

Note: Certain pass-thru modules are delivered with external ports disabled by default. Check if it is necessary to enable them through the AMM interface.

2.5.2 BladeCenter S configuration in the test environment

In our test environment, we used the IBM Server Connectivity Module (SCM) instead of the Intelligent Copper Pass-thru Module. SCM provides a simple Ethernet interface option for connecting the IBM BladeCenter system to the network infrastructure. It is intended for customers with simple networking requirements or limited on-site networking skills, so the SCM configuration and management has been simplified. The graphical user interface is intuitive and the complex functions typically found on advanced switches are not present.

The Windows Essential Business Server Security Server requirement is to have the external NIC on a network separated from the internal NICs. Isolate NIC ports in IBM Server Connectivity Module by putting it in its own port group (or in case of advanced switches, in its own VLAN).

Configuring the IBM Server Connectivity Module.

Perform the following steps to configure the SCM:

1. Open a Web browser and connect to your AMM by entering its IP address.
2. Log in using the AMM credentials (default USERID and PASSW0RD).
3. Click **Configuration** under I/O Module Tasks in the left pane.
4. Click **Advanced Configuration** under heading Bay 1 (Server Conn Mod) in main panel.
5. Click the **Start Web Session** button.
6. Log in using the SCM credentials (default USERID and PASSW0RD).
7. On the “Port Group Mapping” window, organize blade server NICs in at least two port groups. For this Redbooks publication, we created two groups:
   - Group 1, for external server connections.

     In our case, this was the second port on the Security Server, and also our temporary setup server in Bay 5.
   - Group 2, for internal server connections.

Our final SCM configuration for server blades in the BladeCenter chassis is as follows:

- Chassis slot 1: Windows Essential Business Server Management Server
- Chassis slot 2: Windows Essential Business Server Security Server
- Chassis slot 3: Windows Essential Business Server Messaging Server
- Chassis slot 4: SQL Server 2008
- Chassis slot 5: Temporary staging server

The final port configuration page from within AMM is shown in Figure 2-26 on page 47.

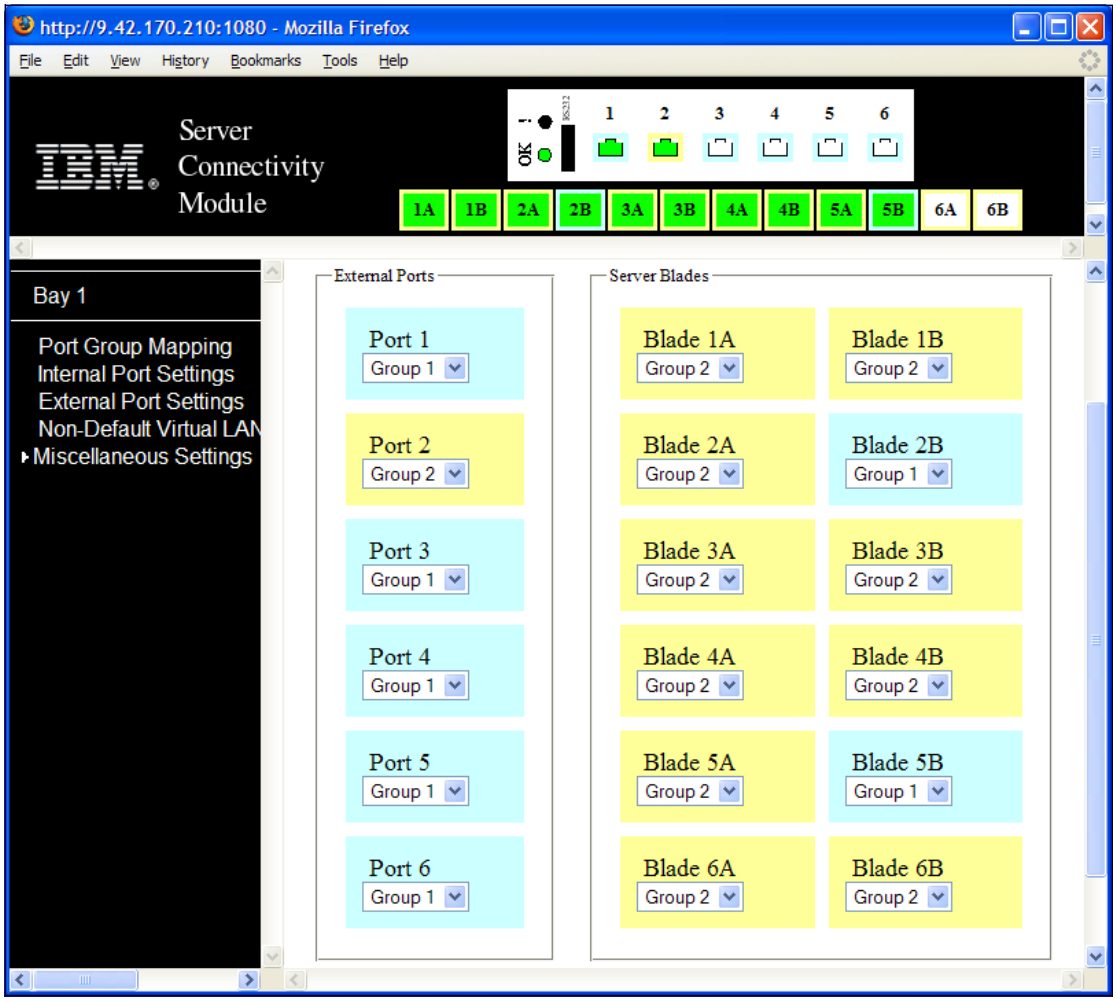

Figure 2-26 IBM Server Connectivity Module Port Group Mapping

Note: If you see 14 server blades in the SCM configuration interface (and not six as shown in Figure 2-26), your SCM module is probably running older firmware. IBM BladeCenter S is supported by SCM firmware version 1.1.

2.6 Configuring the storage

During the Windows Essential Business Server installation you will be prompted for the location of the data drive. So even if the blade servers have local drives as suggested, the RAID modules and Disk Storage Modules (DSM) need to be configured in advance if they will be used for the Windows Essential Business Server installation. If you elected to use the DSMs only (no local drives), the storage subsystem must be configured for both the data and operating system drives.

Suggested practices for Windows Essential Business Servers data volumes are as follows:

- At least one volume mapped to the Management blade server.
- At least one volume mapped to the Messaging blade server.
- If space is available Security blade server should have a volume mapped for logging.
- Any additional space can be used for mapping to blade servers in the future. It is suggested to keep additional storage in separate pools.
- Suggested practice: Assign a global Hot Spare drive for cases of drive failures.

The IBM BladeCenter S SAS RAID Controller Module can be managed through a graphic user interface or a command line interface (CLI):

- IBM Storage Configuration Manager
- IBM BladeCenter S SAS RAID Controller Module Web browser interface
- Telnet

IBM Storage Configuration Manager (SCM) is the most comprehensive and easy to use graphic user interface. It allows for centralized management of all SAS Connectivity Modules and IBM SAS RAID Controller Modules.

In this chapter, we cover the storage configuration using the IBM Storage Configuration Manager. At the time of writing, we used IBM Storage Configuration Manager version 1.10.0.

2.6.1 Installing SCM with the BladeCenter S component

To configure your BladeCenter S storage using SCM, install the product onto a separate computer (a server or a workstation) with network connectivity to the BladeCenter S and RAID modules. See 2.5, “Creating the network connections” on page 45.

Note: If you use Microsoft Internet Explorer® 7 to connect to SCM after the installation has been completed, set the browser security setting to Default Level. Select **Tools** → **Internet Options** → **Security** and click **Default Level**. The SCM interface uses pop-ups, so you might have to disable this feature in your browser, or allow the SCM pop-ups.

Here are the basic steps to install the SCM with the BladeCenter S component:

1. Start the installation by double-clicking the **setupwin32.exe** file. The product and version are displayed. Click **Next**.
2. Accept the license agreement and click **Next**.
3. If IBM Director is installed, review and follow the stated instructions. Otherwise, click **Next**.
4. Specify the installation path for SCM. Click **Next**.
5. Select **SCM Full Install for all devices**, as shown in Figure 2-27 on page 49. Click **Next**.

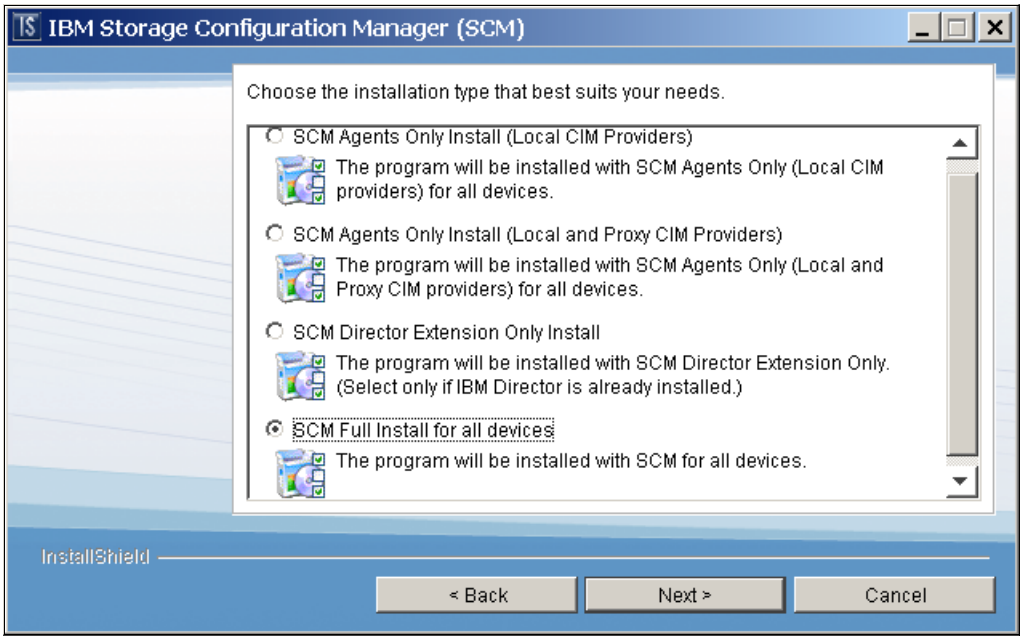

Figure 2-27 BladeCenter S installation option for the Non-RAID SAS Module

6. Select the ports SCM will use on the “Select SCM Manager Communications Port” panel (Figure 2-28). We suggest that you use the default ports unless they are already assigned. Click **Next**.

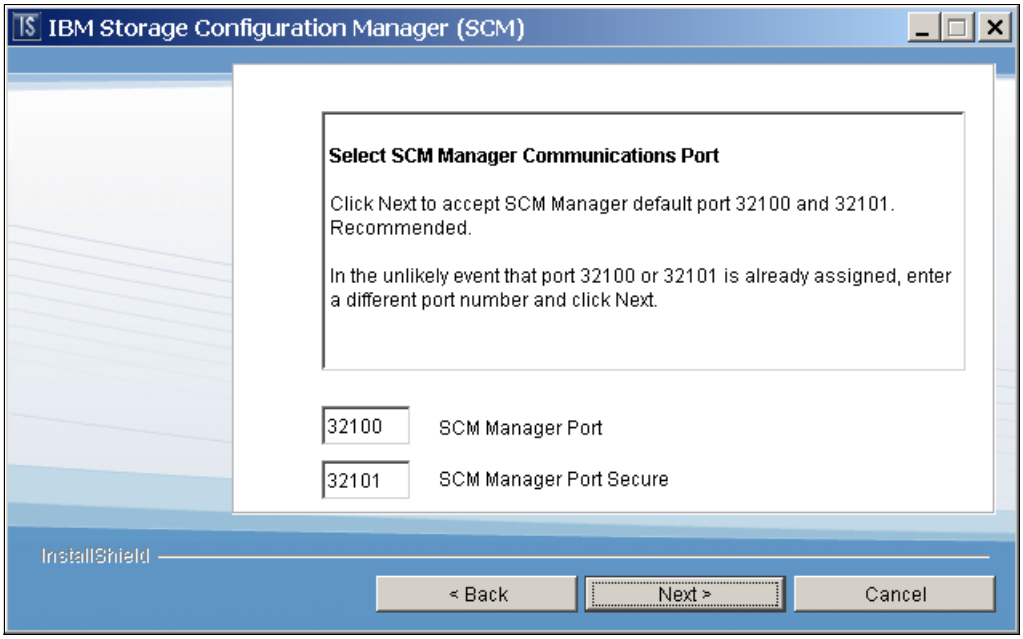

Figure 2-28 SCM Manager Communication Ports selection window

7. In the “Select shortcut options” panel (Figure 2-29), select the **Create Shortcut to SCM in Programs menu** check box to create a shortcut in Programs directory. Click **Next**.

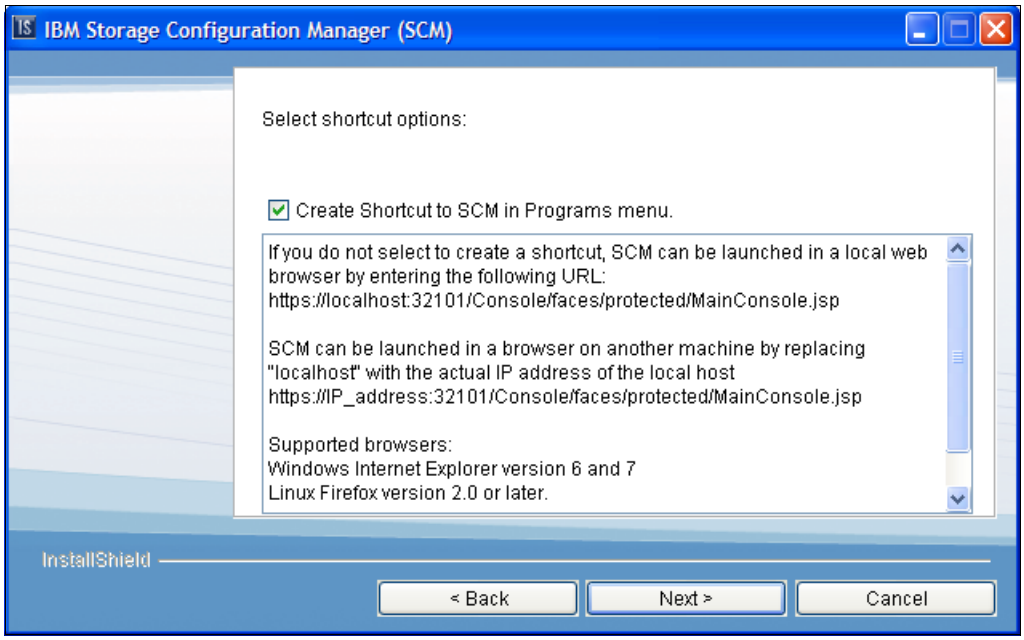

Figure 2-29 Launch and shortcut options

8. Review your installation options in the installation options summary window. Confirm that this information is correct and click **Install**.

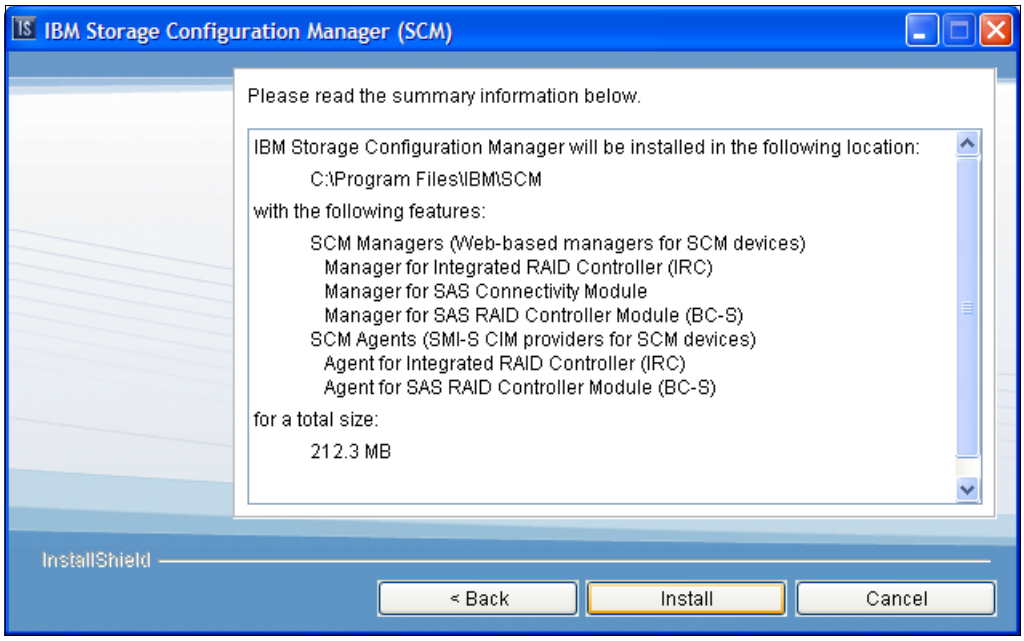

Figure 2-30 Installation options summary window

9. Click **Finish** when the installation process has completed.
10. Reboot the computer once the installation completes. You can let SCM do it, or defer until later. SCM requires a reboot to function properly. Click **Finish.**

2.6.2 Configuring the storage using IBM Storage Configuration Manager

Once you have installed the IBM Storage Configuration Manager, continue with the configuration of SCM.

Starting IBM Storage Configuration Manager

1. Start the IBM Storage Configuration Manager by navigating to **Start** → **Programs** → **IBM Storage Configuration Manager** → **IBM Storage Configuration Manager**. A Web browser window will open and connect to IBM Storage Configuration Manager

> **Note:** You can start SCM from a remote machine by opening a browser and entering the IP address of the computer where SCM is installed:
>
> `https://computername-or-ipaddress:32101/Console/Login.faces`

2. Log in by entering the user name and password. These account credentials can be the local account with which you installed the product, or a user account that has administrative permissions to access the computer where SCM is installed.

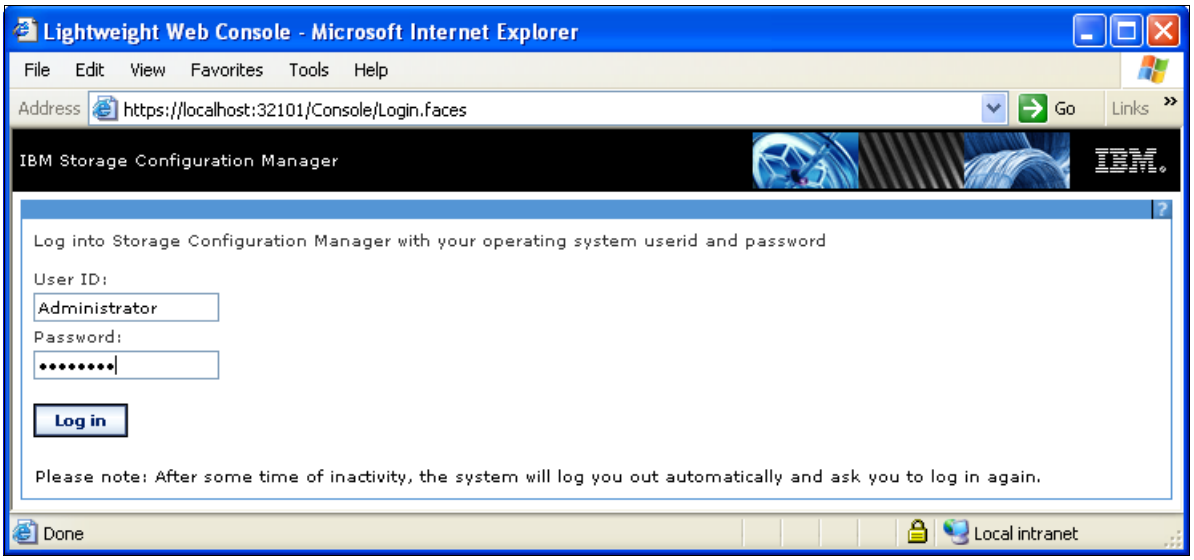

Figure 2-31 SCM log in portlet window

After you have logged in to IBM Storage Configuration Manager, the “Getting Started” panel (Figure 2-32) displays.

Figure 2-32 SCM Welcome window

Before you can start configuring storage, set up the RAID modules using Initial Setup Wizard.

Setting up RAID modules with Initial Setup Wizard

The Initial Setup Wizard allows you to perform the basic operations required to add the IBM BladeCenter S SAS RAID Controller Module to the IBM Storage Configuration Manager console. Perform the following steps to configure the module:

1. On the “Getting Started“ panel (Figure 2-32), select **Initial Setup Wizard**.
2. On the “Add SAS RAID Modules in I/O Bay 3” panel (Figure 2-33 on page 53), add the IP address of the SAS switch inside the IBM BladeCenter S SAS RAID Controller Module installed in bay 3. Provide the User ID and password for the built-in SAS switch and the RAID Controller. Click **Next**.

> **Important:** You must add the IP address of the SAS switch that is built into the IBM BladeCenter S SAS RAID Controller Module, and not the IP address assigned to the RAID Controller subsystem itself. You only need to add the IP address of the module in bay 3. The module in bay 4 will be added automatically as long as it is configured correctly.

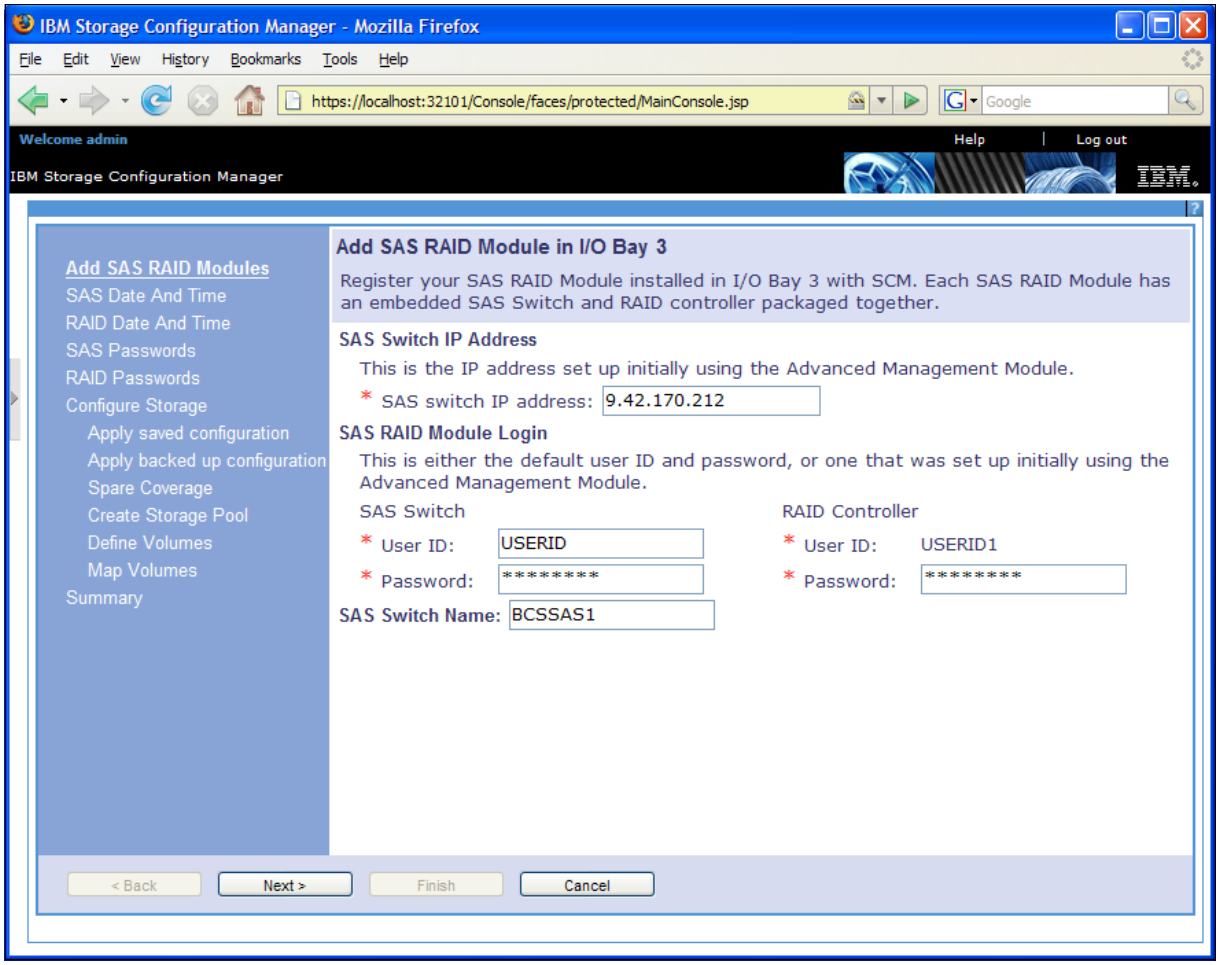

Figure 2-33 Adding a IBM BladeCenter S SAS RAID Controller Module to Storage Configuration Manager

3. Set the SAS Switch date and time (Figure 2-34). Use either the automatic procedure (by connecting to an NTP time server) or specify the date and time manually. Click **Next**.

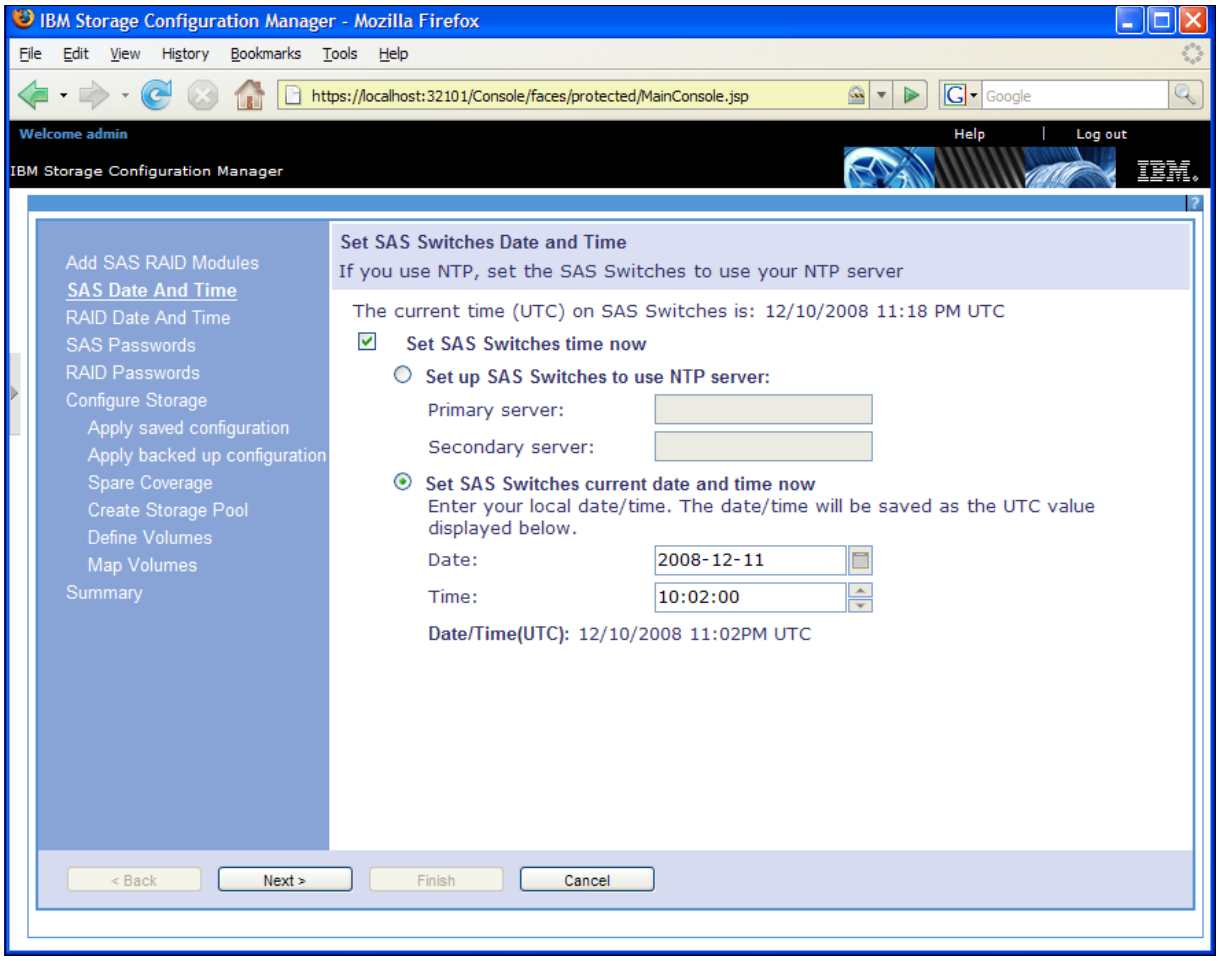

Figure 2-34 Setting SAS switch date and time

4. Set the RAID Subsystem date and time (Figure 2-35). The RAID subsystem does not support an NTP server. Either set the RAID Subsystem date and time manually, or according to the SAS switch. Click **Next**.

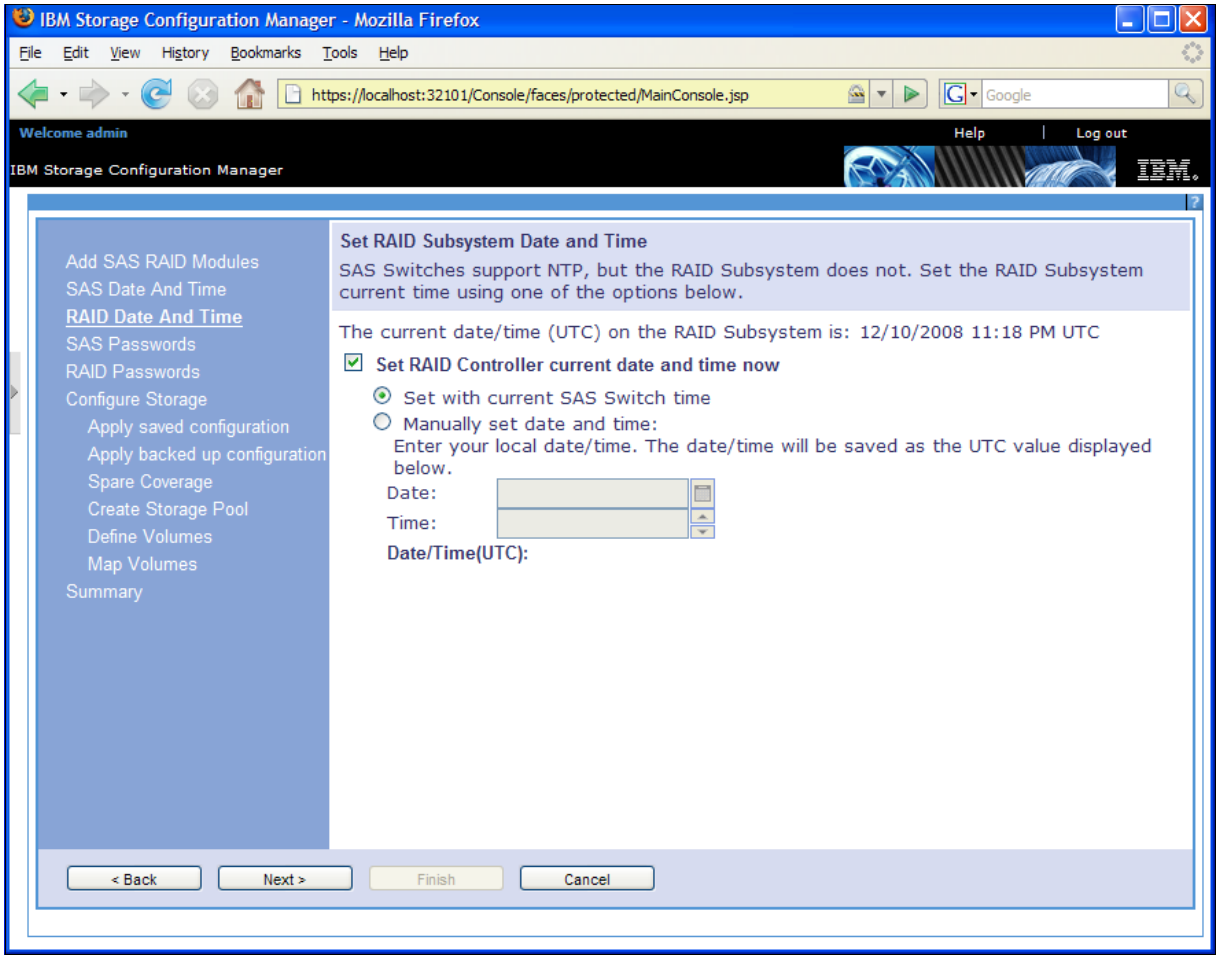

Figure 2-35 Setting RAID Subsystem date and time

5. (Optional) The “Modify Switches Passwords” panel (Figure 2-36) allows you to change the default password for the built in USERID account. Select the **Change passwords on both modules** radio button and click **Change Password**. Click **Next**.

Tip: Have two users created for redundancy purposes.

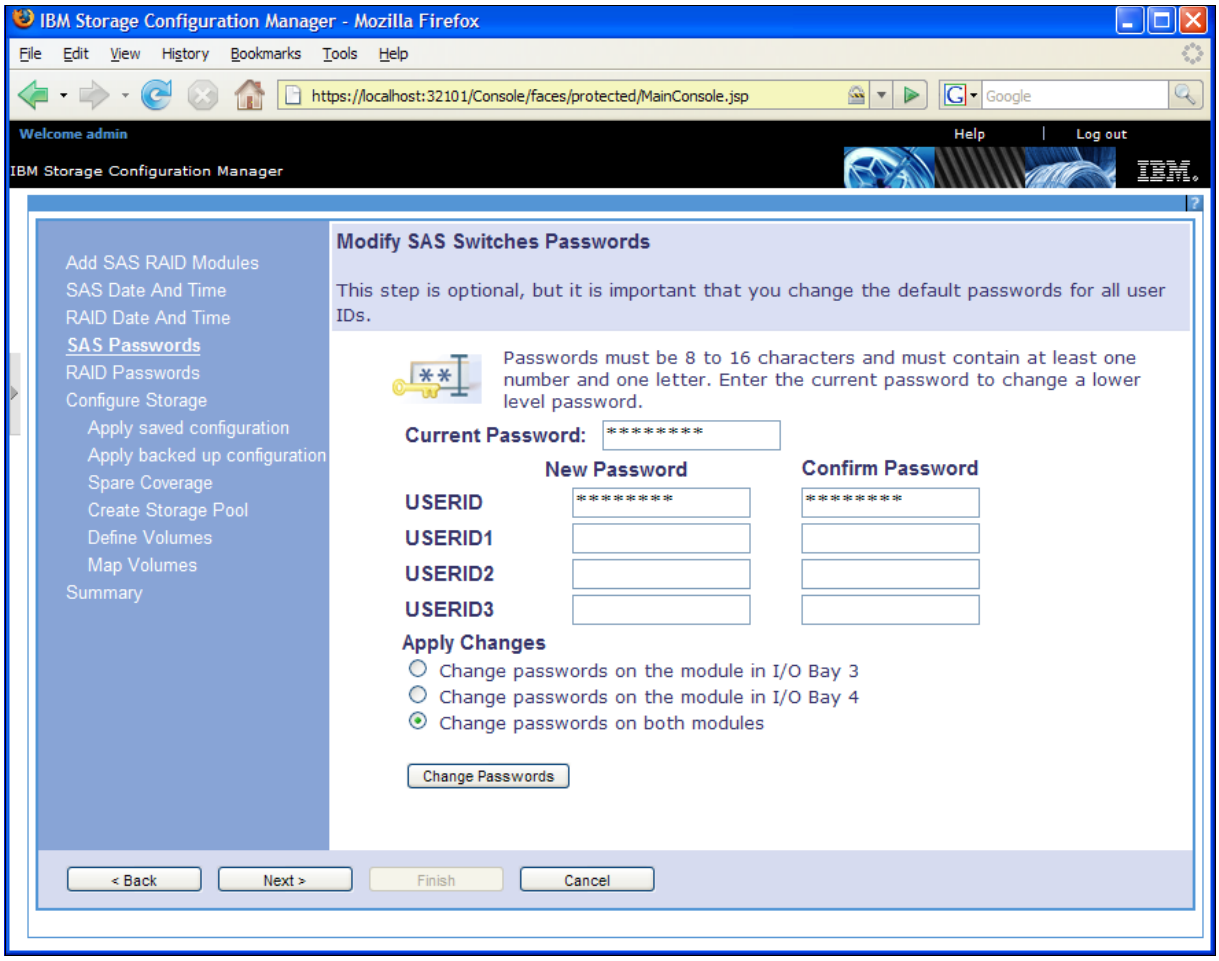

Figure 2-36 Modifying SAS Switch Passwords

6. (Optional) The “Modify RAID Subsystem Passwords” panel (Figure 2-37), allows you to change the USERID account password of the RAID Subsystem. The password change will apply to both RAID subsystems. Click **Change Password** and **Next**.

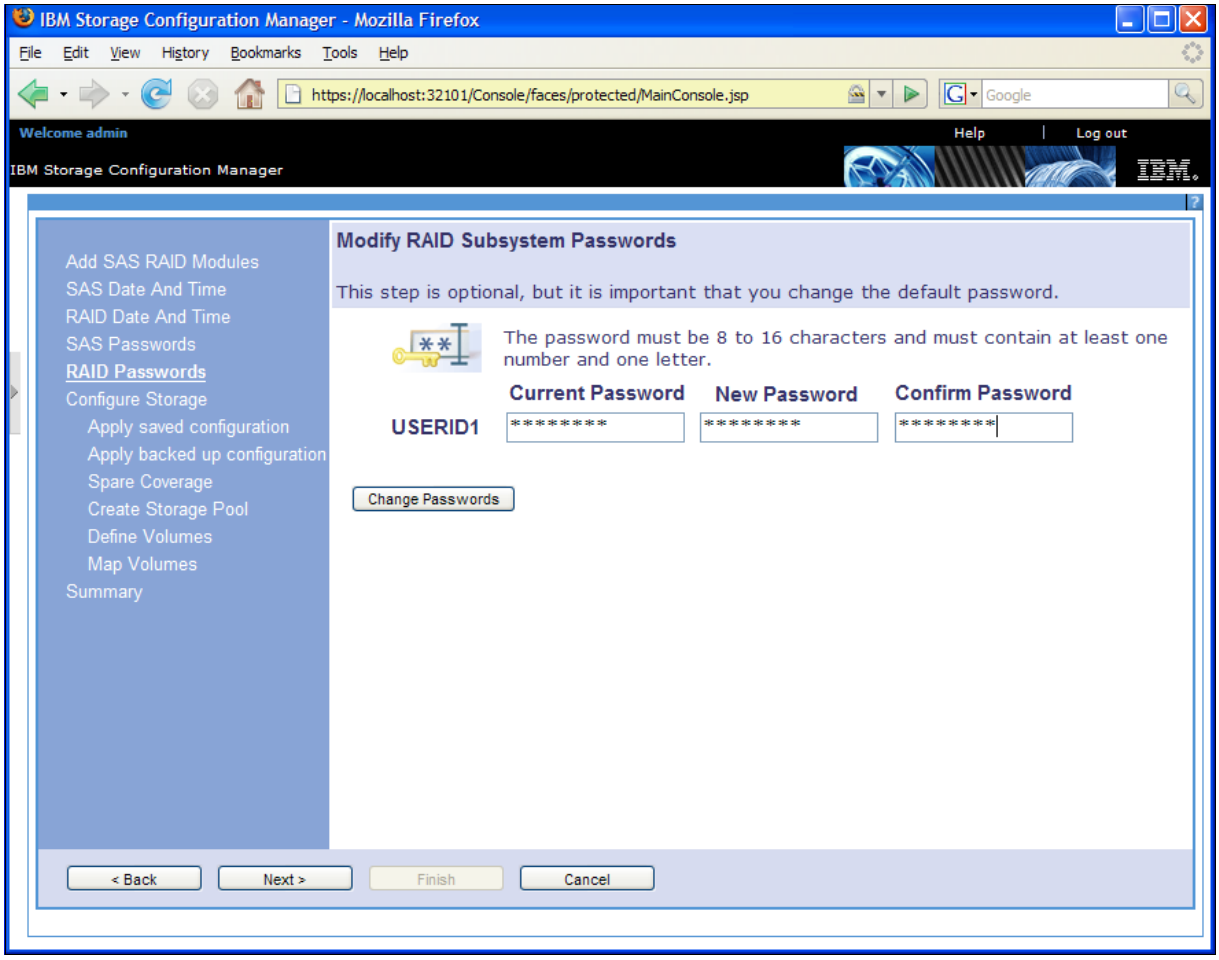

Figure 2-37 Modifying RAID Subsystem Passwords

7. You may see a dialog box to indicate the User ID for which the password is to be changed. Choose **USERID**. Click **OK**. The RAID modules have been added to the Storage Configuration Manager.

8. Configure storage for blade servers. The “Configure Storage” panel (Figure 2-38) provides a number of selections, as follows:

   – Apply a configuration already saved on the controller

     Use an existing configuration on the IBM BladeCenter S SAS RAID Controller Module.

   – Apply a backup configuration file

     Apply a backup configuration file from IBM Storage Configuration Manager should you require a restoration of the IBM BladeCenter S SAS RAID Controller Module to a previously backed up state.

   – Create a custom configuration

     Create a custom configuration in which you either allow IBM Storage Configuration Manager to chose the appropriate drives in the Disk Storage Modules or you may chose the drives yourself.

   Because we do not have an existing configuration saved on the controller, we will create a custom configuration. Select the **Manually choose drives (advanced)** radio button. Click **Next**.

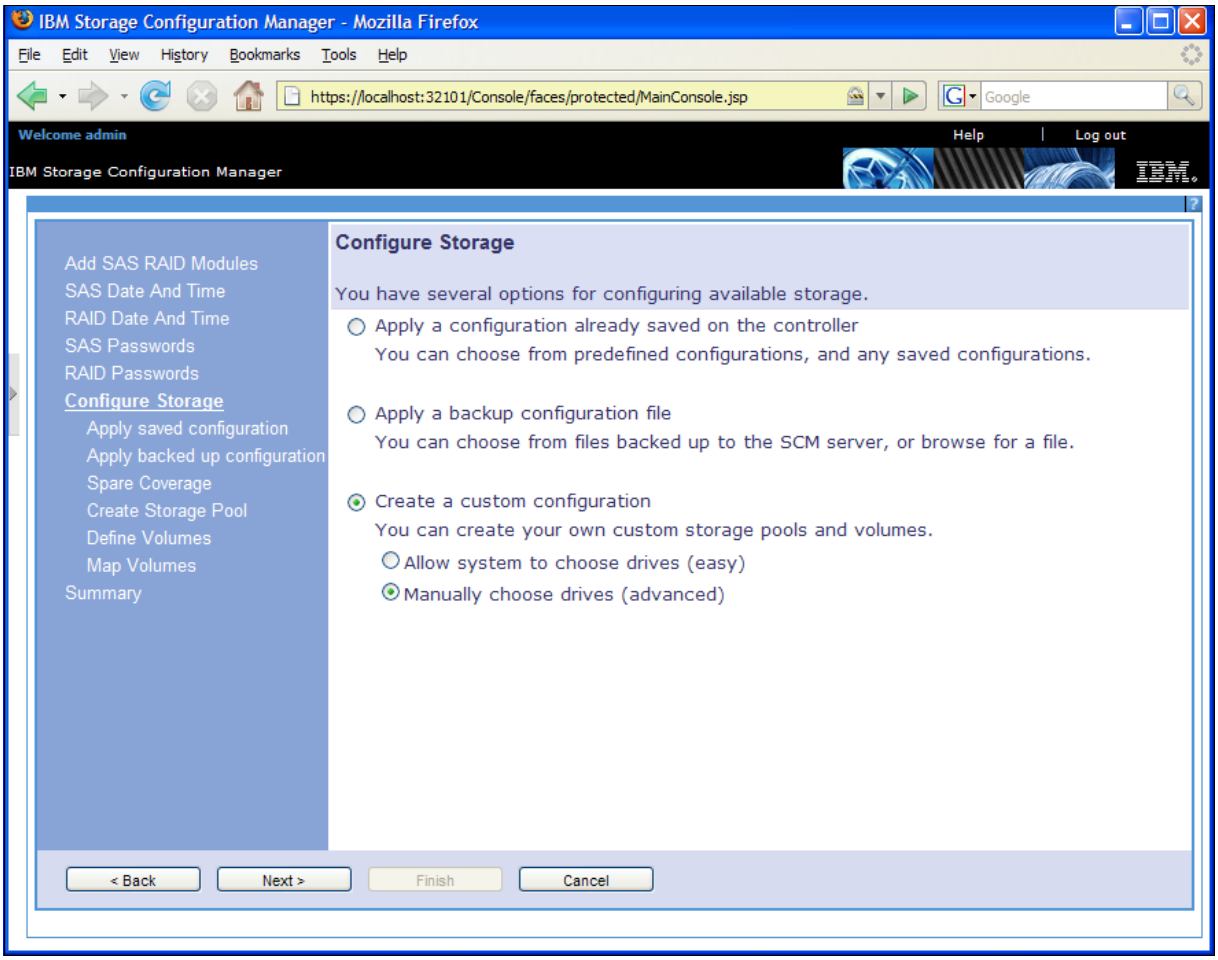

Figure 2-38 Configure Storage window

9. Plan to add redundancy for this data. As Windows Essential Business Server data will be kept on this storage, you can plan to add redundancy for this data. The “Spare Disk Drive Coverage” panel (Figure 2-39) allows spare disks to be defined. These will be used as online replacement in case any working disk fails.

   The Initial Setup Wizard allows you to select up to two global spare disks per drive type, providing you have sufficient capacity. Because we are only deploying one RAID 5 pool, we selected no global spares.

   Note: A global spare provides protection across both disk storage modules in the BladeCenter S chassis.

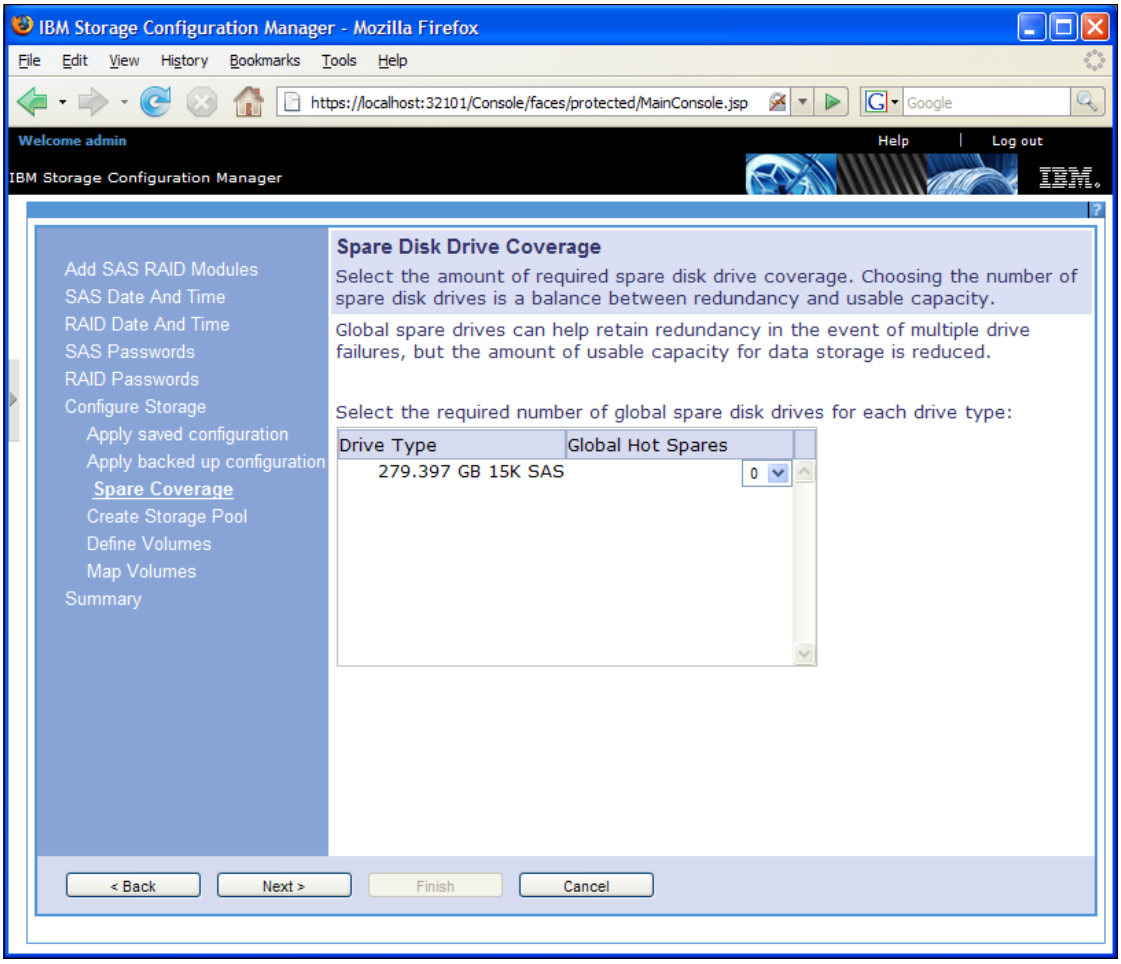

Figure 2-39 Spare Disk Drive Coverage window

10. The “Create Storage Pool” panel (Figure 2-40 on page 60) assists in the creation of storage pools from the available disks. These disks can be a combination of disks from one or both internal storage modules, as well as any external units that are attached. We created one single storage pool, using all of the eight internal disks.

We performed the following steps:

a. Select a name to assign to the storage pool, for example *Pool_1*.

b. Select the RAID level amongst the following choices:

- RAID 0
- RAID 1
- RAID 5
- RAID 0+1

We used RAID 5, as suggested for Windows Essential Business Server data volumes.

c. Select at least the minimum number of drives needed for the chosen RAID level. Add them to the pool by clicking **Add**. The total new pool capacity will be listed in the upper right part of the window.

In our environment, we had eight disk drives, each being 300 GB in size. These spanned the two internal modules. Six in bay 1. Two in bay 2.

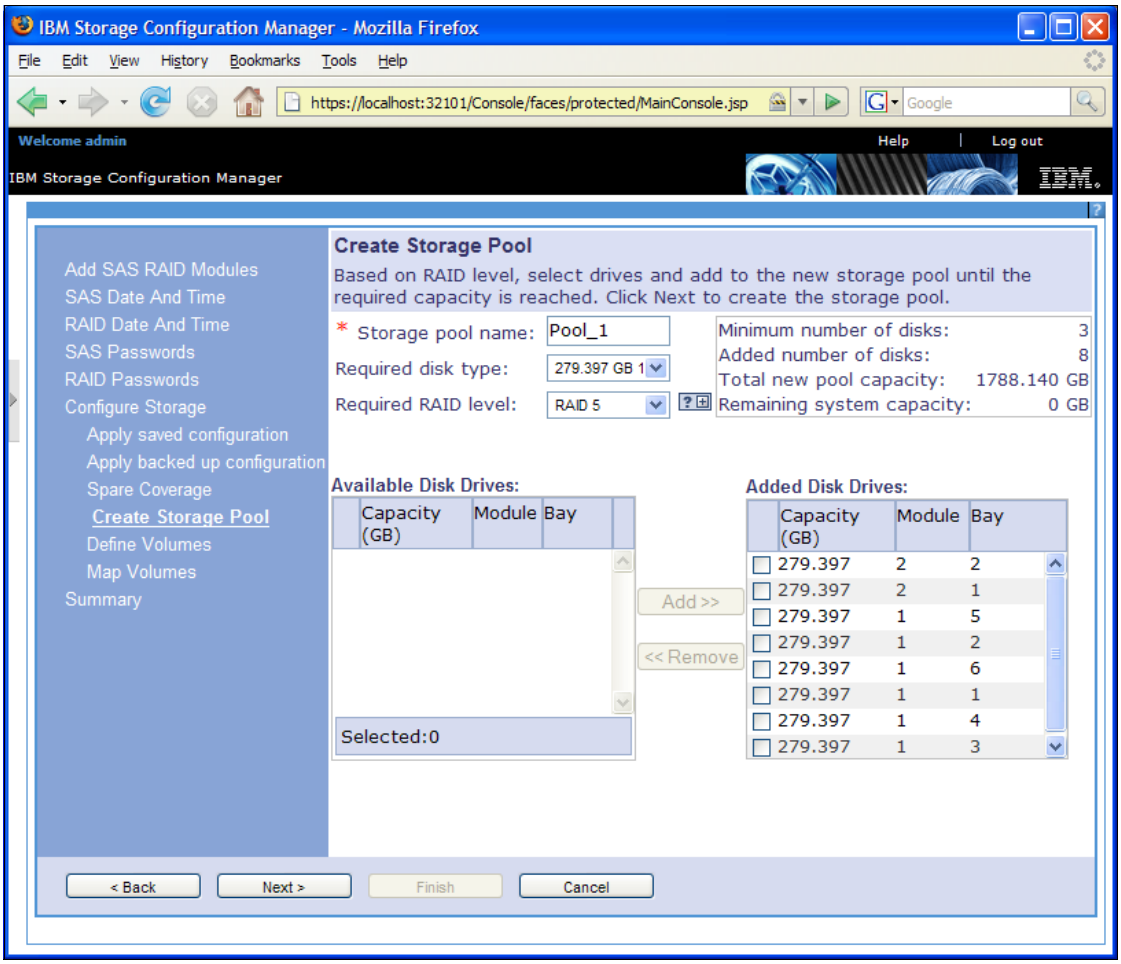

Figure 2-40 Create Storage Pool window

11. Click **Next**. Click **OK** to confirm the Storage Pool summary pane presented to you. Click **Next** when the storage pool has been successfully created.

12. The “Define Volumes” panel (Table 2-2) allows you to create volumes from the storage pool defined in the previous step. Specify a volume name, capacity for the volume to be created, and the quantity of volumes if you want to create identically sized volumes. When creating multiples of the same volume, a suffix will be added to the end of the volume name.

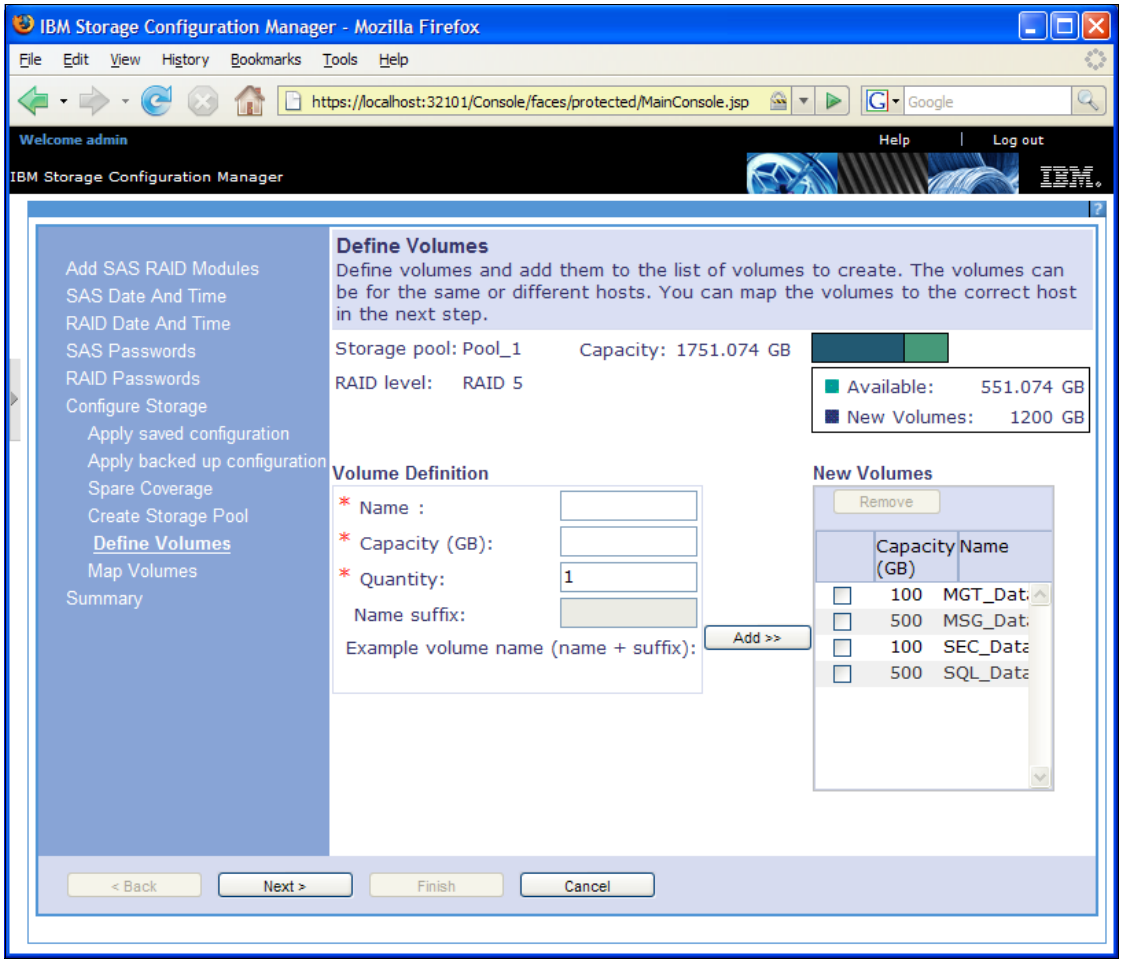

Table 2-2 Define Volumes window

We will create two 100 GB volumes and two 500 GB volumes. Table 2-3 describes the volume structure used for the Windows Essential Business Server deployment.

Table 2-3 Volume sizes

Volume Name	Volume Size
MGT_Data	100 GB
SEC_Data	100 GB
MSG_Data	500 GB
SQL_Data	500 GB

Note: Do not select the exact available amount presented to you on the “Define Volumes” panel, as the volume creation will fail. To create a single volume from the entire storage pool, select an amount marginally less the specified available amount.

13. The “Map Volumes” panel (Figure 2-41) allows you to discover blades and then to map the necessary volumes to them. If the blade servers are not powered on, they will not be discovered. It is possible to map a volume to a blade server after the wizard has completed.

> **Note:** When powered on, the blade servers with the SAS daughter cards are identified by their port and port address to SCM so that they can be mapped.

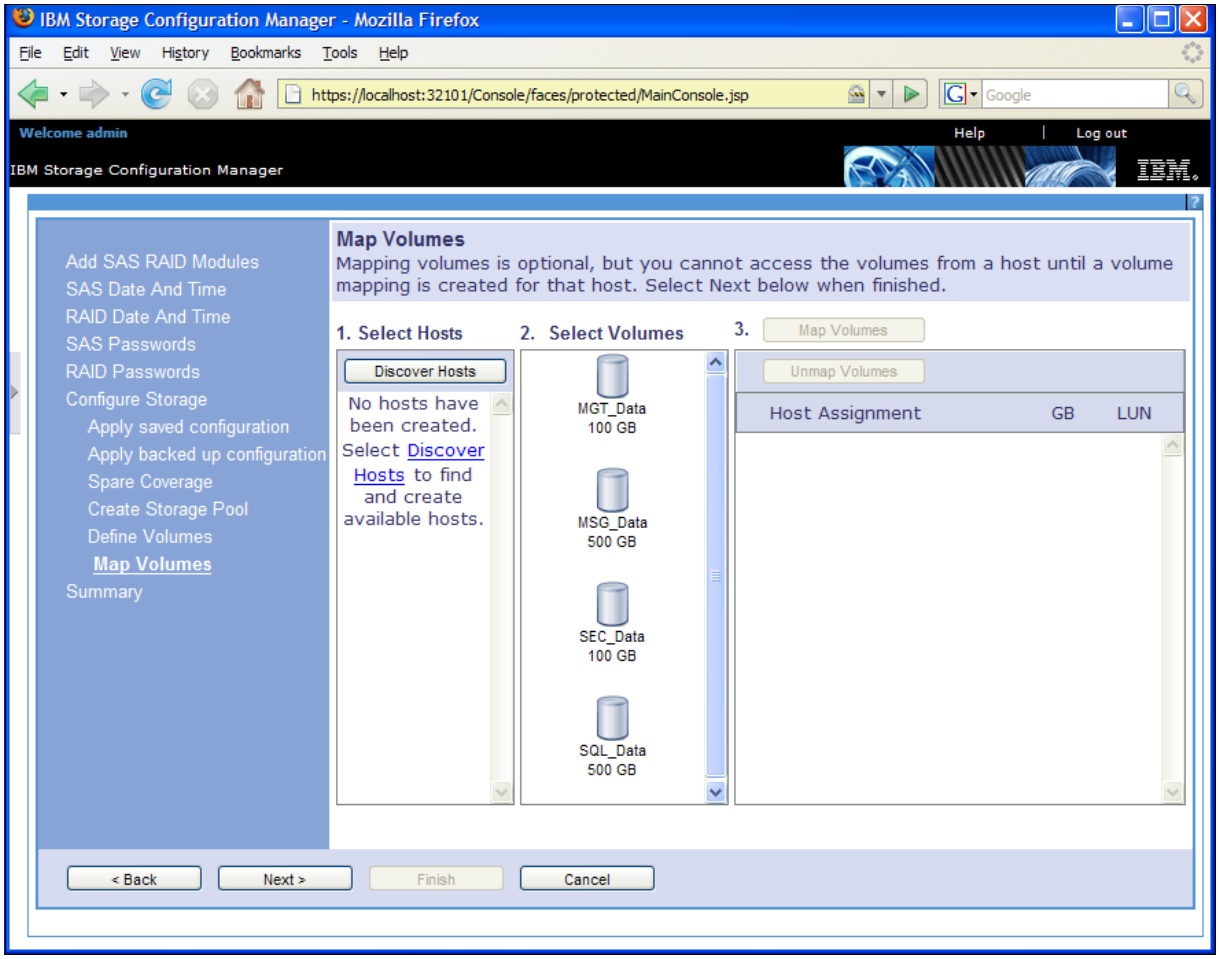

Figure 2-41 Map Volumes panel

Under “1. Select Hosts”, click **Discover Hosts**. IBM Storage Configuration Manager will search and identify blade servers with the SAS daughter card, as shown in Figure 2-42. Click **Next**.

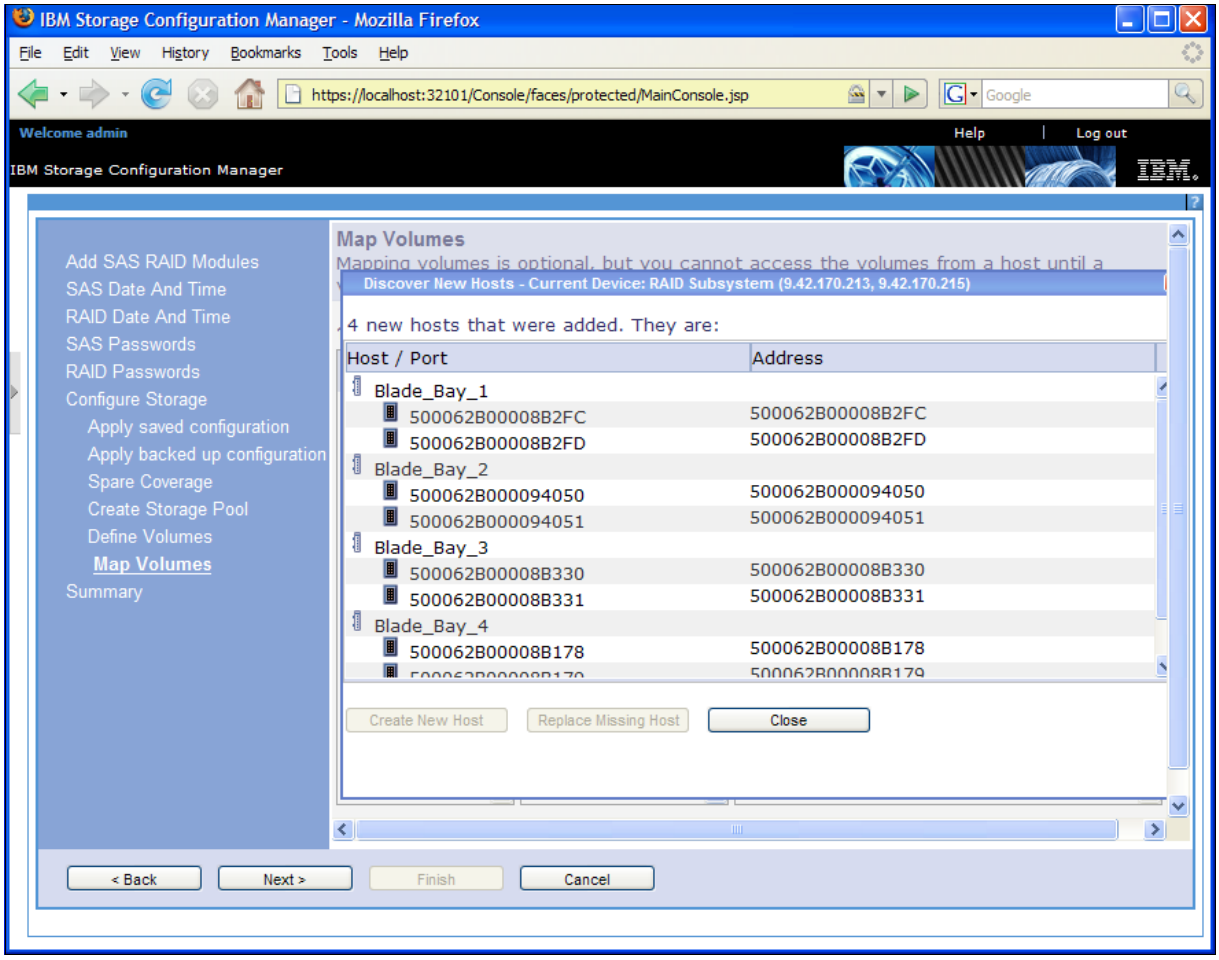

Figure 2-42 Discover Hosts

14. Complete the volume mapping. Select a Host and a volume. Click **Map Volumes**. Upon completion, the “Map Volumes” panel will display all the mapped volumes listed to their configured host (Figure 2-43).

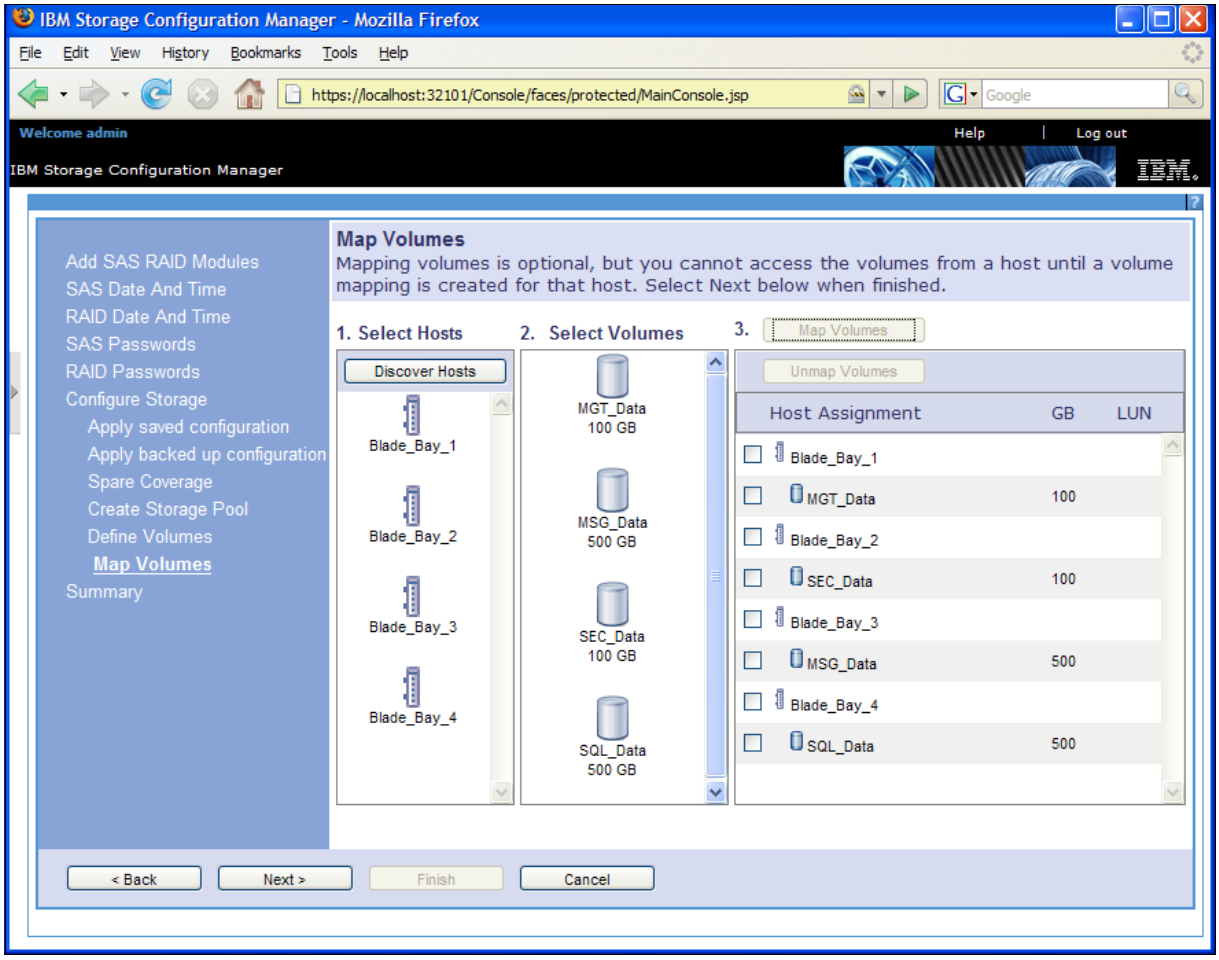

Figure 2-43 Map Volumes panel after volume mapping

15. Review your selection on the “Summary” panel (Figure 2-44). Click **Finish**.

    The necessary tasks will execute and the results of those tasks will be presented. Click **Close** to complete the process and conclude the Initial Setup Wizard for the IBM BladeCenter S SAS RAID Controller Module.

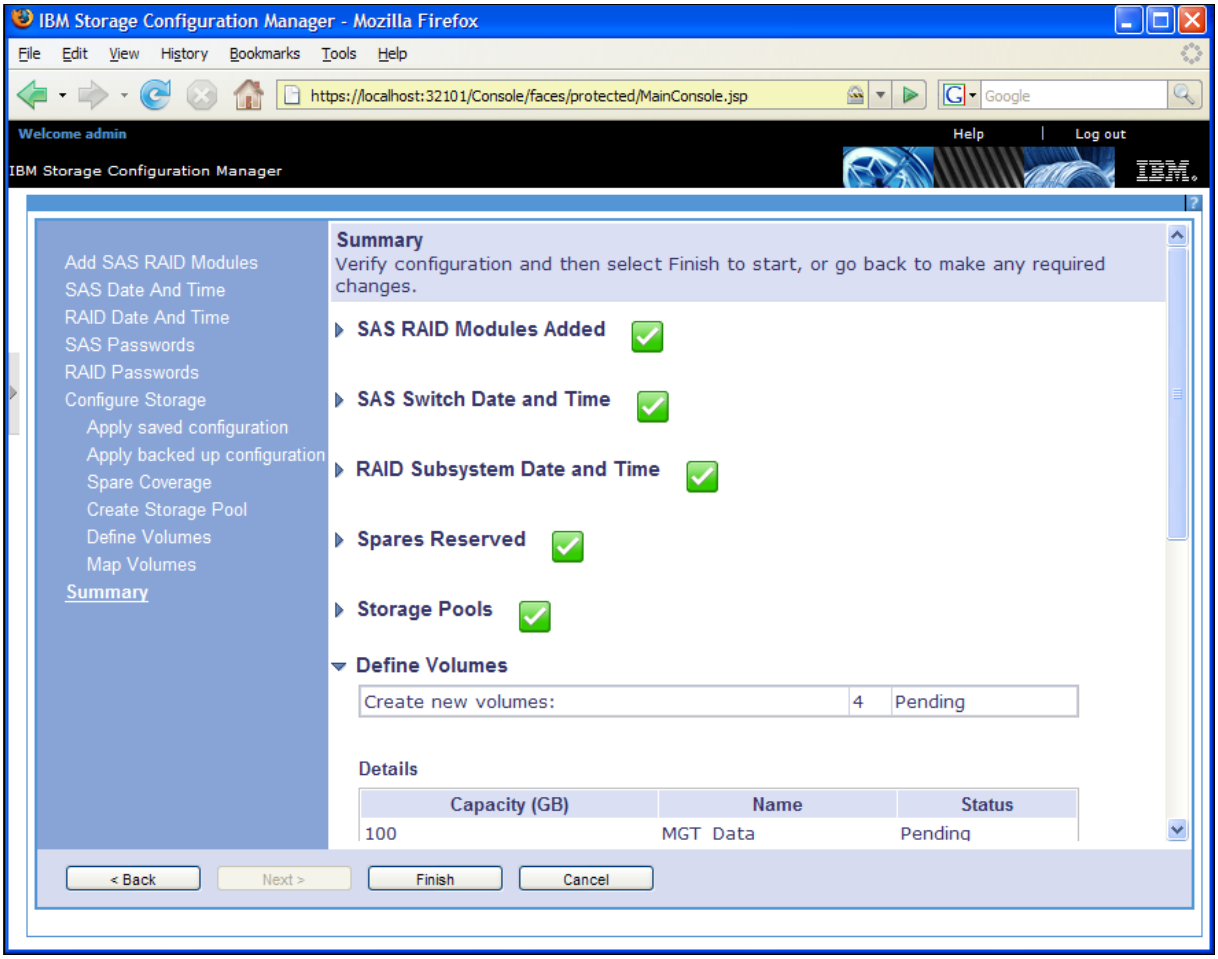

Figure 2-44 Summary panel

Your BladeCenter S infrastructure is now prepared for the Windows Essential Business Server installation. To continue with the deployment, proceed to Chapter 3, “Windows Essential Business Server preinstallation wizards” on page 67.

3

Windows Essential Business Server preinstallation wizards

This chapter describes the two wizards that are used as part of the Windows Essential Business Server installation:

- Preparation Wizard
- Planning Wizard

The two wizards are new compared to Windows Small Business Server 2003. Unlike Windows Small Business Server 2003, where installation typically upgrades from a workgroup environment, Windows Essential Business Server is more likely to be installed in some sort of existing domain environment. Certain environment requirements have to be met to install Windows Essential Business Server.

To ensure successful Windows Essential Business Server implementation, the two wizards need to be completed. When run, they scan the network and search for possible issues. Based on the scan results, possible errors need to be resolved before server installation procedures can be started.

Topics covered in this chapter are as follows:

3.1 Installing the wizards

To run the wizards, they need to be installed on a computer connected to the network where Windows Essential Business Server will be deployed. This computer can run any of the following operating systems:

- Windows Server 2008
- Windows Server 2003
- Windows Vista®
- Windows XP

Additionally, Microsoft.NET Framework 1.1 and 2.0 is required to install and run the wizards.

To install the wizards, insert the *Windows Essential Business Server Disc 1: Prerequisite Planning Tools* disc into the computer. Click **Download and Install the Preparation and Planning Wizards** and follow the installation steps.

In our lab environment, we installed Windows Server 2003 onto a HS20 blade as our staging server.

3.2 Preparation Wizard

When the wizards are installed, first run the Preparation Wizard. It will scan the network and verify it meets the Windows Essential Business Server technical requirements. If you are migrating your existing environment and a server needs an update, the Preparation Wizard will identify the issue and guide you to the appropriate Microsoft KnowledgeBase article.

Preparation Wizard does not change any computer or network settings in your environment.

3.2.1 Running the Preparation Wizard

Perform the following steps to run the Preparation Wizard.

1. Start the Preparation Wizard by double-clicking its icon on the desktop. The “Before you begin” panel (Figure 3-1 on page 69) displays. Click **Next**.

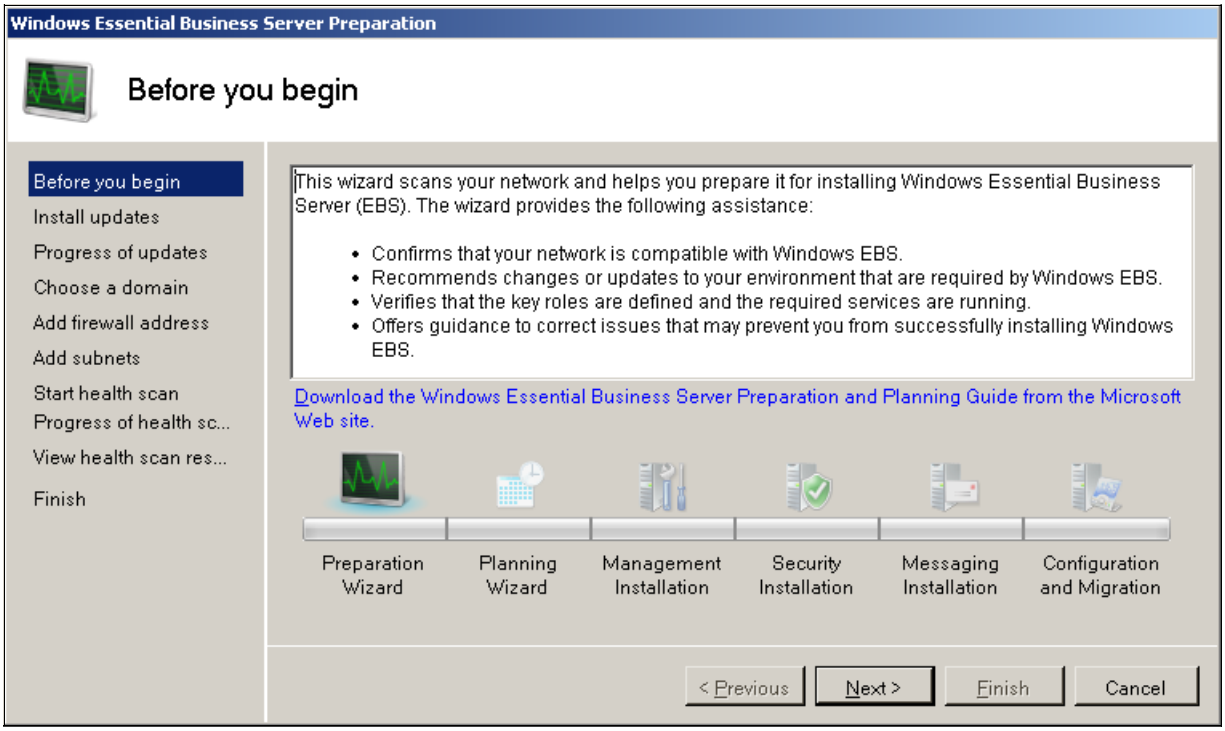

Figure 3-1 Preparation Wizard start

2. Click **Update** on the “Install updates” panel (Figure 3-2) to search for any updates to the wizard.

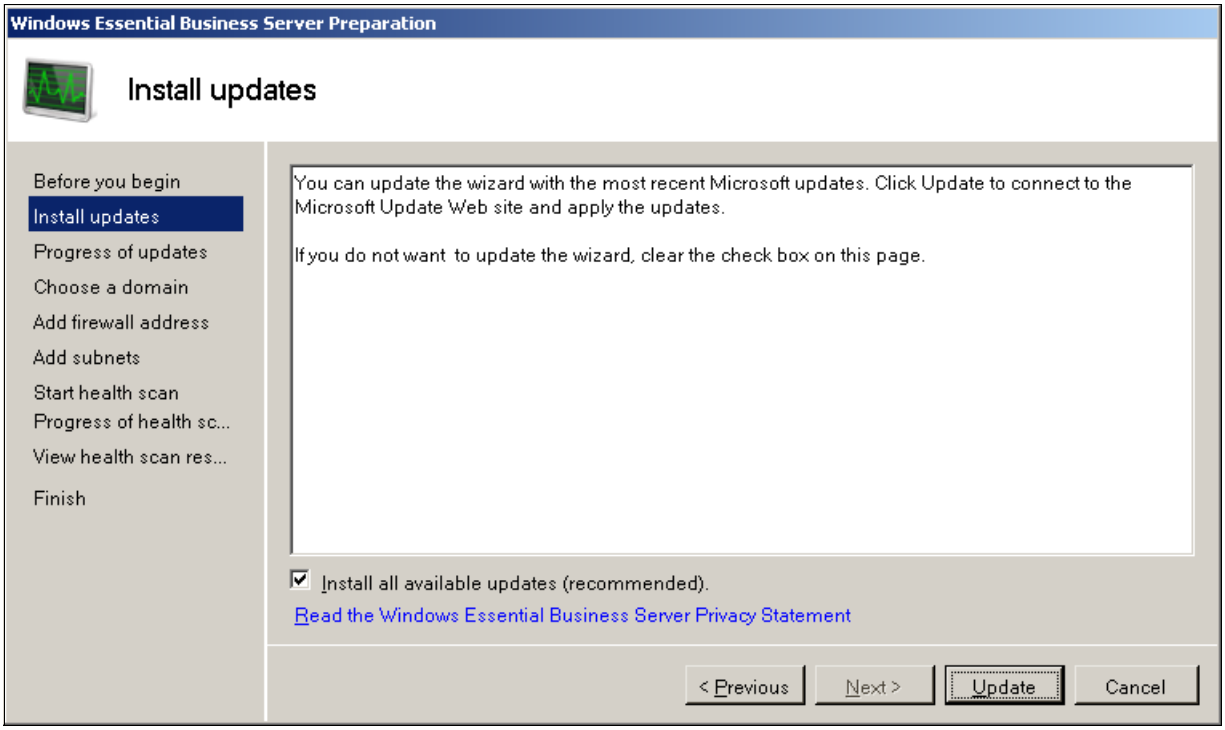

Figure 3-2 Preparation Wizard update

3. On the “Choose a domain” panel (Figure 3-3), select whether you are installing Windows Essential Business Server into an existing domain environment or creating a new one. In our test environment, we created a new network. We selected the **I plan to create a new Active Directory domain when I install Windows EBS** radio button. Click **Next**.

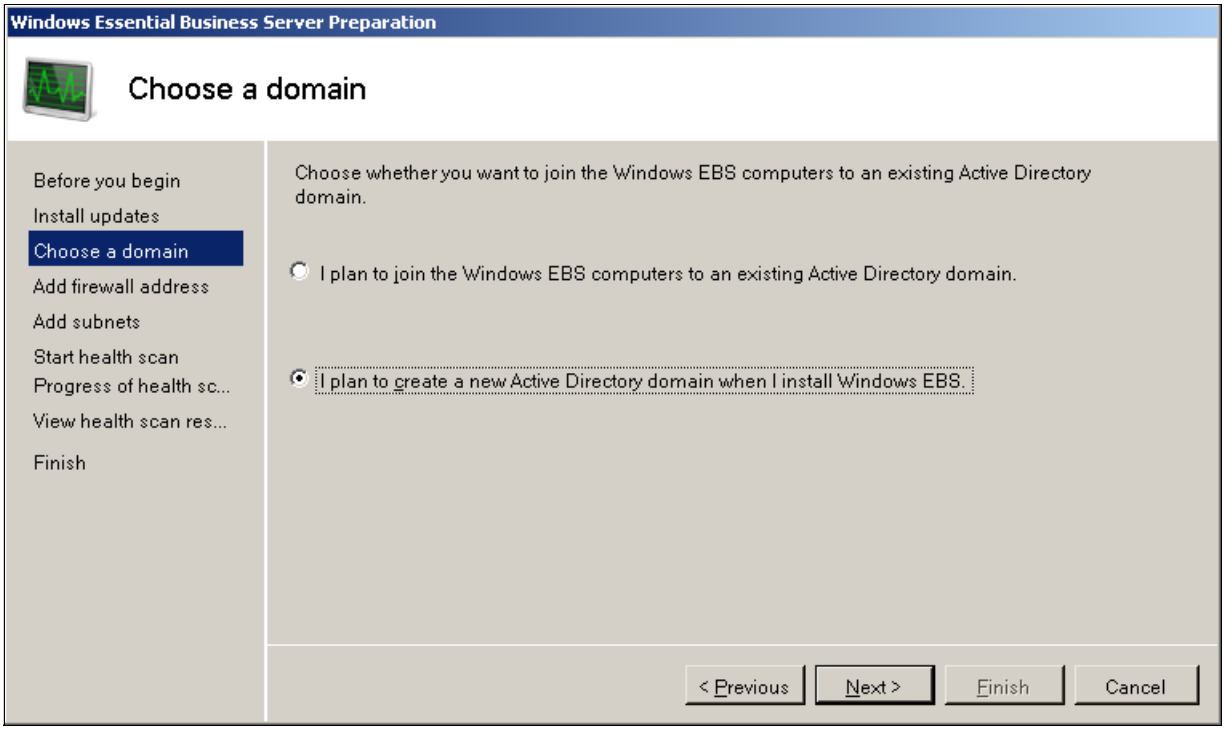

Figure 3-3 Choosing domain

4. Provide networking details, such as firewall IP address, and additional subnets on the following panels. See Figure 3-4. Click **Next**.

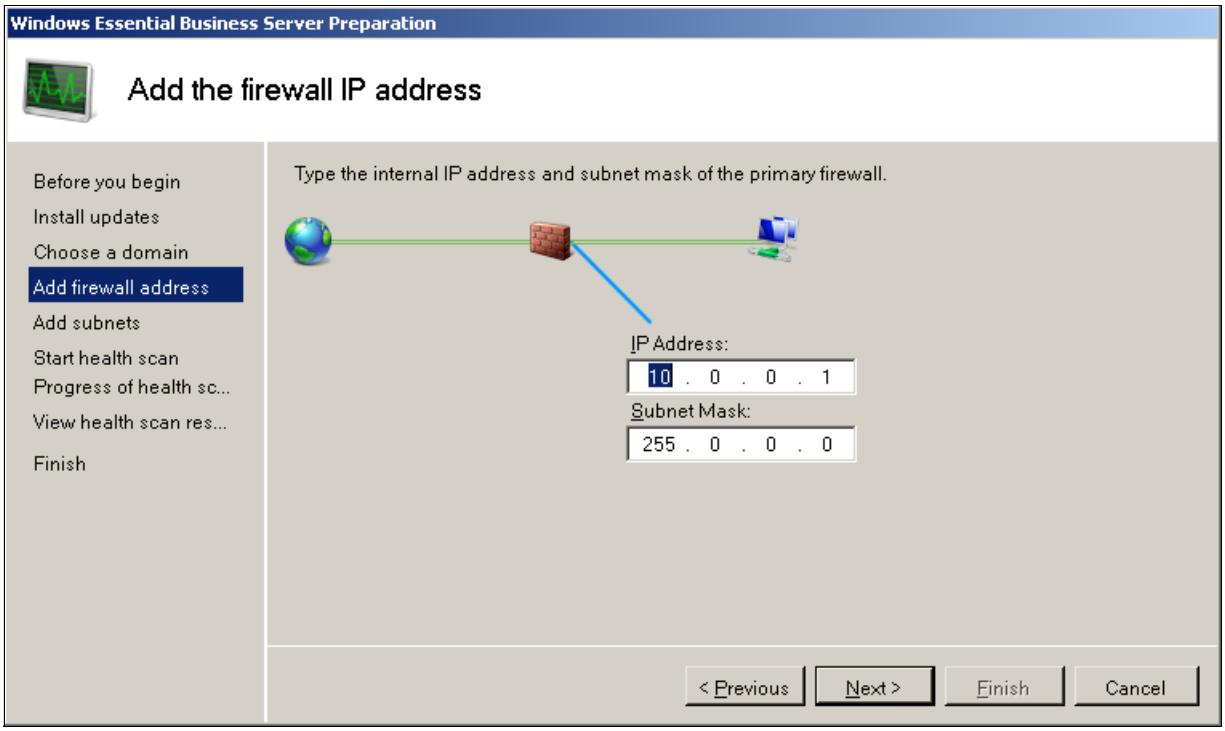

Figure 3-4 Firewall IP address

5. Click **Scan** on the “Start health scan” panel (Figure 3-5). The wizard will scan the existing environment and its components, such as Active Directory, DHCP and DNS service, network adapters, and other network services and components.

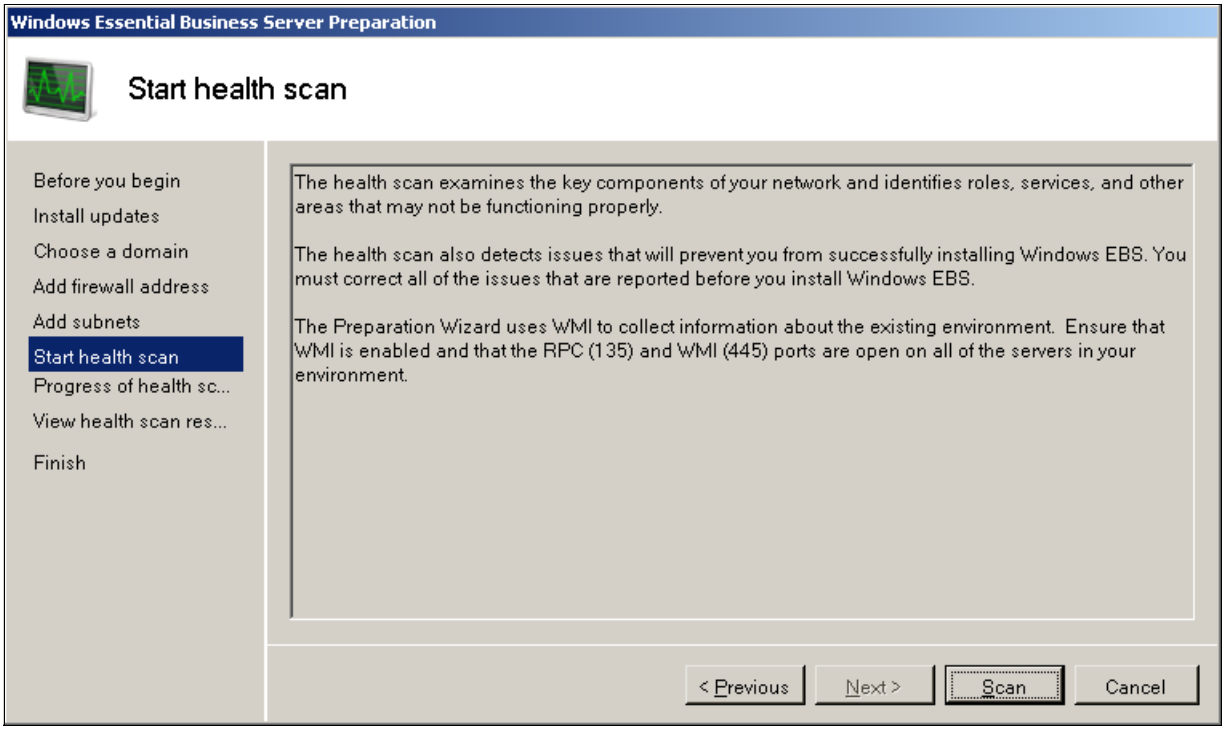

Figure 3-5 Start environment health scan

Note: For detailed listing of tests performed, see the document *Windows Essential Business Server Preparation and Planning Guide*, available from the Microsoft Web site.

6. The “View health scan results” panel (Figure 3-6) displays the scan results. Issues are listed with a problem description, severity, and links to possible resolutions available on the Microsoft Web site. Click **Finish** if no issues are reported.

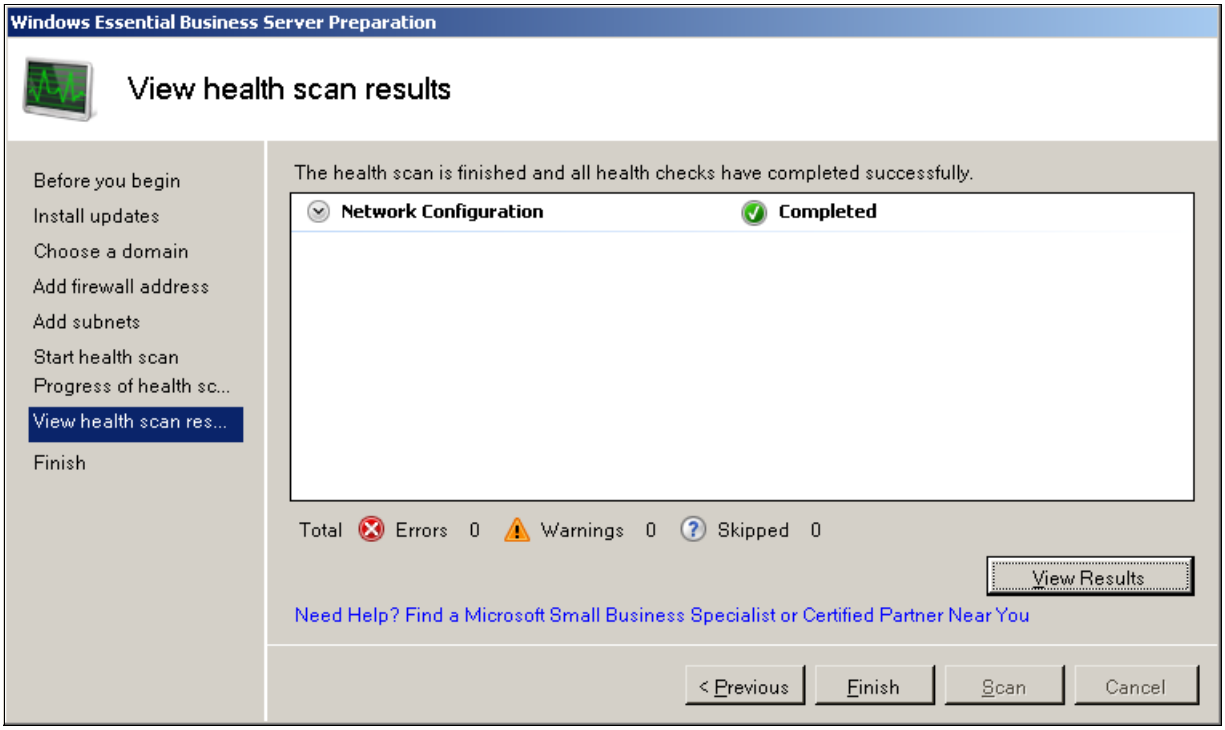

Figure 3-6 Environment health scan results

7. Click **Close** on the “Finish” panel (Figure 3-8 on page 74).

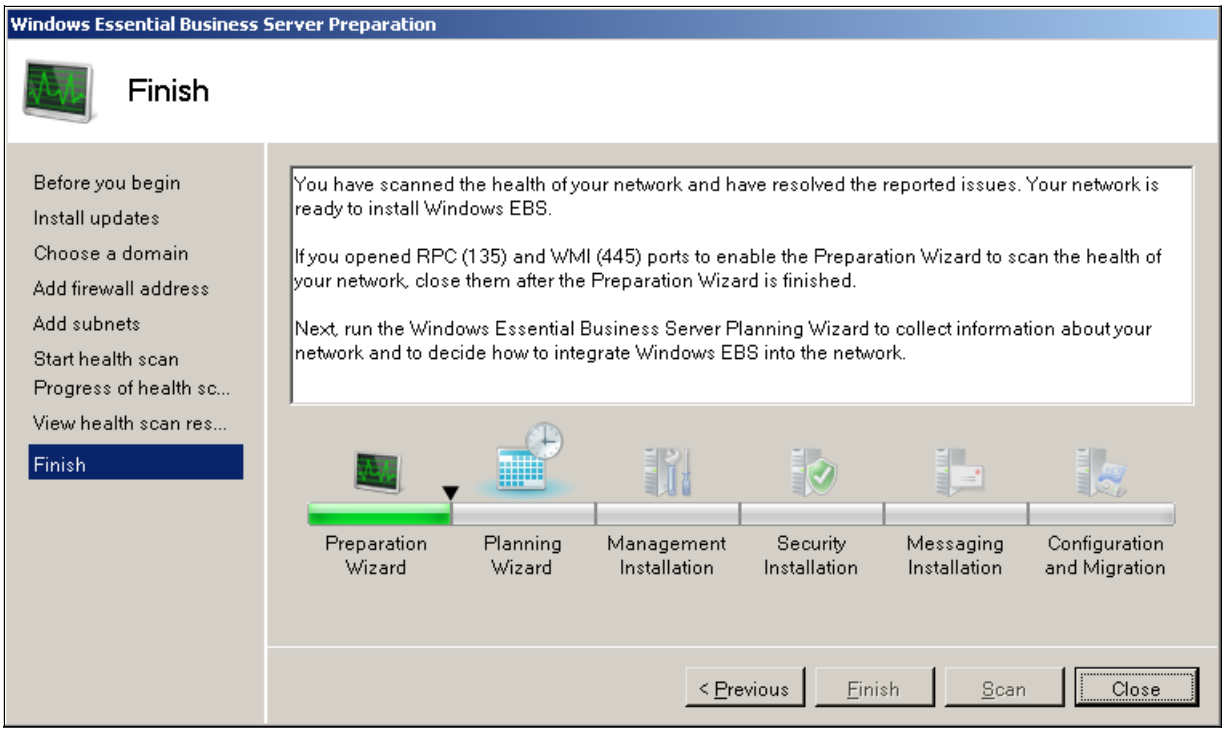

Figure 3-7 Closing the Preparation Wizard

Note: If any errors are reported, correct them and then re-run the Preparation Wizard. The Preparation Wizard will verify the errors have been resolved. This process must be completed successfully before moving forward.

3.3 Planning Wizard

After the Preparation Wizard has been completed, proceed to the next step. The Planning Wizard identifies your current network topology and provides you the opportunity to save it to an output file. It helps you to decide on how to implement network security in Windows Essential Business Server, and planning the names and the network addresses for the computers running Windows Essential Business Server.

3.3.1 Running the Planning Wizard

Perform the following steps to run the Planning Wizard.

1. Double-click the **Planning Wizard** icon on your desktop. The “Before you begin” panel (Figure 3-8) displays. Click **Next**.

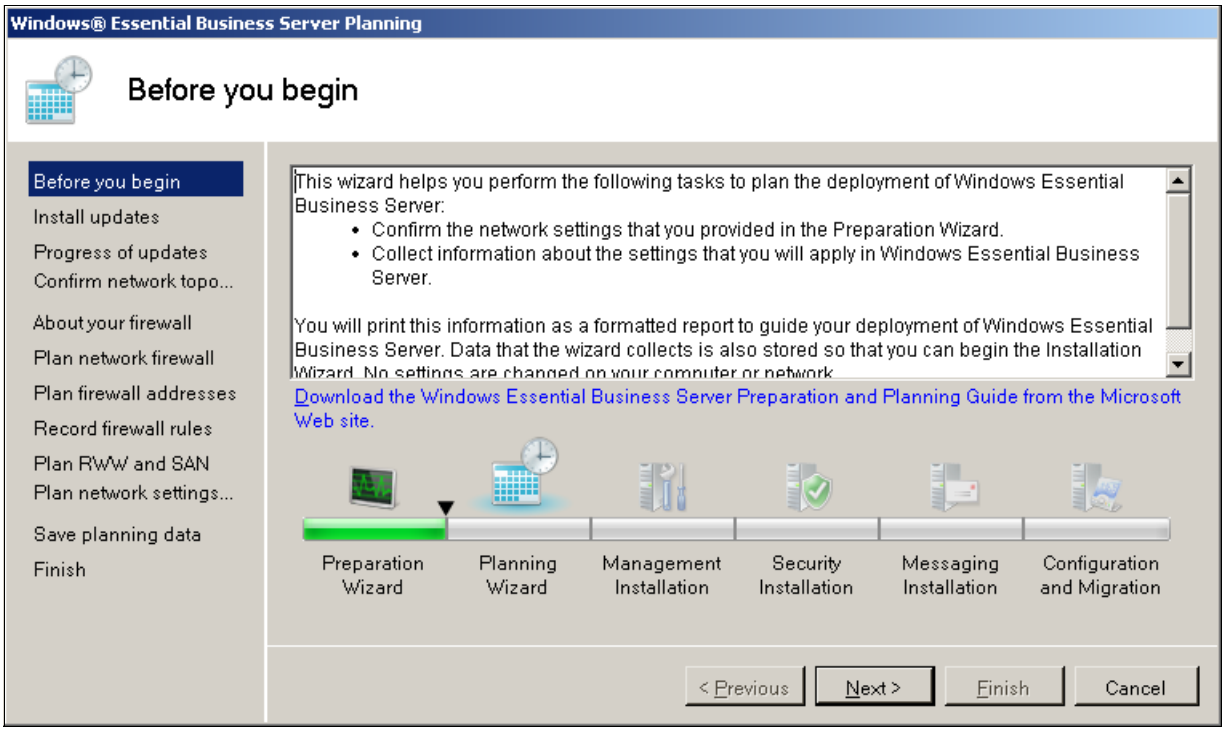

Figure 3-8 Starting the Planning Wizard

2. Click **Update** on the “Install updates” panel (Figure 3-9) to search for any updates to the wizard.

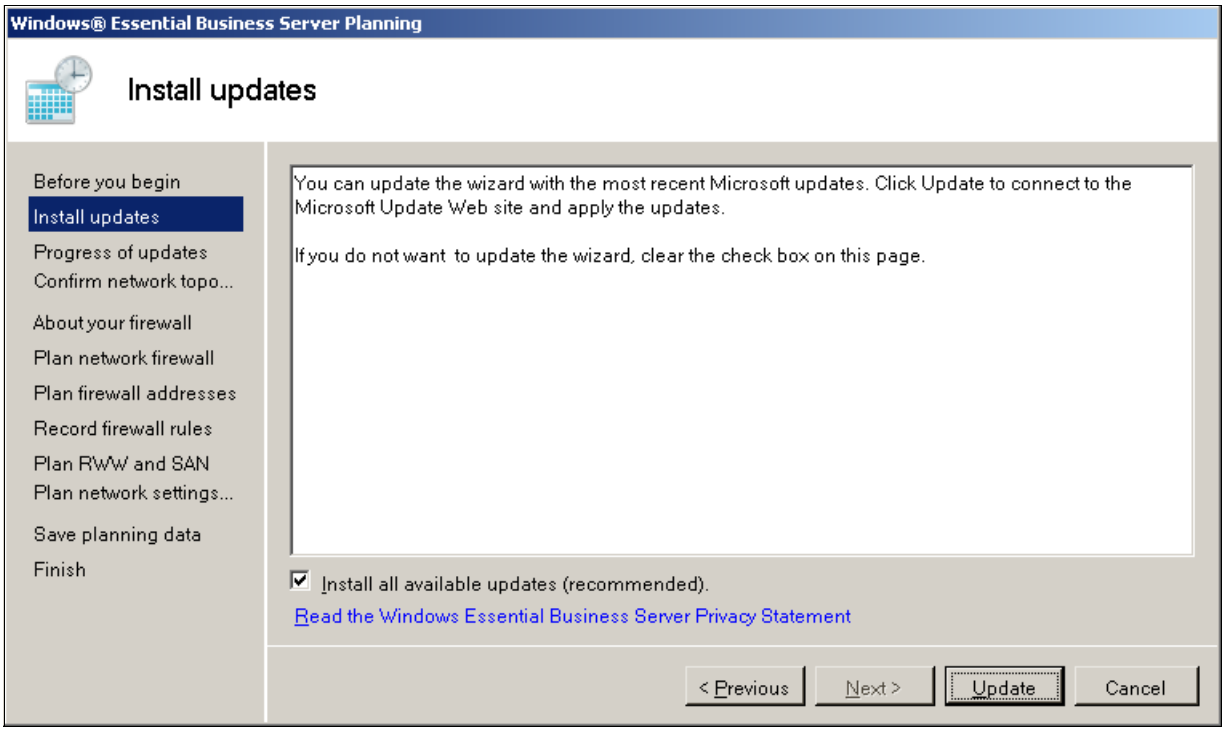

Figure 3-9 Planning Wizard update

The “Confirm your network topology” panel (Figure 3-10) identifies what kind of network topology is used and how you want to deploy Windows Essential Business Server into that topology. Your network topology describes how to organize and connect your servers, client computers, and other network devices. Click **Next**.

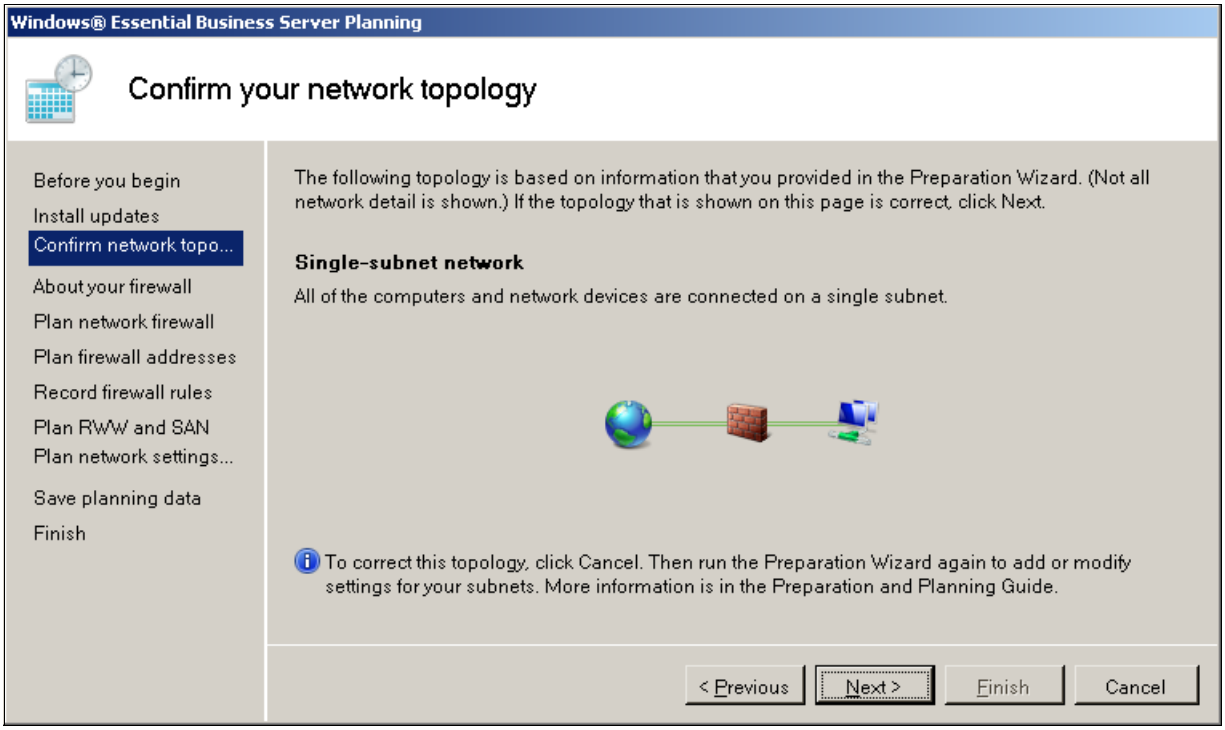

Figure 3-10 Network topology

3. Identify the firewall setup on the “About your firewall” panel (Figure 3-11). Protection for your current network may already be provided by a dedicated hardware-based firewall device or a software-based solution. In our example, we accepted the defaults. Click **Next**.

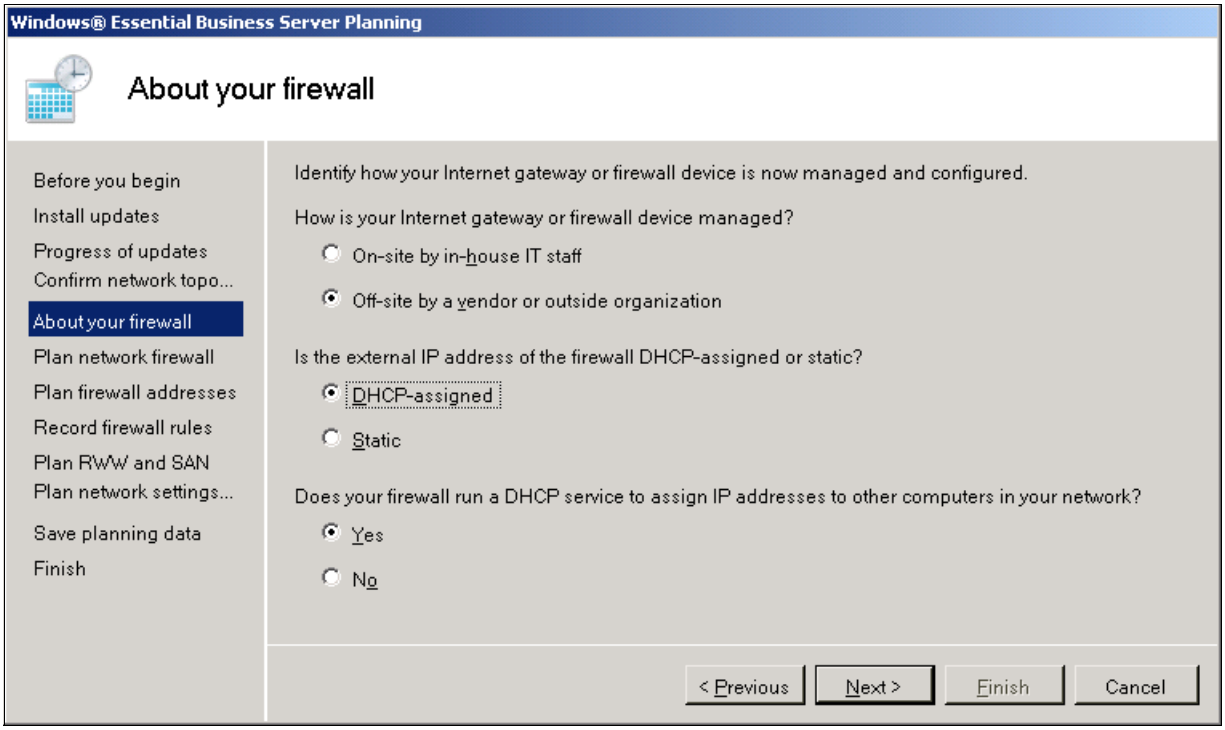

Figure 3-11 Firewall identification

4. Select the appropriate option in the “Plan network firewall for Essential Business Server” panel (Figure 3-12).

   In Windows Essential Business Server, the Security Server is designed to function as a network firewall by using Forefront Threat Management Gateway (TMG). TMG was formerly called Internet Security and Acceleration (ISA Server). It helps protect IT environments from Internet-based threats while providing users with policy-based remote access to applications and data.

   If your network already has a dedicated firewall or a router, you have two possibilities:

   – Replace the existing firewall with the Security Server
   – Deploy the Security Server behind your existing firewall (advanced)

   In our example, we selected the **Deploy the Security Server behind your existing firewall (advanced)** radio button to retain the existing router. Click **Next**.

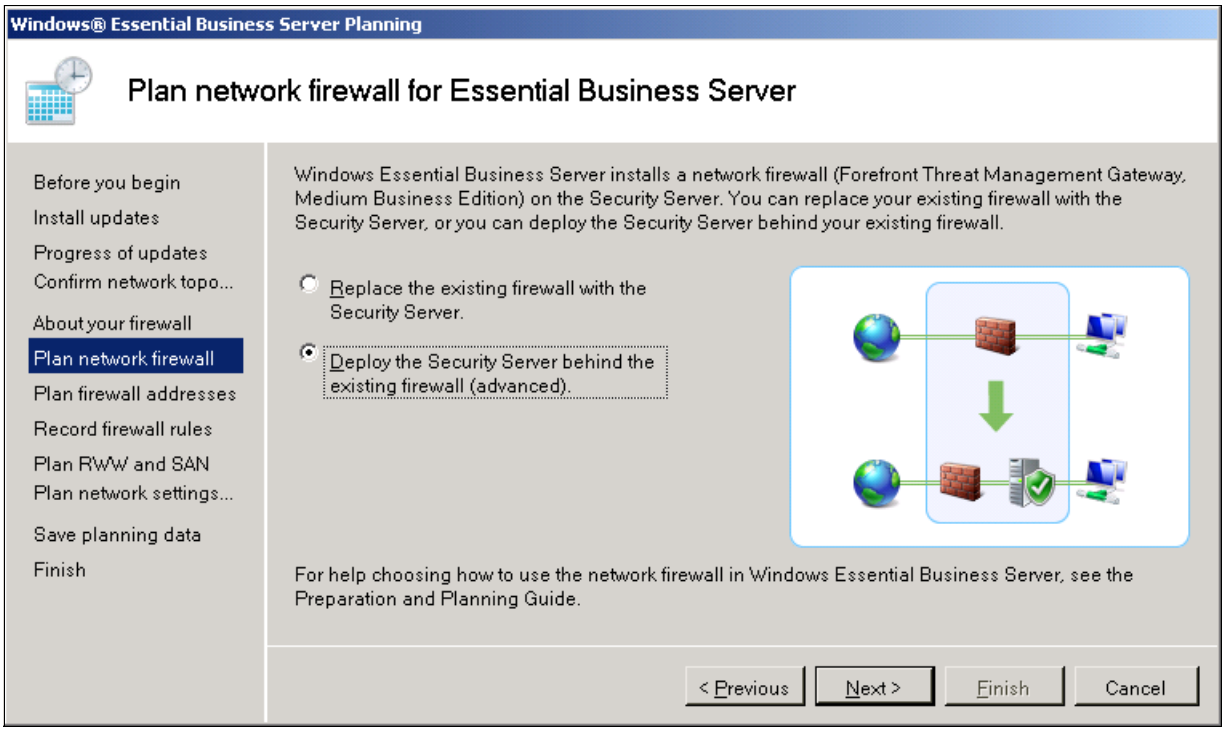

Figure 3-12 Firewall options

5. If you selected the **Deploy the Security Server behind your existing firewall (advanced)** radio button in step 4 on page 78, you are asked to provide the IP address and mask for the new subnet between the existing firewall and the Security Server in the “Plan firewall addresses” panel (Figure 3-13). This information will come from your ISP. Click **Next**.

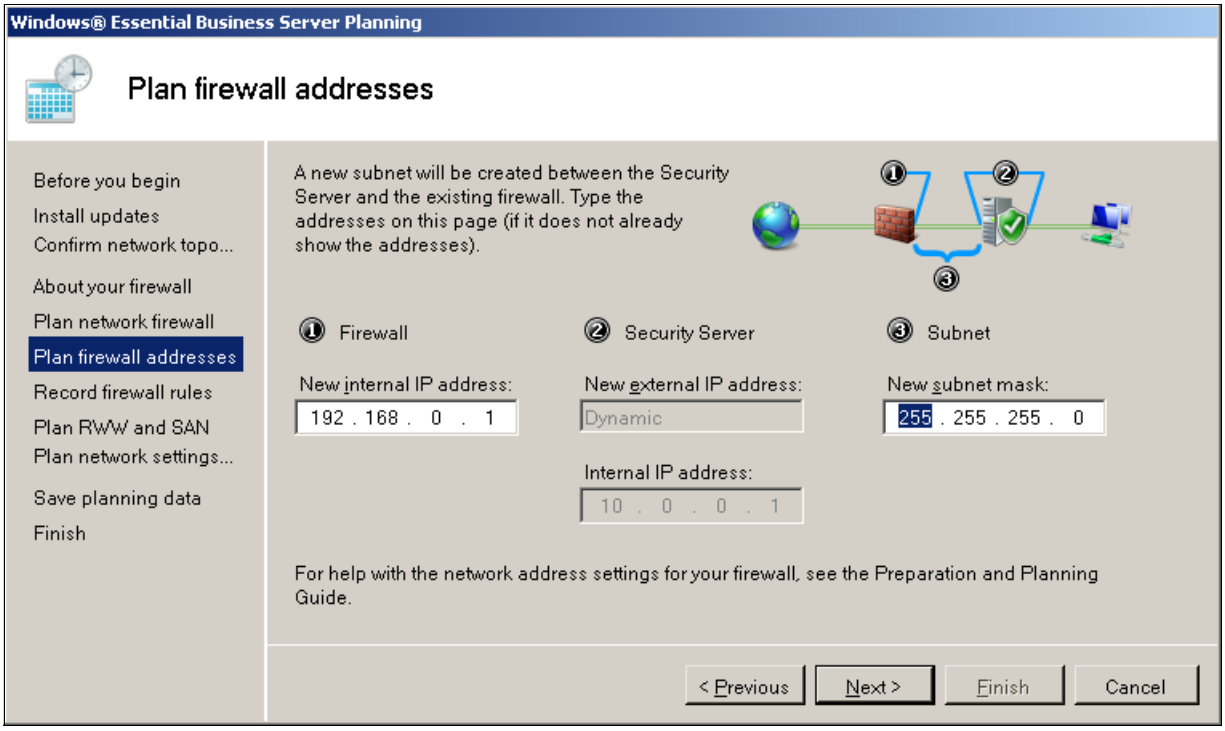

Figure 3-13 Firewall and Security Server IP addresses

Note: Your existing firewall will be reconfigured during the Security Server installation, so you will need the appropriate access credentials to make the necessary configuration changes.

6. (Optional) If any specific firewall rules are in place in your current environment, you can record them in the “Record firewall rules” panel (Figure 3-14). Click **Next**.

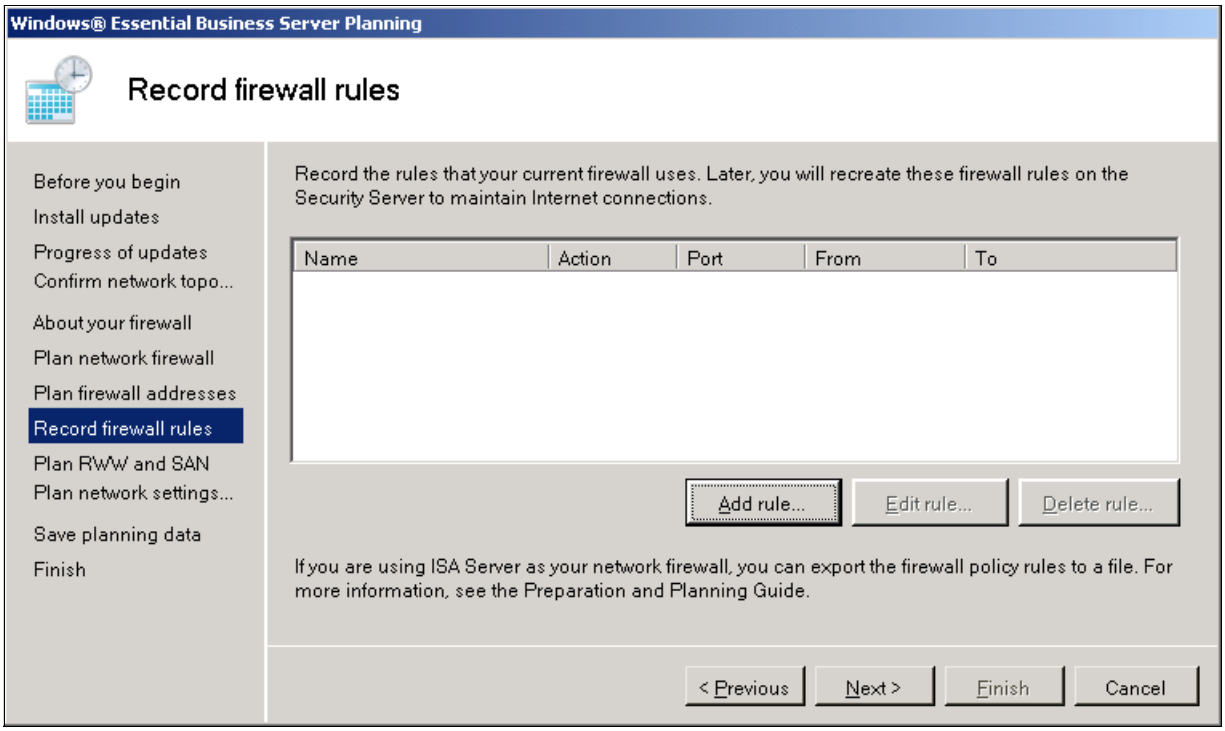

Figure 3-14 Firewall rules

7. Configure Remote Web Workplace (RWW) Windows Essential Business Server functionality on the “Plan Remote Web Workplace and SAN configuration” panel (Figure 3-15).

> **Important:** This step is only required if users will be accessing the company network resources remotely.

In this case, you need to define an easy to remember URL for RWW (For example, remote.rrs.si). A public certificate is needed for this URL. This can be obtained either from a third party or have EBS generate it.

If Windows Essential Business Server servers application data will be stored on storage area network (SAN), indicate this in the Planning Wizard as well.

In our example, these items were not checked. Click **Next**.

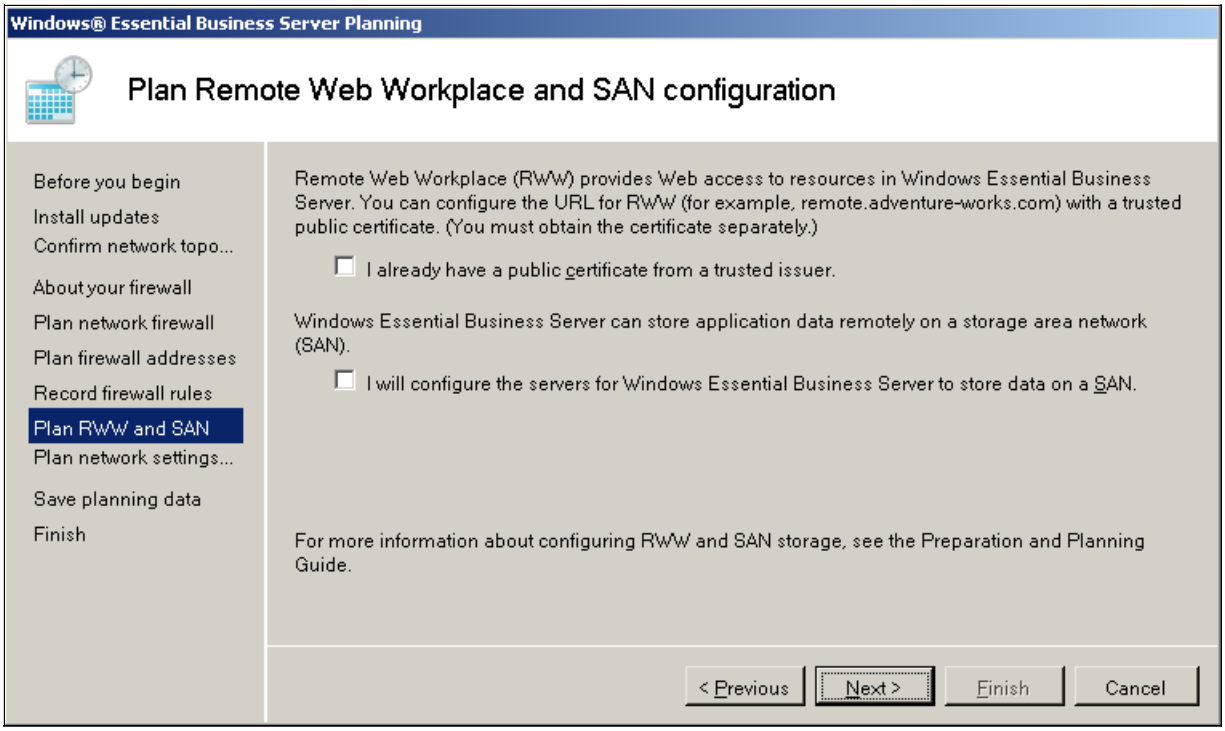

Figure 3-15 Remote access and storage area network configuration

> **Note:** If SAN storage will be used, you may need to perform preliminary storage configuration steps. For detailed information, see your storage equipment documentation.

8. Name your servers and define their static IP addresses on the “Plan network settings for the servers” panel (Figure 3-16). Servers should have unique names that are easily identifiable on the network.

   Appendix B, “Server Naming Convention” on page 175 documents the accepted server naming convention used for system rollouts. We followed this methodology when naming the Windows Essential Business Servers. Review this appendix before naming your servers. Complete the fields and click **Next**.

   Note: It is suggested to define static IP addresses for the Management and the Messaging Server in the same subnet. They will act as domain controllers and will replicate Active Directory data. If they need to be located in different subnets, there needs to be a high-speed connection in place between the subnets.

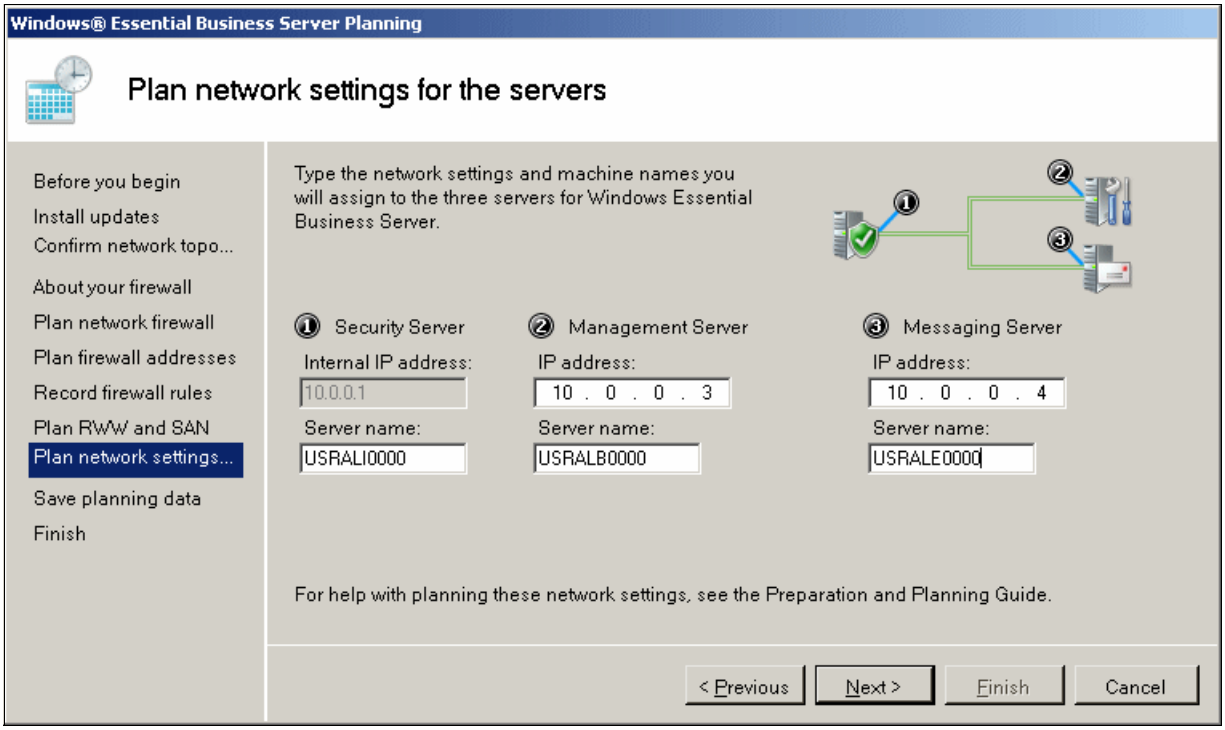

Figure 3-16 Server names and IP addresses

9. Click **Save** on the “Save planning data” panel (Figure 3-17) and choose the name and location of the file.

   At this point, the collected data from the Planning Wizard can be saved and printed as a customer report. Refer to this report to configure settings during the Windows Essential Business Servers installation and again when you complete the configuration and migration tasks.

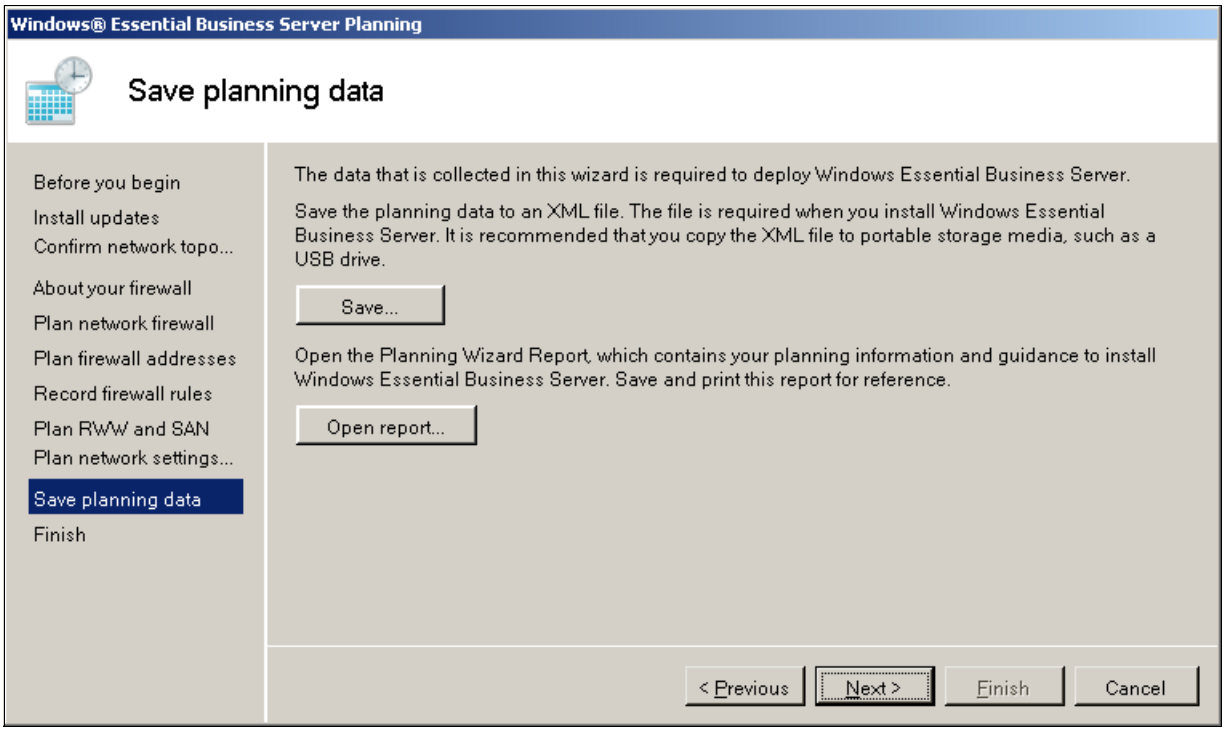

Figure 3-17 Save planning data

If you are planning to join Windows Essential Business Server to an existing Active Directory domain, the wizard also stores the information you collected in Active Directory. The data is retrieved when you connect to the domain during the Windows Essential Business Server Installation Wizard.

In our example, we are setting Windows Essential Business Server in a root domain in a new forest. The gathered data needs to be saved as an XML file, which will be used later during Windows Essential Business Server installation. It is suggested to save it on an external storage device, such as a USB drive.

10. Click **Open report** on the “Save planning data” panel (Figure 3-17) to view the Planning Wizard Report as an HTM file. It is advisable to save it (or print it) for future reference.

    The Planning Wizard Report contains all the collected data from previous steps. Besides listing the data, it displays a diagram of your chosen network type and step-by-step instructions on how to proceed with the Windows Essential Business Servers installation. It includes links to Windows Essential Business Server documentation on the Microsoft home page. As such, the document proves useful when you start the actual Windows Essential Business Server installation.

    Click **Finish**.

11. The “Finish” panel (Figure 3-18) displays your current progress and informs you how to proceed to the next step, which is installing the Windows Essential Business Server Management Server. Click **Close**.

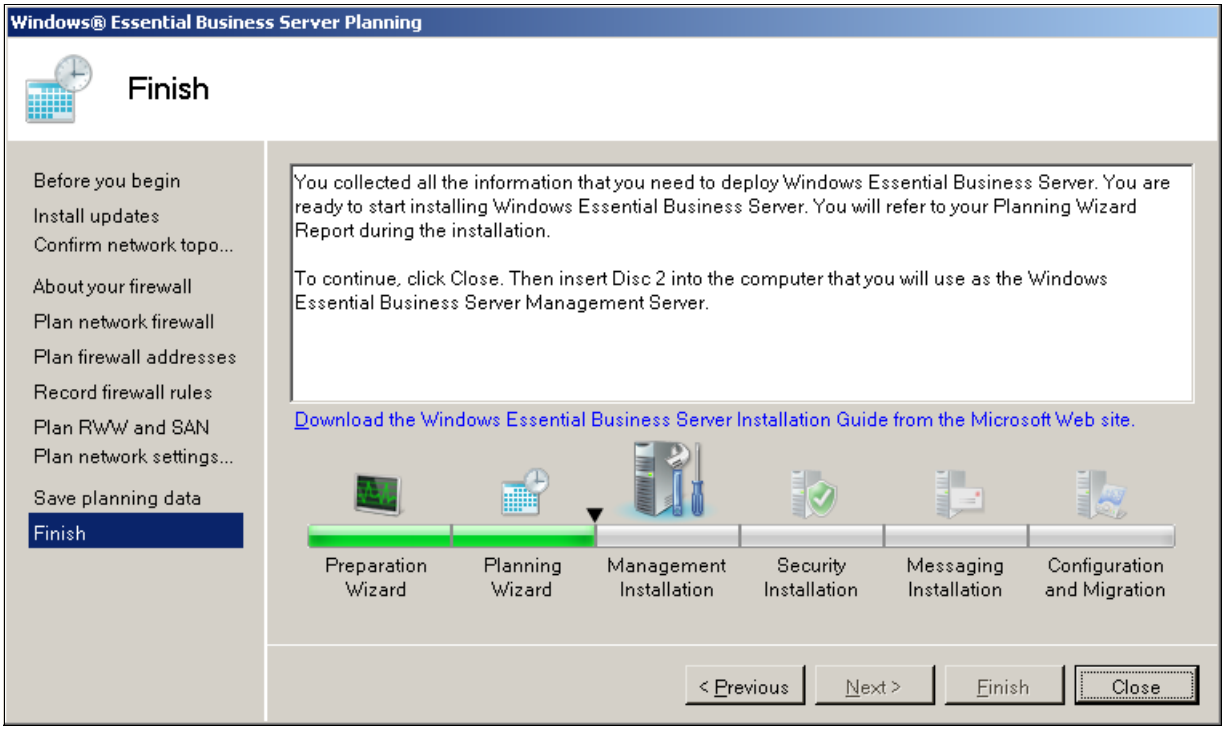

Figure 3-18 Finishing the Planning Wizard

4

Windows Essential Business Server installation

This chapter documents the steps necessary to install three servers in the Windows Essential Business Server (EBS) solution.

Topics in this chapter are:

4.1 Installation overview

Windows EBS automates many of the installation and configuration tasks that would usually have to be performed manually with standard server operating systems. This chapter describes the tasks that are completed during installation and provides the information that you need to install the Windows EBS software.

4.1.1 Installation requirements

Before you run the installation, ensure the following tasks have been completed:

- You have prepared your hardware (servers, network connectivity devices, storage) as described in Chapter 2, “Configuration” on page 21.
- You have run the Windows EBS Preparation Wizard and Windows EBS Planning Wizard and corrected possible issues regarding your environment, as described in Chapter 3, “Windows Essential Business Server preinstallation wizards” on page 67.
- You have performed a complete backup if you are installing Windows EBS into a production environment with existing data.
- You have established temporary Internet connectivity to download critical updates. The installation wizard needs to download critical updates for the server products it installs.

4.1.2 Installation sequence

After completing the installation requirements, you are guided by the Windows EBS Installation Wizard to install Windows EBS on the servers in the following order:

1. The Management Server
2. The Security Server
3. The Messaging Server

Note: The installation wizard detects if you attempt to install the servers out of sequence. You will be prompted you to continue the installation in the correct order.

After the installation has been completed for each server, the installation wizard lists the components, server roles, and services that were installed. After Windows EBS is installed on the messaging server, you can complete the configuration and migration tasks that are necessary to optimize the servers use. Complete these tasks on the “Configuration and Migration Tasks” page that displays when you open the Windows EBS Administration Console on the Management Server. This section describes each task, provides links to associated tools and documentation, and provides a checklist to help you track your progress.

Appendix A, “IP addresses used in the lab” on page 171, is the IP allocation list used for this Redbooks publication. Use this as a guide to understanding how we deployed our Windows EBS environment.

4.1.3 Windows EBS Installation Wizard

The Windows EBS Installation Wizard performs some verification checks, installs Windows EBS, and establishes the Windows EBS Security Server as a network firewall.

The installation wizard completes several functions, including the following tasks:

- Verifies that you have run and finished the preparation wizard and the planning wizard
- Verifies the compatibility of your current network with Windows EBS, and helps you perform updates to ensure compatibility
- Connects to the Microsoft Update Web site to download and install critical updates
- Installs Windows Server 2008
- Installs the product technologies, applications, and components of Windows EBS
- Performs initial configuration of network services, such as DHCP Server service and Active Directory Domain Services
- Performs initial configuration of network security services on the Security Server.
- Guides you through the steps to establish the Windows EBS Security Server as your external gateway and primary firewall during the Security Server installation
- Performs initial configuration of messaging services on the Messaging Server
- If you choose, the installation wizard will connect to the Microsoft Update Web site after each server's software and role is configured, and check for updates to download and install

4.2 Installing Windows EBS

In this phase of your software installation, you install the Windows EBS software on all three servers.

You are prompted to begin each installation on the proper server at the appropriate time during installation. During the installation process, each of your servers will restart to complete various installation tasks. After each restart, continue the installation by logging on with the account that you used to start the installation. After all the necessary information has been entered and you click **Install**, the installation proceeds unattended even if you have not logged on. Check the progress at any time by logging on with the account that you used to start the installation.

The next three sections describe installing the major components of Windows EBS.

4.2.1 Accessing Windows Server 2008 during installation

During installation you may need to leave the installation wizard to access the operating system (for example, to install a driver for a network adapter or to prepare disks, and so forth.)

Use one of the following procedures to access the Control Panel during installation. Methods for accessing the Control Panel during installation depend on whether you are logged on to the computer with the local Administrator user account. When you are finished, you can return to the Installation Wizard and continue the installation.

To access the command prompt, perform the following steps:

1. Press SHIFT+F10. A command prompt displays.
2. Enter your desired command.
3. Type `exit` to close the command prompt.

To access the Control Panel when you are logged on with a local Administrator account, perform the following steps:

1. Press SHIFT+F10. A command prompt displays.
2. Type `control.exe`, and press Enter. The Control Panel displays.

   When you are finished, close the Control Panel, close the command prompt, and then continue with the Windows EBS Installation Wizard.

4.3 Installing the Management Server

Use the following procedure to install the Management Server:

1. Press the **Media tray assignment** button on the Management Server blade to assign the DVD drive to this server. Insert *Windows EBS Installation Disc 2* into the DVD drive, and boot the blade server from the DVD. The Windows Server 2008 Installation Wizard appears.

   Note: For IBM BladeCenter S media tray functionality explanation, see its description in 1.5.2, “IBM BladeCenter S” on page 14.

2. Set your locale and click **Next**, as shown in Figure 4-1.

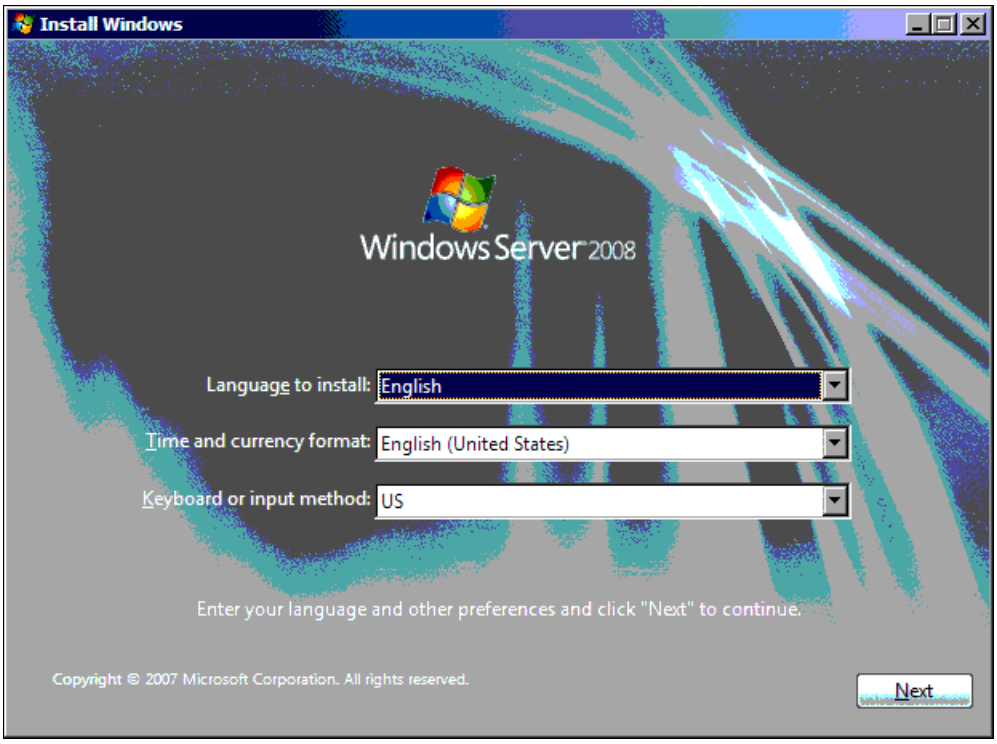

Figure 4-1 Setting language, time and currency and keyboard layout

3. Click **Install Now**.

4. (Optional) Enter your 25-character product key on the “Type your product key for activation” panel (Figure 4-2) to avoid problems during activation. Click **Next**.

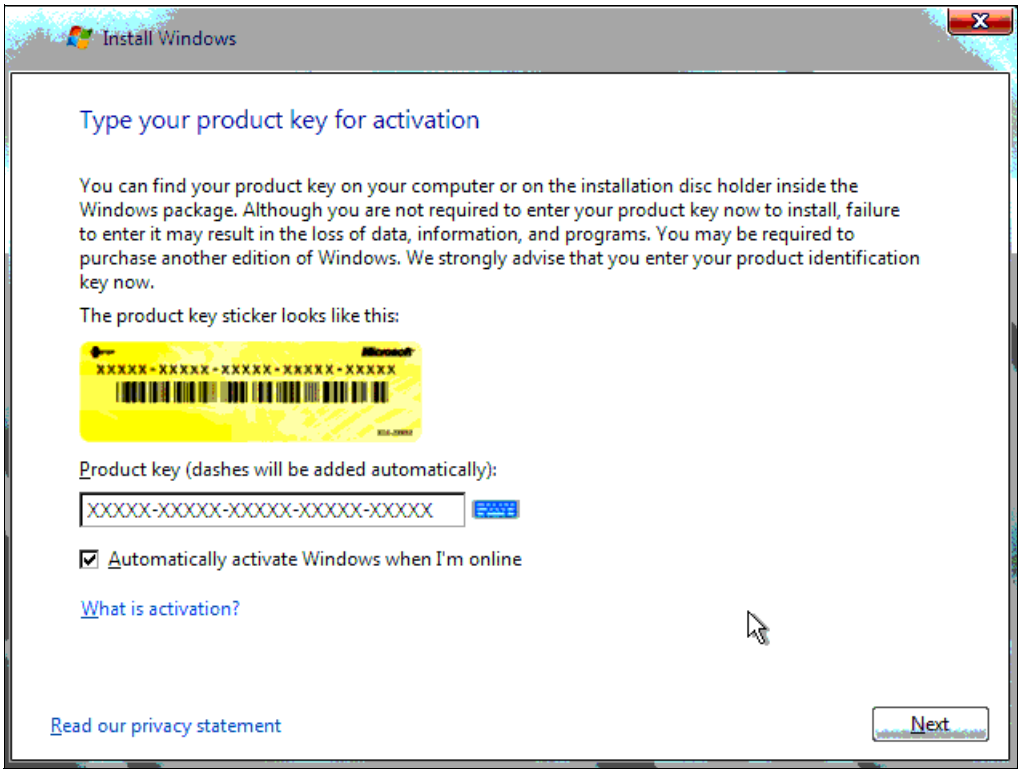

Figure 4-2 Type your product key

About product keys: You need a different product key for each of the three servers. Check your supplied packaging for the proper keys.

5. If you have an Internet connection, select the **Automatically activate Windows when I'm online** check box on the “Type your product key for activation” panel (Figure 4-2), if you want to activate your software now. Click **Next**.
6. Review the Microsoft Software License Terms. Select the **I accept the license terms** check box, and click **Next**.

7. Select you installation type on the “Which type of installation do you want” panel (Figure 4-3). Click **Custom (advanced)**.

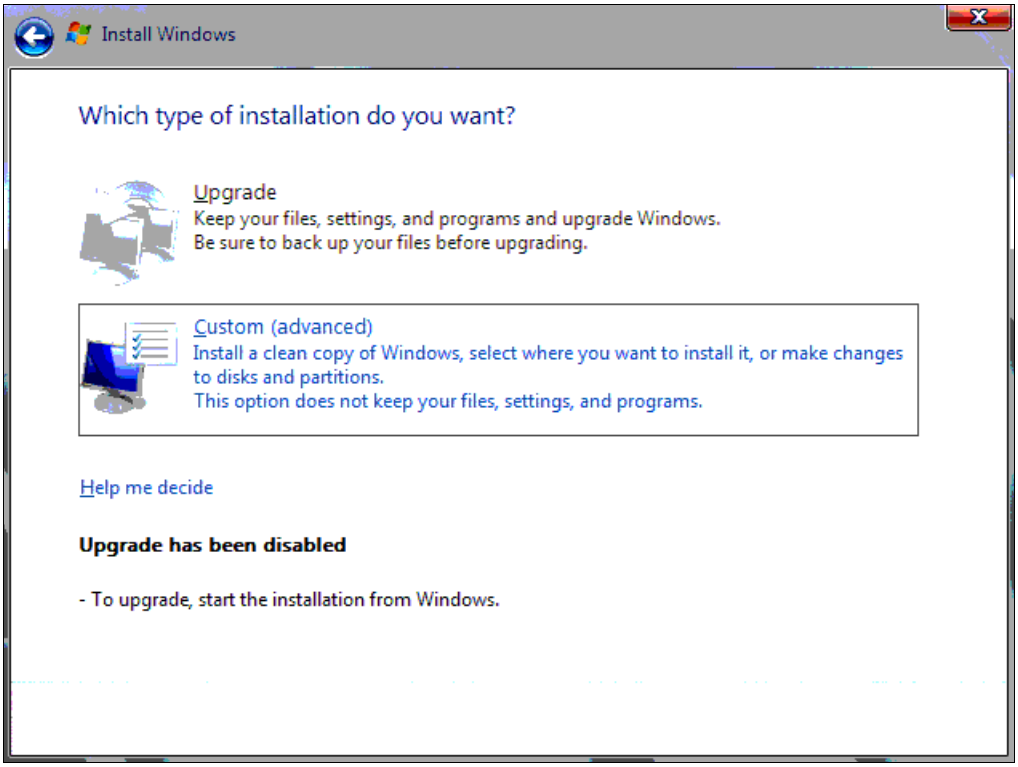

Figure 4-3 Selecting installation type

8. On the “Where do you want to install Windows?” panel (Figure 4-4 on page 91), click the partition where you want to install Windows EBS. A system partition of at least 50 GB is suggested. In addition, perform the following tasks, if necessary:

   a. Click **Load Driver** to load a driver.

   b. Click **Drive Options (advanced)** to format or partition a disk.

      If you do not format or partition the disk now, you have opportunity to do it later during installation by using the Windows Server 2008 Disk Manager.

   c. Configure your hardware-based RAID storage system, if you plan to use one.

   In our test environment, we prepared our storage in advance. Each Windows EBS has a 68 GB mirrored volume (created of two internal disks) and a RAID-5 volume (created of SAS drives inside Disk Storage Modules). For the operating system installation, we selected 68 GB volume.

   Click **Next**.

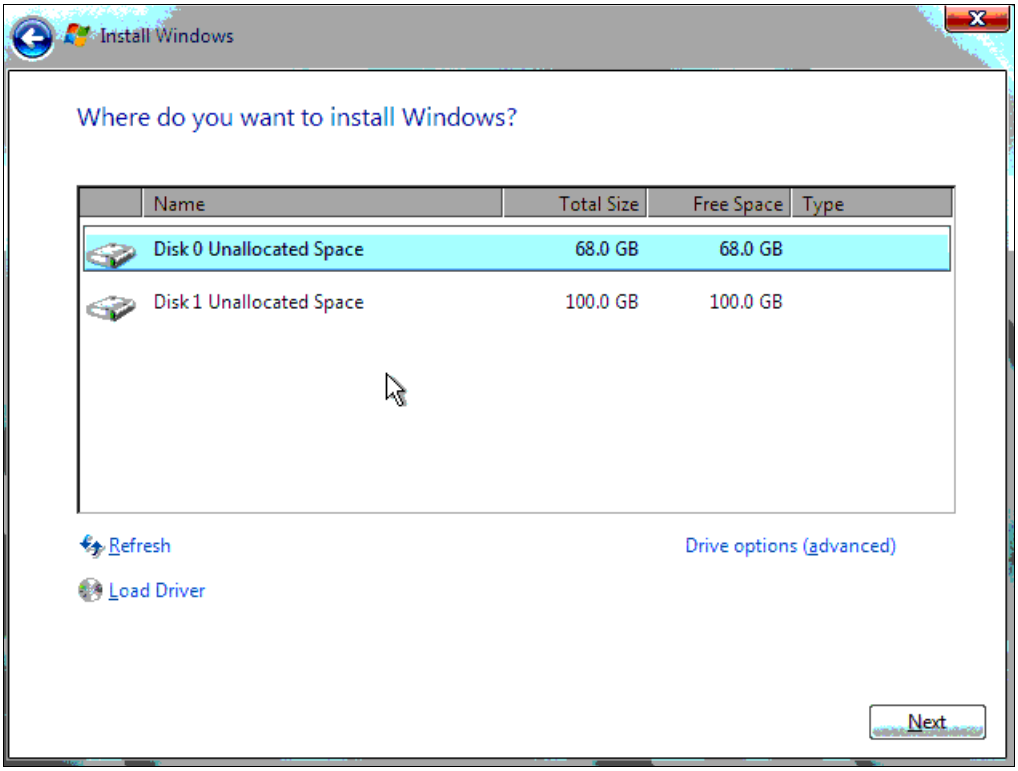

Figure 4-4 Selecting disk for Windows installation

9. The installation wizard starts copying, expanding, and installing Windows Server 2008 files.

> **Note:** Your computer restarts one or more times while Windows Server 2008 is being installed.

10. After the restart, the Management Server Installation Wizard appears. Read the introductory text on the “Welcome” page, and click **Next**.

11. On the “Choose the network adapter” panel (Figure 4-5), select the network adapter that you use to connect this server to your internal network. Verify that the network adapter is connected to your internal network, and click **Next**.

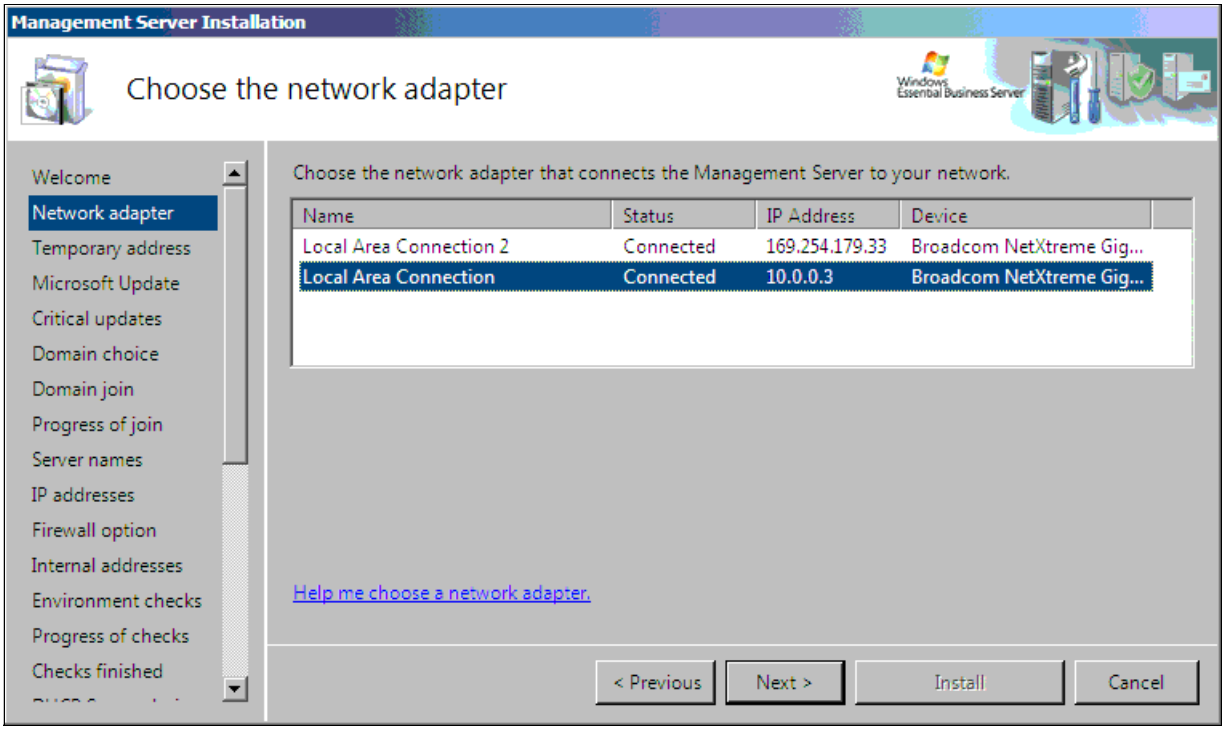

Figure 4-5 Choose the network adapter

> **Note:** If your Management Server has only one network adapter, select it. If the server has two network adapters, select the adapter that you prefer for your internal network (LAN) connection. Windows EBS requires only one network adapter each, connected to the internal network, for the Management Server and your Messaging Server.

12. On the “Choose temporary IP addresses” panel (Figure 4-6 on page 93), choose either to use the DHCP Server service automatically to assign the Management Server an IP address that is used during installation, or type a valid IP address that provides an Internet connection through your network. Click **Next**.

> **Important:** These IP address settings are used temporarily during installation to download critical updates from the Microsoft Updates Web site and to connect to the computers that already exist on your network. The settings will be reconfigured to your final settings later in the installation.

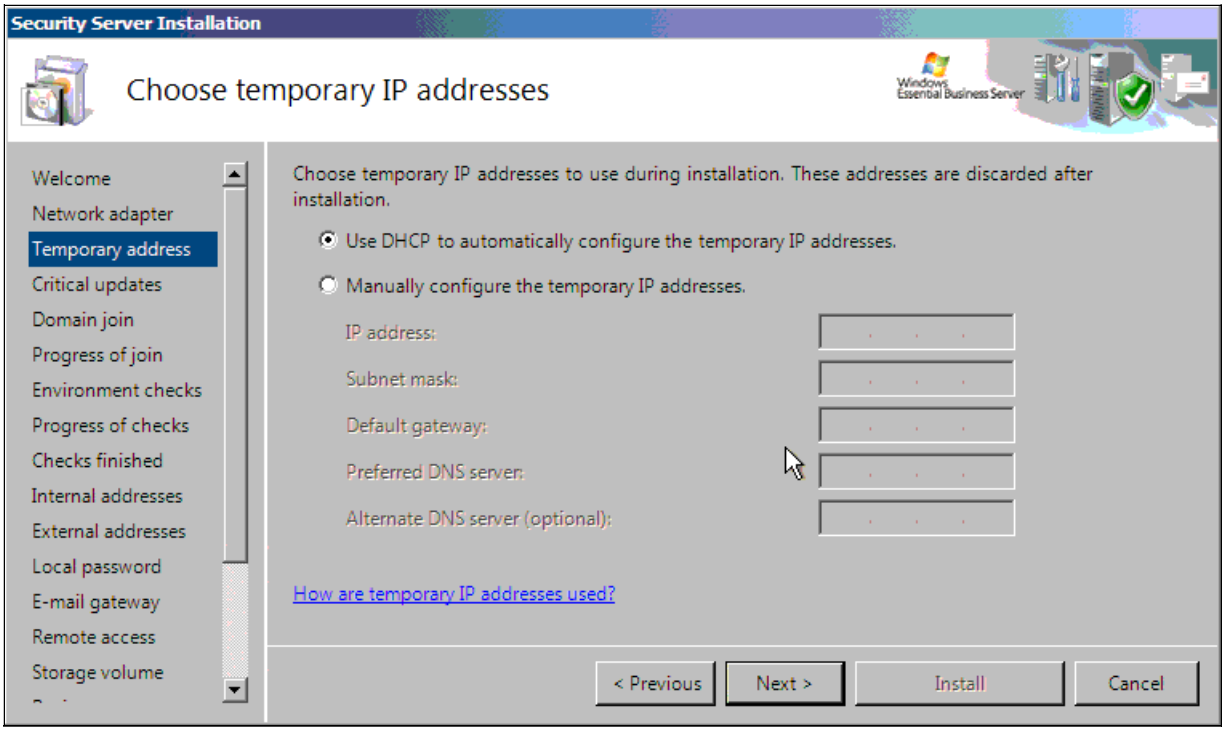

Figure 4-6 Choose temporary IP addresses

13. (Optional) On the “Microsoft Update” panel (Figure 4-7), select the **Download and install optional Microsoft updates during installation** check box to download optional updates from the Microsoft Updates Web site and apply them automatically during installation. Click **Next**.

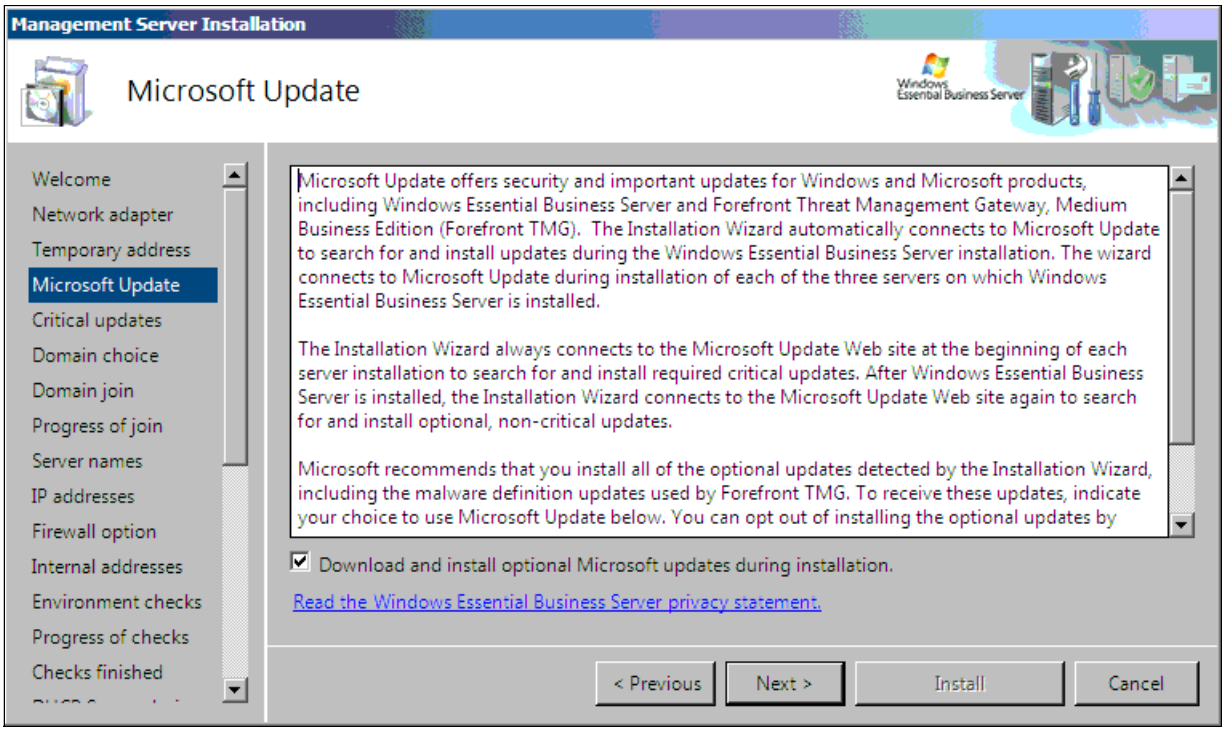

Figure 4-7 Microsoft Update

If you selected the **Download and install optional Microsoft updates during installation** check box, the installation wizard will connect to the Microsoft Updates Web site, search for critical updates for Windows EBS, and downloads and installs them.

14. When the wizard is finished, click **Next** on the “Critical updates installed” panel.

    If there are no updates to install or if you do not have an Internet connection, the installation wizard notifies you. Click **Next**.

15. On the “Choose the Active Directory domain” panel (Figure 4-8), select the appropriate radio button for your requirements. Click **Next**.

    In our example, we chose the **Create a new forest and domain** radio button.

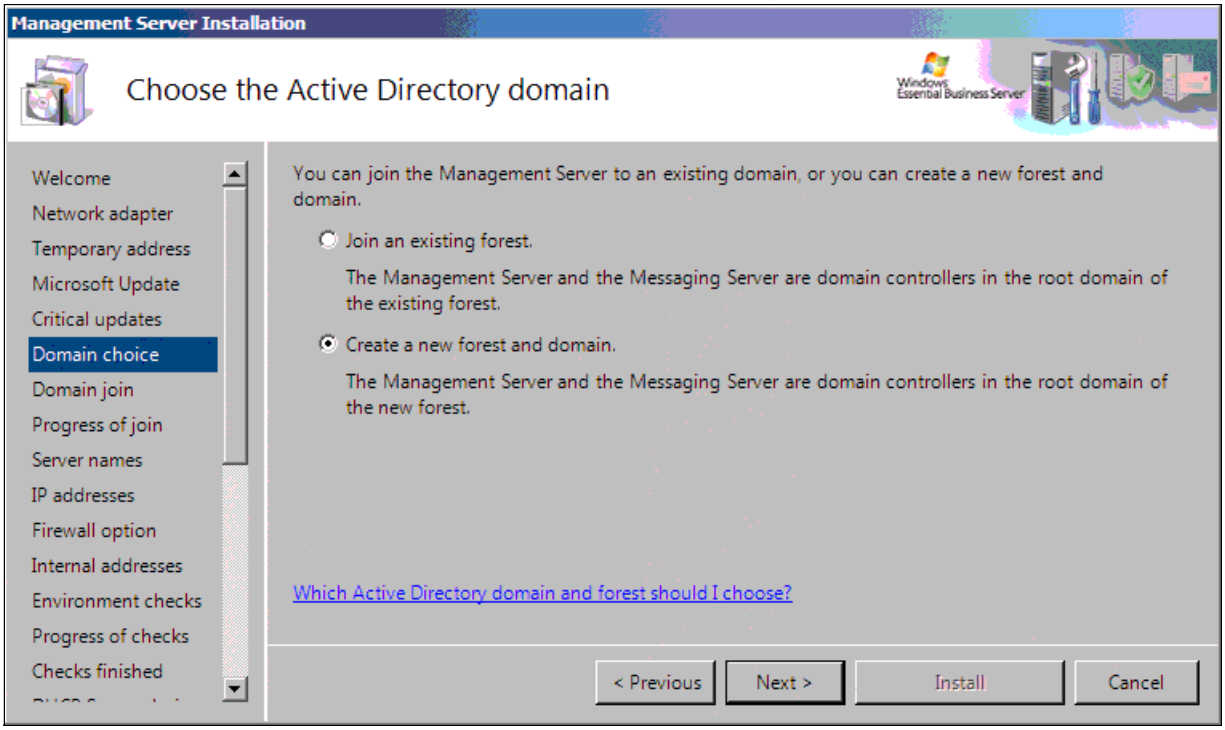

Figure 4-8 Choose the Active Directory domain

16. The next step in this procedure depends on your selection in step 15. Complete step 17a or 17b of this procedure, depending on your selection in step 16:

    a. If you selected the **Create a new forest and domain** radio button, perform the following steps:

        i. Type the name of your new domain and the credentials for the default domain administrator account in the “Name the Active Directory domain” panel (Figure 4-9). Click **Next**.

> **Important:** These credentials are used in the future as your domain administrator credentials. Write them down and keep them in a secure location.

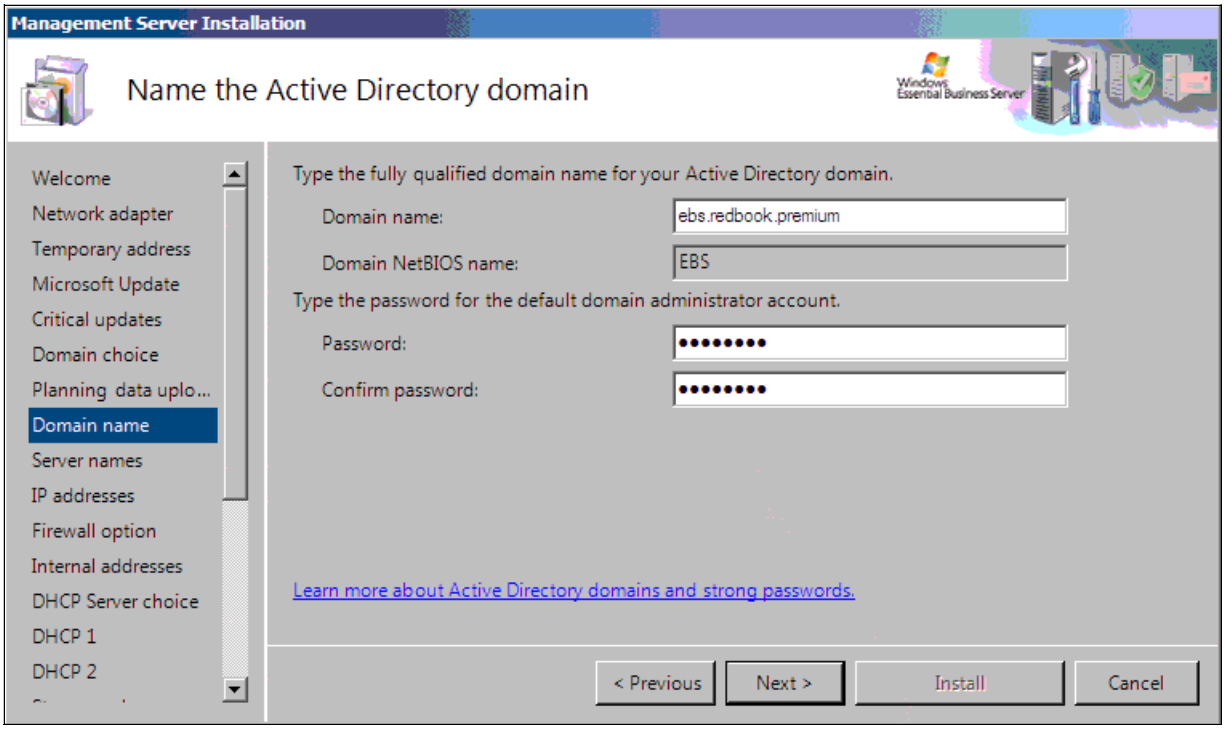

Figure 4-9 Name the Active Directory domain

> **Important:** At this point, complex password has been enabled by the Windows EBS Management Server.

ii. Click **Load Planning Data** on the “Planning data upload” panel. This opens the XML file that you saved when you completed the Planning Wizard. In the “Open” panel (Figure 4-10), provide the location of the XML data file, which is required to continue the installation wizard.

iii. Proceed to step 17.

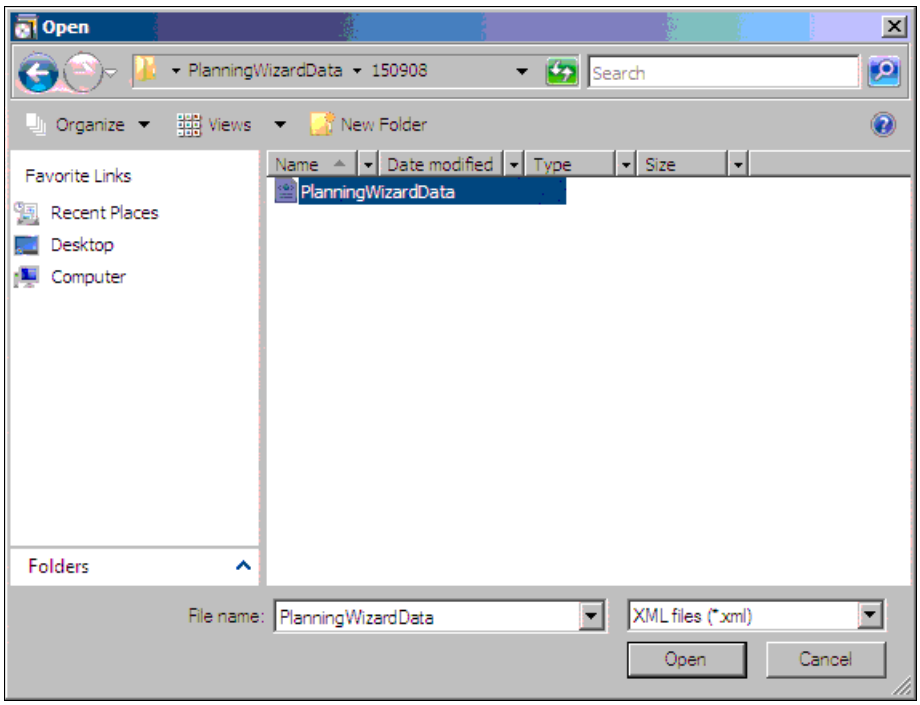

Figure 4-10 Load planning data XML file

b. If you chose the **Join an existing forest** radio button in step 15 on page 94, perform the following steps:

i. type the requested information when prompted on the “Join the Active Directory domain” panel. Click **Next**.

ii. Type the domain name and the account logon credentials for a user account that has Enterprise Administrator permissions on this domain, and click **Join domain**.

The server restarts to join the domain.

iii. When prompted, log on with the account that you used to join the domain. The “Progress of joining the domain” panel displays. When the domain is joined, click **Next**.

17. On the “Name the servers” panel (Figure 4-11 on page 97), type the names of your servers. Refer to Appendix B, “Server Naming Convention” on page 175 for accepted server naming conventions. Click **Next**.

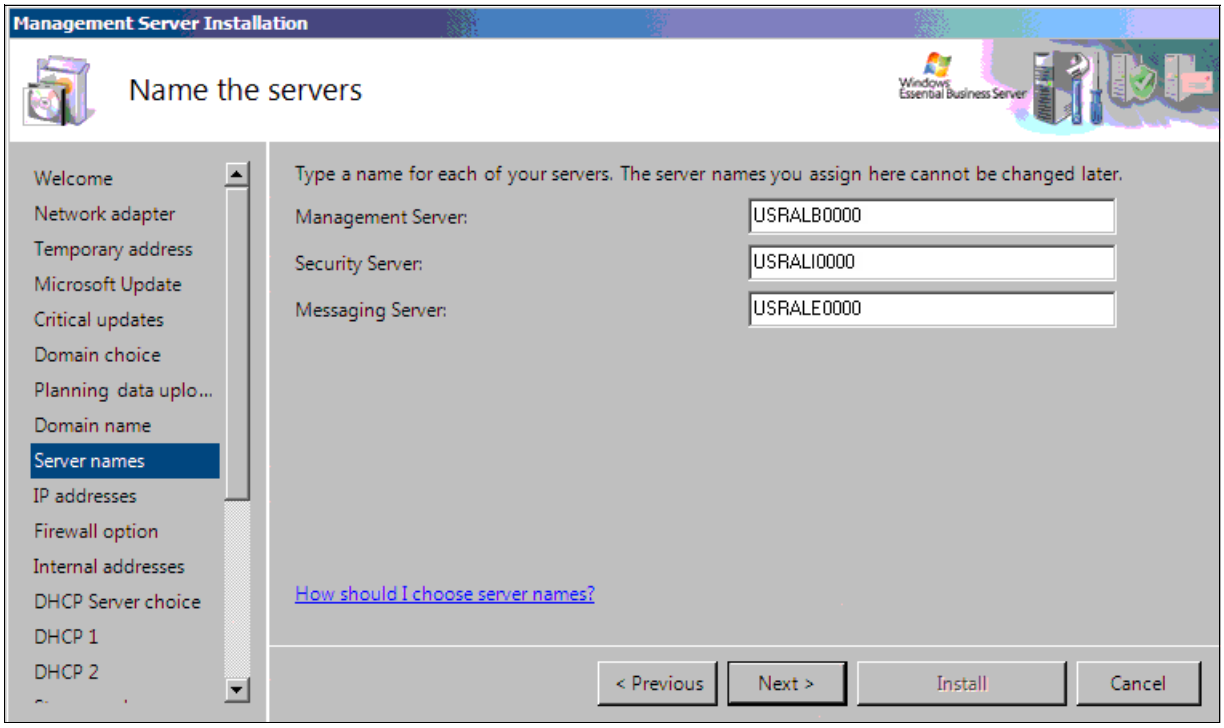

Figure 4-11 Name the servers

Important: Renaming your servers after Windows EBS has been installed is not supported.

18. On the “Assign IP addresses” panel (Figure 4-12), verify the default static IP addresses and the subnet masks for each of the servers. Click **Next**.

> **Important:** For users who are installing Windows EBS into an existing production environment, configure the static IP address for the Security Server with the same IP address as your existing network gateway.

These IP settings are saved on the Management Server during installation. They are used later in the installation to set the suggested network settings for the other servers.

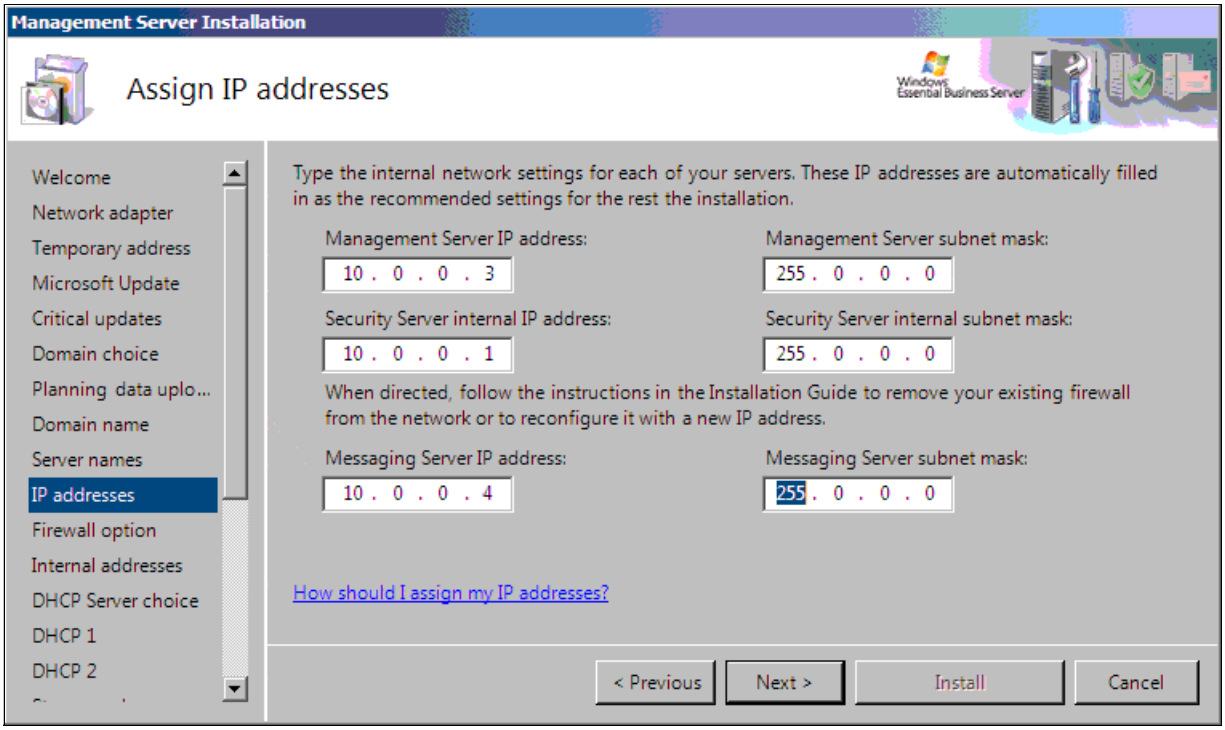

Figure 4-12 Assign IP addresses

19. On the “Select firewall option” panel (Figure 4-13), select the appropriate firewall option for your requirements. In our example, we selected the **No, I will retain my existing firewall (advanced)** radio button. Click **Next**.

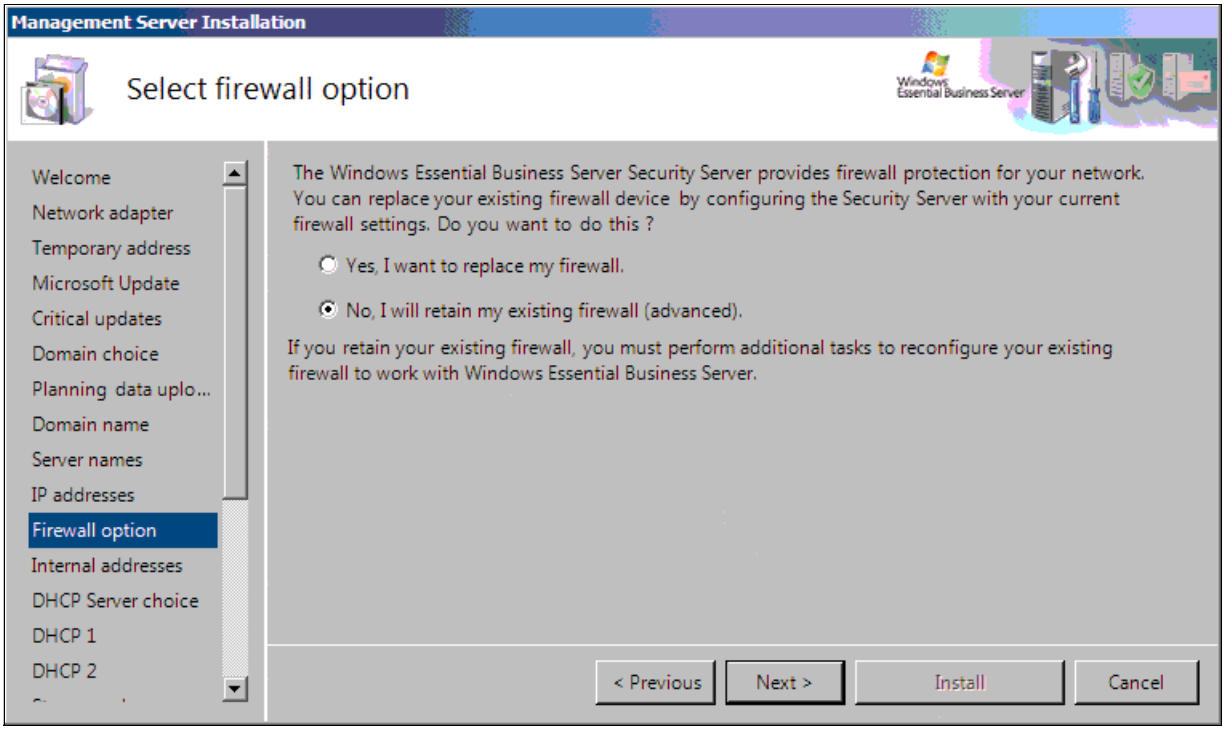

Figure 4-13 Select firewall option

Important: If you choose to retain your existing firewall, you must perform additional configuration tasks during the installation of the Security Server.

20. On the “Set the internal network IP addresses” panel (Figure 4-14), review the default IP settings for the Management Server. Click **Next**.

> **Note:** If you want to use different servers for your preferred and alternate DNS servers, click the **Manually configure the internal IP address** radio button, and then type the IP addresses that you want to use.

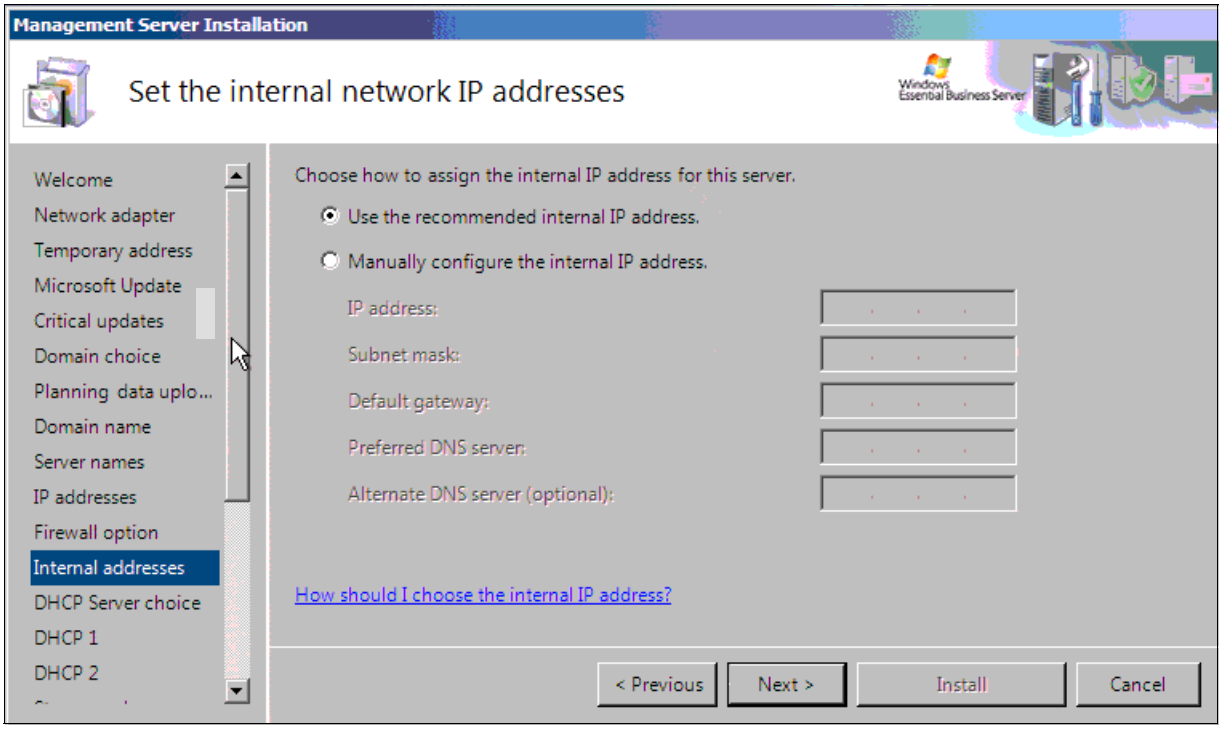

Figure 4-14 Set the internal network IP addresses

21. If you joined an existing Active Directory domain, the “Check the environment” panel displays. Click **Check environment**. The installation wizard will check your environment to ensure that the wizard can finish successfully.

> **Note:** If you did not join an existing Active Directory domain, these checks are not performed. Proceed to step 22 on page 101.

If the environment checks find a condition that prevents successful installation, the installation wizard pauses. You are prompted to make changes. When you are done, click **Check again**. This may happen more than once, if several conditions need attention.

After the installation wizard completes all of the pre-installation checks, you will see the summary and finished page. Review the summary, and click **Next**.

> **Note:** You may be prompted to perform upgrades or to make other changes to your existing environment. If you are prompted to run the Schema Upgrade Tool, see the Run the Schema Upgrade Tool, located on Disc 1 of the Windows Essential Business Server Installation Discs.

22. On the “Choose the DHCP Server service” panel (Figure 4-15), make the appropriate selection for your requirements. We clicked the **Configure the DHCP Server service in Windows Essential Business Server** radio button. Select the **Start the DHCP Server service in Windows EBS** check box. Click **Next**.

> **Important:** If you choose to start the DHCP Server service in Windows EBS, your existing DHCP Server service will be shut down.

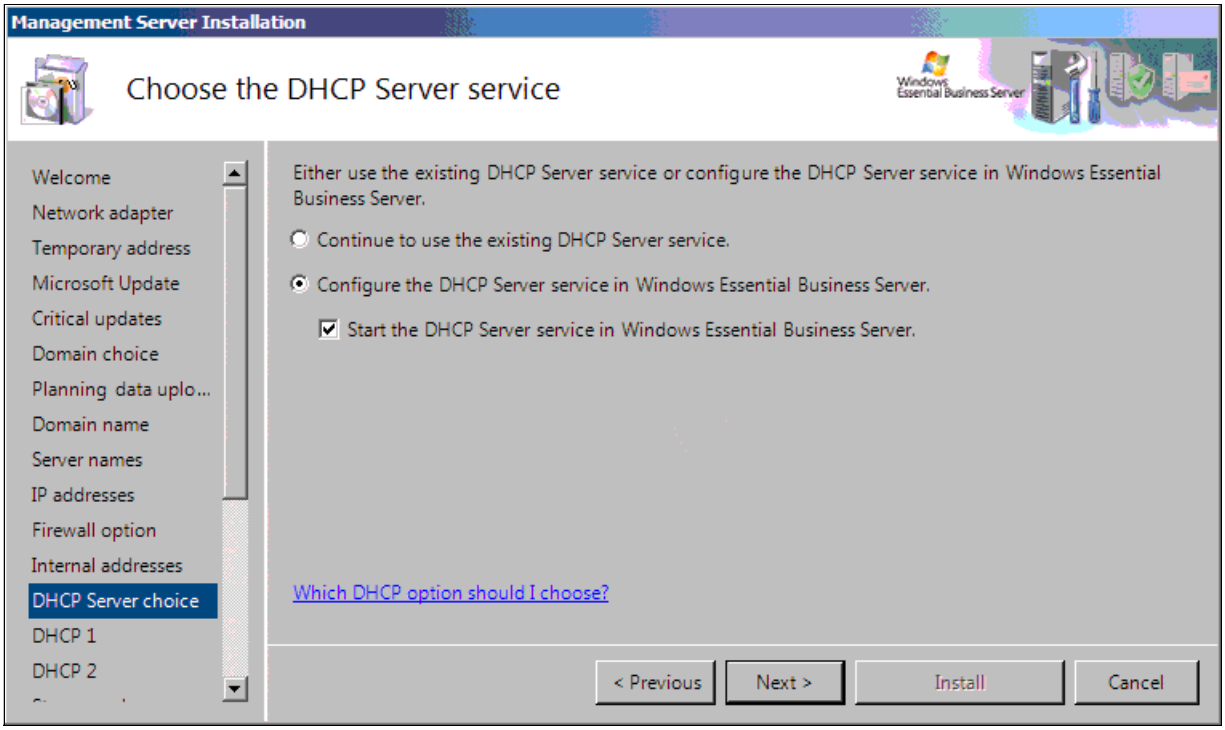

Figure 4-15 Choose the DHCP Server service

23. On the “Configure the DHCP Server service - 1 of 2” panel (Figure 4-16), review the suggested name for your DHCP Server service scope, make any desired changes, and type your desired settings to define the range of the DHCP Server service scope. In our example, our service scope is 10.0.0.20 through 10.0.0.254.

    Review the pre-configured Subnet mask and Default gateway settings, and click **Next**.

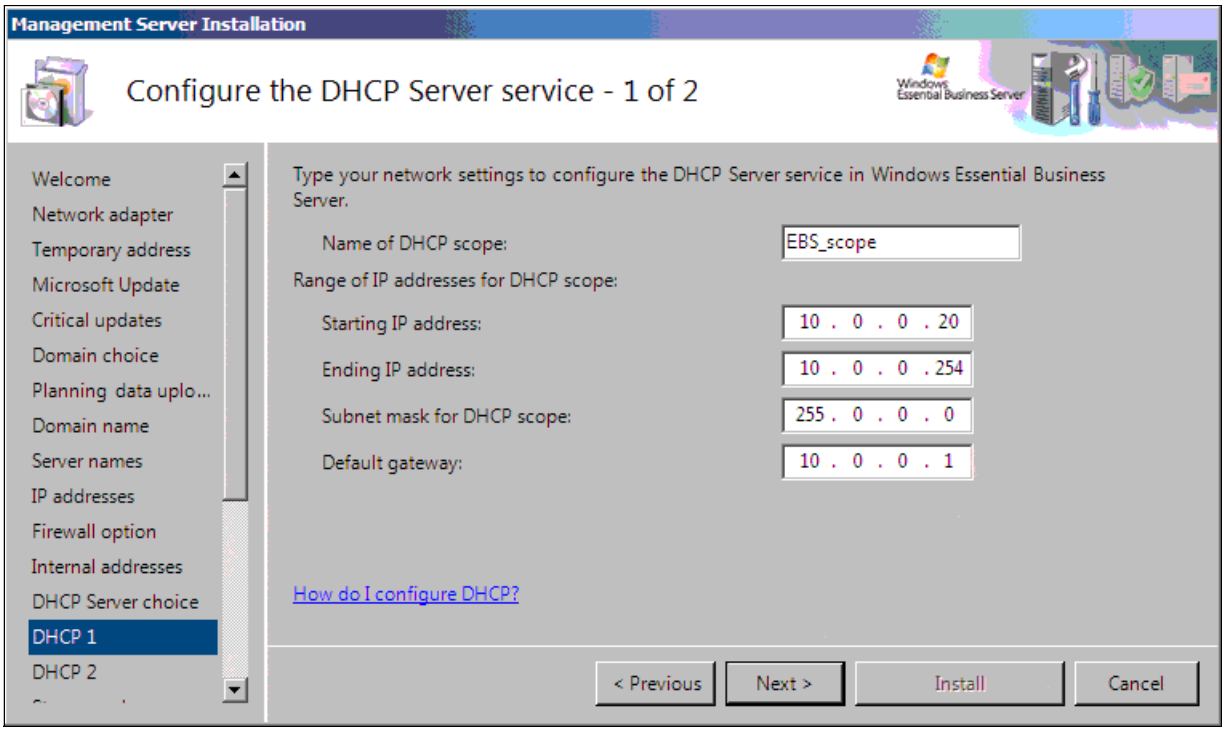

Figure 4-16 Configure the DHCP Server service - 1 of 2

24. On the “Configure the DHCP Server service - 2 of 2” panel (Figure 4-17), either confirm the default DNS server IP address or change the IP address to your preferred DNS server. Set the lease times for the IP addresses that are issued by DHCP Server service or accept the default of eight days. In our example, we accepted the default. Click **Next**.

Note: You can also type the settings for an optional DHCP Server service exclusion range.

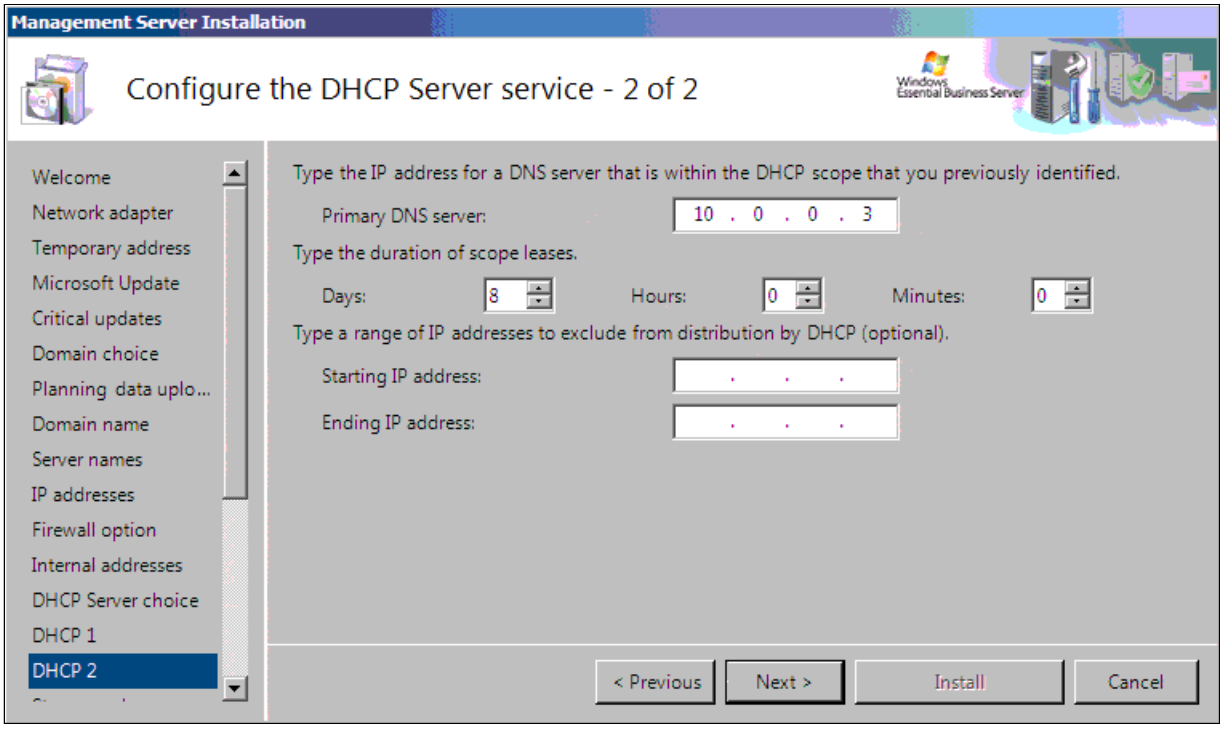

Figure 4-17 Configure the DHCP Server service - 2 of 2

Tip: If there is an IP conflict, see the technical article on the Microsoft Web site, at the following Web page:

`http://technet.microsoft.com/en-us/library/cc737924.aspx`

25. On the “Choose a volume for storing data” panel (Figure 4-18), make the selection appropriate for your requirements. In our environment, we prepared a 100 GB RAID-5 volume on the SAS drives inside the Disk Storage Modules. We selected the **Store the application data on a disk volume other than the system volume (recommended)** radio button. Click **Next**.

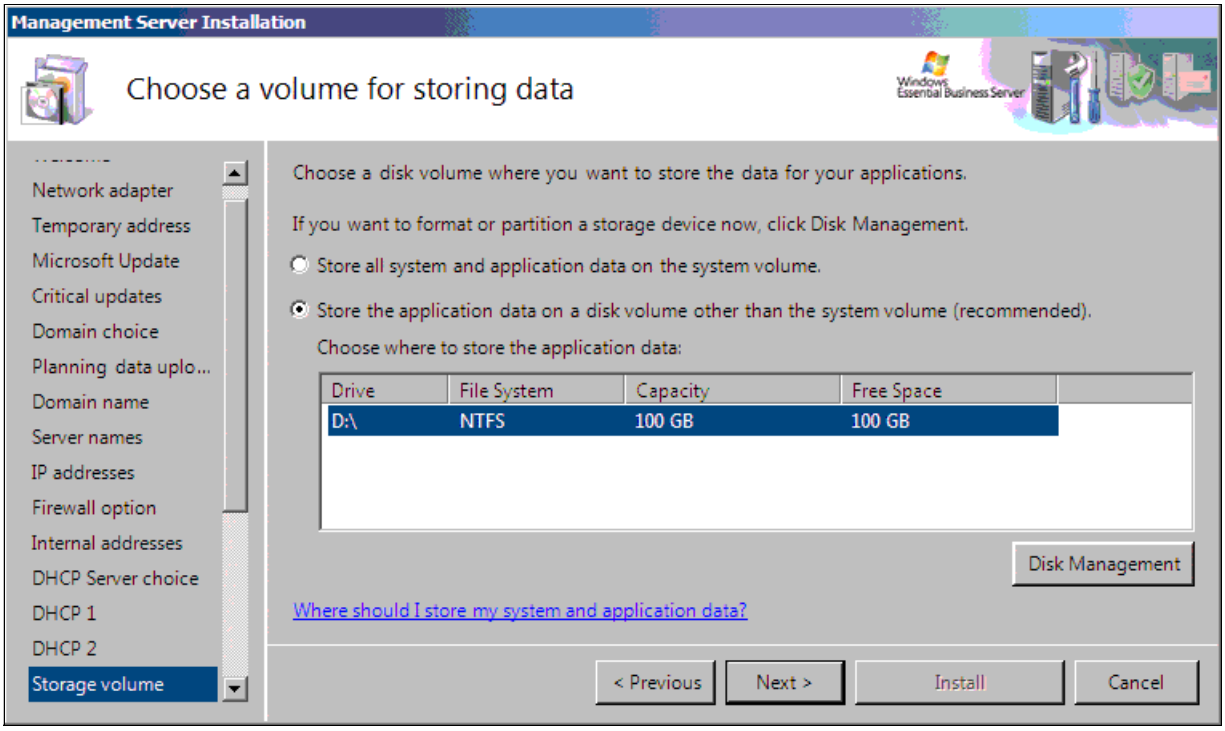

Figure 4-18 Choose a volume for storing data

> **Note:** If you need to format a hard disk drive, create a partition, or perform other disk management tasks, click **Disk Management**. If you need to install a driver for the disk controller, see 4.2.1, “Accessing Windows Server 2008 during installation” on page 87.

26. On the “Type your company information” panel (Figure 4-19 on page 105), enter the following information:
   - Company name. The name that you provide is used for the company name on the home page of Remote Web Workplace. The home page can display a maximum of 30 characters for the company name.
   - Name of certificate issuer. The installation wizard automatically generates a name for the issuer of Windows EBS certificates. You can change the generated name.
   - Administrator’s name.

   Click **Next**.

> **Important:** The certificate issuer name cannot be changed later. Be certain that you have provided the name you want to use before you continue the installation.

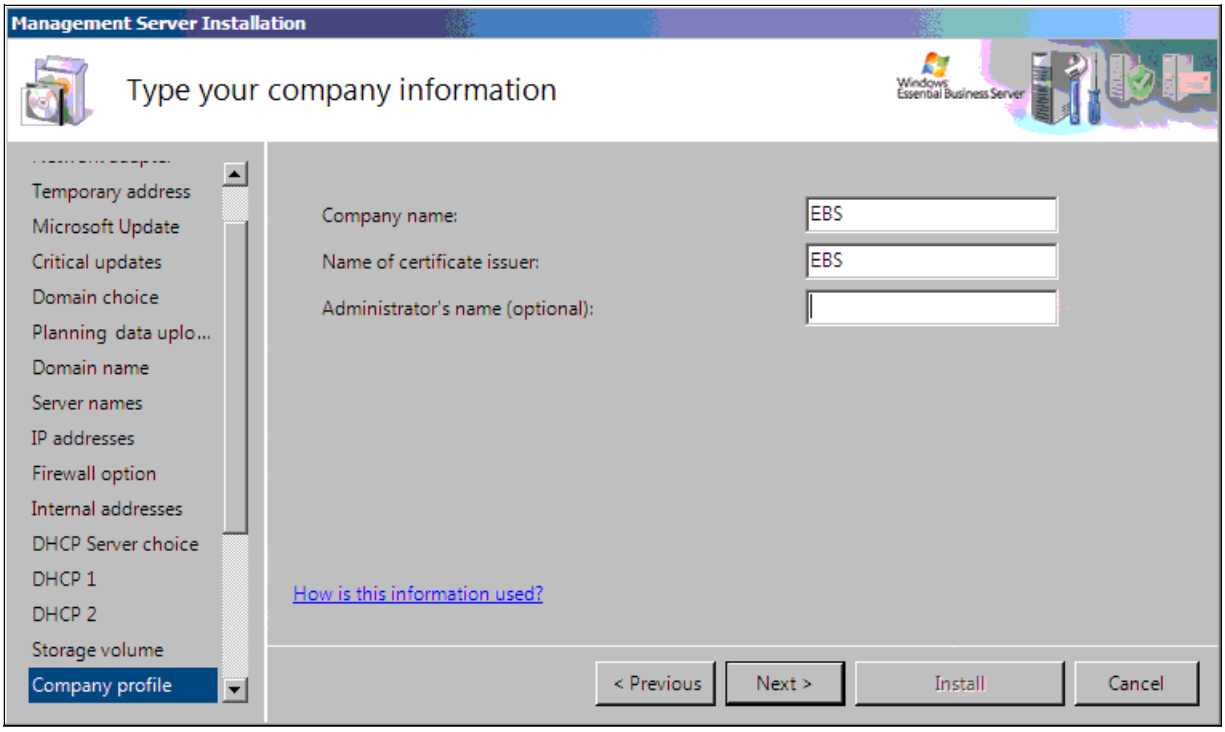

Figure 4-19 Type your company information

27. On the “Choose how to report errors” panel, choose whether to participate in the Microsoft Error Reporting service. We accepted the default. Click **Next**.
28. On the “Choose whether to report usage data” panel, choose whether to report usage and reliability data. We accepted the default. Click **Next**.

29. Review your settings on the “Management Server installation” panel. You can change the settings that you made since you joined the Active Directory domain by clicking **Previous** to return to previous pages. When you finish reviewing the settings, click **Install**.

    The installation wizard installs Windows EBS on your Management Server and configures it with the settings that you chose. The “Progress of Management Server installation” panel (Figure 4-20) displays progress bars that show you how the installation is proceeding. Depending on the settings that you chose, the server may restart several times.

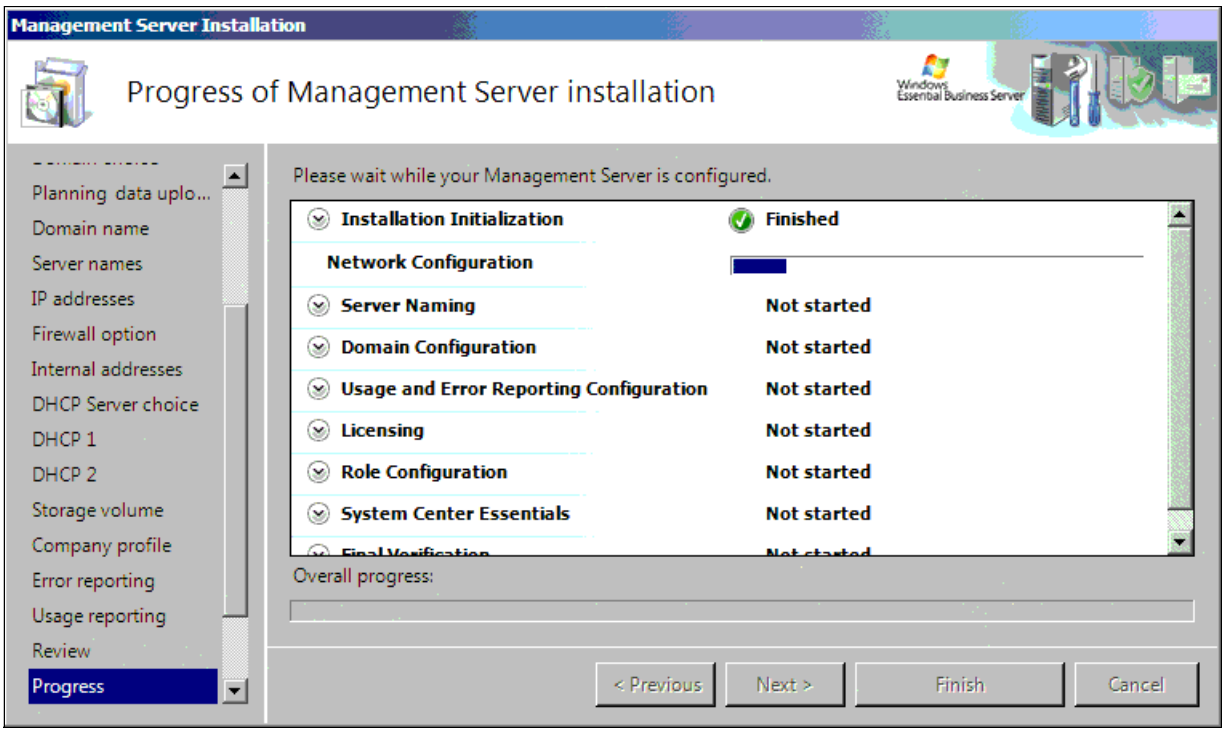

Figure 4-20 Progress of Management Server installation

You can leave the remainder of the installation unattended. If you want to observe the progress, log on to the server by using your domain administrator credentials.

30. The “Management Server installation tasks finished” panel (Figure 4-21) displays when the installation is complete. Click **Next**.

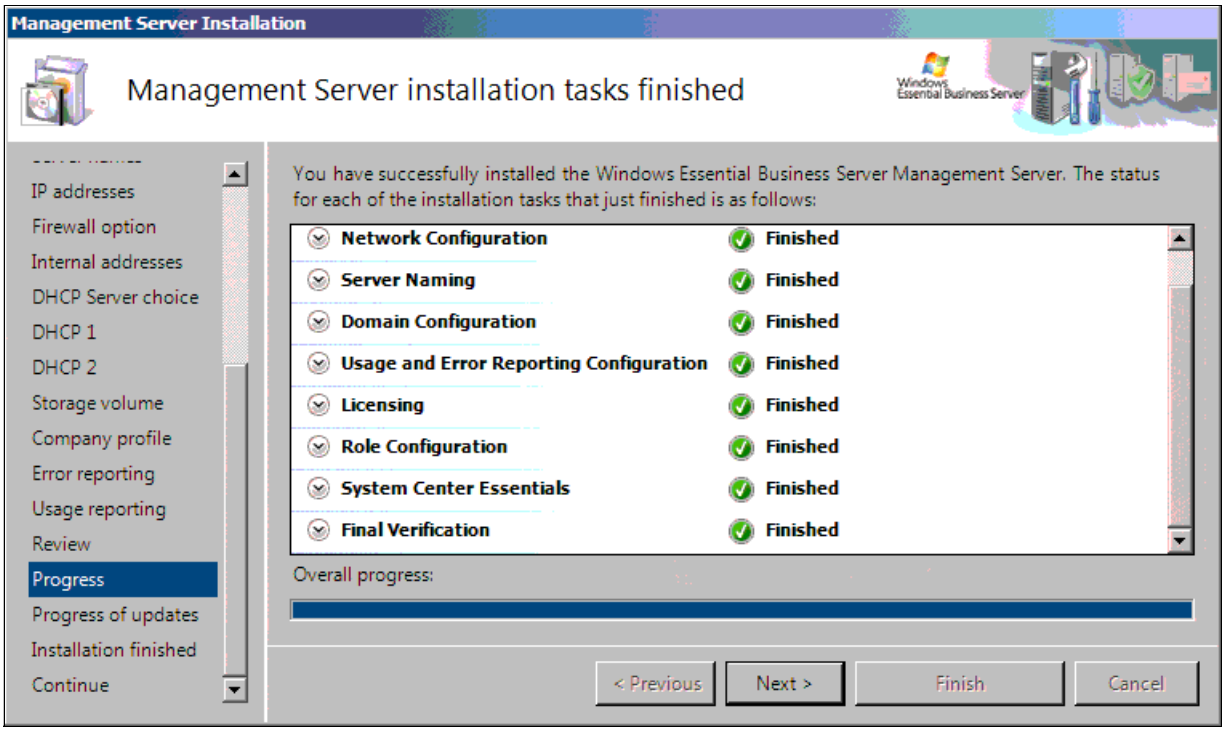

Figure 4-21 Management Server installation tasks finished

31. If you did not choose to automatically install optional updates, the “Select optional updates” panel appears. Click **Install updates** to start the update process. Click **Finish**.

32. Review the status of your installation and updates on the “Installation and updates finished” panel (Figure 4-22). Click **Close**.

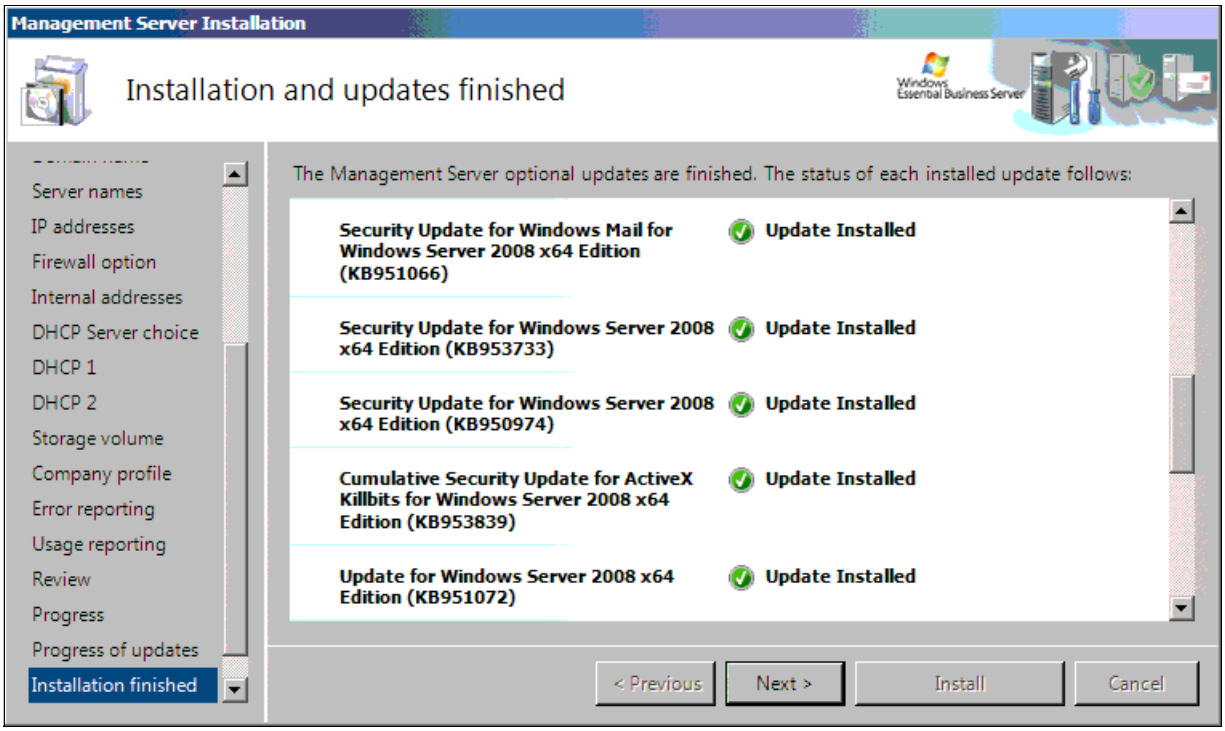

Figure 4-22 Installation and updates finished

33. The “Continue installation” panel (Figure 4-23) directs you to continue the installation on the Security Server, which is described in 4.4, “Installing the Security Server” on page 109. Click **Close**.

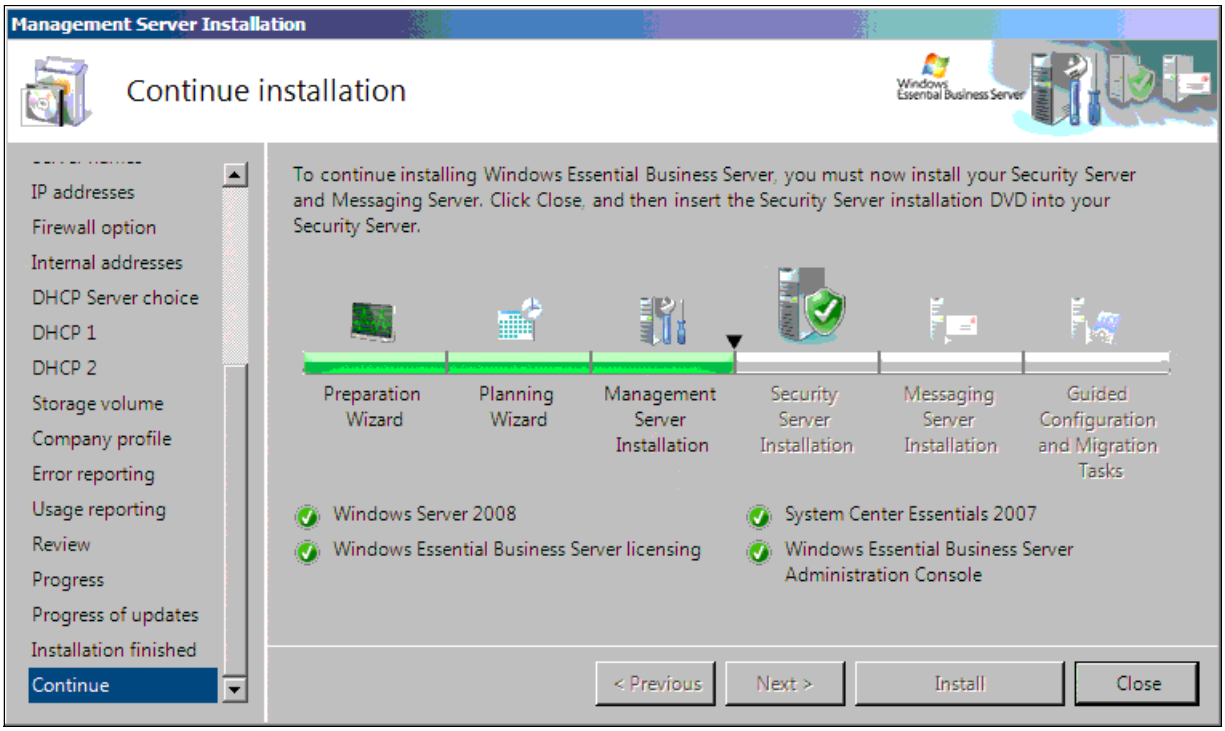

Figure 4-23 Continue installation page

4.4 Installing the Security Server

After the Management Server has been installed, the installation progress is displayed in the “Guided Configuration and Migration Tasks” panel (Figure 4-24) of the Windows EBS Installation Wizard.

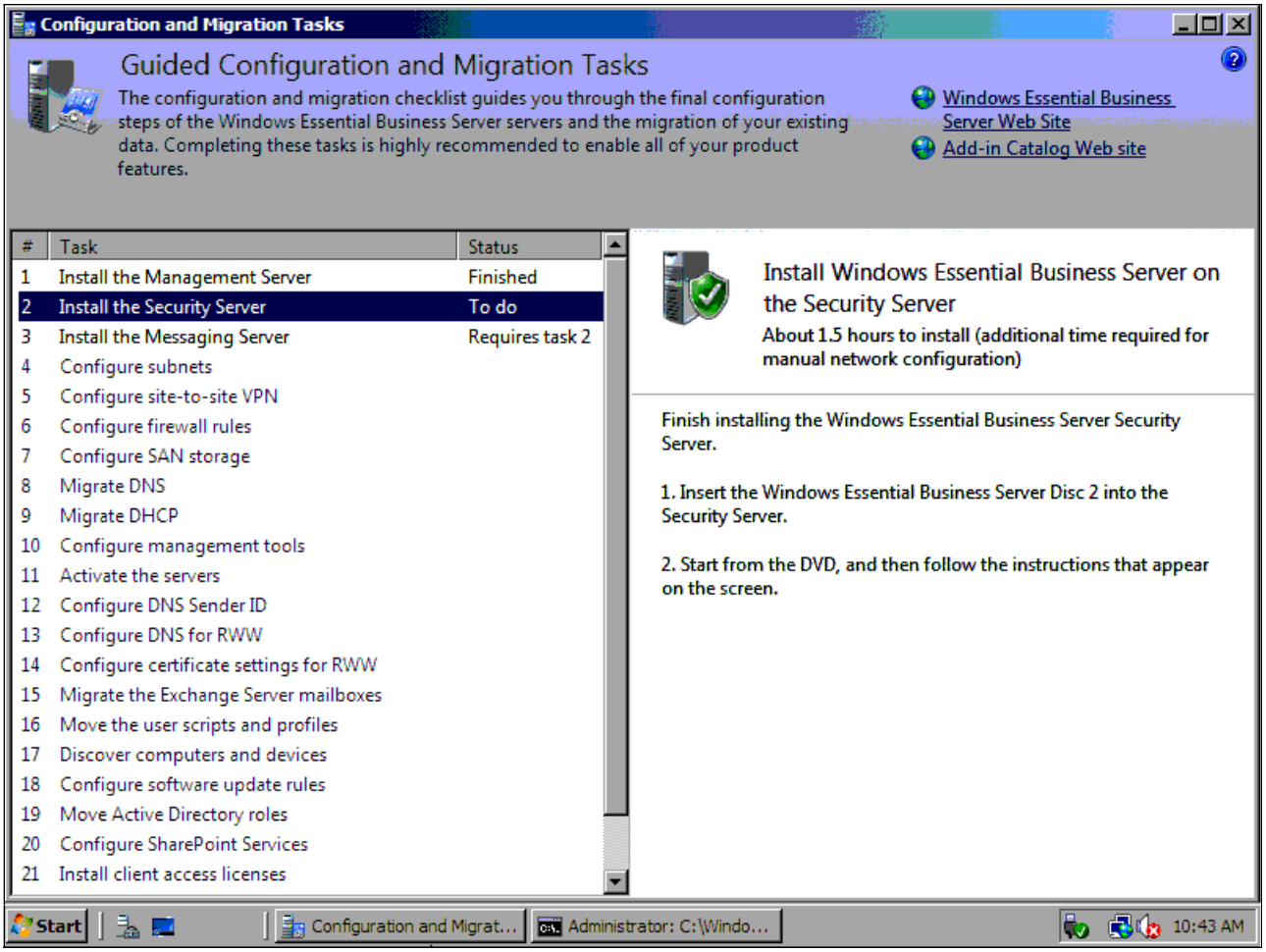

Figure 4-24 Configuration and Migration Tasks window

To continue the Windows EBS deployment with the Security Server installation, proceed through the following steps:

1. Press the **media tray assignment** button on the Security Server blade to assign the DVD drive to this server. Insert *Windows EBS Installation Disc 3* into the DVD drive, and boot the blade server from the DVD. The Windows Server 2008 Installation Wizard appears.

   Note: For IBM BladeCenter S media tray functionality explanation, see its description in 1.5.2, “IBM BladeCenter S” on page 14.

2. Set your locale, and click **Next**.
3. Click **Install Now**.
4. (Optional) Type your 25-character product key to avoid problems during activation. Click **Next**.

5. If you have an Internet connection, select the **Automatically activate Windows when I'm online** check box to activate your software. Click **Next**.
6. Review the Microsoft Software License Terms. Select the **I accept the license terms** check box to continue the installation, and click **Next**.
7. Select **Custom (advanced)** as your installation type.
8. On the "Where do you want to install Windows?" panel, click the partition where you want to install Windows EBS, and click **Next**.

   The installation wizard starts copying, expanding. and installing Windows Server 2008 files.

   Note: Your computer restarts several times while Windows Server 2008 is being installed.

9. The Security Server Installation Wizard starts. Read the introductory information on the "Welcome" panel, and click **Next**.
10. On the "Choose the internal network adapter" panel (Figure 4-25), select the network adapter that you use to connect this server to your internal network. Verify that the network adapter is connected to your internal network. Click **Next**.

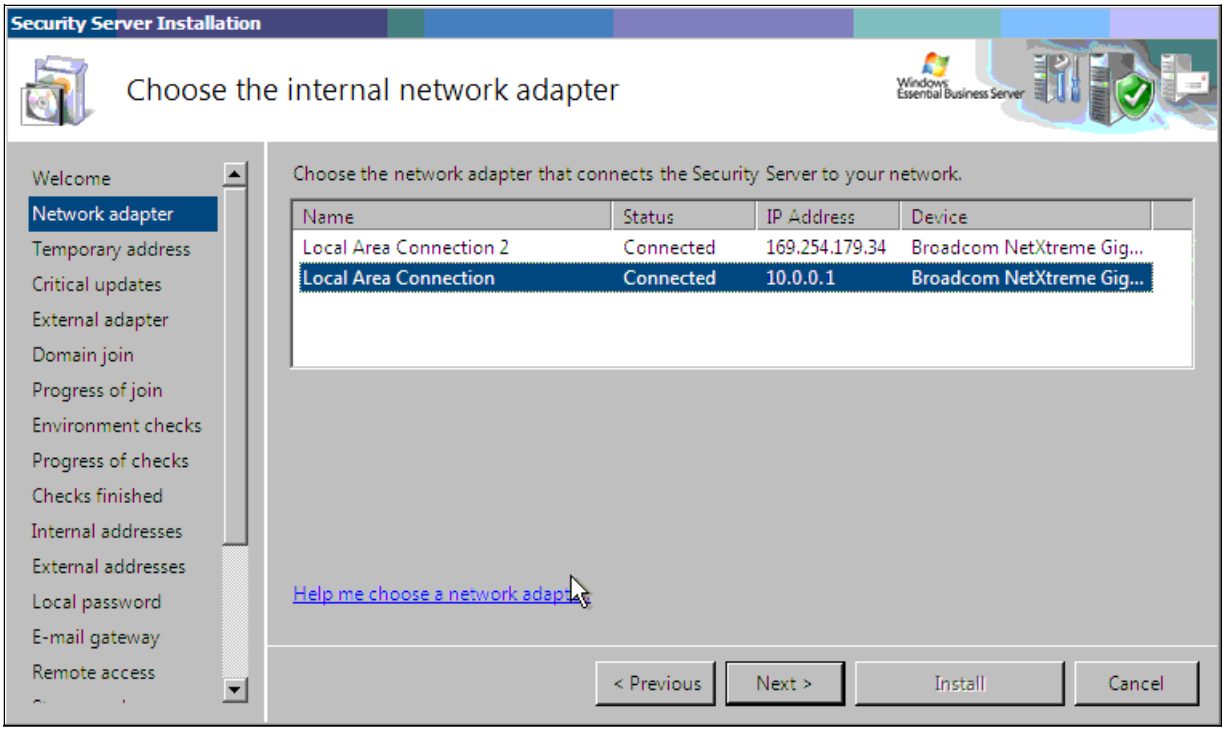

Figure 4-25 Choose the internal network adapter

11. On the "Choose temporary IP addresses" panel, you have two options:
    - Use DHCP Server to automatically assign the Security Server an IP address that is used during installation
    - Type a valid IP address that provides an Internet connection through your network.

    It is suggested that you use an existing DHCP server. If your existing domain does not have a DHCP server, use a static address. Click **Next**.

Important: These IP address settings are used during installation to download critical updates from the Microsoft Updates Web site and to connect to the computers that already exist on your network. The settings will be reconfigured to your final settings later in the installation.

12. The installation wizard connects to the Microsoft Update Web site and searches for critical updates for Windows EBS. Updates are installed.

    Review the status of the critical updates installation on the “Critical updates installed” panel, and click **Next**.

13. On the “Choose the external network adapter” panel list box, select the network adapter that you want to use for your external connection. Click **Next**.

Note: This page does not appear if you have only two network adapters in your computer.

14. On the “Join the Active Directory domain” panel, type the Active Directory domain name that the Management Server is to join. Type the credentials of an account that has Enterprise Administrator permissions on this domain, and click **Join domain**.

    The server restarts to join the domain. When prompted, log on with the account that you used to join the domain. The “Progress of joining the domain” panel (Figure 4-26) tracks the progress. When you are finished joining the Security Server to the domain, click **Next**.

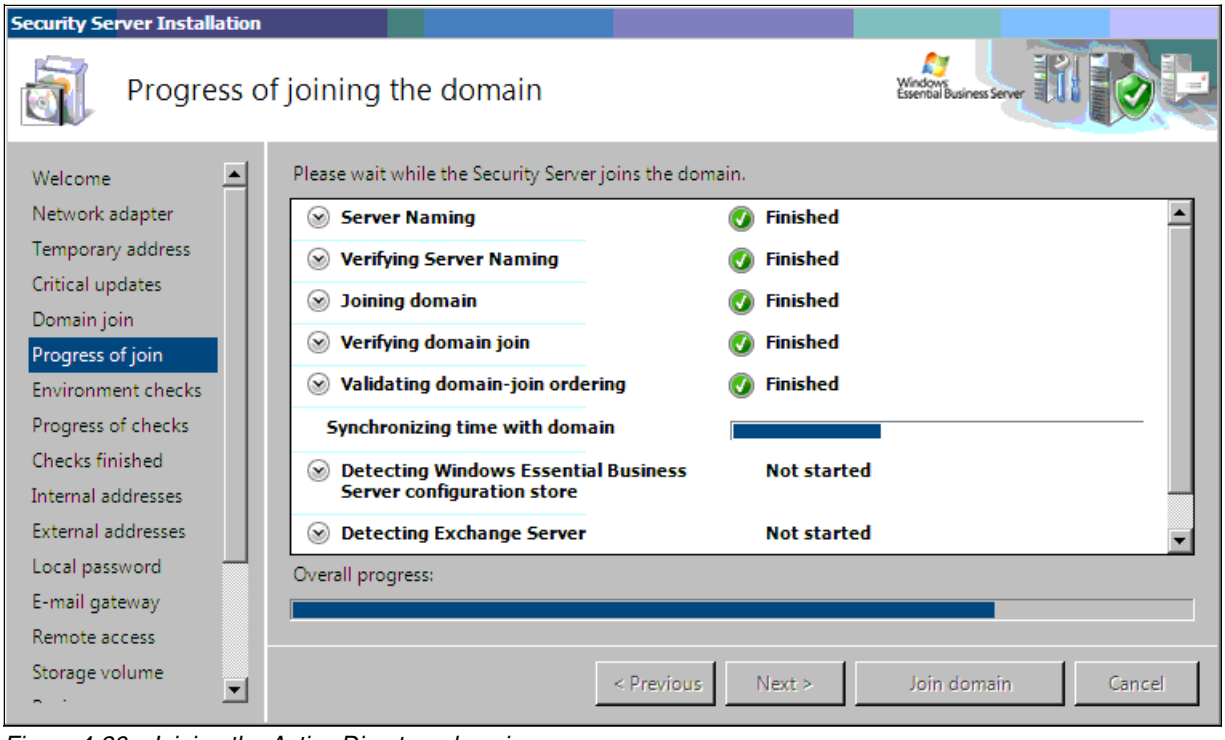

Figure 4-26 Joining the Active Directory domain progress

15. On the “Check the environment” panel, the installation wizard checks your environment to verify that it is compatible with Windows EBS. Read and follow the directions on the window, and click **Check environment**.

16. On the “Environment check is finished” panel, the installation wizard displays the status of the completed environment checks. When the checks are finished, click **Next**.
17. On the “Set the internal IP address” panel (Figure 4-27), verify that the selected settings are the same as those selected during the Management Server installation. We selected the default. Click **Next**.

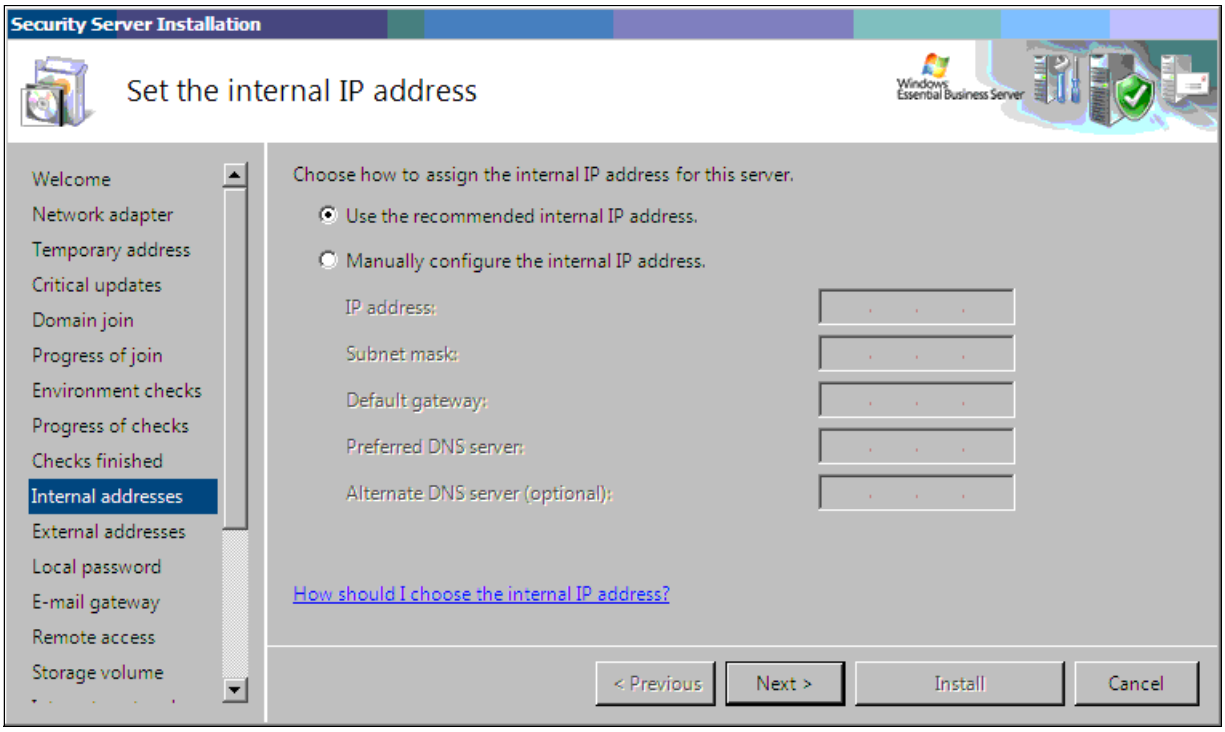

Figure 4-27 Set the internal IP address

If the IP address that you specified is detected in the network, then the “Choose firewall option” panel appears. We selected **Replace your existing firewall device with the Security Server**. Click **Next**.

18. On the “Set the external IP address” panel (Figure 4-28), select the **Use DHCP to automatically configure the external IP address** radio button and click **Next**.

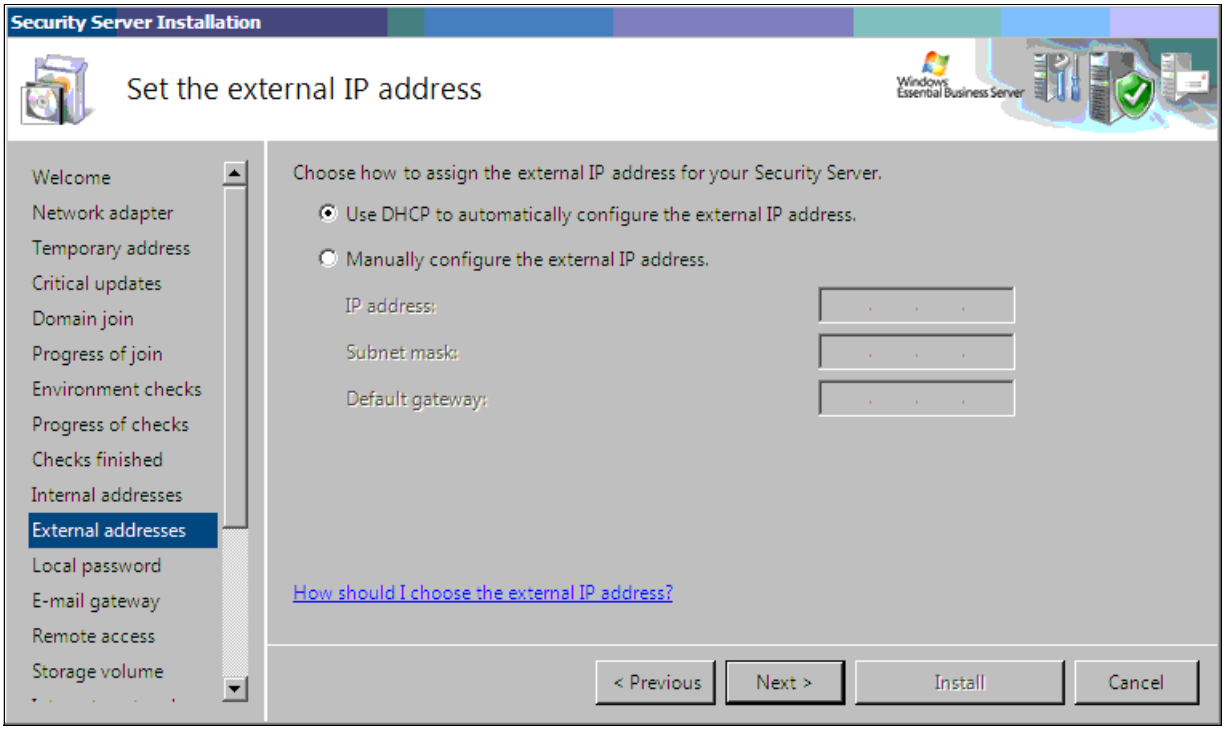

Figure 4-28 Set the external IP address

19. On the “Choose an Administrator password” panel (Figure 4-29), type a new password for the Directory Services Restore Mode. This password should be different from the passwords that you use to log on as a domain administrator and that you used to join the Active Directory domain. Confirm the password, and click **Next**.

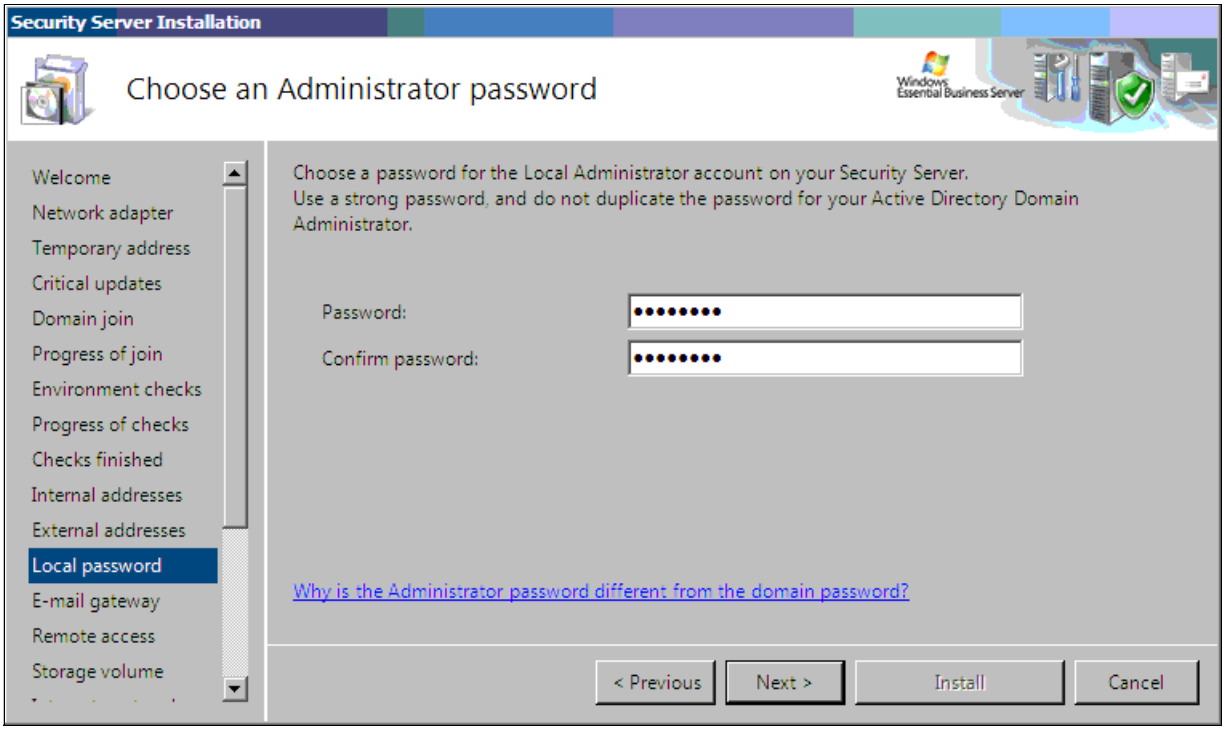

Figure 4-29 Choose an Administrator password

20. On the “Set the e-mail gateway” panel (Figure 4-30), configure the settings that allow external e-mail traffic through the Security Server during the remainder of the installation. The settings that you can configure depend on whether the installation wizard detects a compatible version of exchange server in your environment.

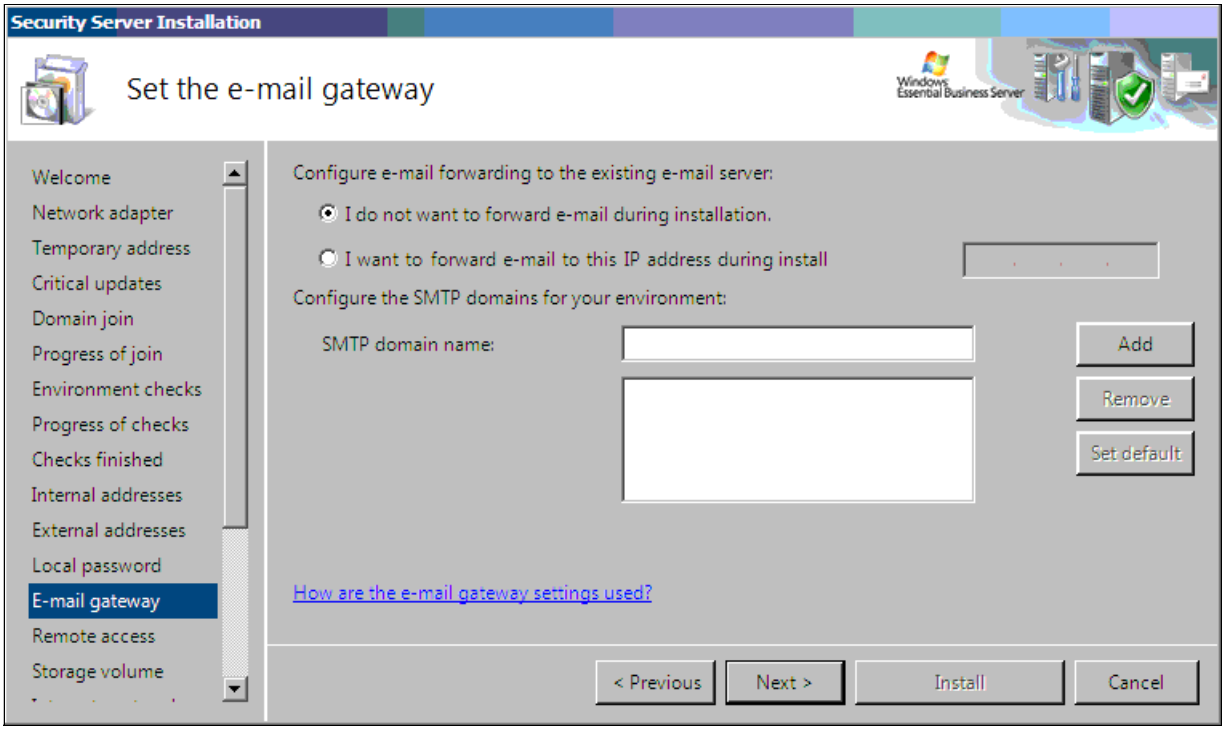

Figure 4-30 Set the e-mail gateway

The installation wizard did not detect the exchange server in our example, so we selected the **I do not want to forward e-mail during installation** radio button, because we do not need to maintain e-mail connectivity. Click **Next**.

If the wizard detects the Exchange Server: If the installation wizard detects the Exchange Server, select the **I want to forward e-mail to this IP address** radio button if you want to maintain e-mail connectivity. If you choose this option, type the IP address of your current e-mail server in the text box.

Configure the SMTP domain name to be used for e-mail messages. To do this, type your SMTP domain name in the text box, and click **Add**. You can add more than one domain name. To set the default, select the domain name and click **Set default**.

You can add, remove, or reconfigure SMTP domain information after the Windows EBS installation is finished. For more information, see the Exchange Server TechCenter article *How to Configure Authoritative Domains for the Exchange Organization*, available on the following Web site:

`http://go.microsoft.com/fwlink/?linkID=121808`

21. On the “Remote access settings” panel (Figure 4-31), set up remote access to your network through services (such as Remote Web Workplace) and through e-mail services (such as Outlook® Web Access or Outlook Anywhere). Choose a URL that is easy to remember, such as remote.redbook.com. Click **Next**.

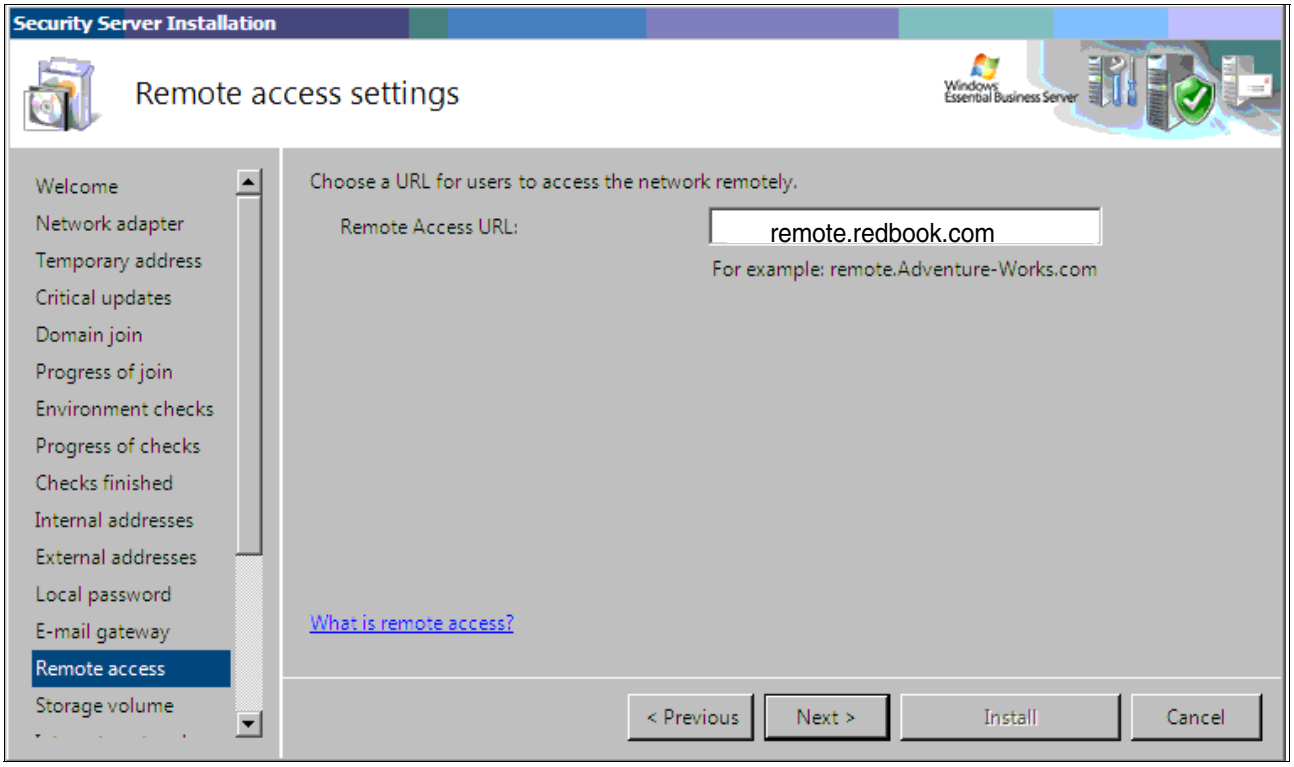

Figure 4-31 Remote access settings

22. On the “Choose a volume for storing data” panel (Figure 4-32), you can choose to store application data on a volume that is separate from your system volume. In our environment, we prepared a 100 GB RAID-5 volume, dedicated for storing security server data. Select the **Store the application data on a disk volume other than the system volume (recommended)** radio button. Click **Next**.

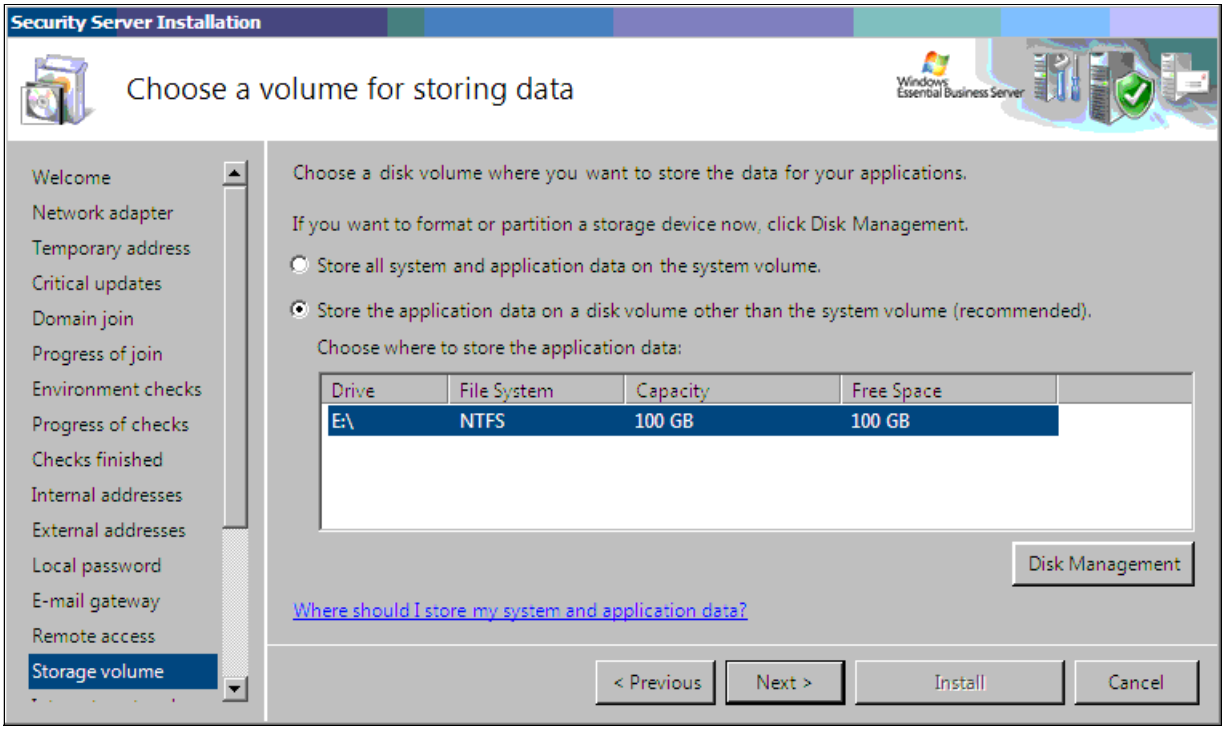

Figure 4-32 Choose a volume for storing data

23. On the “Select firewall option” panel, select the appropriate radio button to replace or retain your existing firewall. We selected the **Option After Integration(Replace**) radio button. Click **Next**.

24. On the “Security Server Network Integration” panel (Figure 4-33), follow the instructions to configure your existing network to route Internet traffic through the Security Server. You have two options:

   – Reconfigure your existing network gateway to use a new IP address on a different network.

     If you choose this option, remove the gateway device from the network and reconnect your Internet cable to the external network adapter of the Security Server.

   – Connect the external network adapter on the security server to your existing gateway.

     If you choose this option, complete the following sub-procedure.

     Important: For this sub-procedure, pause your installation of Windows EBS. These steps position the Security Server as the default gateway for your local area network (LAN). When you finish the re-consideration, your network connects to the Security Server as the Internet gateway (firewall). The Security Server connects to your existing (but reconfigured) firewall device to connect it to the Internet. The installation wizard prompts you to complete steps a through d.

     a. Change the internal IP address on your existing Internet gateway device to a new address. To do this, follow the instructions from the device manufacturer.

     b. Disconnect the cable that connects your existing gateway device to your network (leave it connected to the Internet).

     c. Connect the disconnected cable to the external network adapter on the Security Server. This connects the Security Server to the gateway device. You may need to use one or more hubs to make these connections.

     d. Connect the internal network adapter on the Security Server to the LAN. The security server is already configured with the IP address of your gateway device.

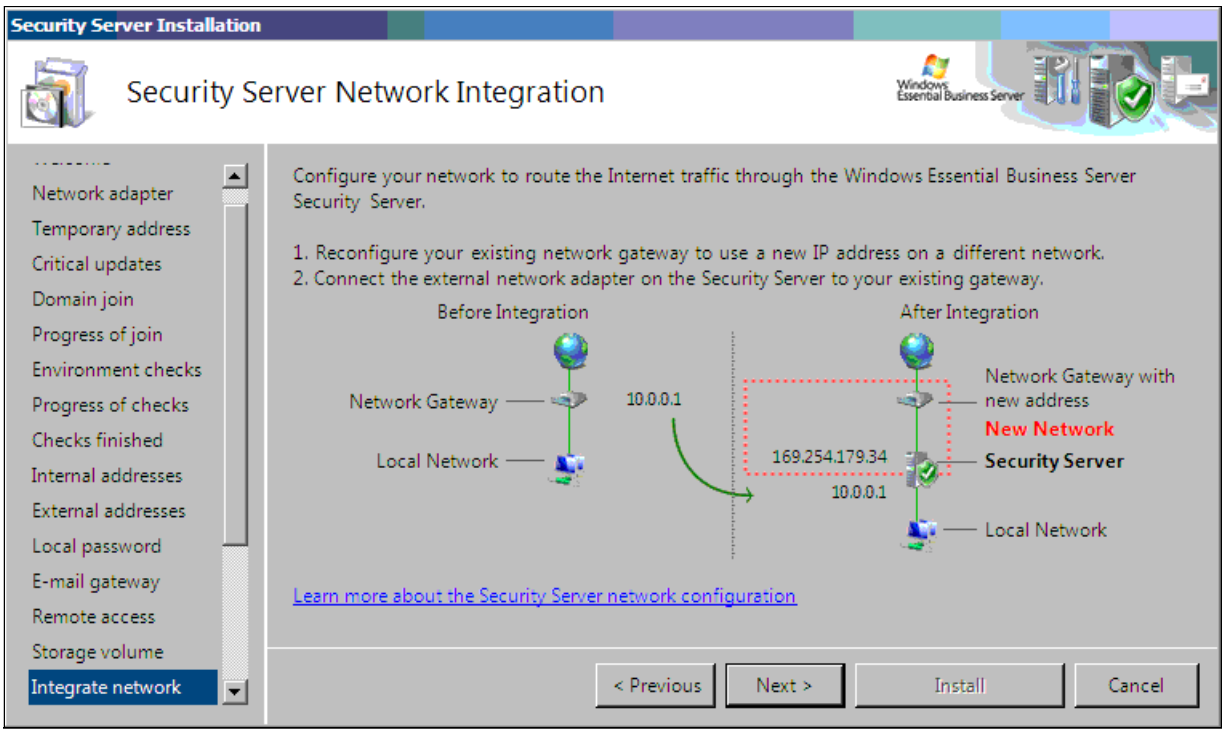

Figure 4-33 Security server network integration

The new network settings of the security server in our test environment are shown in Figure 4-34.

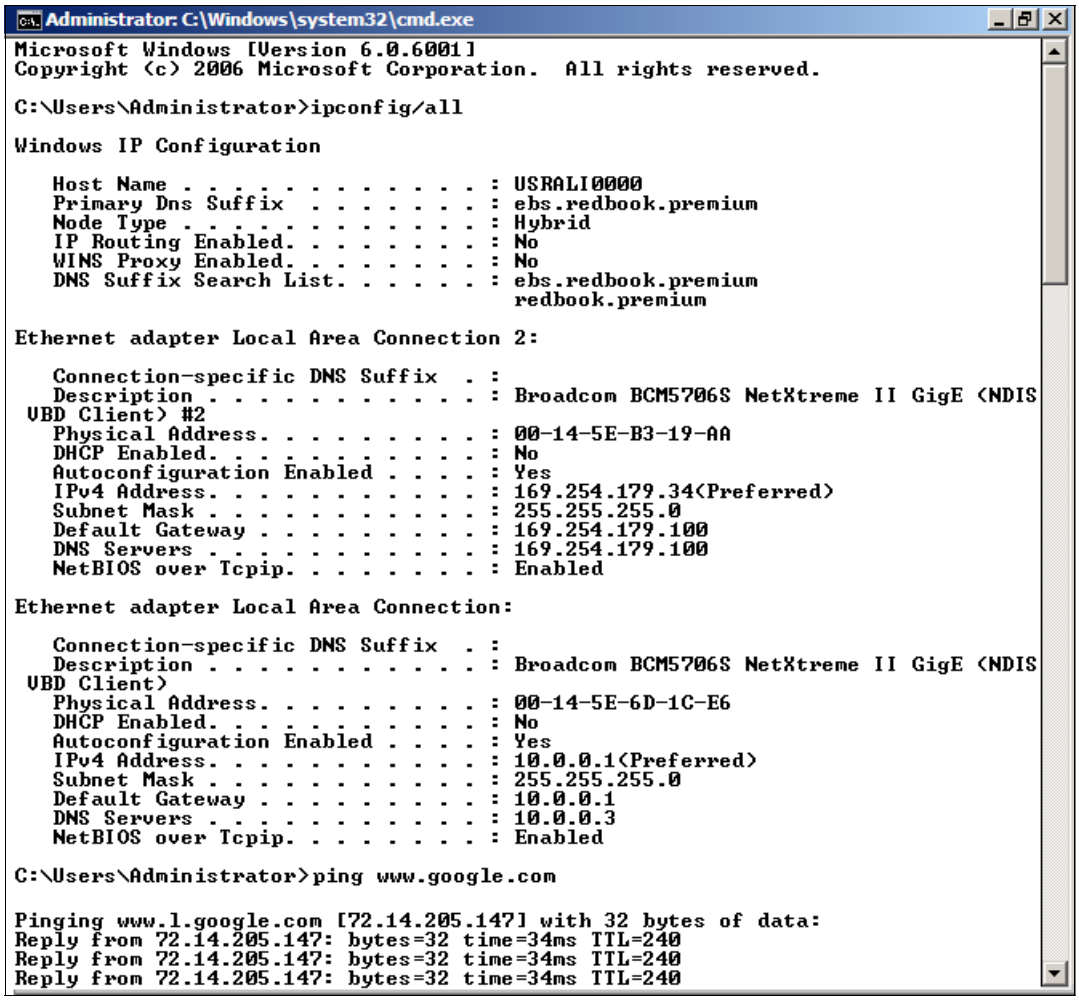

Figure 4-34 New Security server network settings

When you are finished, click **Next** in the installation wizard.

25. On the “Review the Security Server installation” panel (Figure 4-35), review your settings. You also have the option to save these settings. You can change the settings that you made since you joined the Active Directory domain by clicking **Previous** to return to previous pages. When you finish reviewing the settings, click **Install**. The remainder of the installation can proceed unattended.

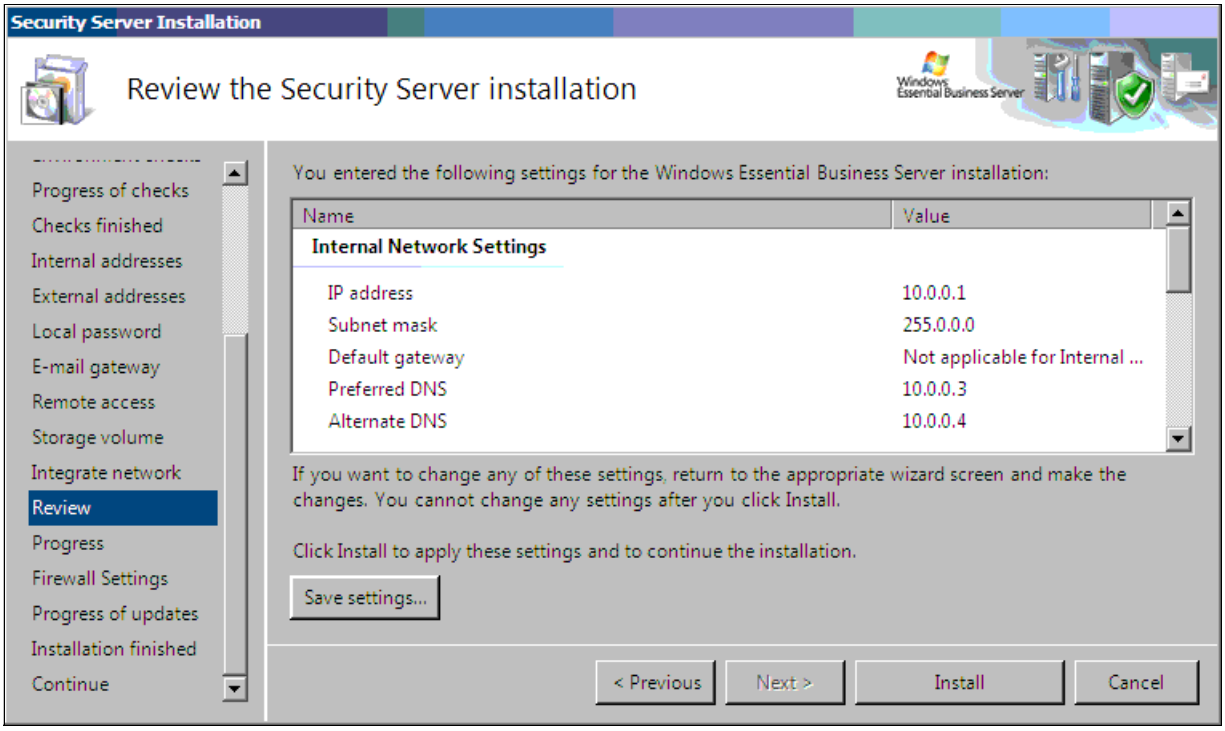

Figure 4-35 Review the Security Server installation

The installation wizard installs Windows EBS on your Security Server and configures it with the settings that you selected. The “Progress of Security Server installation” panel (Figure 4-36 on page 121) displays progress bars that show you how the installation is proceeding. Depending on the settings that you chose, the server may restart several times. If you want to observe the progress, you can log on to the server by using your domain administrator credentials.

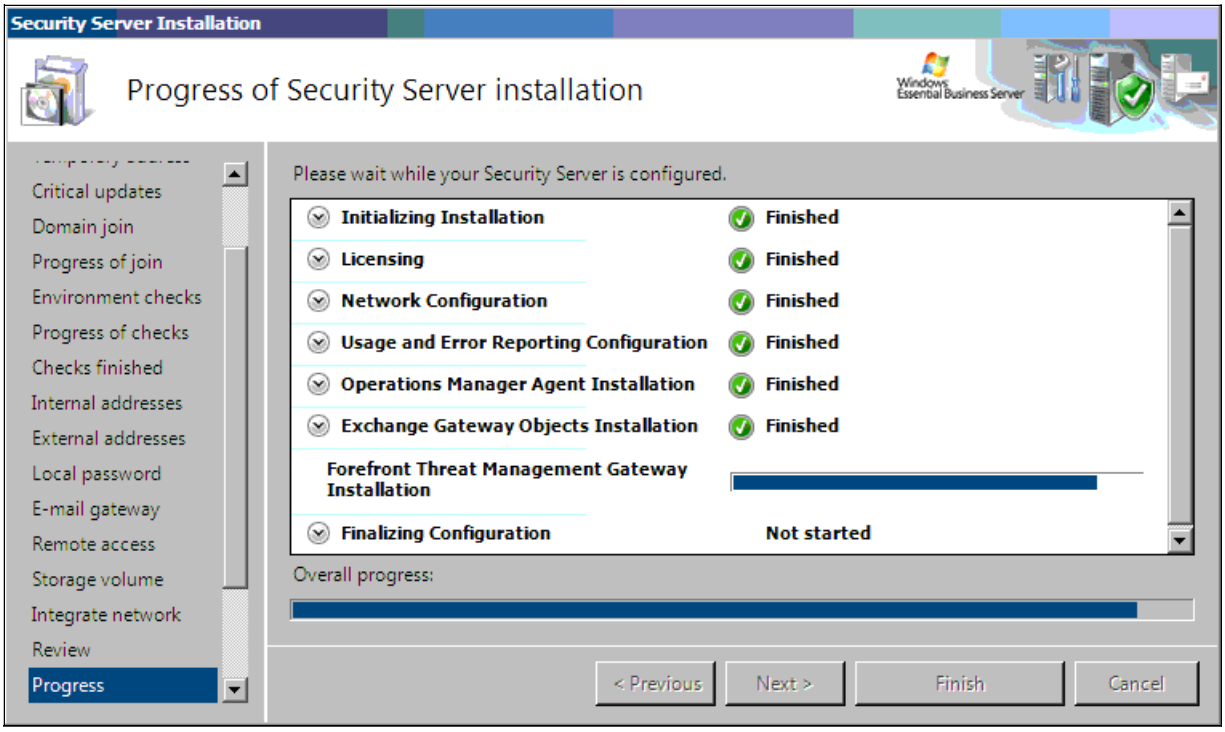

Figure 4-36 Progress of Security Server installation

When the Security Server is installed, the “Security Server installation tasks finished” panel displays. Click **Next**.

26. If you did not choose to install optional updates automatically, the “Choose optional updates” panel displays. You have two options:

   – Install updates for all the server roles that you installed

     Click **Install updates** to start the update process. The installation wizard connects to the Microsoft Updates Web site to search for and download updates for your server. The “Progress of optional updates” panel displays the installation progress. After the updates are installed, click **Finish** on the “Installation and updates finished” panel.

   – Finish the installation without downloading or installing the updates.

     Click **Finish**.

27. The “Continue installation” panel (Figure 4-37) directs you to continue installation on the Messaging Server, described in 4.5, “Installing the Messaging Server” on page 123. Click **Close**.

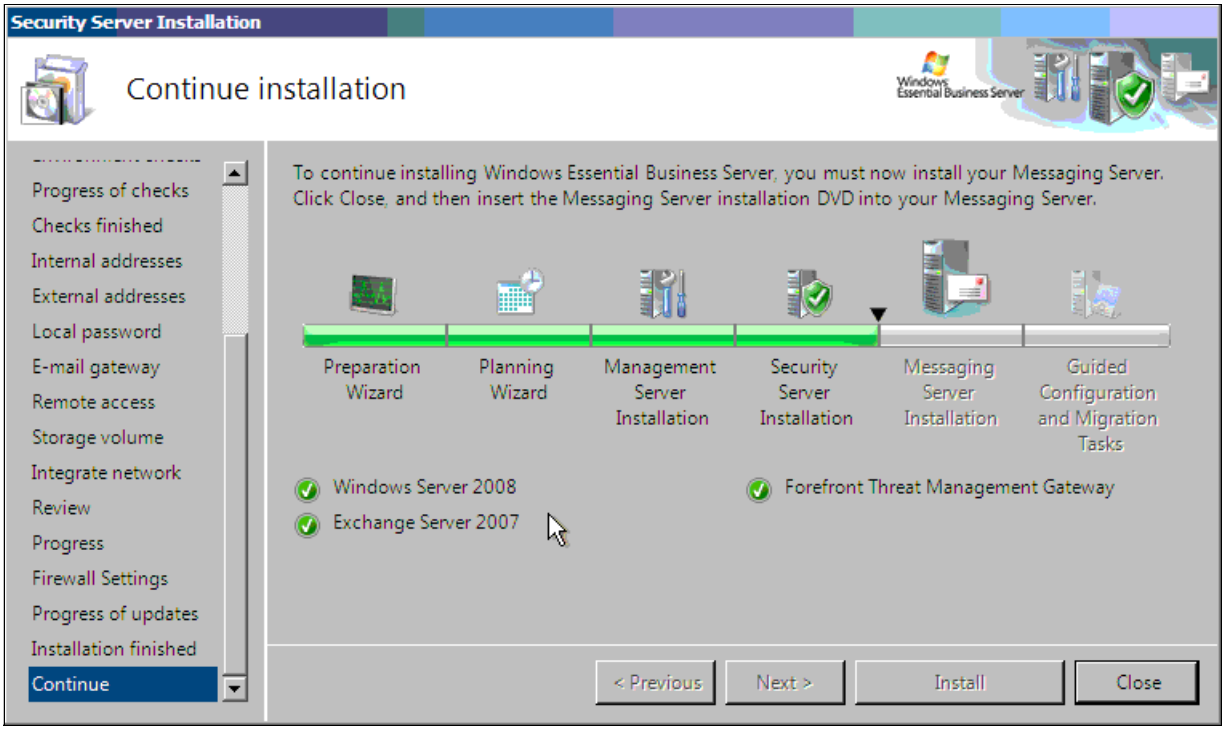

Figure 4-37 Continue installation page

4.5 Installing the Messaging Server

After the Security Server has been installed, the Windows EBS Installation Wizard progress is displayed in the “Configuration and Migration Tasks” panel (Figure 4-38).

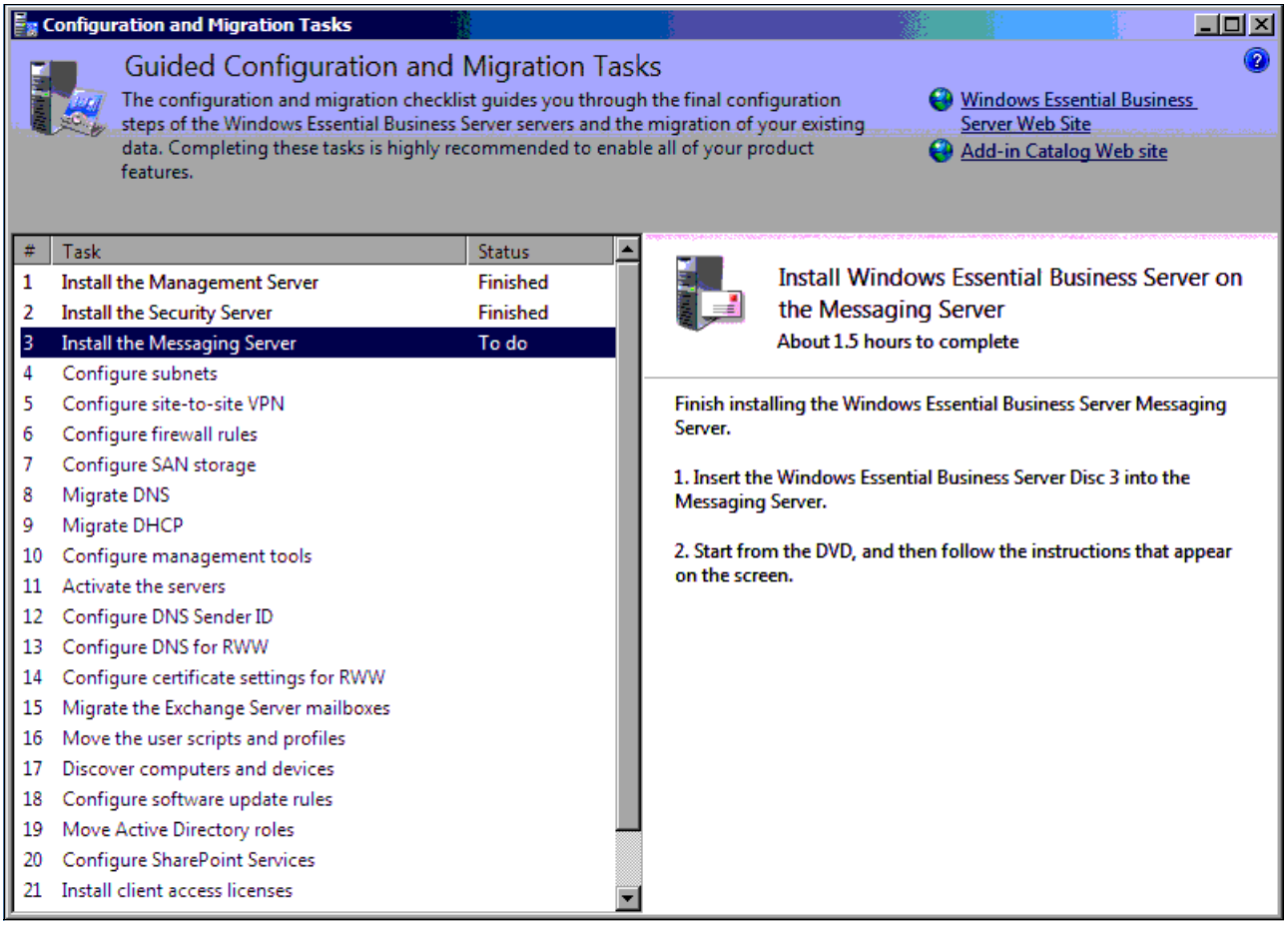

Figure 4-38 Configuration and Migration Tasks window

To continue the Windows EBS deployment with the Messaging Server installation, perform the following steps:

1. Press the **media tray assignment** button on the Messaging Server blade to assign the DVD drive to this server. Insert *Windows EBS Installation Disc 4* into the DVD drive, and boot the blade server from the DVD. The Windows Server 2008 Installation Wizard starts.

   Note: For IBM BladeCenter S media tray functionality explanation, see its description in 1.5.2, “IBM BladeCenter S” on page 14.

2. Set your locale and click **Next**.
3. Click **Install Now**.
4. (Optional) Type your 25-character product key to avoid problems during activation. Click **Next**.
5. Review the Microsoft Software License Terms. Select the **I accept the license terms** check box to proceed with the installation. Click **Next**.
6. Select **Custom (advanced)** as your installation type.

7. On the “Where do you want to install Windows?” panel (Figure 4-39), select the partition where you want to install the Windows EBS Messaging server operating system. In our test environment, we prepared a 68 GB mirrored volume for the operating system, and a 500 GB RAID-5 volume for Exchange data. Click **Next**.

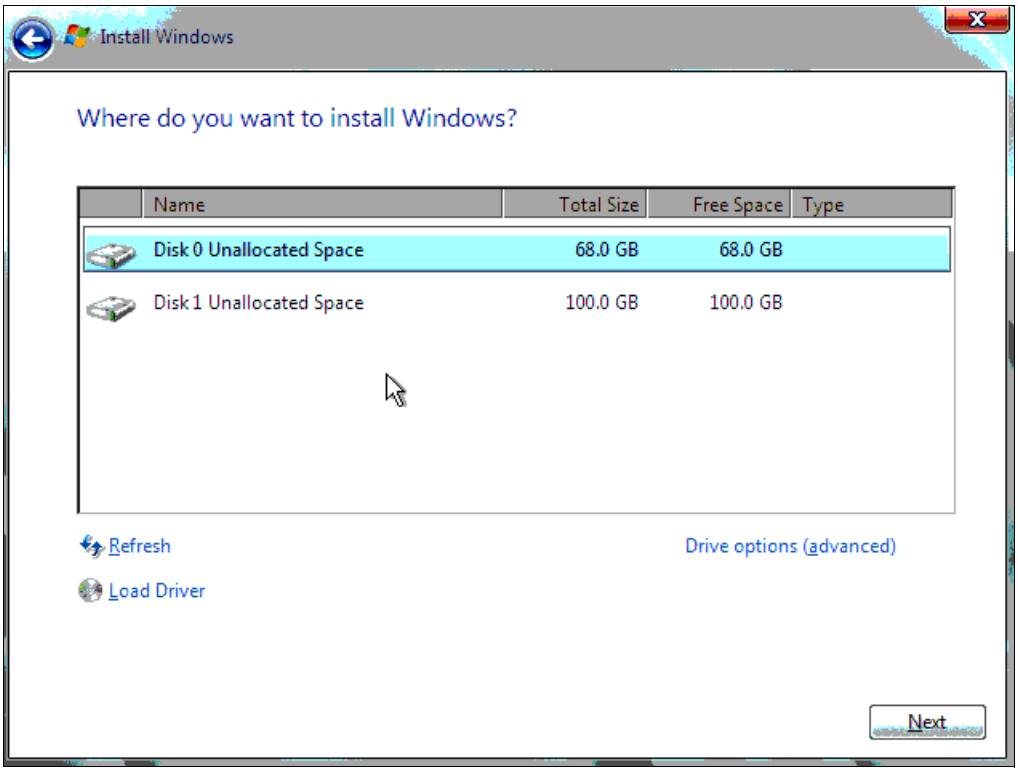

Figure 4-39 Selecting disk for Windows installation

The installation wizard starts copying, expanding, and installing Windows Server 2008 files.

Note: Your computer may restart one or more times while Windows Server 2008 is being installed.

8. The Messaging Server Installation Wizard starts. Read the introductory information on the “Welcome” panel, and click **Next**.
9. On the “Choose the network adapter” panel, select the network adapter that you use to connect this server to your network. Click **Next**.
10. On the “Choose temporary IP addresses” panel, you have two options:
    - Use DHCP Server to automatically assign the Messaging Server an IP address that is used during installation
    - Type a valid IP address that provides an Internet connection through your network.

    Click **Next**.

Note: These IP address settings are used temporarily during installation to download critical updates from the Microsoft Updates Web site and to connect to the computers that already exist on your network. The settings will be reconfigured to your final settings later in the installation.

11. The installation wizard connects to the Microsoft Update Web site and searches for critical updates for Windows EBS. Updates are downloaded and installed. When the process is finished, the “Critical updates finished” panel is displayed. Click **Next**.

12. On the “Join the Active Directory domain” panel (Figure 4-40), type the Active Directory domain name that the Management Server is to join. Type the domain name and credentials of an account that has Enterprise Administrator permissions on this domain, and click **Join domain**. The server restarts to join the domain.

    When prompted, log on with the account that you used to join the domain. The “Progress of joining the domain” panel tracks the installation progress. When you are finished joining Messaging Server to the domain, click **Next**.

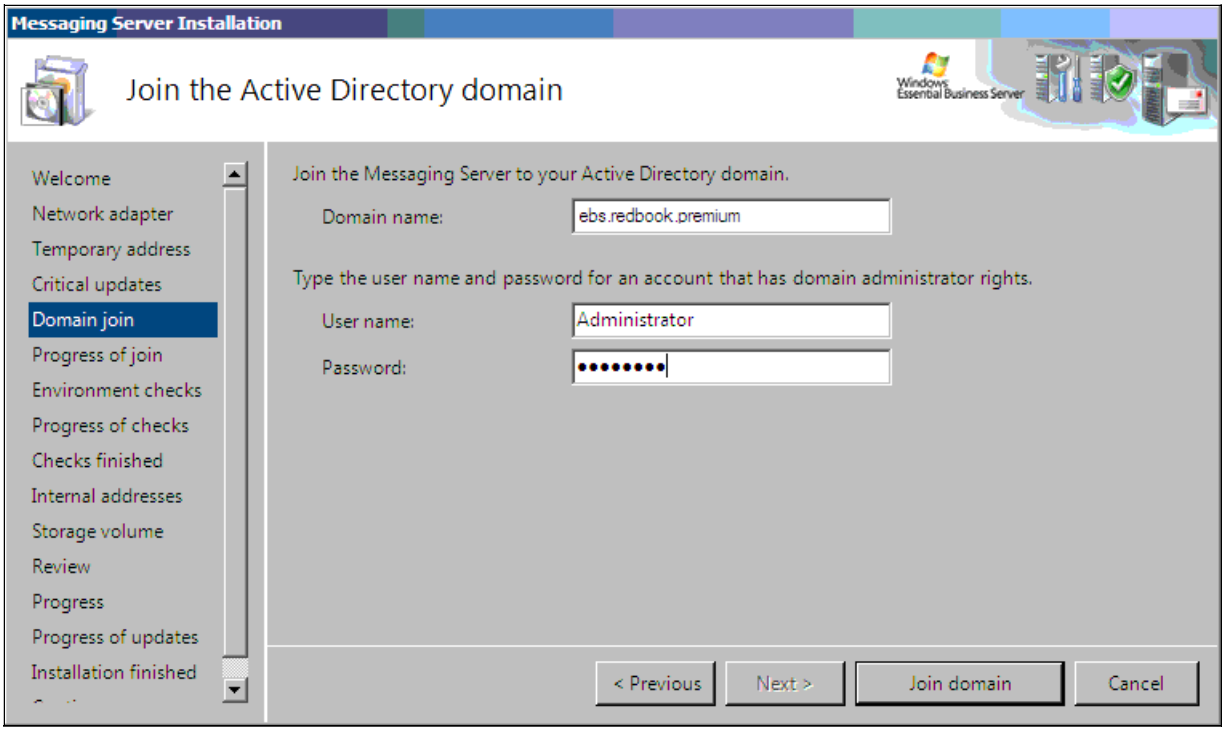

Figure 4-40 Join the Active Directory domain

13. On the “Check the environment” panel (Figure 4-41), the installation wizard checks your environment to verify that it is compatible with Windows EBS. Read and follow the directions on the window and click **Check environment**.

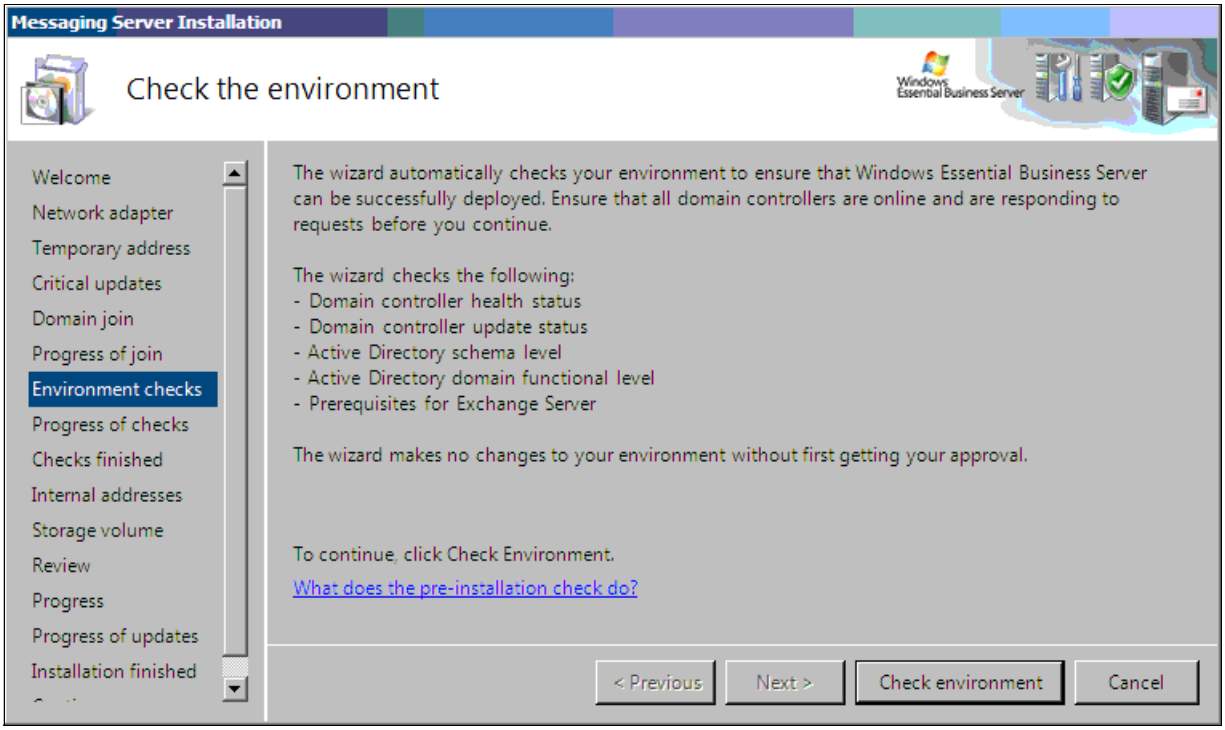

Figure 4-41 Check the environment

On the “Environment check is finished” panel, the installation wizard displays the status of the completed environment checks. When all of the checks are finished, click **Next** to continue.

14. On the “Set the internal IP address” panel (Figure 4-42), verify that the settings that you chose during the Management Server installation are filled in as the suggested settings. In our example, we selected **Use the recommended internal IP address**. Click **Next**.

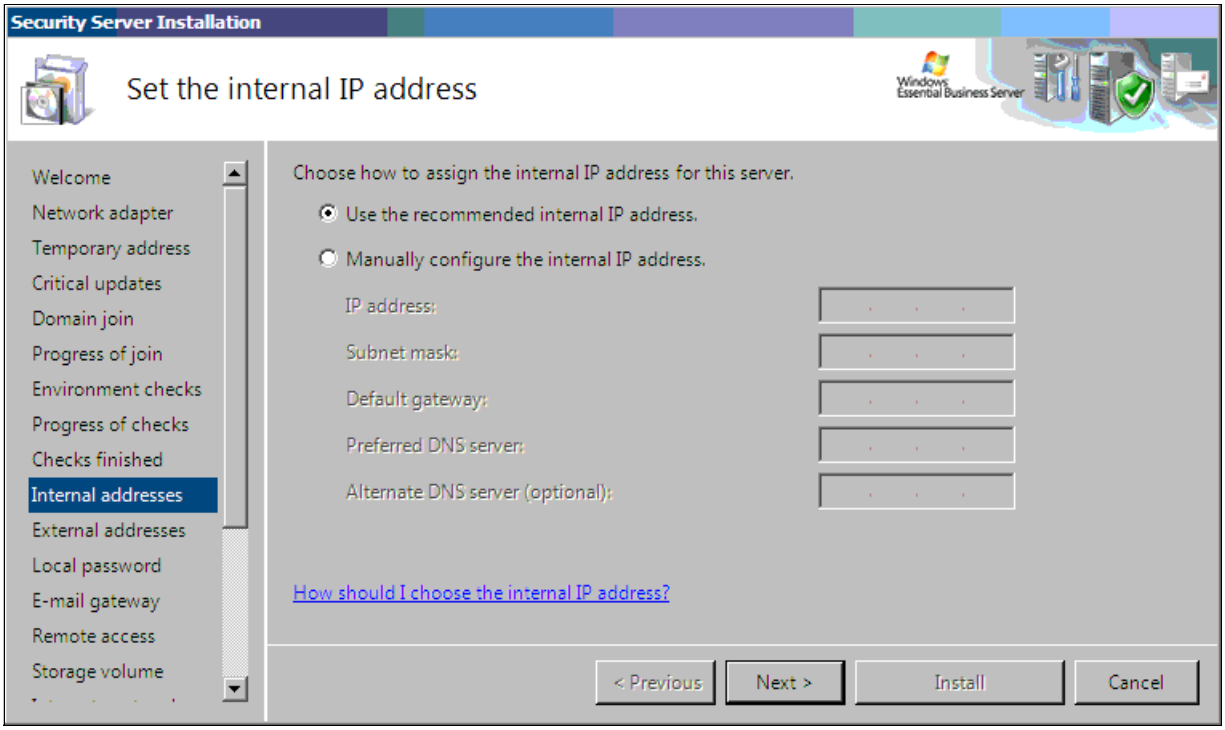

Figure 4-42 Set the internal network IP address

15. On the “Choose a volume for storing data” panel (Figure 4-43), you can choose to store application data on a volume that is separate from your system volume.

Tip: For better Exchange Server performance on your Messaging Server, it is suggested that you accept the default setting and store your applications data on a separate volume from your system files.

In our environment, we prepared a 500 GB RAID-5 volume, dedicated for Exchange data. Select the **Store the application data on a disk volume other than the system volume (recommended)** radio button, then the drive. Click **Next**.

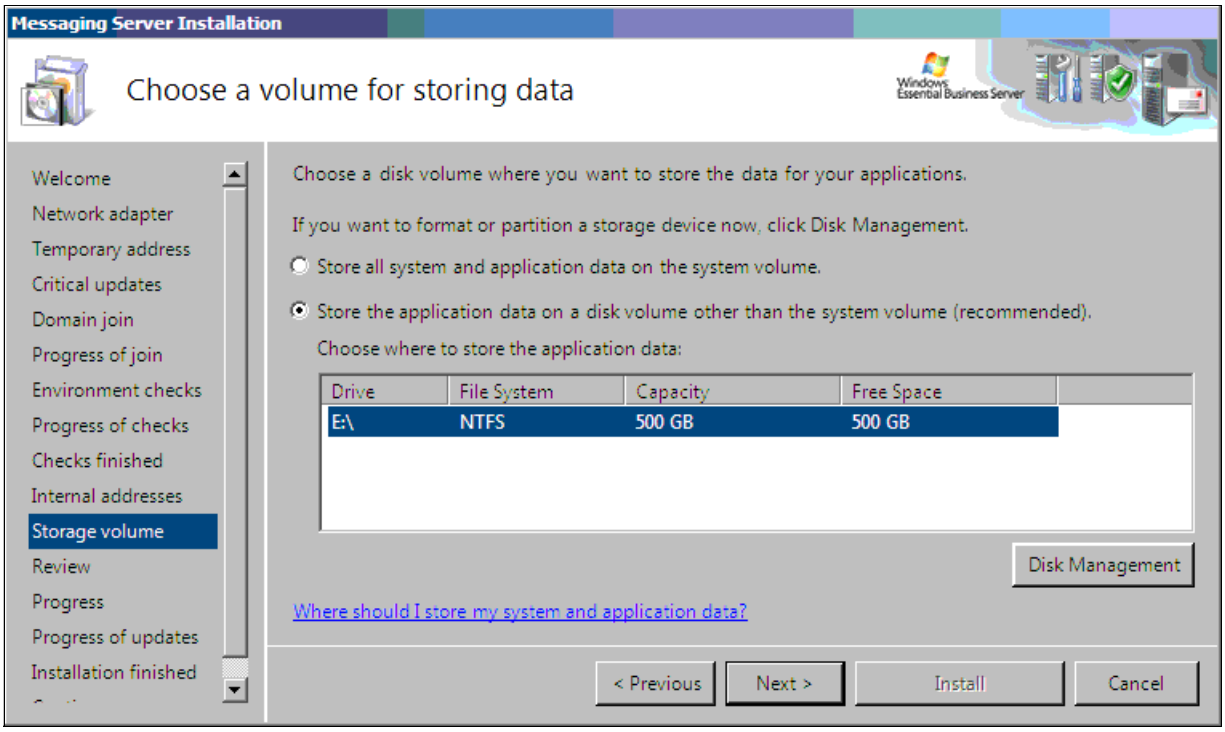

Figure 4-43 Choose a volume for Exchange data

Note: If you need to format a hard disk drive, create a partition, or perform other disk-management tasks, click **Disk Management**. If you need to install a driver for a disk controller, see 4.2.1, “Accessing Windows Server 2008 during installation” on page 87.

If you want to store your system and application data on the same volume, select the **Store all system and application data on the system volume** radio button. Click **Next**.

16. Review your settings on the “Review the Messaging Server installation” panel (Figure 4-44). To change the settings that you made since you joined the Active Directory domain, click **Previous** to return to previous pages.

    When you are finished reviewing the settings, click **Install**.

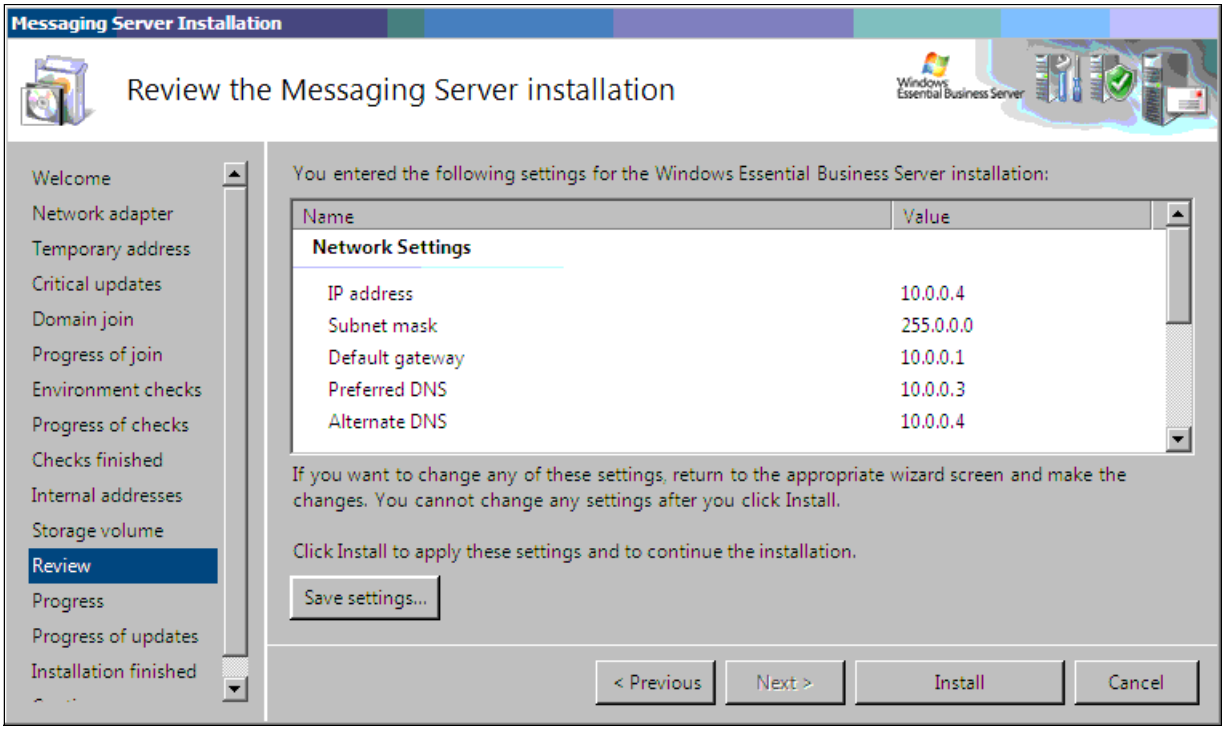

Figure 4-44 Review the Messaging Server installation

The installation wizard installs Windows EBS on your Messaging Server and configures it with the settings that you select. The “Progress of Messaging Server installation” panel displays progress bars that show you how the installation is proceeding. Depending on the settings that you chose, the server may restart several times.

When the Messaging Server is installed, the “Messaging Server installation tasks finished” panel (Figure 4-45) displays. Click **Next**.

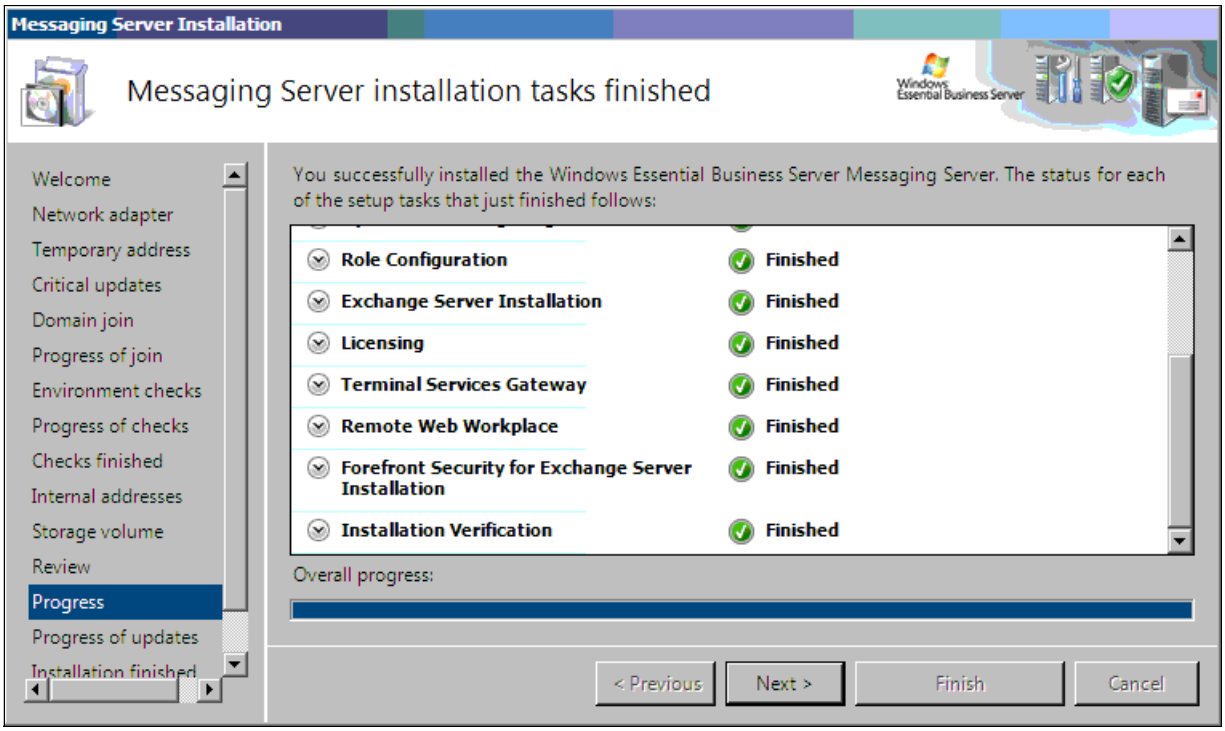

Figure 4-45 Messaging Server installation tasks finished

17. If you did not choose to install optional updates automatically, the “Choose optional updates” panel is displayed. Click **Install updates** to connect to the Microsoft Update Web site and install any updates.
18. Review the status of the update installation on the “Installation and updates finished” panel. Click **Finish** to close the installation wizard.
19. The “Continue installation” panel (Figure 4-46 on page 131) displays, directing you to return to the administration console to review and begin work on the Guided Configuration and Migration Tasks. Click **Close**, and change your console focus to the Management Server.

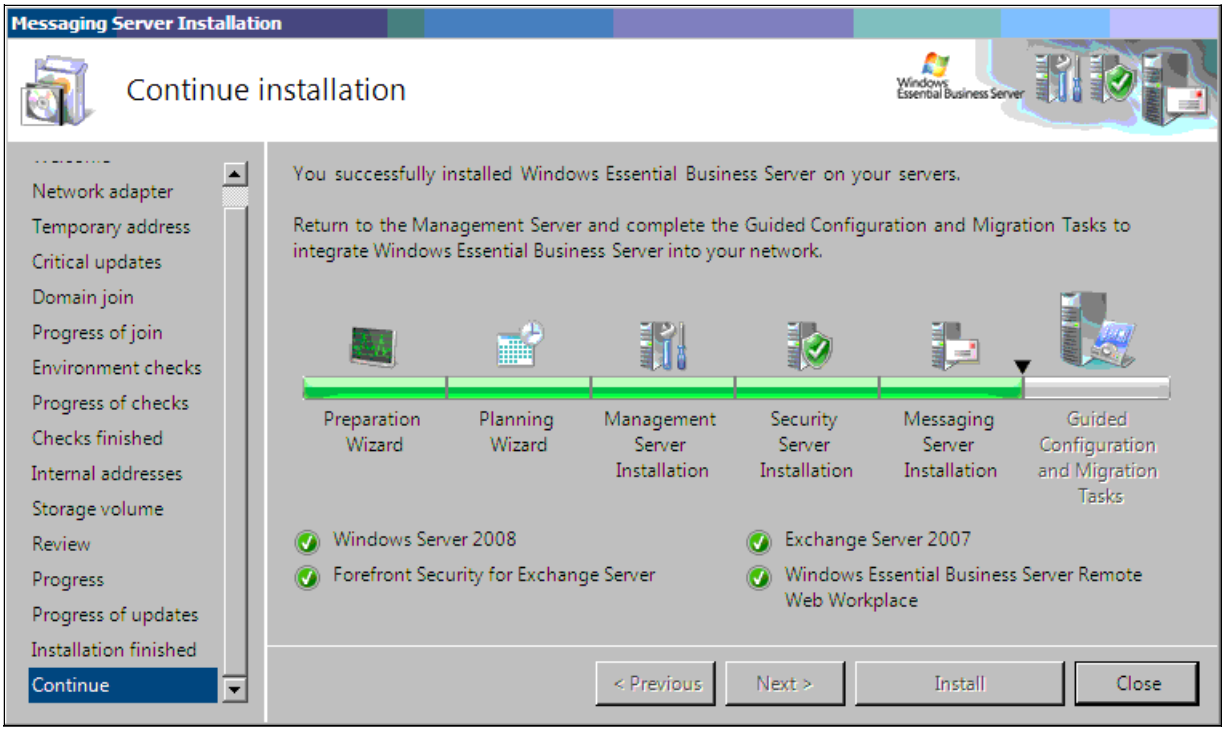

Figure 4-46 Continue installation page

4.5.1 SDDDSM drivers for Windows Server 2008

The appropriate SAS controller drivers need to be installed on each blade server that has a SAS Expansion Card. These drivers are needed to take full advantage of the shared volume drives configured in the SAS RAID Controller modules.

At the time of writing this Redbooks publication, these drivers were not available on the IBM Web site. For our project, we used pre-GA drivers. Review and download these drivers from the Web when they are posted. Perform the following steps to install these drivers.

1. Ensure you are logged onto the server with a user ID that has administrator rights. Download the drivers from the following Web page:

   `http://www.ibm.com`

2. Extract the files to the local c:\SDDDSM\ drive.
3. Navigate through the c:\SDDDSM folder until you reach the setup.exe file. Double-click this file to launch the install process.
4. Use the default options and click **Next** until you get to the restart server prompt.
5. When possible, restart the server.
6. After restarting, log in to the server. Navigate to **Start** → **Administrative Tools** → **Server Manager** → **Storage** → **Disk Management**. Verify that you can see the SAS shared volume assigned to the blade server.

5

Postinstallation steps

This chapter describes the postinstallation steps that are needed as part of the Windows Essential Business Server (EBS) installation.

5.1 Postinstallation overview

After you have installed all three servers for Windows EBS, the installation wizard prompts you to complete a list of configuration and migration tasks on the Windows EBS Administration Console. These tasks complete your network configuration and move your primary workloads to the servers running Windows EBS.

5.2 Configuration and Migration Tasks page

Log on to the Windows EBS Management Server as an administrator and launch Windows EBS Administration Console. We logged onto server USRALB0000.ebs.redbook.premium. Start the administration console by navigating to **Start** → **Programs** → **Windows Essential Business Server** → **Windows Essential Business Server Administration Console**. The administration console displays, followed by the "Configuration and Migration Tasks" window (Figure 5-1).

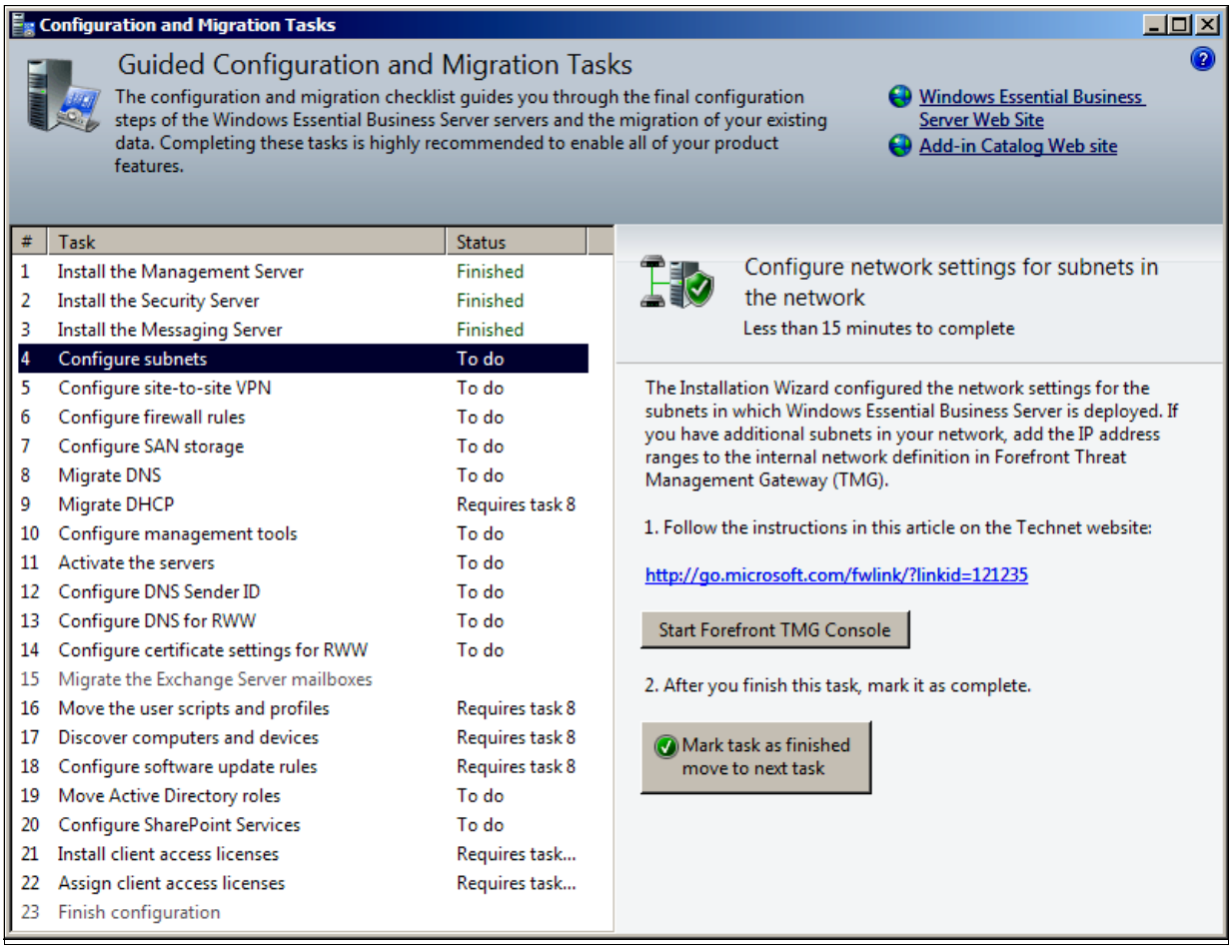

Figure 5-1 Postinstallation task list

Each task has a description of what must be configured. In some cases, an application or wizard is run to assist in the process. Most tasks will need additional configuration for different business environments. The additional configuration is not discussed in depth in this Redbooks publication.

6

Database Server setup

This chapter describes the installation steps we used to install and configure our Microsoft SQL database environment to support the Windows Essential Business Server solution.

Note: At the time of writing this Redbooks publication, SQL2008 was not fully integrated into the premium package. However, prior to this Redbooks publication release, there is now an SQL add-in for the admin console. The Microsoft SQL Server Add-in for Windows Essential Business Server 2008 is available at the following Web page:

http://go.microsoft.com/fwlink/?LinkID=132717

Also, refer to 6.1.7, “Microsoft SQL Server Application Add-in for Windows Essential Business Server” on page 168.

6.1 Installation overview

This chapter describes how to install SQL Server 2008 Standard version into a Windows Essential Business Server environment. Before proceeding, ensure you have installed Windows Essential Business Server Premium and completed the postinstallation steps.

Windows Essential Business Server Premium does not provide a setup wizard for SQL Server 2008. This chapter was written to provide step-by-step instructions to implement a database server into the Windows Essential Business Server Premium environment. Completing these steps provides an integrated SQL Server 2008 that takes advantage of the BladeCenter S features (including system management and the SAS RAID storage functionality).

6.1.1 Installation requirements

Before you run the installation, ensure that you have completed the following tasks:

- You have licensed copies of Windows Server 2008 Standard CD and SQL Server 2008 Standard CD. These are not provided as part of the Windows Essential Business Server Premium package and will need to sourced externally.
- You have checked and met the CRM or BI application requirements before proceeding.
- You have a separate blade on which to run SQL Server 2008. This server should have no previous operating system installed. The blade server should have the following minimum hardware requirements:
  - Minimum of two internal hard drives in RAID 1 configuration
  - Processor
    - Minimum: AMD™ Opteron™, AMD Athlon™ 64, Intel XEON with EM64T support, Intel Pentium® IV with EM64T support
    - Minimum: 1.4 Ghz
    - Recommended: 2.0 Ghz or faster
  - RAM
    - Minimum: 512 MB
    - Recommended: 2048 GB or more
    - Maximum: Operating system maximum
  - At least one active NIC controller
  - SAS daughter card to gain access to the SAS RAID

For this Redbooks publication, we used the following blade server infrastructure:

- IBM BladeCenter HS12 with the following specifications:
  - 2 × 68 GB SAS internal disks
  - 8 GB RAM
  - 2 × 2.66 Ghz Intel Xeon processors × 64 bit
- IBM BladeCenter LS21 with:
  - 1 × 68 GB SAS internal disks
  - 8 GB RAM
  - 2 × 2.20 Ghz Dual Core AMD Operton Processor 2218 × 64 bit

Read the Essential Business Server Technical FAQ to understand fully the requirements to install SQL Server 2008 on a separate server. Ensure you understand the size limitation when using SQL Standard. The technical FAQ is available at the following Web page:

http://technet.microsoft.com/en-us/ebs/dd183189.aspx

6.1.2 Installation sequence

The installation sequence steps are as follows:

1. Installation and configuration of Windows 2008 Server from the separate media not Windows Essential Business Server Premium kit.
2. Installation of SQL Server 2008 Standard from its media.
3. Postinstallation configuration of SQL Server 2008.

Note: Today, Windows 2008 Server and SQL2008 are integrated into Windows Essential Business Server. At the time of the writing of this Redpaper, the products were available on separate media.

6.1.3 Install standalone Windows Server 2008

This installation process will perform basic verification checks, installs Windows Server 2008, and establishes access with the Windows Essential Business Server Premium structure. Perform the following steps to install the standalone version of Windows Server 2008:

1. Press the **media tray assignment** button on the Database Server blade to assign the DVD drive to this server. Insert the *Windows Server 2008 Standard 64xbits standalone* disk into the DVD drive, and boot the blade server from the DVD. The Windows Server 2008 Installation Wizard starts.

   Note: For an explanation of IBM BladeCenter S media tray functionality, see 1.5.2, “IBM BladeCenter S” on page 14.

2. On the “Windows regional settings” panel (Figure 6-1), set your locale, and click **Next**.

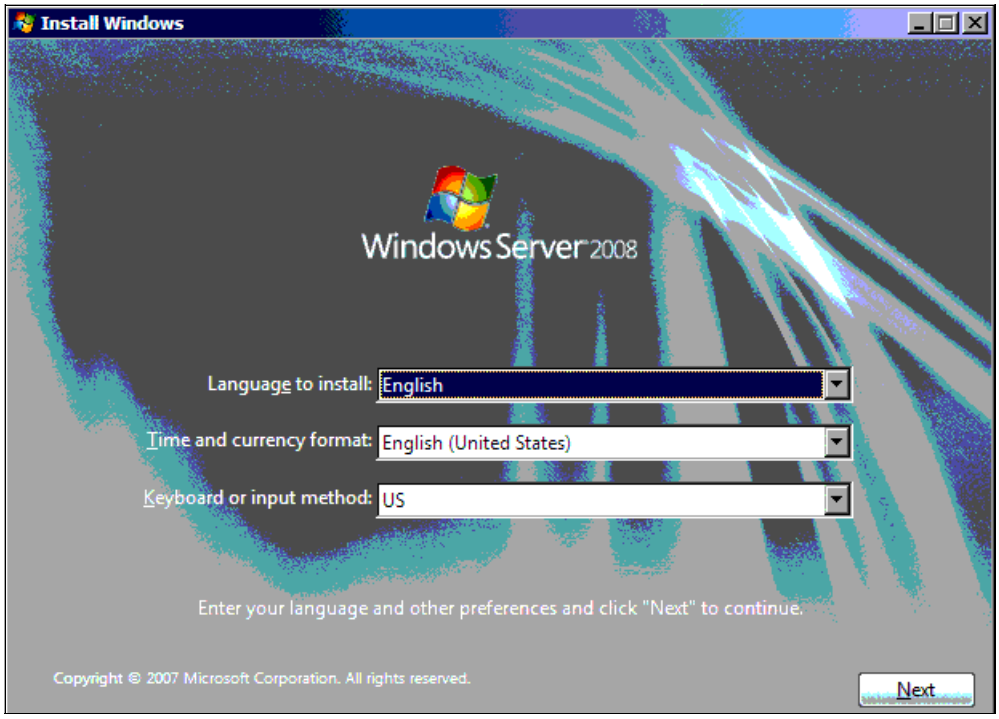

Figure 6-1 Windows regional settings window

3. Click **Install Now**.
4. (Optional) On the “Type your product key for activation” panel (Figure 6-2), type your 25-character product key to help avoid problems during activation. Click **Next**.

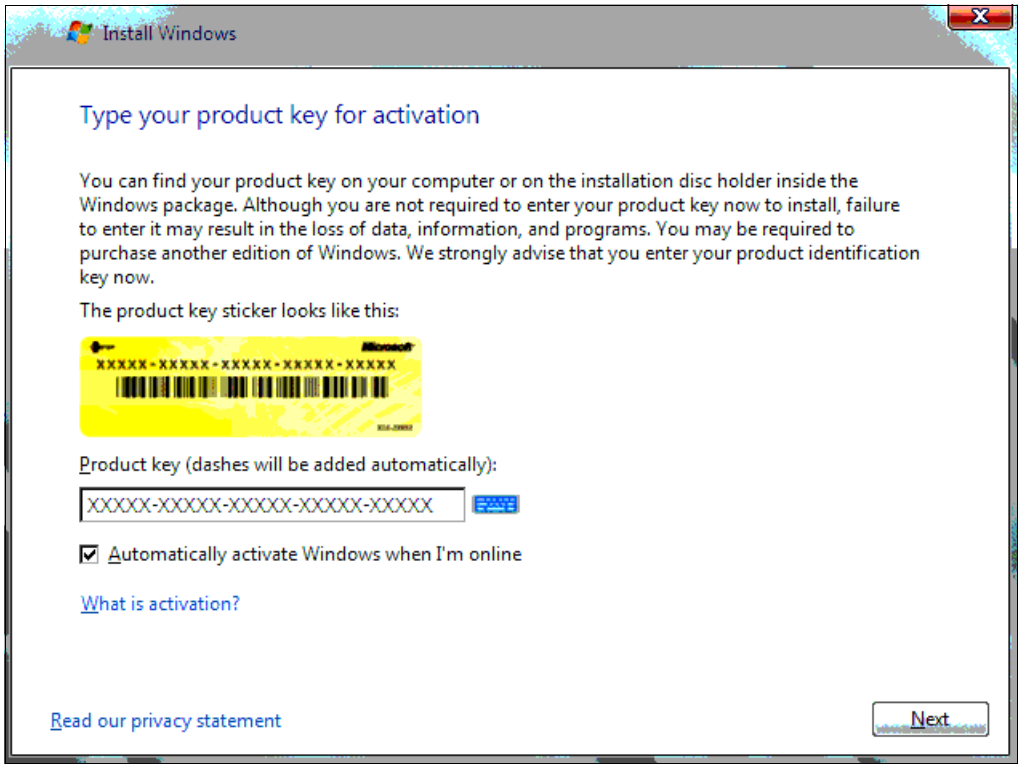

Figure 6-2 Type your product key for activation panel

Note: You need a different product key for each of the Windows Essential Business Server. Check your supplied packaging for the proper keys

5. Select the **Automatically activate Windows when I'm online** check box to activate your software. Click **Next**.
6. Review the Microsoft Software License Terms. Select the **I accept the license terms** check box to proceed with the installation. Click **Next**.
7. On the “Which type of installation do you want?” panel (Figure 6-3), click **Custom (advanced)**.

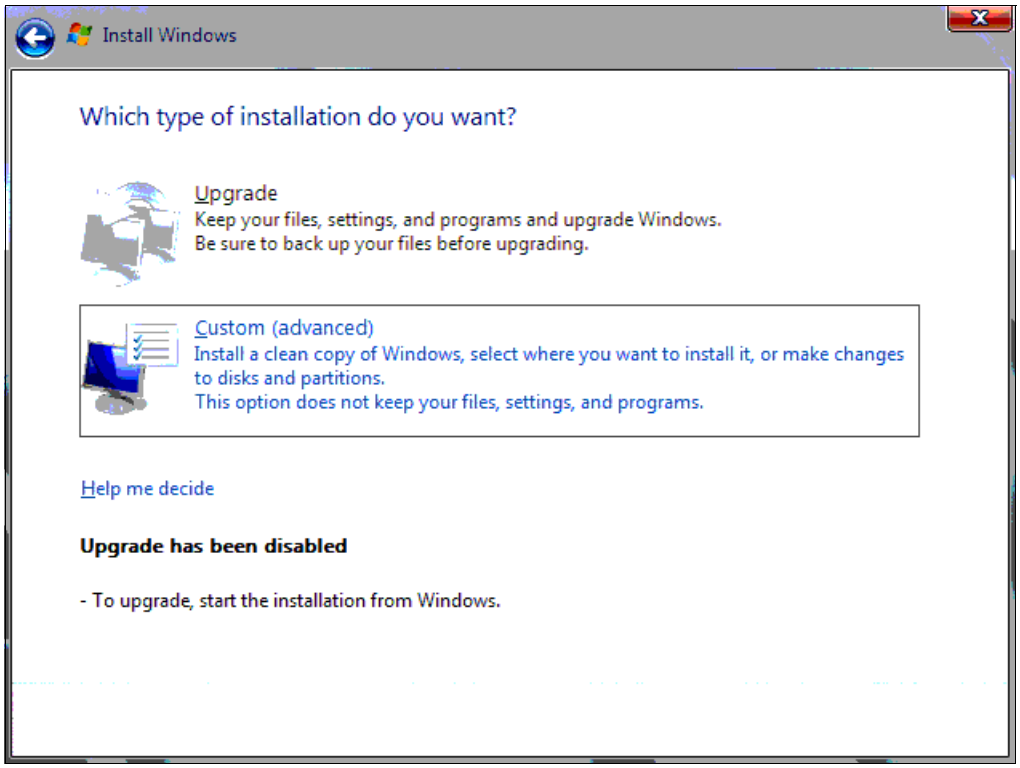

Figure 6-3 Selecting install type

8. On the “Where do you want to install Windows?” panel (Figure 6-4 on page 140), select the partition where the Windows Server 2008 will be installed. A system partition of at least 50 GB is suggested.

   In addition, the following tasks may need to be performed on the “Where do you want to install Windows?” panel:

   – If you need to load a driver, click **Load Driver**.

   – If you need to format or partition a disk, click **Drive Options (advanced)**.

     If you do not format or partition the disk now, you can do it later during installation by using the Windows Server 2008 Disk Manager.

   – If you plan to use a hardware-based RAID storage system, it is suggested to configure it now, prior to installing SQL Server 2008. We suggest the following specifications:

     • SQL Server: Use RAID 1 for Windows in C:\
     • SQL Logs in D:\ and the database: Placed on the SAS volumes configured with RAID 5.

In our test environment, we prepared our storage volume when we configured the BladeCenter hardware. We defined the hard drive configuration as follows:

- Each Windows Essential Business Server server has two 68 GB internal drives, the volume being mirrored
- A SAS RAID Disk storage system configured into a RAID-5. A 500 GB volume assigned to the SQL Server 2008

Click **Next**.

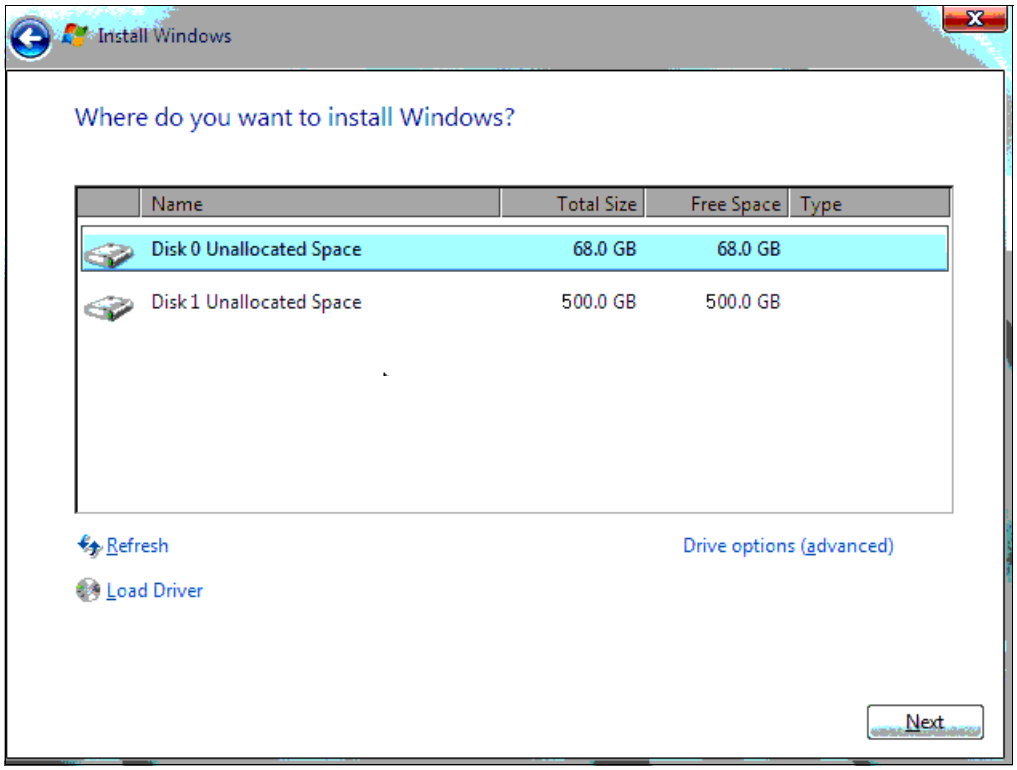

Figure 6-4 Selecting disk for Windows installation

The installation wizard starts copying, expanding, and installing Windows Server 2008 files.

Note: Your computer will restart several times during the installation of Windows Server 2008.

9. After the restart, the “Database Server Welcome” panel displays. Read the introductory text, and click Ctrl+Alt+Del.
10. On the “Choose the network adapter” panel, select the network adapter that will be used to connect this server to your network. Verify that the network adapter is connected to your internal network, and click **Next**.

11. On the “Local Area Connection Properties” panel (Figure 6-5), select **Internet Protocol Version 4 (TCP/IPv4)**. Click **Properties**.

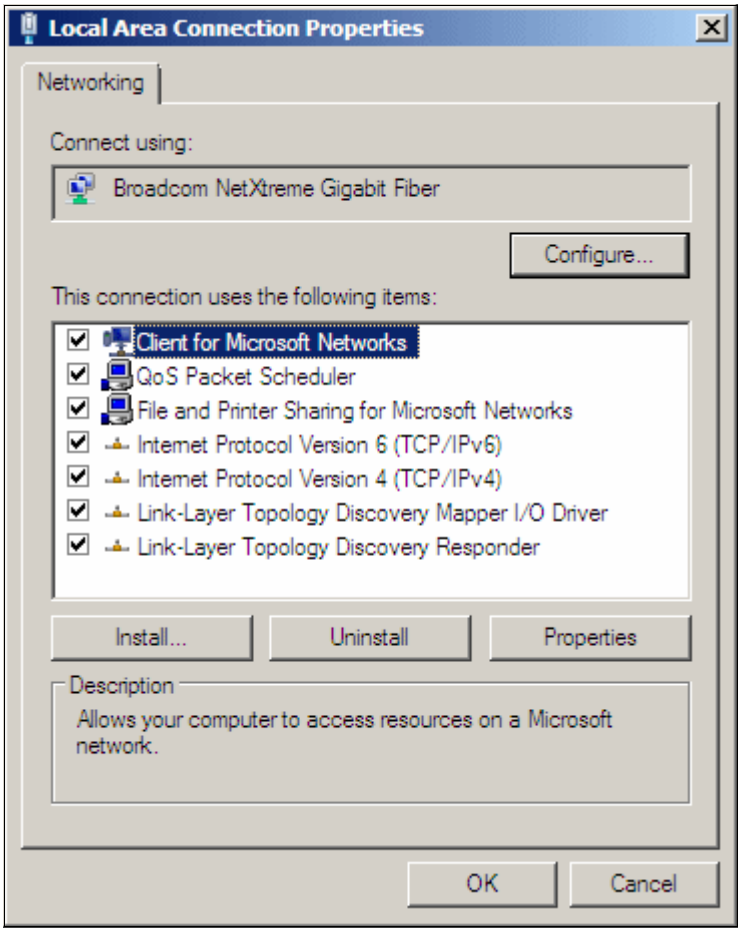

Figure 6-5 IP configuration

12. Enter the assigned static IP address for the Database Server in the “Internet Protocol Version 4 (TCP/IPv4) Properties” panel (Figure 6-6). This will allow us to access the internal Windows Essential Business Server network. Click **OK**. If asked to restart, do so before continuing.

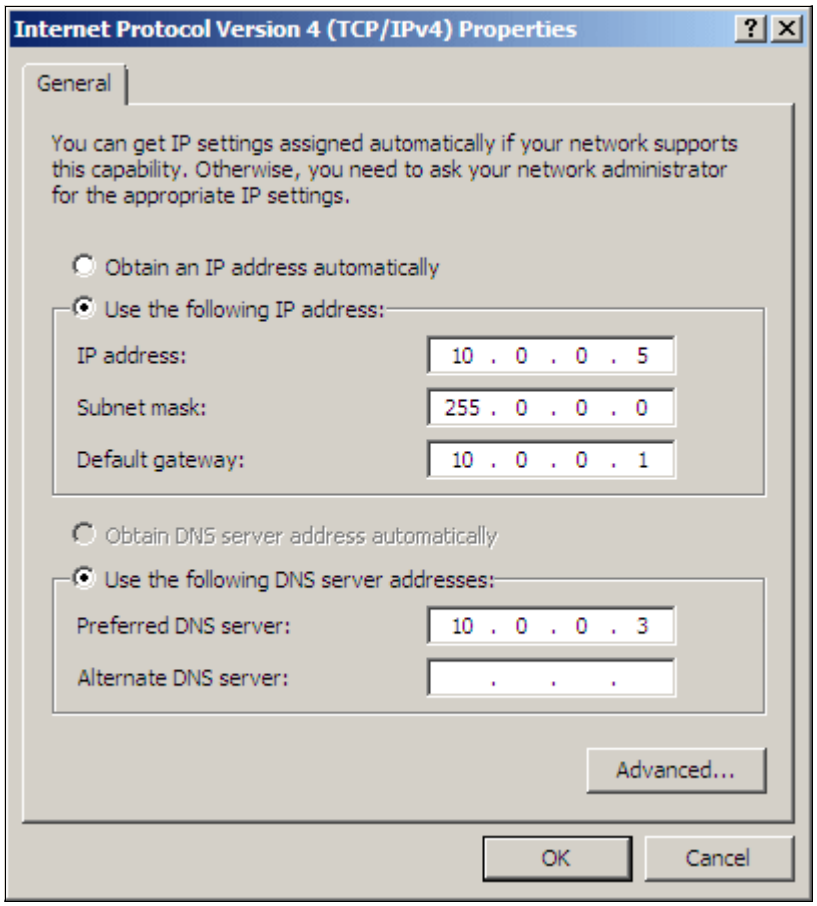

Figure 6-6 Assigning IP address

6.1.4 Add Server Windows 2008 on existing Windows Essential Business Server Premium domain

The next step is to add the standalone server into the Windows Essential Business Server domain. In our case, the domain name is ebs.redbook.premium. Perform the following steps to add the server:

1. It is suggested to change the server's computer name to the correct naming convention used in your environment. On the desktop, right-click the Computer icon and click **Properties** to display the "System" window (Figure 6-7). Click **Change settings**. The "System Properties" panel displays.

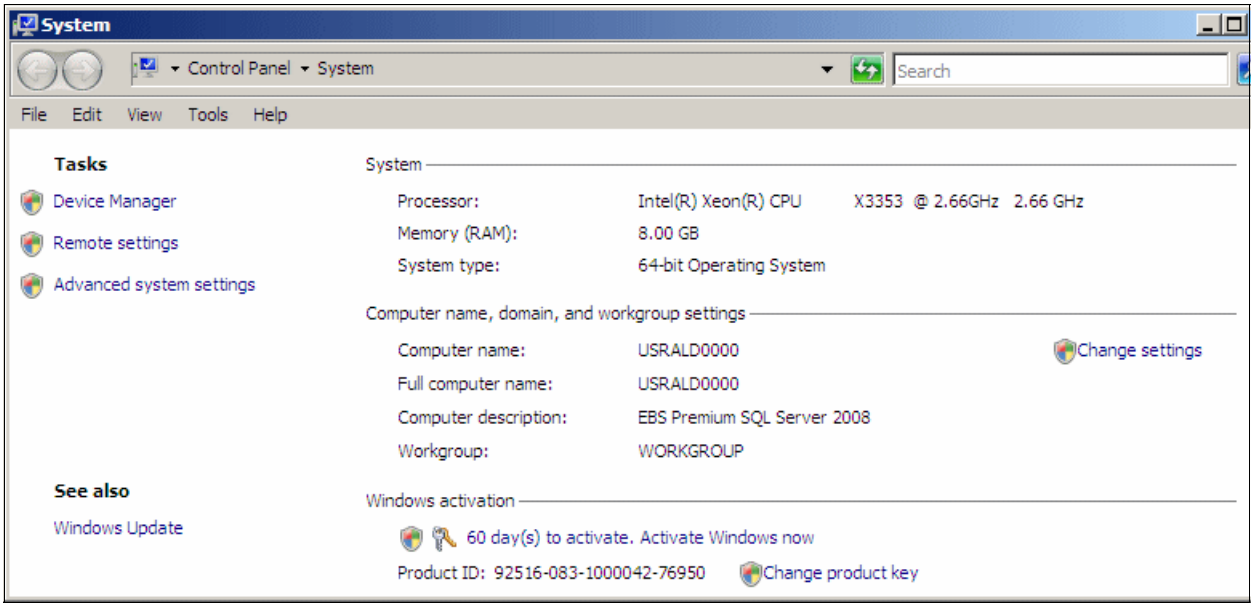

Figure 6-7 System settings

2. The “System Properties” panel (Figure 6-8) shows the current server settings. On the “Computer Name” tab, click **Change** to change the server name.

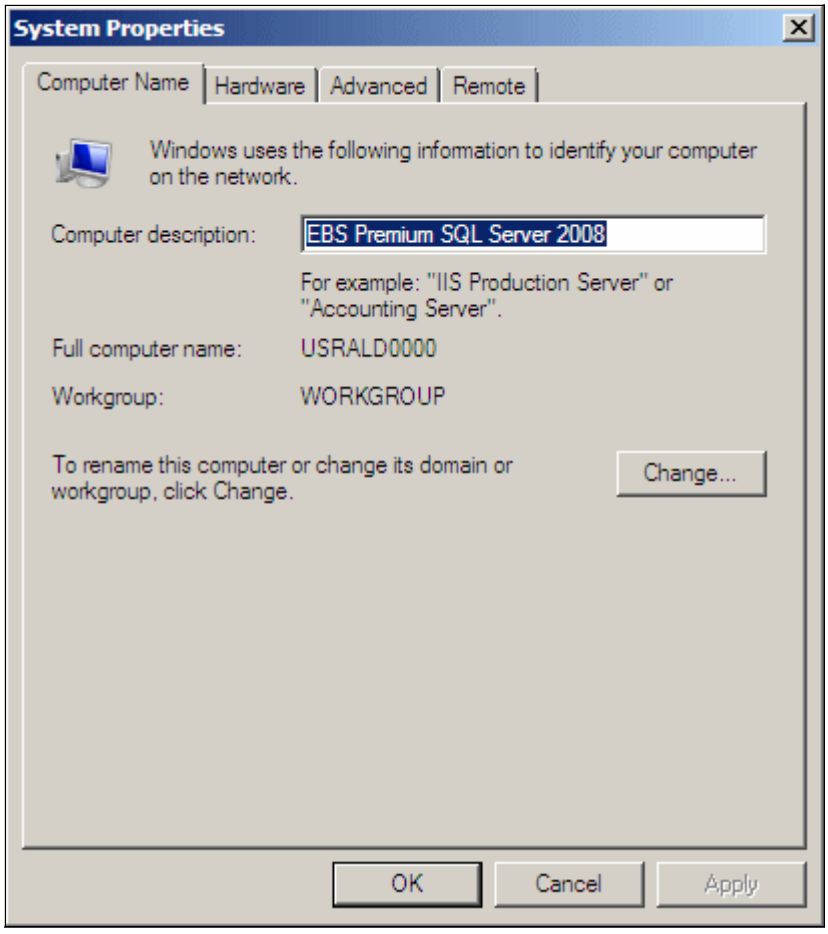

Figure 6-8 System Properties

The “Computer Name/Domain Changes” panel (Figure 6-9) displays. Type the appropriate server name for your server in the name field. We named the server USRALD0000.

Restart the server for the name to take affect. Click **OK** to reboot the server.

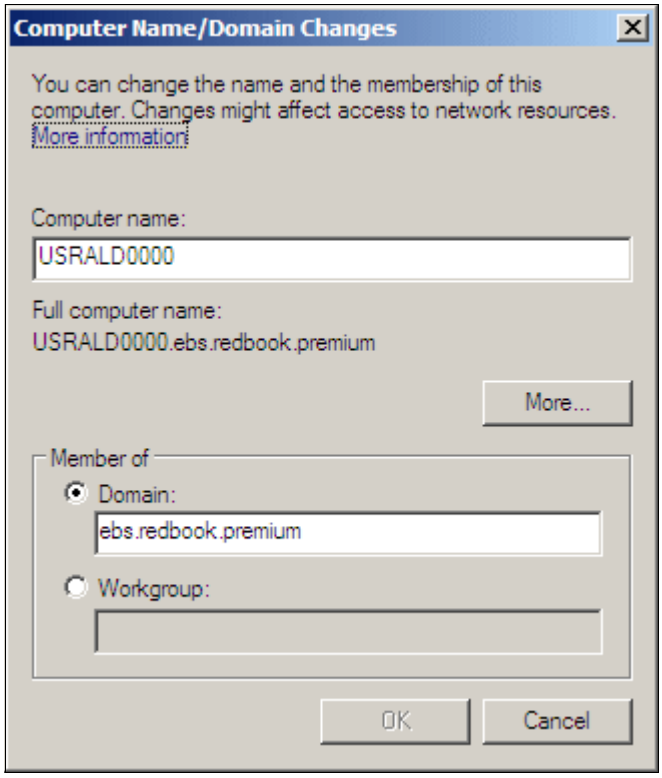

Figure 6-9 Server and Domain name change panel

3. Once the system has restarted and you are logged in, return to the “System” window shown in Figure 6-7 on page 143. Click **Change settings**, then click **Change**. This time the domain name needs to be updated. Click the **Domain** radio button and type the domain name. We named the server ebs.redbook.premium. Figure 6-9 displays the new domain name. Click **OK**.
4. Adding the server to the domain can take some time. When the windows in Figure 6-10 displays, click **OK**.

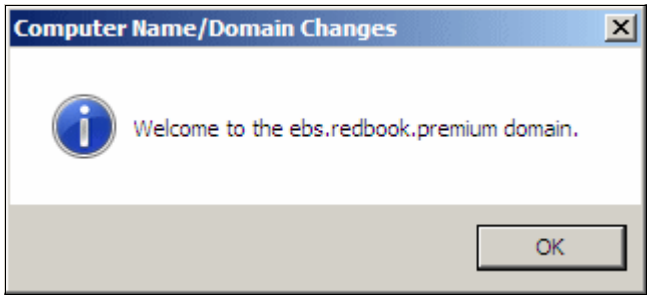

Figure 6-10 Domain welcome message

5. To complete the domain setup, the server will need to restart. A warning message (Figure 6-11) displays, advising you to close all open and unsaved files. Click **OK**.

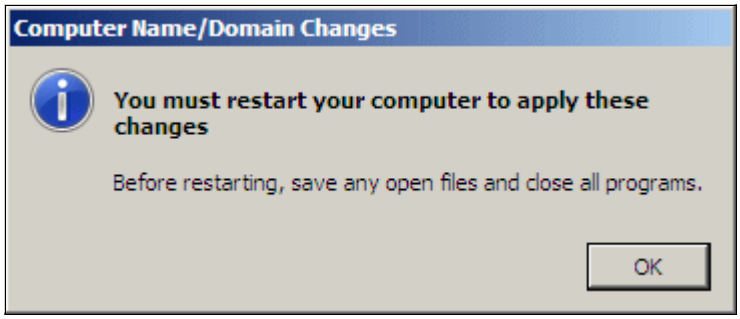

Figure 6-11 Server save file warning

6. A dialog box (Figure 6-12) displays, offering the option to restart now or later. Click **Restart Now**. When the restart is complete the server will be part of the Windows EBS domain.

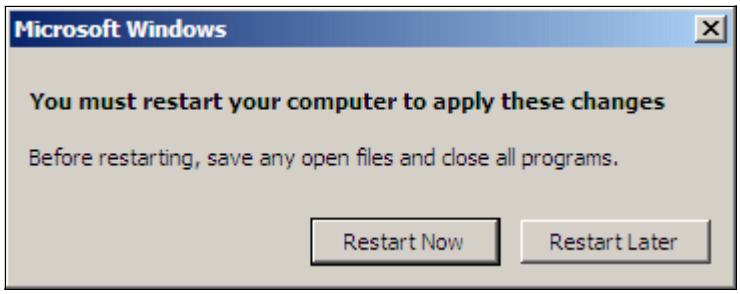

Figure 6-12 Server restart panel

6.1.5 Installing SQL Server 2008 onto Windows Server 2008

In this section, we begin the installation of SQL Server 2008 in the Windows Essential Business Server environment.

Installing SQL Server 2008 prerequisites

This installation process installs SQL Server 2008. This includes basic verification prerequisite checks, SQL Server 2008 application installation, and the joining of the Windows Essential Business Server Premium domain structure. Perform the following steps to install the SQL Server 2008 prerequisites:

1. Verify the SQL Server 2008 minimum requirements.
   - .NET Framework 3.5 SP1
   - SQL Server Native Client
   - SQL Server Setup support file
   - Microsoft Windows Installer 4.5 or a later version. SQL Server Setup requires this.

   After installing the required components, SQL Server Setup will verify that the target computer meets the other requirements for a successful installation. For more information, see the Microsoft TechNote article *Check Parameters for the System Configuration Checker* at the following Web page:

   `http://technet.microsoft.com/en-us/library/ms143753.aspx`

2. The SQL Server 2008 DVD has an installation wizard to guide you through the install process. Assign the DVD drive in the media to this blade server and insert the SQL Server 2008 Standard 64xbit DVD. The AutoPlay panel (Figure 6-13) displays. Click the Setup.exe file.

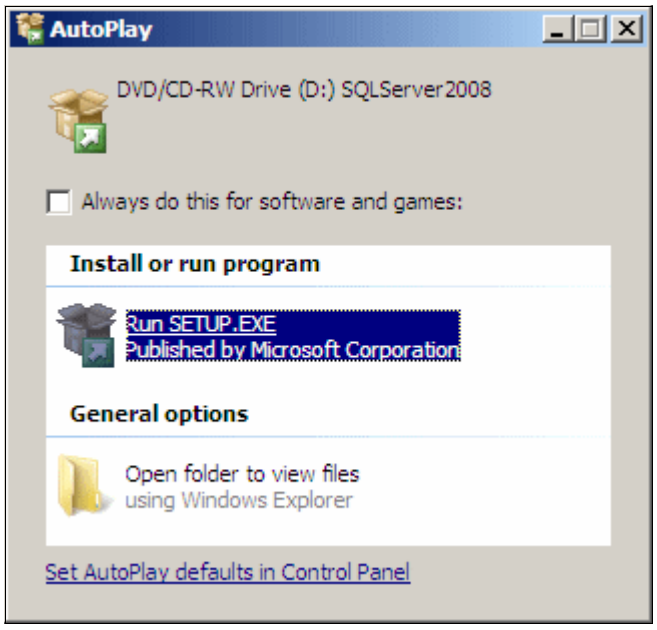

Figure 6-13 SQL run setup.exe

3. The “Microsoft SQL Server Setup” panel (Figure 6-14) alerts you to any missing prerequisites. In our case, both .NET and the updated windows installer are required. Click **OK** to install these prerequisites.

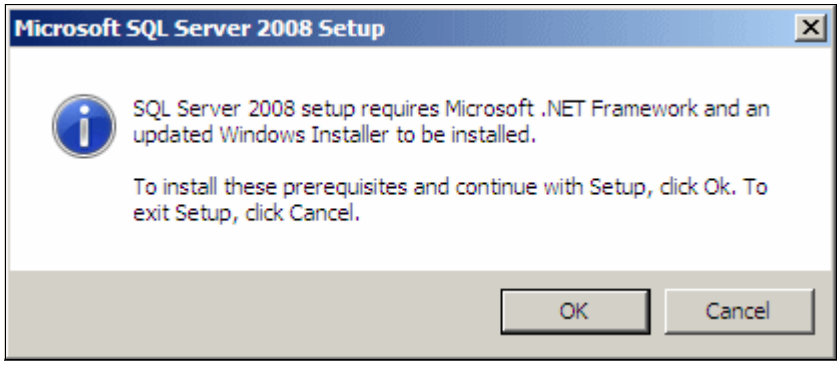

Figure 6-14 SQL Server requirements

Note: Both of these pre-requisites are included on the SQL Server 2008 DVD. Or you can download them from the Microsoft Web site.

4. On the “Microsoft .NET Framework 3.5 SP1 Setup” panel (Figure 6-15), click the **I have read and ACCEPT the terms of the License Agreement** radio button to install .NET. Click **Install**.

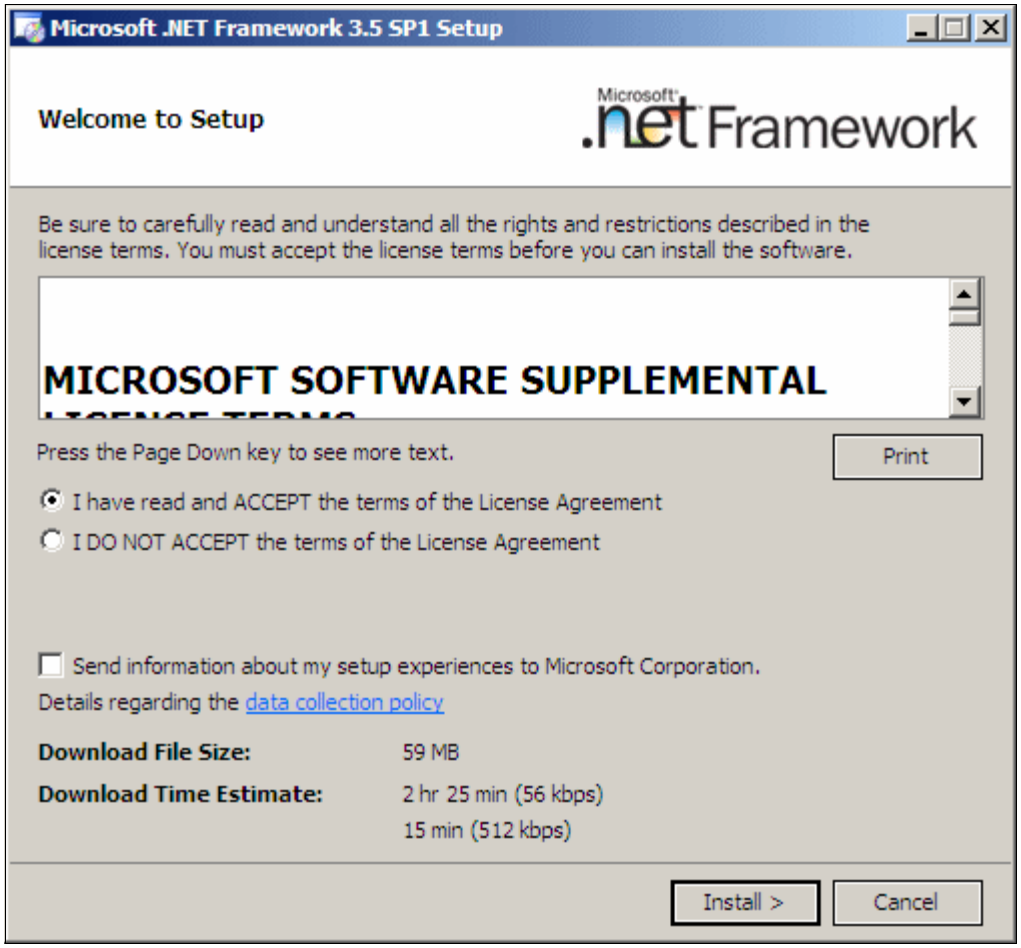

Figure 6-15 .NET Framework setup window

5. The “Windows Update Standalone Installer” panel (Figure 6-16) displays. Click OK to install the required hotfix. Once completed, restart the server.

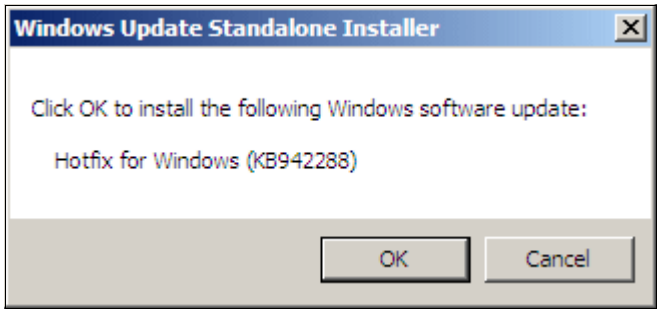

Figure 6-16 Installing hotfix pre-req

Install SQL Server 2008

The required environment has now been built. SQL Server 2008 can be installed. The installation wizard installs the following SQL components:

- SQL Server Database Engine
- Analysis Services
- Reporting Services
- Integration Services
- Replication
- Management tools
- Documentation

Perform the following steps to install SQL Server 2008 to the blade server.

1. Press the **media tray assignment** button on the Database Server blade to assign the DVD drive to this server. Insert *SQL Server 2008 Standard 64xbit standalone* into the DVD drive, and boot the blade server from the DVD. The SQL Server 2008 Installation Wizard appears.

   Note: For an explanation of IBM BladeCenter S media tray functionality, see 1.5.2, “IBM BladeCenter S” on page 14.

2. The “AutoPlay” panel (Figure 6-17) displays. Click the setup.exe file to start the SQL Server Wizard.

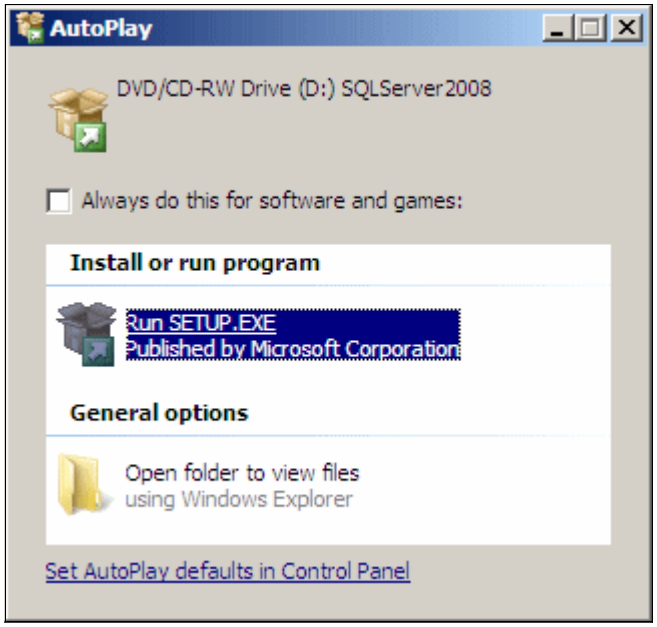

Figure 6-17 Autoplay panel to run the setup.exe from CDROM

3. The “SQL Server Installation Center” panel (Figure 6-18) displays. It describes the SQL installation steps. Click **Installation** on the menu on the left of the panel to continue.

Figure 6-18 The SQL Server installation center window where you choose how to install product

4. The “SQL Server Installation Center” panel (Figure 6-18 on page 150) displays several installation options (Figure 6-19). Click **New SQL Server stand-a-lone installation or add features to an existing installation**. This is the option we selected.

Figure 6-19 SQL Server standalone panel

5. (Optional) Type your 25-character product key in the “Product Key” panel (Figure 6-20) to avoid activation problems during installation. Click **Next**.

> **Note:** You are required to enter the license key for SQL Server 2008. Check your packaging for the proper key.

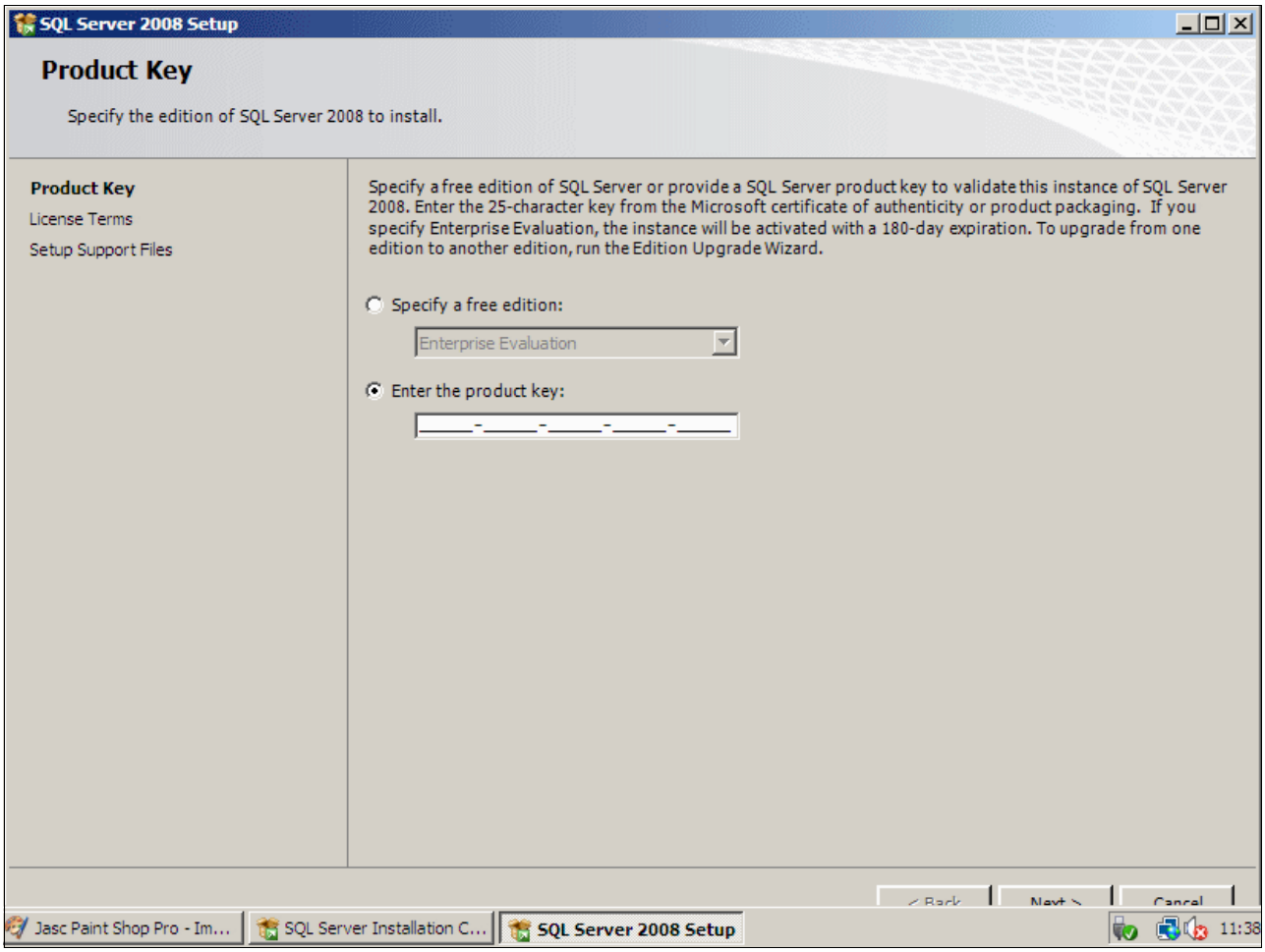

Figure 6-20 SQL Server 2008 license key request window

6. The “License Terms panel (Figure 6-21) displays. Click the **I accept the license terms** check box. Click **Next**.

Figure 6-21 Microsoft licensing terms and conditions

SQL Server 2008 installs the necessary setup support rules. Once done, click **Next**.

7. If all the setup support rules are met, the “Setup Support Rules” panel (Figure 6-22) displays, showing the operation completed successfully. Click **OK**.

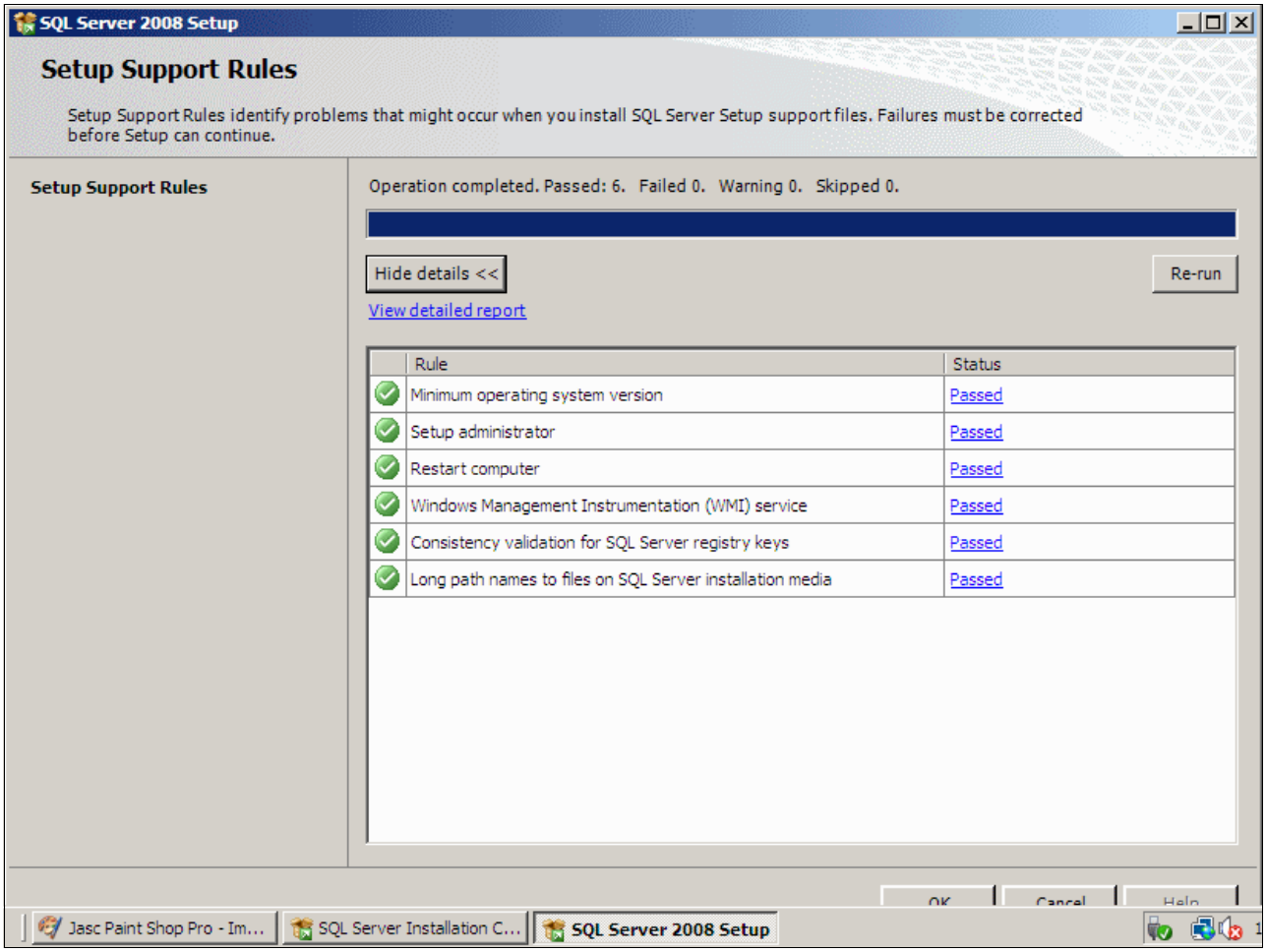

Figure 6-22 Setup Support Rules installation window

The Setup Support Rules test the Server environment software and configuration requirements against the blade server. In our case, the Windows Firewall test received a warning message, as shown in Figure 6-23. If a test fails, you need to address it before continuing the SQL installation. Click **Re-run** to check the rules again. If all rules have passed, click **Next**.

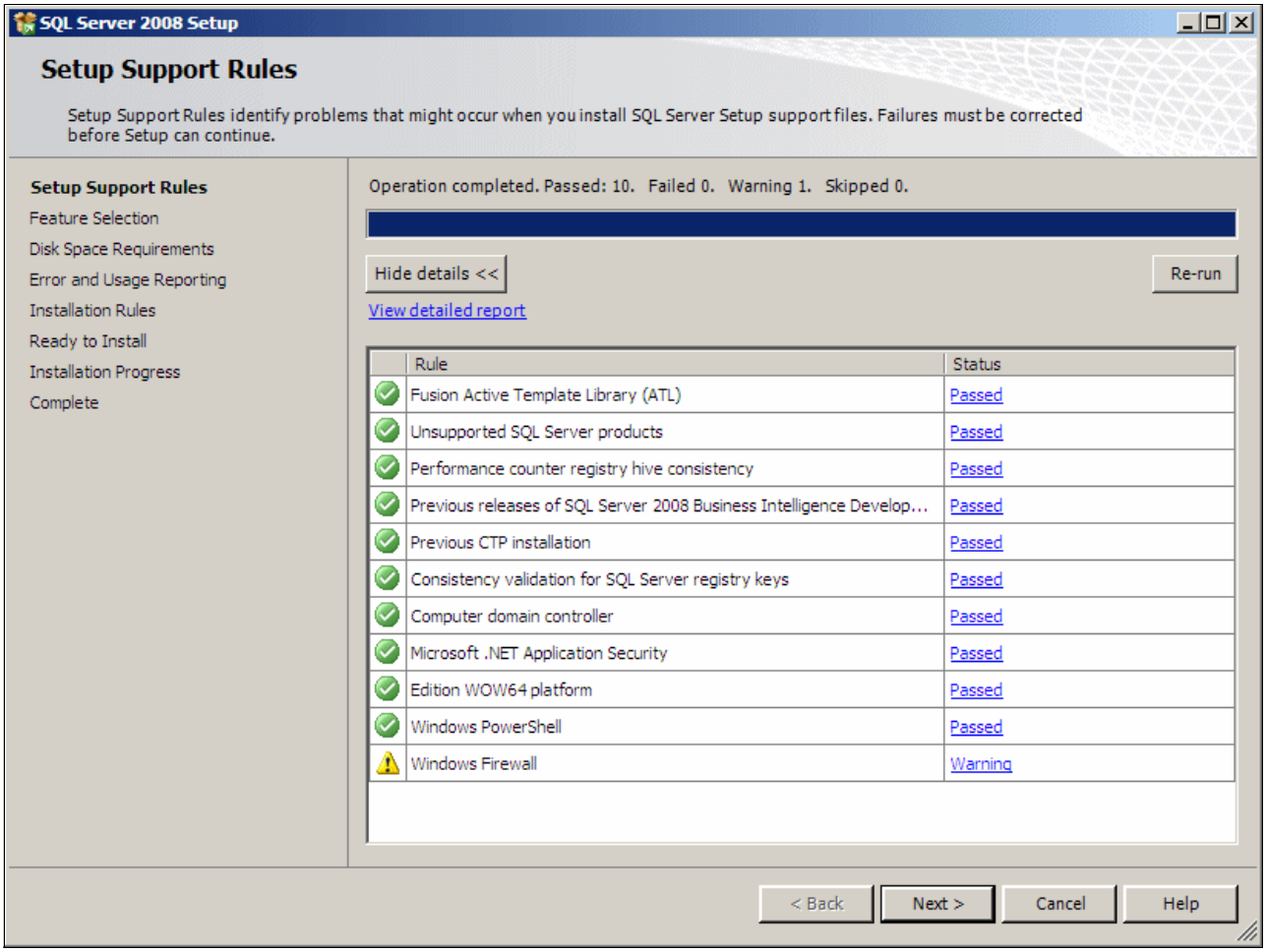

Figure 6-23 System test for setup rules

8. On the “Feature Selection” panel (Figure 6-24 on page 156) click any features as necessary. Each feature must be clicked to enable it. SQL also displays the default location for the shared features. In this Redbooks publication, we kept the default settings. Click **Next**.

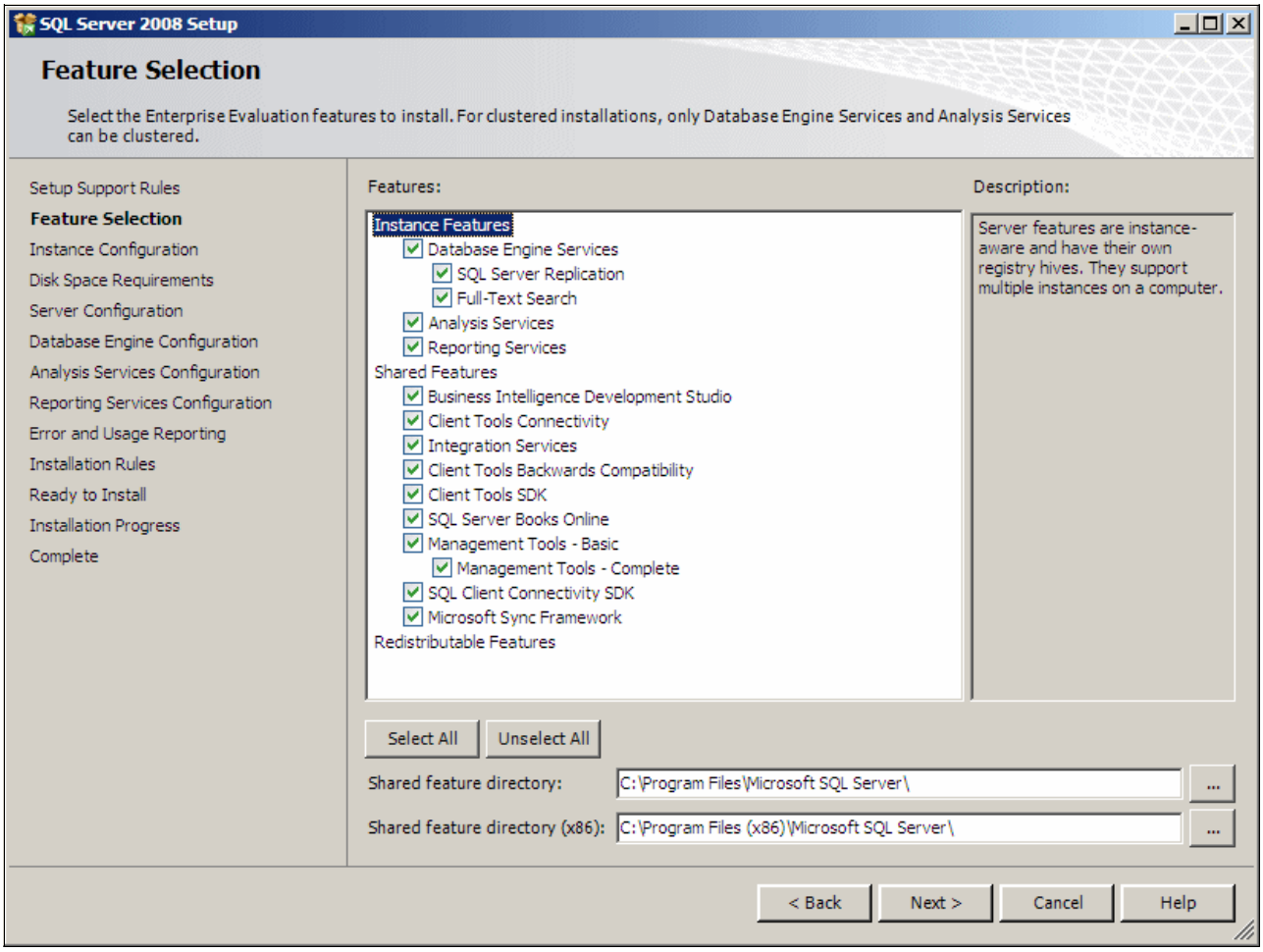

Figure 6-24 feature selection window

9. SQL Server 2008 requires an instance to be created and a unique ID. On the “Instance Configuration” panel Figure 6-25 on page 157) we created a default instance with the basic name convention of `EBSPremium`. Click **Next**.

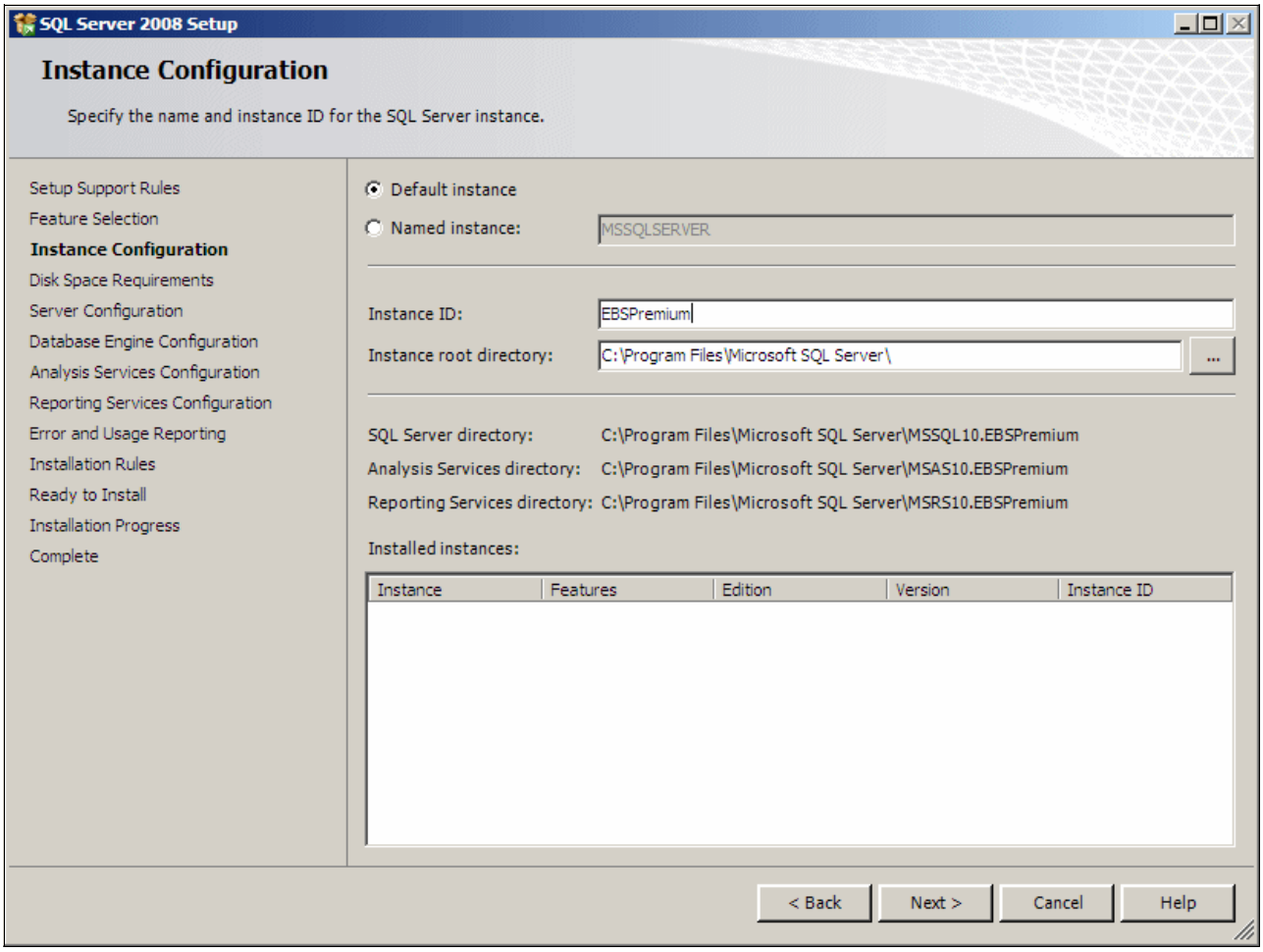

Figure 6-25 SQL Server instance naming panel

The “Server Configuration” panel (Figure 6-26) displays the account access information for each of the SQL Server services. The recommendation from Microsoft is to have a separate account for each SQL Server service. We created a specific SQL account with the appropriate rights. This account was used for all the SQL Server services to simplify user management.

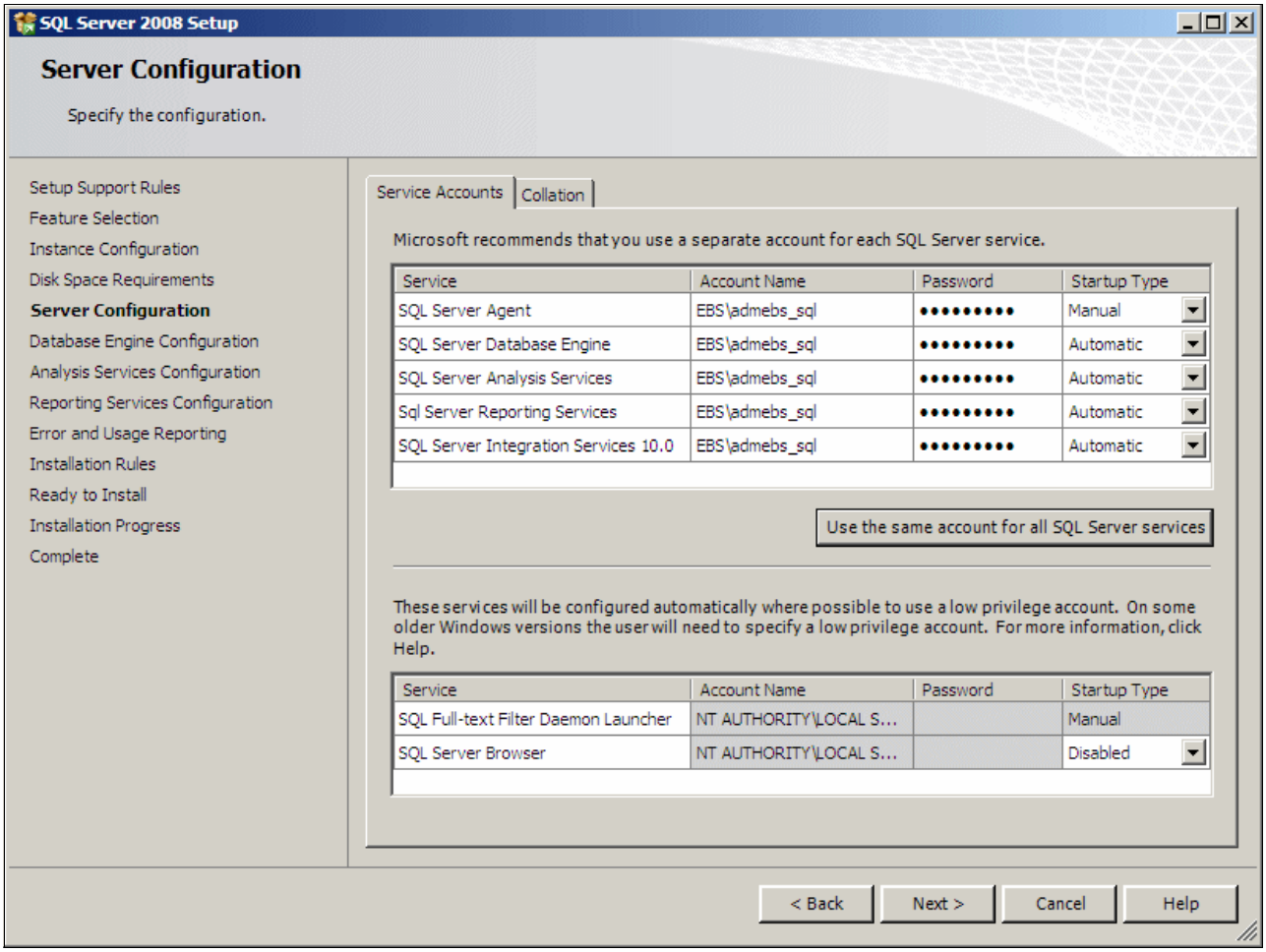

Figure 6-26 SQL Server services user account configuration

10. The Account Provisioning tab of the “Database Engine Configuration” panel (Figure 6-27) displays the available authentication modes to gain access to the database engine. By default, the **Windows authentication mode** radio button is selected. We accepted the default.

    Also, in this panel, set up the database administrator password. Once the fields are completed, click **Next**.

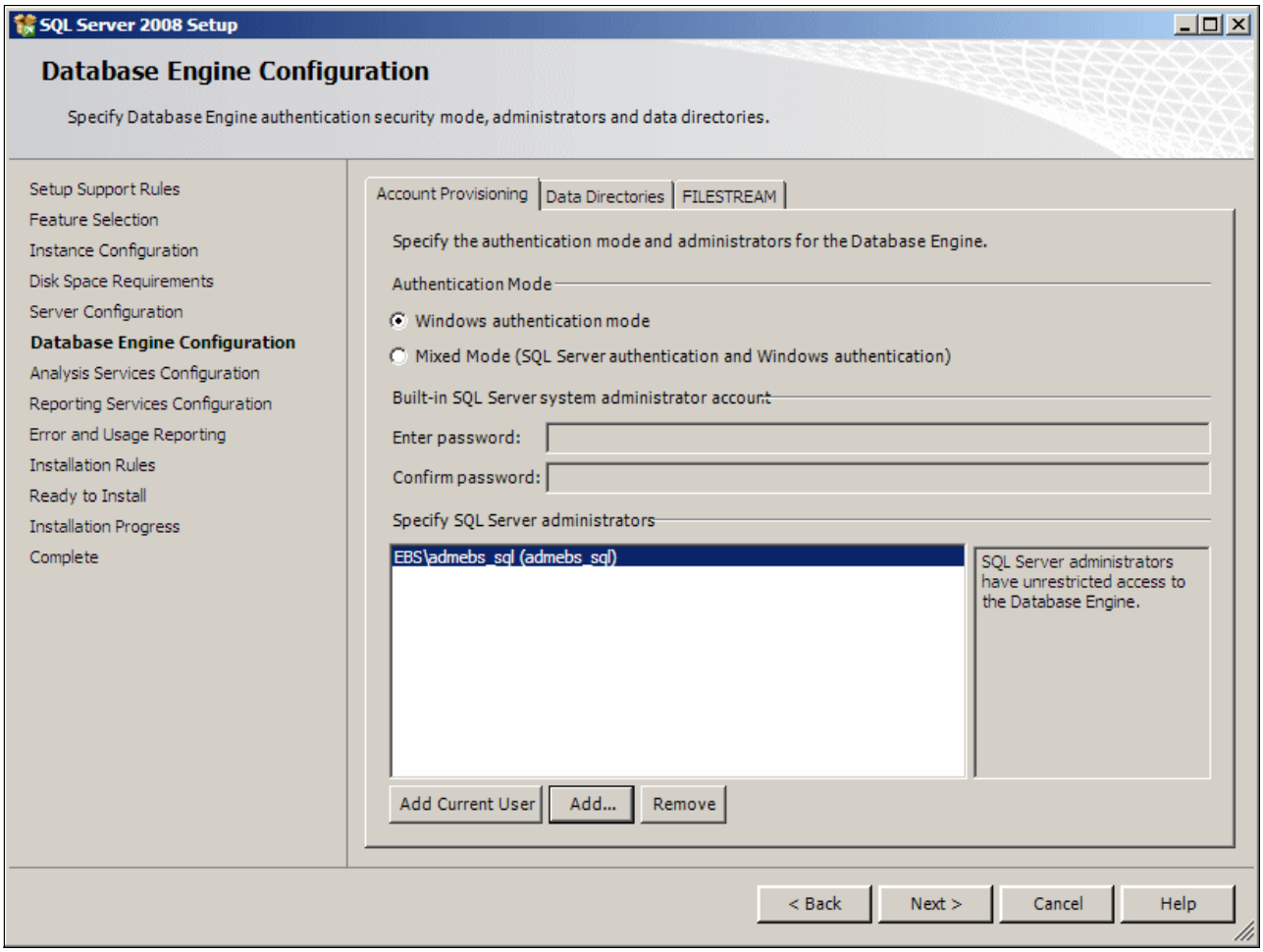

Figure 6-27 Database Engine Configuration window

11. The Data Directories tab of the “Database Engine Configuration” panel (Figure 6-28) displays all of the directory paths the database will use. Select the correct drives and paths. Failing to do so may inadvertently have the database be installed on a smaller capacity drive. We implemented an environment with the following configuration:
    - Log files were posted on the RAID 1 D: drive. The path was D:\Program Files\.
    - The database and all of its updates were assigned to the SAS RAID 5 E: drive. This ensured redundancy and resilience as we take advantage of the BladeCenter S features. The path was E:\Program Files\.

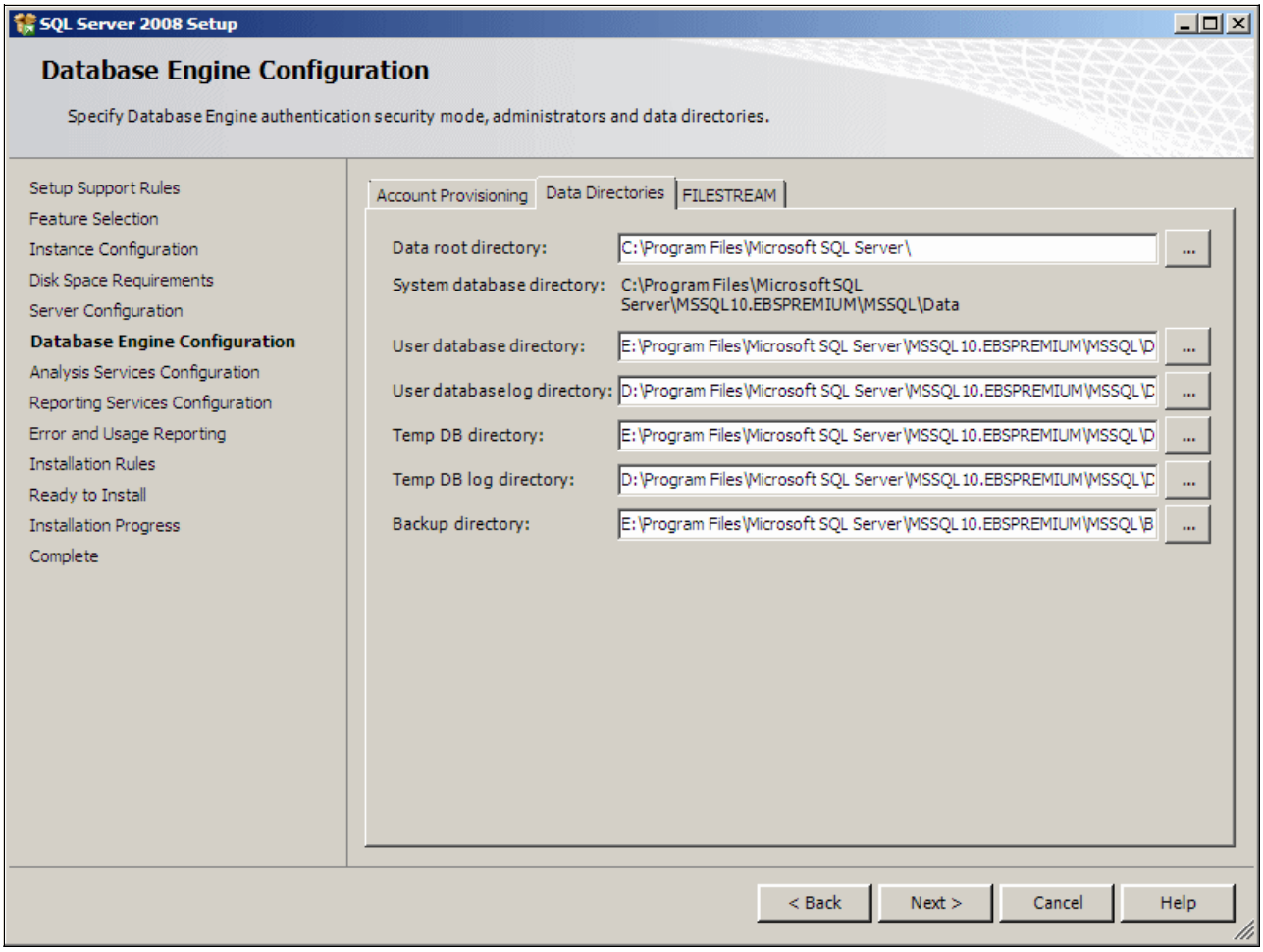

Figure 6-28 Database Engine configuration

12. Define a user account for Analysis Services on the Account Provisioning tab of the “Analysis Services Configuration” panel (Figure 6-29Figure 6-29). SQL Server 2008 requires that you define a user account for the Analysis Services.

    In addition, assign the system administrator account. Click **Next**.

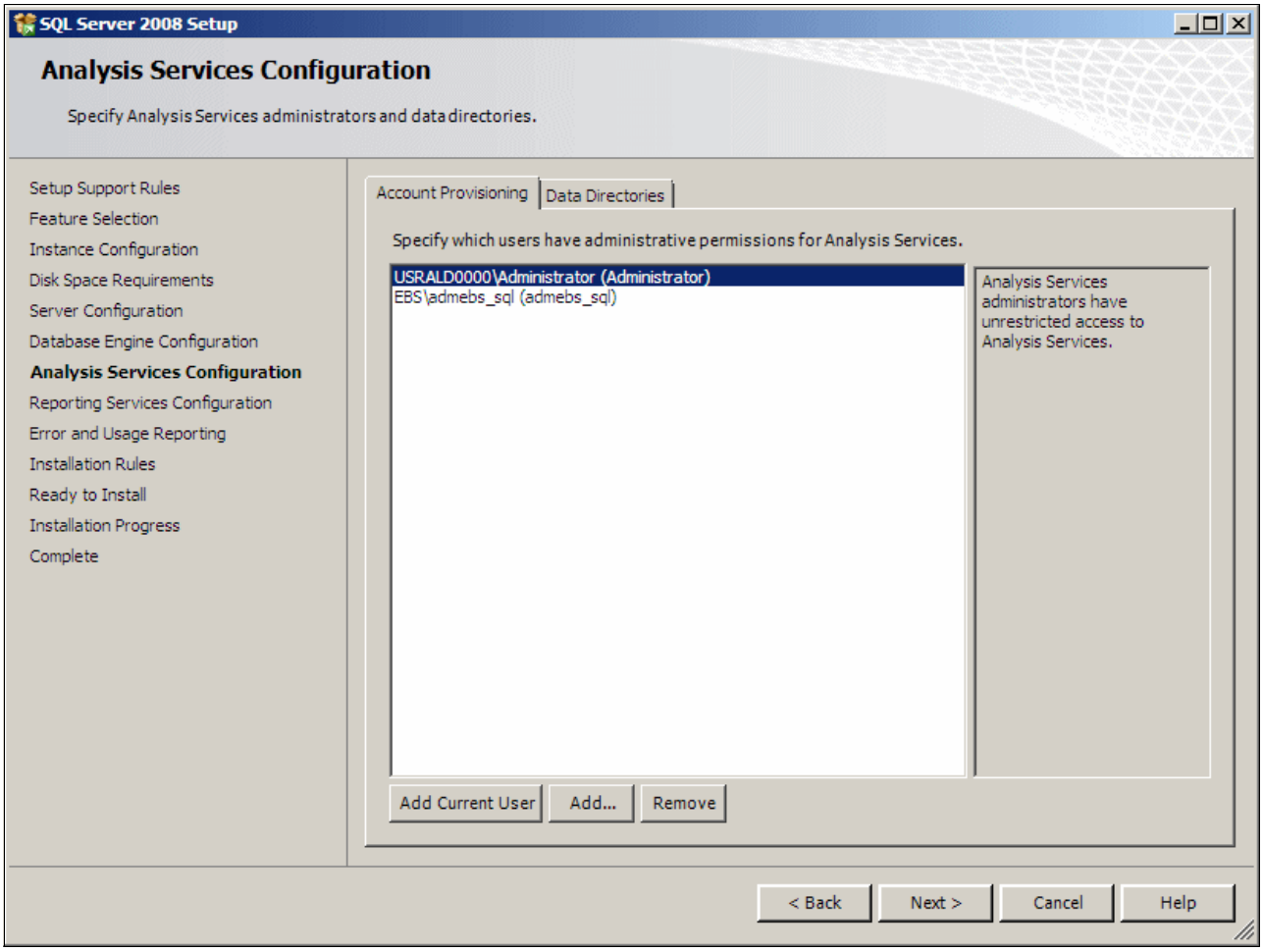

Figure 6-29 Analysis Services Configuration

13. The “Reporting Services Configuration” panel (Figure 6-30) presents several configuration options. For our example, we clicked the **Install the native mode default configuration** radio button. Click **Next**.

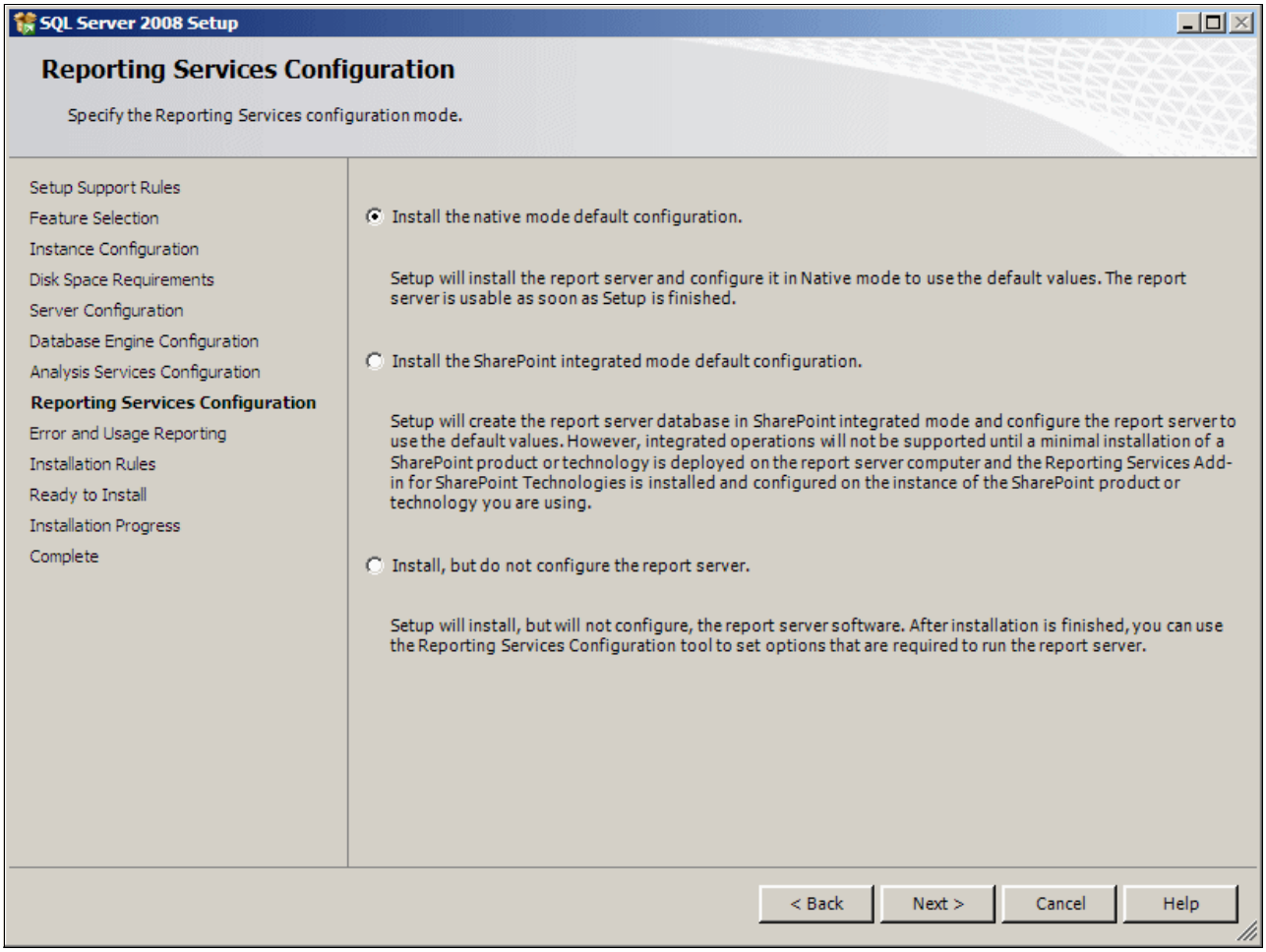

Figure 6-30 The Reporting Services configuration panel.

14. Configure Error and Usage Reporting. This defines whether or not you want error information sent to Microsoft to assist with future development of SQL. We accepted the defaults. Click **Next**.

    Once all of the configuration steps have been completed, SQL Server 2008 will run the SQL setup rules to check that all the information is valid. Click **Next**.

15. The “Ready to Install” panel (Figure 6-31) displays a list of the features to be installed. This should list the same features you selected earlier. Confirm the required features. Click **Install**.

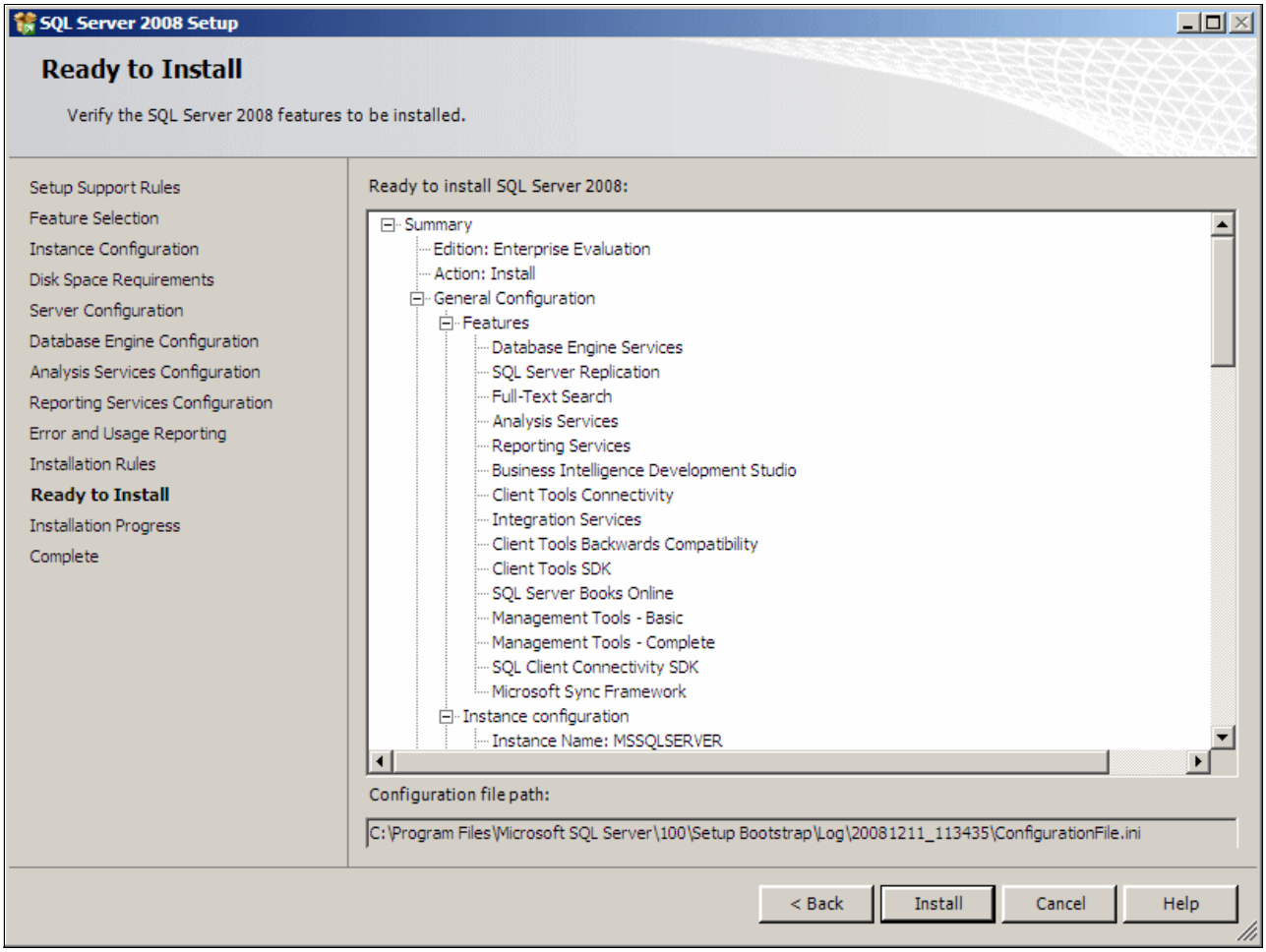

Figure 6-31 Ready to install the selected features

16. The install process shows a progress bar as each component is installed. The “Installation Progress” panel (Figure 6-32) displays when the installation is complete. The panel displays the installation status of each feature. Those installed will have a green tick as well as the status “Success”. Rectify any failures before continuing. Click **Next**.

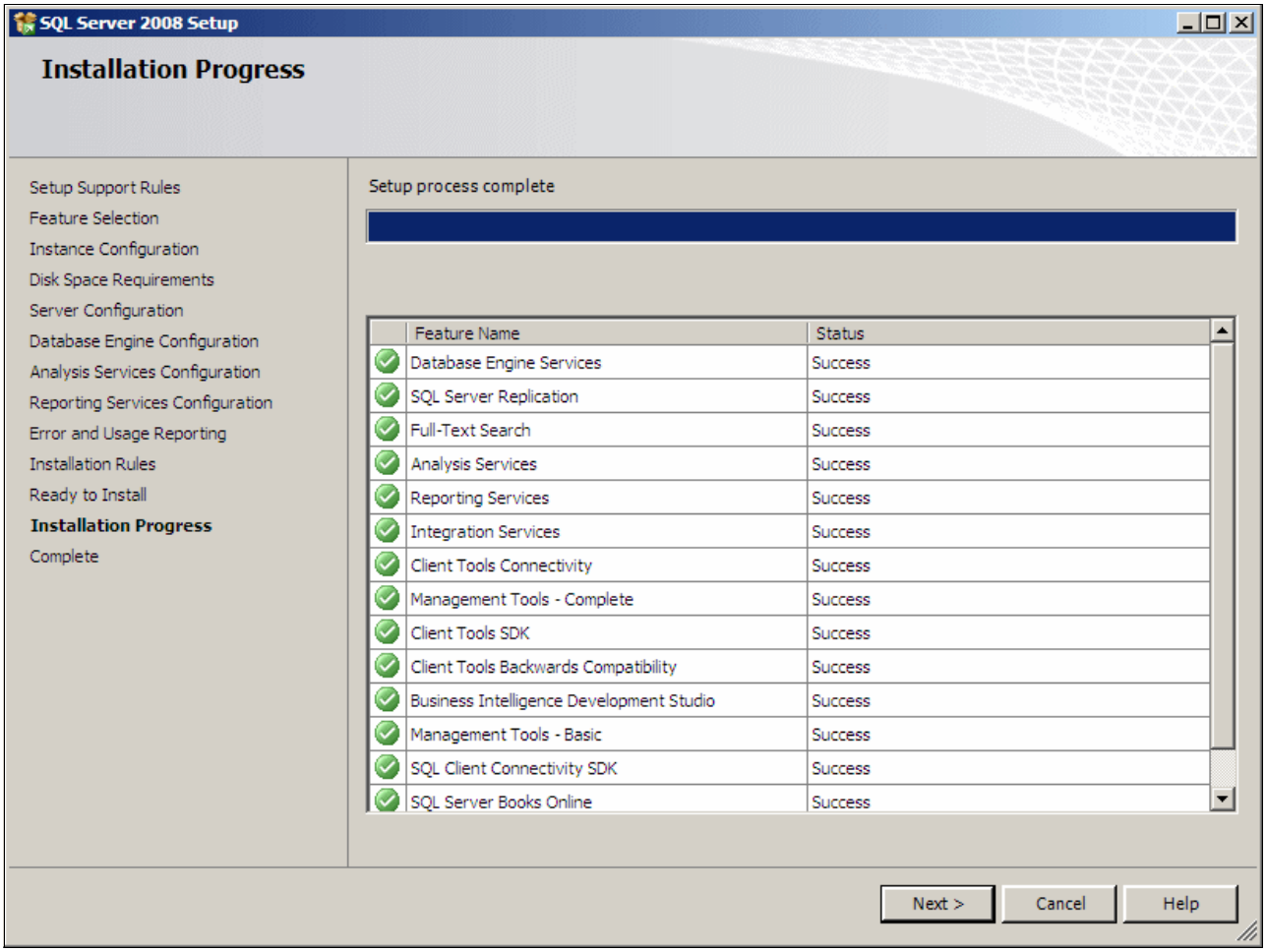

Figure 6-32 SQL installation status.

17. The “Complete” panel (Figure 6-33) displays when the installation is complete. Click **Close**.

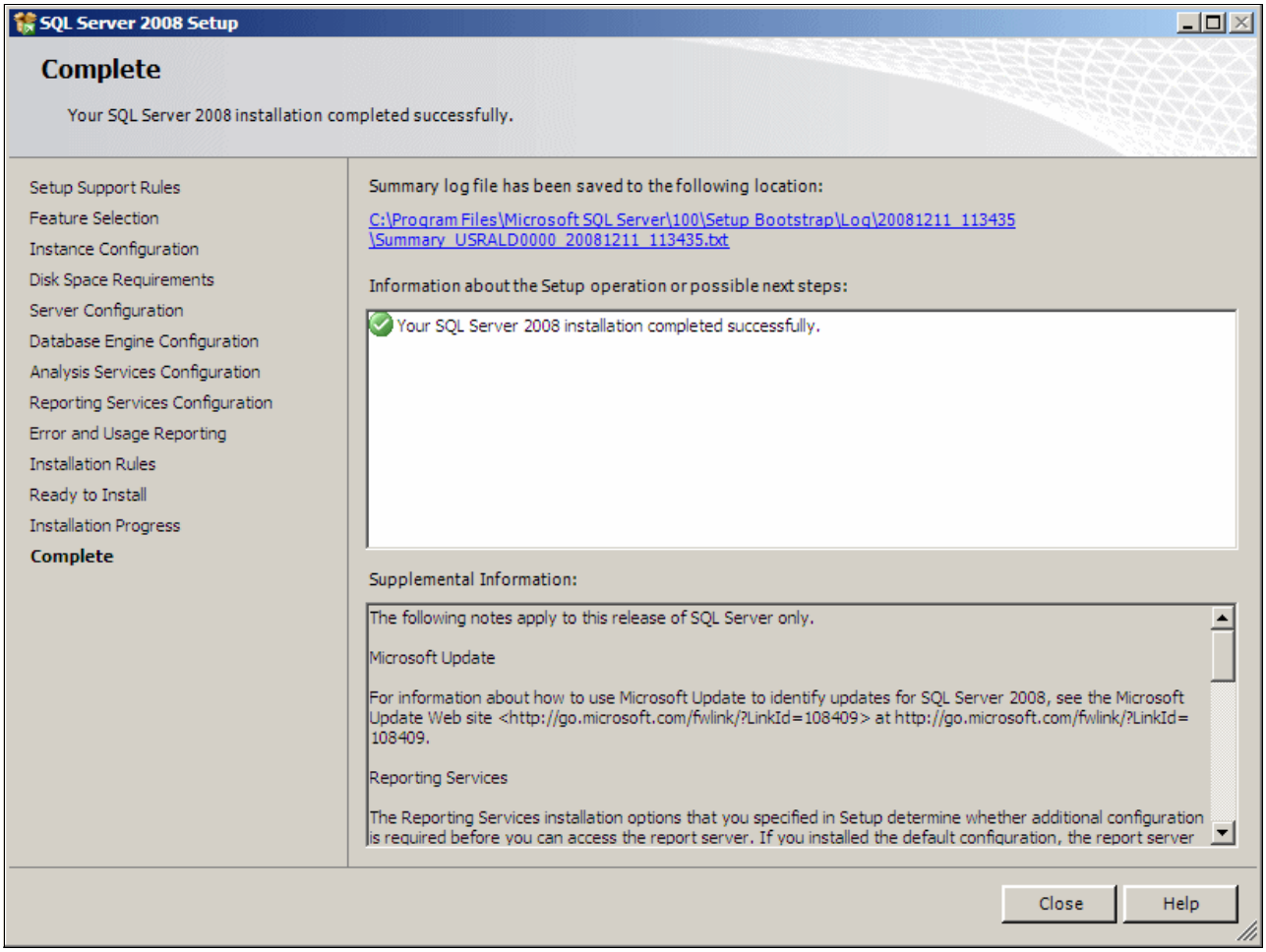

Figure 6-33 Installation complete

SQL is now installed. If a restart is required a message will prompt you. It is suggested to to restart SQL Server 2008. This ensures all SQL services start in their appropriate order.

6.1.6 Log onto SQL Server 2008

In this section, we log onto the SQL Server. This will verify the access and user permissions have been configured correctly. Perform the following steps to log on to the SQL Server

1. Access the database by navigating to **Start** → **Programs** → **Microsoft SQL Server 2008** → **SQL Server Management Studio**. The “Connect to Server” dialog box (Figure 6-34) displays. Enter the correct Database Server name and the SQL administrator account specified during the installation. In our example, the server is called USRALD0000. We opted for the server administrator account to be the database administrator account as well. Click **Connect**.

Figure 6-34 SQL logon on window

Note: Make sure the correct authentication method defined during configuration, is used.

The “Microsoft SQL Server Management Studio” panel (Figure 6-35) displays. From here the administrator can run the SQL resources.

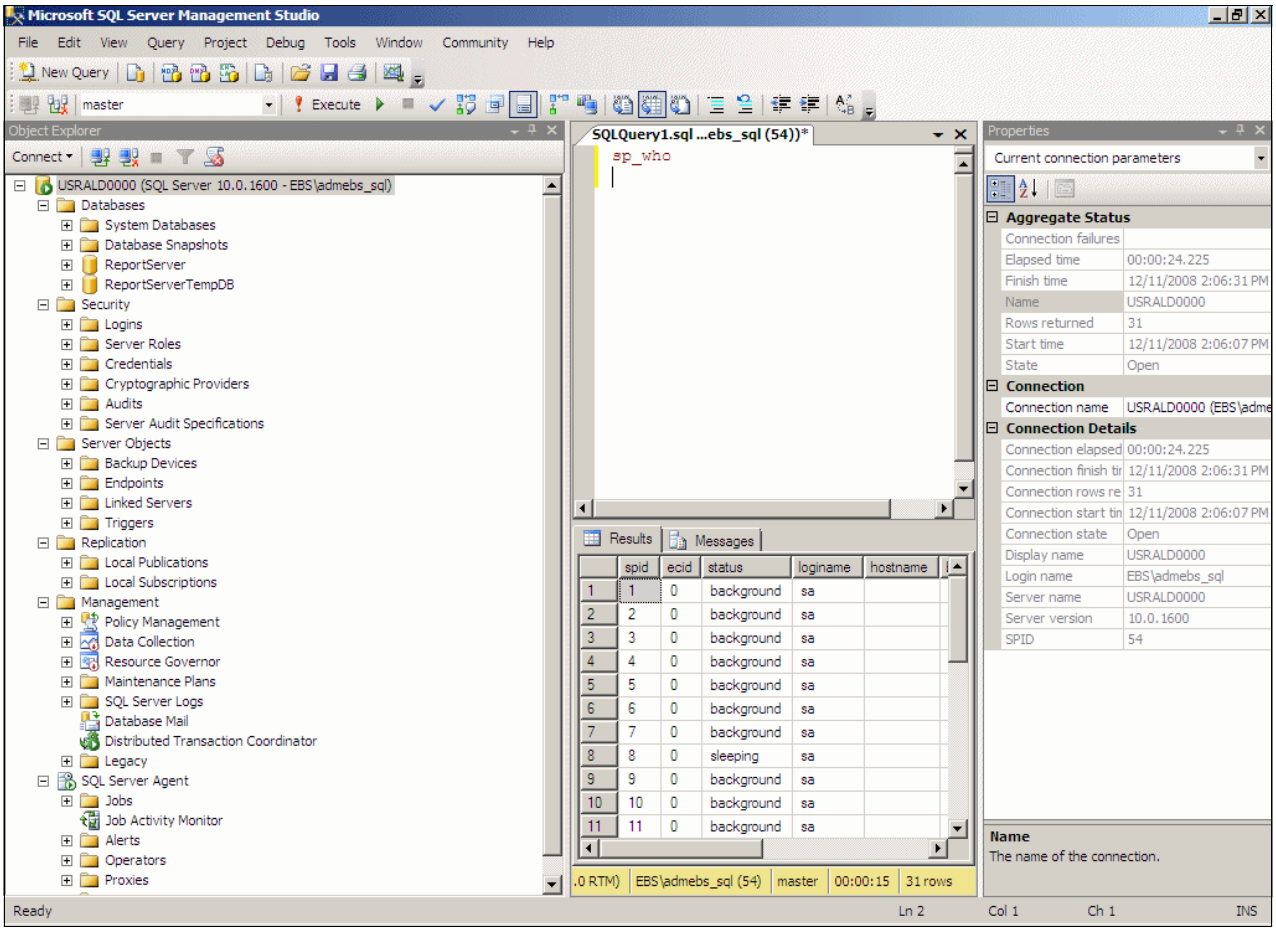

Figure 6-35 SQL Server 2008 Management Studio

2. Click **Help** → **About** on the SQL Server 2008 Management Console to confirm the version of SQL Server 2008 is installed. The version installed during the Redbooks publication exercise is shown in Figure 6-36.

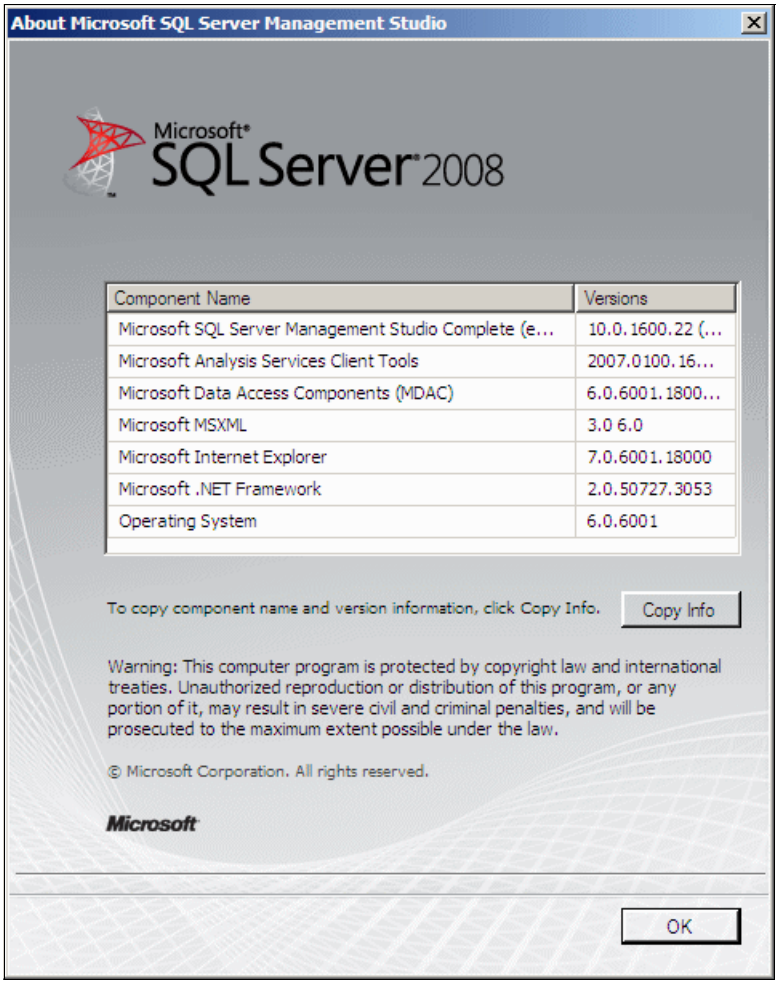

Figure 6-36 SQL Server 2008 version

6.1.7 Microsoft SQL Server Application Add-in for Windows Essential Business Server

The administration console installed as part of Windows Essential Business Server provides a unified view of the infrastructure components deployed by Windows Essential Business Server. It has been designed to provide a dashboard view of all IT components. It allows IT administrators to view the configuration, execution, and historical performance of their workloads quickly. With the addition of the Microsoft SQL Server Application Add-in, you can perform the following tasks:

- Centralize basic administrative tasks for Microsoft SQL Server into the Windows Essential Business Server administration console.
- View a dashboard of all supported servers that are running SQL Server within your domain.
- View the health status, and space-related information, for each database instance.
- Simplify alert monitoring for servers that are running SQL Server.

Through the console, IT administrators can also manage common tasks (for example, adding users, managing groups, and resolving critical alerts for all applications in their environment through the installation of Microsoft and third-party add-ins).

The add-in presents the health status of each instance, and space-related information for databases, and simplifies alert monitoring for the Microsoft SQL Servers within the current domain, and provides easy access to common tasks to maintain the instances and databases.

Open the administration console from Management Server and click the System Application to view the SQL Server Instance and Database Maintenance features.

Installation requirements

This add-in can only be installed on the Management Server for Windows Essential Business Server. For our example, it is the Management Server for Windows EBS - USRALB0000.

Perform the following steps to install the SQL Server Add-in:

1. Download the installation package.
2. Run the installation package, SQLServerAddinSetup.msi, on the Windows Essential Business Server Management Server. Follow the instructions to complete the installation.

The installation package can be found at the following Web page:

http://www.microsoft.com/downloads/details.aspx?FamilyID=2F7BF5A4-EF2A-4ACC-9238-77530DA8DC3B&displaylang=en

A

IP addresses used in the lab

This appendix lists the IP addresses used for this Redbooks publication. These addresses were used for Windows Essential Business Server deployment in the BladeCenter S environment.

A.1 IP address allocation

Within any properly designed and planned network, certain IP addresses will be statically assigned for specific functions. For the examples in this Redbook, we defined an IP address solution that has been documented here for reference. The purpose is to aid people planning a BladeCenter deployment using this guide and will also provide a better understanding of how this solution was configured.

IP addresses can be statically or dynamically assigned. Certain functions within a network need to have a static IP address so that the servers, workstations and end users are able to communicate and access information. This becomes even more important when having outside internet access. Security is paramount.

This appendix lists the IP addresses used in the Windows Essential Business Server environment. It is hoped by providing this information in an appendix, the reader will have a clearer, better understanding of the Windows Essential Business Server environment deployed during this Redbooks publication. Table A-1 lists the internal network IP address settings.

Table A-1 Internal network IP address configuration

IP Address	Name	Purpose
10.0.0.1	USRALI000	Security Server
10.0.0.3	USRALB000	Management Server
10.0.0.4	USRALE000	Messaging Server
10.0.0.5	USRALD000	Database Server
10.0.0.20-254	USRALB000	DHCP Range
10.0.0.1	USRALI000	Gateway
10.0.0.3	USRALB000	DNS Server

The BladeCenter S chassis was managed through the Advanced Management Module (AMM). The IP address assigned to the AMM was configured to be part of the ITSO lab. This provided four benefits:

- No external access to BladeCenter management
- BladeCenter management is not connected to the internal Windows Essential Business Server network.
- Allowed remote management through the ITSO network.
- An extra security level. Users on the internal network could not communicate directly with the BladeCenter S chassis.

Table A-2 shows the IP addresses assigned to the AMM. The two SAS RAID Controller modules were also on the same subnet.

Table A-2 Management network IP address configuration

IP Address	Name	Purpose
IP Address	**Name**	**Purpose**
9.42.170.210	AMM	Advanced Management Module
9.42.170.212	SAS RAID Controller Bay 3	SAS Switch Subsystem - Bay 3
9.42.170.213	SAS RAID Controller Bay 3	RAID Controller Subsystem Bay 3r
9.42.170.214	SAS RAID Controller Bay 4	SAS Switch Subsystem - Bay 4
9.42.170.215	SAS RAID Controller Bay 4	RAID Controller Subsystem Bay 4r

B

Server Naming Convention

This appendix should be used as a reference guide for naming servers within a network infrastructure.

B.1 Server naming conventions

A standardized approach to naming servers in a network is good practice. It helps with system management and problem diagnosis. For this book, we incorporated the naming standards discussed here. A server name is broken down into components based on the following order:

- Country
- City
- Role
- Server number

Table B-1 lists the naming convention for servers with their function.

Table B-1 Server naming conventions

Letter	Role
B	Domain Controller
C	Collaboration (BES, Faxnation, Messaging)
D	Database Servers (SQL, Oracle®, DB2®)
E	Collaboration (messaging)
F	FSMO
H	Cluster
I	Internet Server
M	Monitoring (Tivoli®)
N	DNS Servers
P	Print Servers
R	Backup Servers
S	SAP® Servers

As an example, the name of our first server in our domain, USRALB000, would be explained as follows:

- US: Country
- RAL: City
- B: Server Domain Controller role
- 0000: First Server in this site

Note: 0099 is usually reserved for Server Development

C

Command line interface

This appendix is brief guide to the command line interface as used with the SAS RAID Controller modules on a BladeCenter S chassis.

C.1 Overview

The SAS RAID Controller Modules can be modified from within the AMM as well as the IBM Storage Configuration Manager. It is also possible to modify the modules through the command line interface (CLI). This means using a command like **TELNET** to gain access to the hardware.

Under some circumstances, the use of the CLI may be required, as in when performing a firmware upgrade to the SAS RAID Controller. It is also an excellent way to obtain more detailed diagnostic information. This may be necessary if the SCM or AMM cannot communicate with the SAS modules.

C.1.1 Accessing the SAS RAID Controller modules

In our system, the SAS RAID Controllers are reached through a separate network to the internal Windows Essential Business Server domain. Specifically the IP addresses are as shown in Table C-1:

Table C-1 SAS Controller IP addresses

Component	IP Address
9.42.170.212	Bay 3 - SAS Switch Subsystem
9.42.170.213	Bay 3 - SAS RAID Controller Subsystem
9.42.170.214	Bay 4 - SAS Switch Subsystem
9.42.170.215	Bay 4 - SSAS RAID Controller Subsystem

Perform the following steps to access the SAS RAID Controller module:

1. Start a cmd.exe window.
2. Issue a ping command against all of the listed IP addresses.
3. Issue the command **TELNET 9.42.170.213**.

Important: Make sure you TELNET to the RAID Controller subsystem, not the SAS Switch subsystem.

4. Enter the user ID and password configured during installation.

   All the functions accessible in the SCM, such as defining and building pools and volumes can be issued here. In addition status information of all the SAS RAID components can be view. Even the firmware versions running on the battery backed up cache modules that plug into the media bay, are displayed.

Important Functions and Commands

Once logged on, the **help** command is useful in finding the right commands and the correct syntax needed.

Another useful command is **list controller**. This will display the status of both of the SAS RAID Controller modules. There are several modes to be familiar with:

- Bay 3: Primary, Bay 4 Secondary

  These represent a working system.

- Service mode

  This is the mode the controllers must be in when performing firmware upgrades.

- Binding

  On system start, the SAS RAID Controller will display this mode. While in this state, the storage system will be inaccessible to the blade servers. The SAS Controller modules are performing internal checks and configuration. Depending on the complexity of the hard drive pools, volumes, and RAID settings, the controllers can remain in a Binding state for up to an half hour.

Perhaps the most important function CLI provides is the upgrading of firmware. Currently, this is the only way to upgrade the firmware on the SAS RAID Controller modules. It is important to remember that both modules must run the same level of firmware, and any upgrade will be performed on both modules.

Note: See the readme file with any firmware upgrade files. It will explain the install process. When executing an upgrade, the process can take up to one hour.

C.2 Built-in redundancy

The purpose of two SAS RAID Controller modules is for resilience and redundancy. If one module fails, the second module will remain functional, so that access to the data on the storage devices is possible.

For the Redbooks publication, we had one controller module off-line. Both AMM and SCM were unable to access the SAS RAID Controller modules. We could still ping their assigned IP addresses, but were unable to gain access through these two methods.

The CLI process allowed us to access the modules, perform diagnostics, and alter settings. While we still had one controller off-line we were able to perform the following tasks:

- Check status.
- Delete a volume, delete a RAID configuration, and delete a pool.
- Create a pool, create a volume, and even assign volumes to specific blade servers.

Abbreviations and acronyms

AC	alternating current
AMM	Advanced Management Module
BIOS	basic input output system
CAL	Client Access License
CD	compact disk
CLI	command line interface
CPU	central processing unit
CRU	customer replaceable units
DHCP	Dynamic Host Configuration Protocol
DIMM	dual inline memory module
DNS	Domain Name System
DSM	disk storage module
DVD	Digital Versatile Disc
GB	gigabyte
HDD	hard disk drive
I/O	input/output
IBM	International Business Machines
ICPM	Intelligent Copper Pass-thru Module
ID	identifier
IM	instant messaging
IO	input output
IP	Internet Protocol
ISA	industry standard architecture
IT	information technology
ITSO	International Technical Support Organization
KVM	keyboard video mouse
LAN	local area network
LED	light emitting diode
NIC	network interface card
NTP	Network Time Protocol
PCI-X	Peripheral Component Interconnect Extended
POST	power-on self test
RAID	redundant array of independent disks
RSSM	IBM BladeCenter S RAID SAS Switch Module
RWW	Remote Web Workplace
SAN	storage area network
SAS	Serial Attached SCSI
SATA	Serial ATA
SCM	Supply Chain Management
SDDDSM	Subsystem Device Driver Device Specific Module
SFF	Small Form Factor
SIO	Storage and I/O
SMTP	simple mail transfer protocol
SQL	Structured Query Language
TMG	Forefront Threat Management Gateway
URL	Uniform Resource Locator
USB	universal serial bus
USERID	user identifier
VLAN	virtual LAN
XML	Extensible Markup Language

Related publications

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

IBM Redbooks

For information about ordering these publications, see “How to get Redbooks” on page 184. Note that some of the documents referenced here may be available in softcopy only.

- *Introducing Microsoft Small Business Server 2003 on IBM eServer xSeries Servers,* REDP-3913-00
- *Implementing the IBM BladeCenter S Chassis,* REDP-4357-00

Online resources

These Web sites are also relevant as further information sources:

- Microsoft Windows Essential Business Server 2008

  http://www.microsoft.com/ebs/en/us/default.aspx
- Microsoft Windows Small Business Server 2008

  http://www.microsoft.com/sbs/en/us/default.aspx
- Windows Essential Business Server

  http://en.wikipedia.org/wiki/Windows_Essential_Business_Server
- IBM BladeCenter S Chassis

  http://www-03.ibm.com/systems/bladecenter/hardware/chassis/blades/index.html
- Upgrade Options: Solutions Pathway

  http://www.microsoft.com/wess/en/us/solutions-pathway-overview.aspx
- Start Now Advisor v1.1.1 - IBM BladeCenter

  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5076842
- Microsoft - Enable address conflict detection

  http://technet.microsoft.com/en-us/library/cc737924.aspx
- Microsoft - How to Configure Authoritative Domains for the Exchange Organization

  http://go.microsoft.com/fwlink/?linkID=121808
- IBM

  http://www.ibm.com
- Windows EBS 2008 Technical FAQ

  http://technet.microsoft.com/en-us/ebs/dd183189.aspx

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Implementing Windows Essential Business Server on IBM BladeCenter S

Redpaper™

Introduces the new server offering from Microsoft

Describes how to install EBS on the BladeCenter S platform

Includes the integration of SQL Server 2008

Medium sized businesses today require the same level of IT services as enterprises, but don't have the IT departments available in enterprise environments.

The new Microsoft Windows Essential Business Server 2008 solution is targeted at businesses without enterprise-size resources. It enables them to use the latest technologies designed for the enterprise. Windows Essential Business Server is a solution that tightly integrates a messaging server, a management server and a security server based on the Microsoft Windows Server 2008 family.

IBM BladeCenter is a hardware platform that is based upon a modular chassis design. The platform is a radical departure from existing server architectures in that it uses universal components, shared with servers contained with a chassis, that can be upgraded or replaced over time. Through the use of "blade" style server slots and I/O expansion bays, servers within the chassis can connect to a vast array of networking and storage options.

The IBM BladeCenter S is the latest addition to the IBM BladeCenter family. It is unique from the rest of the BladeCenter family, because it is specifically designed to be used outside of the datacenter. It is designed to operating in the office environment, operating in either a 110 V or 220 V AC power environment. In includes highly energy-efficient power supplies, new integrated storage, and the most advanced management capabilities available.

This IBM Redpaper is intended to provide planning recommendations and installation instructions to deploy the Microsoft Windows Essential Business Server 2008 on IBM BladeCenter S infrastructure.

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