MIGRATION GUIDE

MIGRATING TWO LEGACY HP SERVERS
TO ONE DELL POWEREDGE T410
RUNNING MICROSOFT WINDOWS
SERVER 2008 R2

Principled Technologies®

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Introduction

Advances in server and software technologies enable small businesses to reduce costs by consolidating multiple older servers onto a single new server. The new Dell PowerEdge T410 and the new features in Microsoft Windows Server 2008 R2 Standard Edition offer a clear win to businesses seeking to lower IT expenses and increase performance.

Organizations with legacy servers, such as older HP ProLiant ML110 G5 systems, often find themselves running out of capacity and at a decision point: Do they scale out and add more similar servers, or do they scale up to a smaller number of more powerful servers? As the results from our tests show, by scaling up to the more powerful Dell PowerEdge T410, such organizations can accommodate more users, get more computing power, and thus have the potential to significantly reduce both systems-management costs and energy consumption.

This Principled Technologies (PT) Guide explains the process for consolidating an existing two-server installation onto a single Dell PowerEdge T410 and upgrading Microsoft Windows Small Business Server 2003 R2 Premium to Microsoft Windows Server 2008 R2 Standard Edition. We will explain how to migrate user accounts (Active Directory®), email software, and a database application.

We have actually performed this procedure and consolidated two legacy servers, a primary server running Microsoft Windows Small Business Server 2003 R2 Premium with Microsoft Exchange Server 2003 and a member server running Microsoft Windows Server 2003 R2 Standard with SQL Server® 2005 Workgroup Edition, onto a single new Dell PowerEdge T410. The companion performance report, available at: http://www.principledtechnologies.com/clients/reports/Dell/T410_ SBS_performance0710.pdf shows that this one Dell PowerEdge T410 running Windows Server 2008 R2 Standard Edition performed the work of two older HP ProLiant ML110 G5 servers while supporting twice as many users, delivered better performance in both applications, and left room for future growth.

This Guide documents some best practices and can help you simplify operations and take advantage of new features in Windows Server 2008 R2 Standard Edition.

In the sections that follow, we discuss some of the new features of the servers and software, give an overview of the consolidation and migration process, and discuss what to be aware of after the migration is complete. The appendices to the Guide give detailed, step-by-step information on how to successfully complete the migration.

> **NOTE:** Those with more complex configurations, special requirements, or the desire to avoid implementing the migration themselves may wish to investigate the consulting services Microsoft and Dell offer.

Why consider migrating to Microsoft Windows Server 2008 R2 Standard Edition on a Dell PowerEdge T410?

Because any migration requires an investment of time, it should deliver clear benefits. In this section, we present just a few of the benefits from migrating to Microsoft Windows Server 2008 R2 Standard Edition on a Dell PowerEdge T410.

Features of Microsoft Windows Server 2008 R2 Standard Edition

A small business is not necessarily a simple business. Business needs, regulatory requirements, and other factors place an increasing strain on limited IT resources. Microsoft Windows Server 2008 R2 Standard Edition addresses many of these issues, and offers many compelling new features, including the following:

- **Simplified setup.** Much of the setup is wizard based, making the installation and setup process considerably simpler.
- **Updated components.** When you migrate to Microsoft Windows Server 2008 R2 Standard Edition, you automatically upgrade key Microsoft Windows components, including Active Directory, Internet Information Services 7.5 (IIS), Windows PowerShell 2.0, and more.
- **Management.** Microsoft Windows Server 2008 R2 Standard Edition includes a revamped management console, making adding new server roles, features, and functions easier than ever before.
- **Virtualization.** Microsoft Windows Server 2008 R2 Standard Edition supports Microsoft Hyper-V, which you can use to create virtual servers. You can use the virtual servers to run legacy applications without fear that other applications on the same physical server will create any problems. Virtual servers also allow you to isolate business functions for security or regulatory reasons.

For more information about Microsoft Windows Server 2008 R2 Standard Edition, see http://www.microsoft.com/windowsserver2008/en/us/2008-std.aspx.

Features of the Dell PowerEdge T410

The Dell PowerEdge T410 offers many compelling new features, including the following:

- **Storage.** The Dell PowerEdge T410 holds up to 6 terabytes (6,000 gigabytes) of internal storage, giving you 25 percent to 50 percent more internal storage than many common small-business servers**.**
- **Memory.** The Dell PowerEdge T410 holds up to 128 GB of RAM—16 times the capacity of many older small-business servers, which typically hold a maximum of 8 GB of RAM.
- **Power.** The Dell PowerEdge T410 includes enhancements that let it use less energy than many older servers. Because our goal is to consolidate two legacy servers onto a single Dell PowerEdge T410, the potential power savings are dramatic.
- **Processor.** The Dell PowerEdge T410 uses Intel Xeon 5500 and 5600 series processors. These processors automatically adjust their speed and energy usage to meet the requirements of your applications, improving performance and saving power. For more information, see

http://www.intel.com/p/en_US/products/server/processor/xeon5000.

- **Management.** The Dell PowerEdge T410, like all late-model Dell servers, comes with the Dell Lifecycle Controller. This tool simplifies management by providing a single interface for management functions and by storing critical system information in the system itself. No need to keep track of floppy disks or USB keys for drivers or firmware.

For more information on the Dell PowerEdge T410, see http://www.dell.com/us/en/enterprise/servers/server-poweredge-t410/pd.aspx?refid=server-poweredge-t410&cs=555&s=biz.

Features and benefits of Microsoft Exchange Server 2010

Microsoft Exchange Server 2010 offers distinct benefits that both administrators and users will encounter after an upgrade. The following list highlights some of the more significant improvements:

- **Greater deployment flexibility.** In previous versions of Exchange, implementations such as clustering required separation of Exchange roles and installation of a specific clustered mailbox role. Microsoft Exchange Server 2010 changes that with Database Availability Groups (DAGs). DAGs allow clustering and disaster recovery to be added to an existing Exchange Server 2010 setup without any special clustering preparation. DAGs also allow for clustering in multi-role installations because DAGs use mailbox-level failover while previous versions of Exchange use Exchange-level failover.
- **Greater mailbox mobility.** As previously mentioned, putting more responsibility on the Client Access Services (CAS) role allows for greater mailbox mobility. This allows a mailbox to be moved between servers while a user is accessing it.
- **Shadow copies of email messages.** Microsoft Exchange Server 2010 creates shadow copies of emails as the message moves throughout an organization and uses these shadow copies to keep messages from being lost due to disk or server failure.
- **I/O optimization.** Microsoft Exchange Server 2010 uses several different techniques to help reduce the load on storage. The reduced amount of I/O allows for use of cheaper disks, which saves costs for Exchange administrators. Exchange Server 2010 also optimizes disk

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I/O to no longer arrive in bursts, which allows greater utilization of lower-end SATA disk drives.

- **Greater messaging consolidation.** Microsoft Exchange Server 2010 adds many features to unified messaging. New capabilities such as receiving voicemail in your inbox allow Exchange to act as a one-stop location for all messaging. The new voicemail text preview feature allows users to identify voicemails at work having to listen to the actual message.

Migration overview

The migration process includes the following key steps. We explain each in detail in subsequent sections:

- Preparing for the migration
    - o Backing up your current configuration
    - o Preparing your network
    - o Modifying your user directory
    - o Preparing your Dell PowerEdge T410 Server
    - o Final considerations
- Configuring the new server for migration
    - o Microsoft Exchange Server 2010 prerequisites
    - o Installing and configuring Microsoft Exchange Server 2010
    - o Migrating your Microsoft Exchange Server mailboxes
- Migrating Microsoft SQL Server
    - o Installing Microsoft SQL Server 2008 R2 Standard
    - o Using the Microsoft SQL Server 2008 R2 Upgrade Advisor
    - o Implementing the migration
- Decommissioning the source server
    - o Migrating IP address and server name to the new server
    - o Migrating DHCP
    - o Demoting the source server as a domain controller
- Summing up

Before you begin, please note that you will need the following items to successfully complete this migration:

- USB flash drive or external hard drive
- Microsoft Windows Server 2008 R2 Standard Edition installation DVD
- Router/firewall device (if you do not already have one installed)

Preparing for your migration

To ensure a smooth migration to Microsoft Windows Server 2008 R2 Standard Edition, you will need to make some changes to your current network and server configuration. This section reviews the steps you need to complete before performing the migration. Some of these steps require more manual input, while others are as simple and automated as completing a guided wizard; you can accomplish all of them with a little planning.

> **NOTE:** Before you begin, verify that you have the latest updates installed on the servers you will be migrating from by running the Microsoft Windows Small Business Server 2003 Best Practices Analyzer. Please see http://support.microsoft.com/kb/940439.

This section addresses the following:

- Backing up your current configuration
- Preparing your network
- Modifying your user directory
- Preparing your Dell PowerEdge T410
- Final considerations

Backing up your current configuration

Prior to completing any preparatory changes to your current configuration, we recommend that you create a backup. The migration process makes irreversible changes to your Microsoft Windows Small Business Server 2003 R2 server, which we refer to as the source server.

Chances are that you already have a software solution or other method in place to create backups on a regular basis to prevent data loss. As long as your current backup solution can perform a full system restoration, it is perfectly suitable for this purpose.

If you are using the backup solution that is included with Microsoft Windows Small Business Server 2003 R2 for your regular system backups, you can also use this to create a manual backup. Just be sure that it is configured to create a backup of the entire system. To begin a manual backup, follow these steps:

1. Click Start, and click Server Management.
2. In the left pane, click Backup. A series of backup-related options appears in the right pane.
3. Click Back up now. This brings up a Backup Utility screen.
4. Click Start Backup to begin.

NOTE: Depending on the amount of information you are backing up and the backup method of your software, this procedure could take several hours to complete. You may want to consider starting a backup and letting it run overnight.

If you currently do not have any backup method configured or you need to reconfigure the Microsoft Windows Small Business Server 2003 R2 backup agent to create a full system backup, refer to Appendix A for step-by-step instructions.

Additionally, if any member servers are running applications that you wish to migrate to your new server, you will also want to create backups of those. The Microsoft Windows Server 2003 R2 operating systems also have integrated backup software. See Appendix A for additional information on using this backup software.

Preparing your network

Microsoft Windows Small Business Server 2003 R2 and Microsoft Windows Server 2008 R2 operate differently in terms of how they run within a network. To prepare for a successful migration, you may need to make some changes to your internal network and the way it connects to the Internet.

If your network is set up based on Microsoft Windows Small Business Server 2003 R2 best practices, it should look similar to Figure 1.
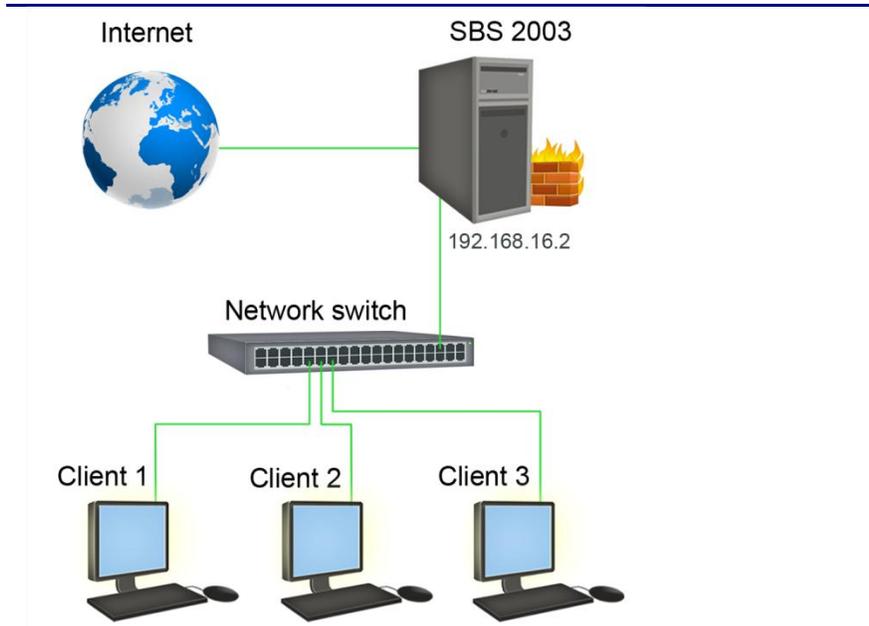
Figure 1. Typical Microsoft Windows Small Business Server 2003 R2 network.

The primary difference between the recommended network setup for Microsoft Windows Small Business Server 2003 R2 and Microsoft Windows Server 2008 R2 is that the server no longer acts as the primary gateway to the Internet nor acts as a firewall for the internal network. Instead, the network needs to be configured with an independent router and firewall between the network switch and the Internet.

A firewall is simply a protective barrier intended to keep unauthorized users from accessing your private network, and a router is a device that manages network traffic between two different networks. In the case of a typical small-business network like the one in Figure 2, the router and firewall are on the same device. The device manages traffic between the network leading to the Internet and your private network while keeping them separated from each other.
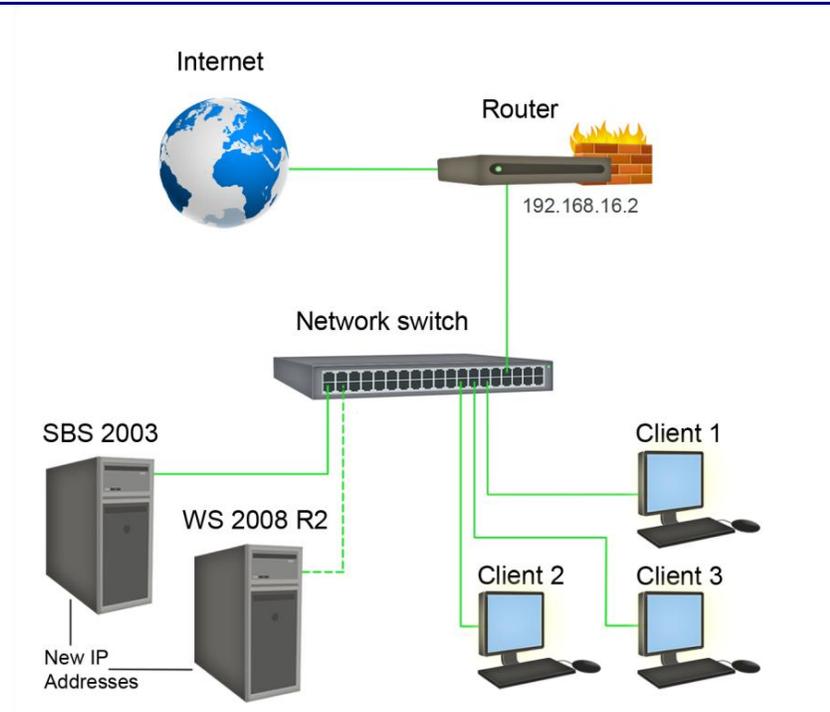
Figure 2. Migration-ready network.

Figure 2 displays how your network should be configured for the migration, with a dotted line indicating the connection that you will set up before you perform the actual migration to your new Dell PowerEdge T410. If your current network is set up like Figure 1, we have devised a method of introducing a router and defining the IP address of your new server in a way that prevents you from having to make changes to every system on the network. If your current network setup already matches Figure 2, you may skip to the Modifying your user directory section below.

Below, we provide an overview of the steps needed to seamlessly introduce a router/firewall and reconfigure your Microsoft Windows Small Business Server 2003 R2 network. Note that your users will temporarily lose access to the Internet during this process.

1. **Connect your router.** Generally speaking, there are two types of connections on a typical router, a wide area network (WAN) port, and usually several local area network (LAN) ports. For now, once you have powered on your router, plug in an Ethernet cable from your network switch into one of the LAN ports on the router.
2. **Disable or remove the Internet-facing network adapter in your Microsoft Windows Small Business Server 2003 R2 server.** You may do this either by physically taking out the network adapter card or by

disabling it within Windows. For specific steps on how to disable the network adapter, see Appendix B.

3. **Change the IP address of your Microsoft Windows Small Business Server 2003 R2 server internal network adapter.** By default, the self-assigned static IP address of your Windows Small Business Server 2003 R2 server is 192.168.16.2, and every other member server or client will be assigned an IP address of 192.168.16.# (where # is unique for each system in the network). Change the IP address of Windows Small Business Server 2003 R2 server to another static address that is not currently being used in your network. For example, if you have DHCP set to not give any IP address higher than 192.168.16.200, you could assign your Windows Small Business Server 2003 R2 server the IP address of 192.168.16.254. You will also soon need to determine a static IP address for your new Dell PowerEdge T410 server, so it would be wise to go ahead and also write down what IP address you plan on giving the new server. For specific steps on how to change the IP address, see Appendix B.

4. **Assign the internal IP address and subnet mask of your router to match the former IP address of your Microsoft Windows Small Business Server 2003 R2 internal network adapter.** By doing this, we take advantage of the fact that the Windows Small Business Server 2003 R2 server's former IP address was the default gateway to access the Internet, thus avoiding having to change the default gateway for every other system in the network. Because every router is different, check the router user's manual for instructions on how to configure the IP address of your internal network.

5. **Disable DHCP on your router.** Currently, your Microsoft Windows Small Business Server 2003 R2 server already has the DHCP service running, and that role will transfer to the new server running Microsoft Windows Server 2008 R2. See the router user's manual for specific instructions on disabling DHCP.

6. **Remove the Ethernet cable that leads to your Internet service provider's (ISP) modem or similar device from the back of the Microsoft Windows Small Business Server 2003 R2 server, and plug it into the WAN port of your router.** Depending on your Internet connection, you may need to configure the WAN port settings in the router with a specific IP

address as provided by your ISP. This will reestablish a physical connection to the Internet.

7. **Run the Configure E-mail and Internet Connectivity Wizard to reconfigure your Microsoft Windows Small Business Server 2003 R2 server's network settings.** This wizard is located in Server Management within Microsoft Windows Small Business Server 2003 R2. See <u>Appendix B</u> for a step-by-step guide of how to reconfigure your Microsoft Windows Small Business Server 2003 R2 server to work with a single network adapter and successfully connect to the router.

Modifying your user directory

You must make two simple but important modifications to your old user directory (Active Directory) before adding Microsoft Windows Server 2008 R2 as an additional domain controller. First, you must raise the functional level of both your Microsoft Windows Small Business Server 2003 R2 Active Directory domain and forest from Microsoft Windows 2000 to Microsoft Windows Server 2003. Next, you must install schema updates to the domain and forest to enable compatibility between your source and destination server.

Raising the functional level of your source server Active Directory

To raise the functional level of Active Directory from Microsoft Windows 2000 to Microsoft Windows Server 2003, complete the following steps:

1. Click Start→Administrator Tools→Active Directory Domains and Trusts. This brings up the Active Directory Domains and Trusts screen (Figure 3).
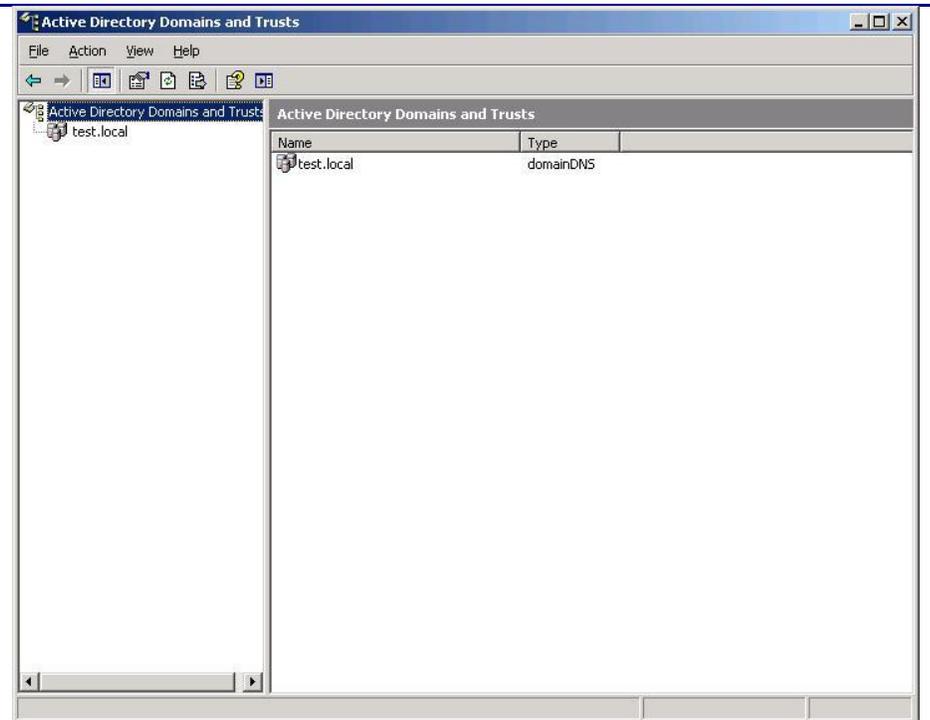
Figure 3. Active Directory Domains and Trusts screen.

> **2.** To raise the domain functional level, right-click your domain name in the left pane, and select Raise Domain Functional Level.
>
> **3.** An additional Raise Domain Functional Level screen pops up (Figure 4). Select Windows Sever 2003 from the drop-down menu, and click Raise. If a confirmation pop-up screen appears, click OK.
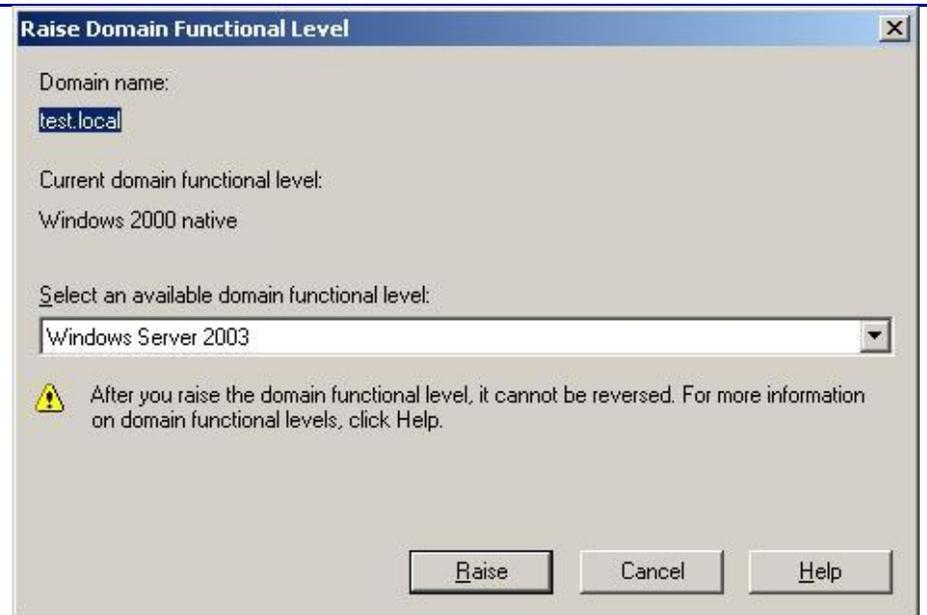
Figure 4. Raise Domain Functional Level pop-up screen.

4. If the operation succeeds, an additional notification pop-up screen appears. Click OK to return to the Active Directory Domains and Trusts screen.
5. To raise the forest functional level, right-click Active Directory Domains and Trusts just above your domain name in the left pane, and select Raise Forest Functional Level.
6. An additional Raise Forest Functional Level screen pops up. As before, select Windows Server 2003 from the drop-down menu and click Raise. If a confirmation pop-up screen appears, click OK.
7. If the operation succeeds, an additional notification pop-up screen appears. Click OK to return to the Active Directory Domains and Trusts screen, and close that screen.

Installing source server domain and forest schema updates
To update your Active Directory domain and forest, follow the steps outlined below. You will need your Microsoft Windows Server 2008 R2 installation DVD.

1. Insert your Microsoft Windows Server 2008 R2 DVD into the DVD drive on your source server. You may close any pop-up warnings or installation autorun messages that appear.
2. Open a command prompt window by clicking Start, Run, and then typing cmd.

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3. In the command prompt window, type `d:` and press Enter, where d: is the drive letter of your DVD drive.

4. Then, type `support\adprep\adprep32.exe /forestprep` and press Enter. This command initiates the Active Directory forest update.

5. To proceed from the warning message asking you to verify that all Windows 2000 domain controllers have been updated, type `C` and press Enter to continue. This will take a few minutes.

6. Once adprep32.exe has finished updating the Active Directory forest, proceed to the domain update by typing `support\adprep\adprep32.exe /domainprep /gpprep` in the same command prompt window and pressing Enter.

7. Once the domain update finishes, type `support\adprep\adprep32.exe /rodcprep` and press Enter. This updates any Read-Only Domain Controllers.

Preparing your Dell PowerEdge T410 server

Now that your source server is ready, you need to perform a few steps on your Dell PowerEdge T410 server running Microsoft Windows Server 2008 R2 Standard Edition. To simplify things, we will call this the destination server.

Once you have physically set up your destination server according to Dell's recommendations and booted into Microsoft Windows Server 2008 R2 Standard Edition, you are ready to configure your system for the migration. Here is an outline of the steps you will perform in this section:

- Configuring your network
- Running Windows Update
- Joining the domain
- Installing Active Directory and DNS
- Transferring Operation Master roles

Configuring your network

In order to configure your network properly, you need to perform two relatively simple steps. First, you will physically connect the server into the network switch, and then you will configure the network settings in Microsoft Windows Server 2008 R2 Standard Edition.

To physically connect the server into the network switch, complete the following steps:

1. Take an Ethernet cable and plug one end into an available port in the Ethernet switch. For a visual

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reference, an Ethernet cable and port look similar to a phone-line cable and jack, except they are wider.

2. Take the other end of the Ethernet cable and plug it into the first Ethernet port, with a number 1 printed next to it, on the back of your Dell PowerEdge T410 server.

3. Verify that the connection is active by looking for blinking green lights on either side of the Ethernet port where you just plugged in the Ethernet cable connected to the switch.

Next, you will assign a static IP address to your new server for the migration. To configure the network settings in Microsoft Windows Server 2008 R2 Standard Edition, complete the following steps:

1. Click Start→Control Panel.

2. In the Control Panel, click View network status and tasks under Network and Internet.

3. In the upper left side of the window, click Change adapter settings.

4. In the Network Connections window, you should see two Local Area Connections, with only one of them being active. Inactive network connections are marked with a red X and say Network cable unplugged. Right-click the active connection, and click Properties.

5. Click Internet Protocol Version 4 (TCP/IPv4) so that it is highlighted, and click Properties.

6. Change the radio buttons so that Use the following IP address and Use the following DNS server addresses are selected.

7. Enter an appropriate IP Address, subnet mask, gateway, and preferred DNS server.

The subnet mask and gateway of your destination server should be the same as the subnet mask and gateway of your source server, and the preferred DNS server should be the actual IP address of your source server because by default it also acts as the DNS server. Because we used the default IP scheme of Microsoft Windows Small Business Server 2003 R2 for our network, we assigned an IP address of 192.168.16.253, with subnet mask 255.255.255.0, a default gateway of 192.168.16.2, and 192.168.16.254 as our preferred DNS server since that is the IP address of our source server.

Running Windows Update

Now that your Dell PowerEdge T410 server is connected to your network, the first thing you should do is run Windows Update to install any available important or recommended updates. To check for and install updates, follow these steps:

1. Click Start, All Programs, Windows Update.
2. At the Windows Update screen, you may choose to Turn on automatic updates, or customize your update options by clicking Let me choose my settings.
3. Once you have enabled automatic updates or chosen a custom update option, click Check for updates on the upper left corner of the Windows Update window and install any recommended or important updates.

Joining the domain

Next, you must join the destination server to the domain of your source server and give your destination server an appropriate name. You will need the exact name of the domain in order to do this. You can find the domain name easily by opening a command prompt window on your source server and typing `ipconfig /all`. The domain name is listed as the Primary DNS Suffix. Once you have the domain name, follow these steps on your destination server:

1. Click Start, right-click Computer, and select Properties.
2. Under Computer name, domain, and workgroup settings, click Change settings.
3. In the Computer Name tab, click Change…
4. Under Computer name, enter the name you wish to assign your destination server during the migration. For example, we used DellPET410.
5. Under Member of, select the Domain radio button, and enter the appropriate domain name.
6. When prompted to enter user credentials with administrative rights, enter an administrator user name and password, and click OK.
7. When you receive a pop-up message stating that you successfully joined the domain, click OK.
8. Click OK to exit the remaining dialogue boxes, and restart your computer when prompted.

Installing Active Directory and DNS

In this section, we will promote the destination server to be a domain controller in your domain as well as install DNS. This creates a replica of your source server Active Directory onto the destination server.

NOTE: You will have both servers running as domain controllers during the entire migration process until both the mail server and database roles have been moved to your destination server. Then, you will demote and decommission the source server, leaving your destination server as the primary domain controller.

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To complete the Active Directory installation, follow these steps:

1. Click Start, Run, type `dcpromo` and click OK.
2. At the Active Directory Domain Services Installation Wizard welcome screen, check the Use advanced mode installation option, and click Next.
3. At the Operating System Compatibility screen, click Next.
4. At the Choose a Deployment Configuration screen, select the Existing forest radio button, and select Add a domain controller to an existing domain. Click Next.
5. At the Network Credentials screen, you are asked to enter the domain name and then specify an alternate set of credentials. Click Set… and enter an authorized network administrator account user name and password. Click OK, and click Next.
6. At the Select a Domain screen, you should be able to see the Windows Small Business Server 2003 R2 domain listed. Click it to highlight it, and click Next.
7. At the Select a Site screen, select the appropriate site, and click Next.
8. At the Additional Domain Controller Options, leave the default selections with DNS server and Global catalog checked, and click Next.
9. If you receive a warning about creating a delegation for the DNS server, click Yes to continue.
10. At the Install from Media screen, leave Replicate data over the network from an existing domain controller selected, and click Next.
11. At the Source Domain Controller, select the Use this specific domain controller radio button, click to highlight the appropriate domain controller name, and click Next.
12. At the system folder location screen, leave the default options, and click Next.
13. Assign a Directory Services Restore Mode Administrator account password, and click Next.
14. At the Summary screen, review your selections, and click Next.
15. Once Active Directory Domain Services finishes installing, click Finish, and restart the system.

To continue the DNS server role installation, complete the following steps below on the source server:

1. Open a command prompt window by clicking Start, Run, and typing `cmd`.
2. In the command prompt window, type `dnscmd /enumdirectorypartitions`, press Enter, and take note

of the directory partition count as well as the names of
the listed partitions.

3. Next, type `net stop "dns server"` and press Enter.
4. Once the service has successfully stopped, type `xcopy`
   `%windir%\system32\dns c:\dns_export /s` and press
   Enter.
5. Type `d` to specify a directory name.
6. Go to the newly created dns_export folder in C:\, and
   delete the Samples folder.
7. Click Start, Run, and type `regedit`
8. When the Registry Editor window appears, go to the
   following keys below, right-click each, and click Export.
   Save each one in a location where you can copy them
   off later.
   - HKEY_LOCAL_MACHINE\System\CurrentControlSet\S
     ervices\DNS\Parameters
   - HKEY_LOCAL_MACHINE\Software\Microsoft\Windows
     NT\CurrentVersion\DNS Server
9. Copy the dns_export folder and the two exported
   registry keys to the Destination server.
10. In the command prompt window, type net `start "dns`
    `server"` and press Enter.

To finish the DNS server role installation, complete the following
steps on the destination server:

1. Open a command prompt window by clicking Start, Run,
   and typing `cmd`.
2. In the command prompt window, `type dnscmd`
   `/enumdirectorypartitions`, press Enter, and verify
   that the partition count and the names of the listed
   partitions match those of the source server. If any of the
   partitions are missing from the destination server, type
   `dnscmd /enlistdirectorypartition`
   `<partitionname>`, where `<partitionname>` is the
   missing partition. For example,
   `DomainDnsZones.test.local`.
3. Next, type `net stop "dns server"` and verify that the
   service stopped successfully.
4. Take the contents of the dns_export folder and copy
   them into C:\Windows\System32\dns.
5. Double-click each of the exported registry keys and
   install them into the registry.
6. Type `net start "dns server"` and press Enter.

Transferring Operation Master roles

Finally, you will transfer the Operation Master roles, also known as Flexible Single Master Operations (FSMO) roles from the source server to the destination server. There are five: two forest-wide roles and three domain-wide roles. The forest-wide roles are the schema master and the domain-naming master, and the domain-wide roles are the infrastructure master, the RID master, and the PDC emulator.

To successfully transfer these roles, follow these steps on the destination server:

1. Click Start, type `cmd`, and press Enter to open a command prompt.
2. Type `ntdsutil`, and press Enter.
3. When ntdsutil: appears, type `roles` and press Enter.
4. When fsmo maintenance: appears, type `connections` and press Enter.
5. When server connections: appears, type `connect to server <destinationservername>` and press Enter, where <destinationservername> is the name you have assigned to your destination server running Microsoft Windows Server 2008 R2 (the server you are currently working on).
6. Type `quit` and press Enter to go back to fsmo maintenance:.
7. Type `transfer schema master`, press Enter, and click Yes to confirm the operation.
8. Type `transfer naming master`, press Enter, and click Yes to confirm the operation.
9. Type `transfer infrastructure master`, press Enter, and click Yes to confirm the operation.
10. Type `transfer rid master`, press Enter, and click Yes to confirm the operation.
11. Type `transfer pdc`, press Enter, and click Yes to confirm the operation.
12. Type `quit`, press Enter twice to exit the NTDSUTIL command-line utility, and close the command prompt.

Final considerations

You are almost ready to begin the migration to your new Dell PowerEdge T410 server. There are just a few final things to consider before proceeding to the next section.

Verify that your source server has the correct date, time, and time zone. Your source and destination server must have the same date and time zone, and the clock must be set with no greater than 5 minutes difference between the two servers.

Encourage your users to delete any unnecessary emails, save important attachments, and archive any older mail. This helps reduce the time it takes to migrate the mailboxes to the new server. If you plan on enabling Microsoft Forefront Security for Exchange Server (FSE) on your new server, your users should save any important email attachments. FSE automatically scans and blocks attachments with certain file types. This step is a safeguard to prevent any loss of email data.

Plan your migration method for any other important programs and applications. Verify compatibility of your software applications with the Microsoft Windows Server 2008 R2-based operating system. Migrating these additional applications is beyond the scope of this Migration Guide.

Configuring the new server for migration

In this section, we focus on configuring your new Dell PowerEdge T410 with Microsoft Exchange Server 2010, and migrating critical components such as Active Directory, DNS, and your Exchange Server mailboxes.

This section addresses the following:

- Microsoft Exchange Server 2010 prerequisites
- Installing and configuring Microsoft Exchange Server 2010
- Migrating your Microsoft Exchange Server mailboxes

NOTE: Once you have logged in, you may see a pop-up window stating This Program has known compatibility issues, referring to Microsoft Windows Small Business Server 2003 R2 on the source server within the network. Because you will be decommissioning the source server after completing migration, you may ignore this warning and click Cancel.

Microsoft Exchange Server 2010 prerequisites

There are a few prerequisites required to install Microsoft Exchange Server 2010. These prerequisites are .NET 3.5, IIS, and installing Microsoft Filter Pack. The CAS role also suggests that you set the Net.tcp port sharing to automatic. Appendix C provides complete, detailed installation instructions.

1. Click Start, and click Server Manager. Click Features, and choose Add Features.
2. Choose .NET 3.5.1 Features, and install them.
3. Once that finishes, click Roles, and choose Add Roles.
4. At the Before You Begin screen, click Next.
5. Click Web Server (IIS). Add IIS 6 Metabase Compatibility, IIS 6 Management Console, Basic Authentication, Windows Authentication, Digest Authentication, and Dynamic content Compression

checkboxes; and proceed to install the Web Server (IIS) role.

6. Open Services, and set the Net.tcp port sharing to automatic.

7. Install the Active Directory Domain Services remote management tools by opening a command prompt and running the following command: `ServerManagerCmd -i RSAT-ADDS`

8. Restart the system.

9. Install the x64 version of the 2007 Office System Converter: Microsoft Filter Pack 1.0 from http://go.microsoft.com/fwlink/?linkid=123380.

Installing and configuring Microsoft Exchange Server 2010

To install and configure Microsoft Exchange Server 2010 on your destination server, complete the steps below. For complete details on installing and configuring the Exchange Server 2010 Client Access Services, Hub Transport, and Mailbox roles, see Appendix D.

NOTE: Plan on at least 30 minutes for setting up Microsoft Exchange Server 2010.

1. Download Microsoft Exchange Server 2010 from http://www.microsoft.com/downloads/details.aspx?FamilyID=05741f65-2a7b-4070-879f-d74208d6171d&displaylang=en.

2. Extract the installation files, and browse to the folder where you extracted the installation files in a command prompt. Run the following two commands via the command prompt to update domain permissions: `Setup /PrepareAD` and `Setup /PrepareDomain`

3. Begin your Microsoft Exchange Server 2010 installation, and choose the Client Access Services, Transport Hub, and Mailbox services. Management Tools should automatically select itself when you add these roles. See Appendix D for specific settings to use.

4. Run the following command after setup finishes to move RPC over HTTP capabilities from Microsoft Exchange Server 2003 to Microsoft Exchange Server 2010: `ServerManagerCmd.exe -I RPC-over-HTTP-proxy`

5. Open the Exchange Management Console, and click Server Configuration→Client Access. Configure your External Client Access domain as your combined NLB host name (`mail.yourdomain`). (See Figure 5).

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6. On that same screen, right-click your server, and choose Enable Outlook Anywhere. Again, type your NLB host name (`mail.yourdomain`) in the available space.
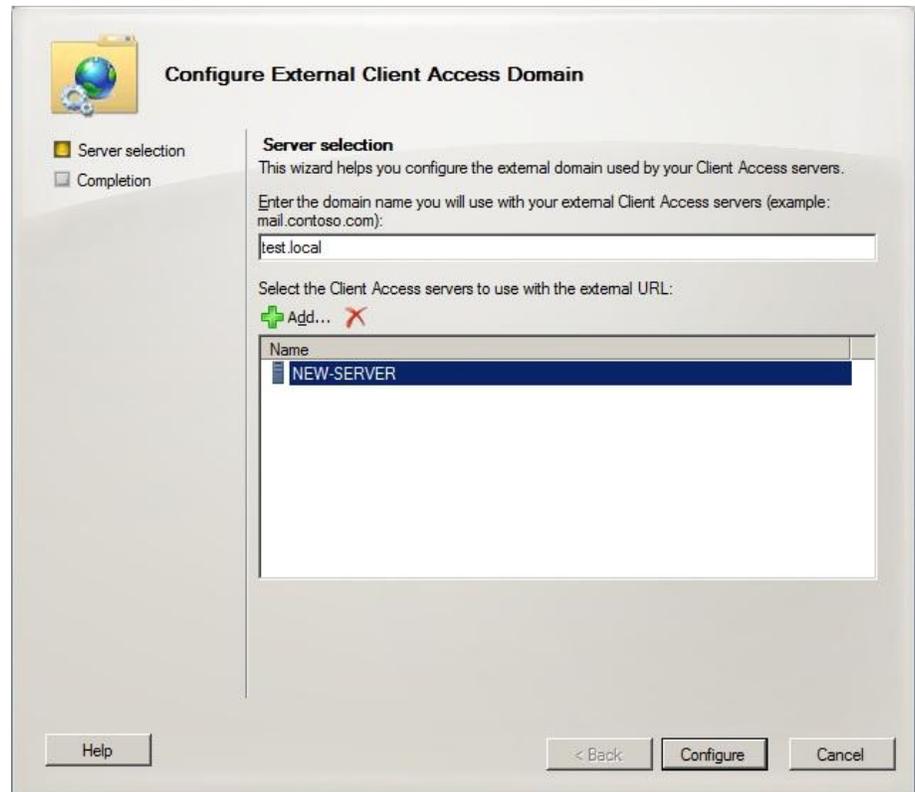
Figure 5. Configuring the External Client Access Domain.

7. In the Exchange Management Console, click Organization Configuration, and click Hub Transport. Click Send Connectors, and create a new SMTP send connector.

8. Open the Exchange Management Console, click Organization Configuration, and click Mailbox.

9. Click the Offline Address Book tab. Move the Default Offline Address Book from your Microsoft Exchange Server 2003 server to your destination server running Microsoft Exchange Server 2010.

10. Click the Distribution tab, and enable Web-based distribution of the Offline Address Book (OAB).

Migrating your Microsoft Exchange Server mailboxes

The final step in this migration is to move the user mailboxes to your new server. For complete details of the mailbox migration, see [Appendix E](#).

NOTE: The total time required to migrate mailboxes relies heavily on the size of the database.

1. On the destination server, open the Exchange Management Console, and click Recipient Configuration→Mailbox.
2. Create a New Local Move Request. Use this move request to move the user mailboxes to the destination server.

Migrating Microsoft SQL Server

In this section, we provide specific details about migrating user databases from Microsoft SQL Server 2005 to Microsoft SQL Server 2008 R2. Microsoft SQL Server 2008 R2 Standard Edition is a component that needs to be installed. For that reason, this section begins with installing Microsoft SQL Server 2008 R2 and covers the entire process until you have successfully migrated your databases.

Microsoft recommends that you install SQL Server 2008 on a member server rather than on your domain controller, in this case also your primary server. For the purposes of this Guide, we will install all components on a single server.

This section addresses the following:

- Installing Microsoft SQL Server 2008 Standard
- Using the Microsoft SQL Server 2008 Upgrade Advisor to analyze databases
- Implementing side-by-side migration

Installing Microsoft SQL Server 2008 R2 Standard

1. Insert the Microsoft SQL 2008 Standard DVD and, if prompted, run setup.exe.
2. At the SQL Server Installation Center screen, click Installation in the left pane, and click New SQL Server installation or add features to an existing installation (Figure 6).

Figure 6. SQL Server 2008 R2 Installation.

3. A Setup Support Rules screen opens and runs a quick check to identify any potential problems. Once the operation finishes, click OK to continue.

4. Enter your product key in the Product Key screen, and click Next.

5. At the License Terms screen, read and accept the license terms, and click Next to continue.

6. At the Setup Support Files screen, click Install to add the necessary setup support files.

7. At the Setup Support Rules screen, the installer runs another series of checks and warns of any issues you may encounter with your installation. Read these to make any necessary corrections, and click Install when you're ready.

NOTE: You will likely see a domain controller warning in this check. This is because Microsoft recommends installing SQL Server 2008 on a member server rather than your primary domain controller server. For our purposes, you can ignore this warning.

8. At the Setup Role screen, select whether you want to add all features with defaults, or perform a SQL Server Feature Installation. For our purposes, we selected the SQL Server Feature Installation. As Figure 7 shows, we chose the following typical features:

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- Database Engine Services
- Full-Text Search
- Client Tools Connectivity
- Client Tools Backwards Compatibility
- Management Tools Basic and Complete
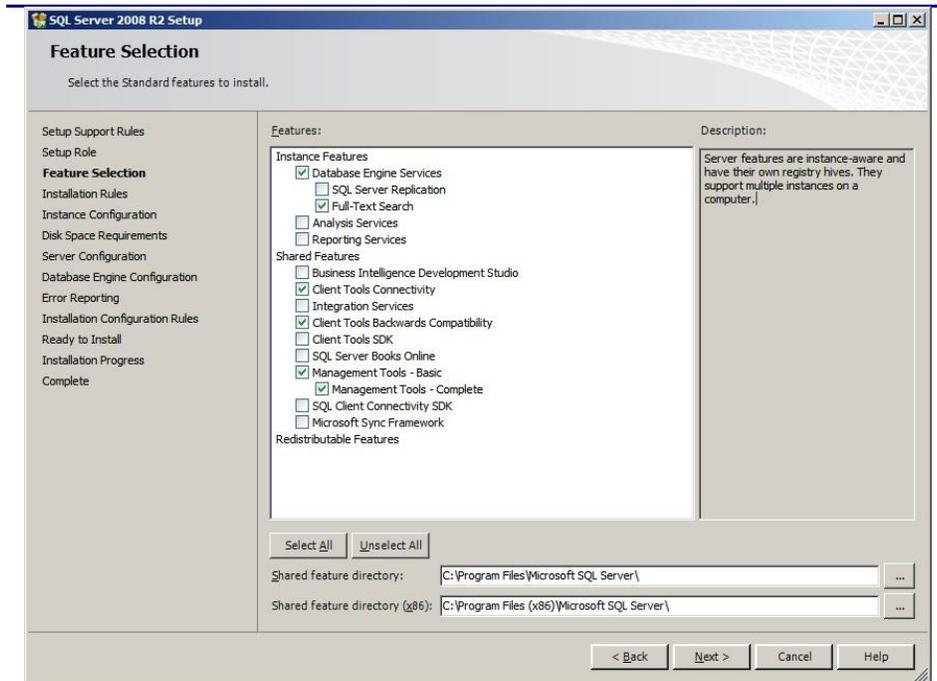
Figure 7. Selecting your instance features in SQL Server 2008 R2 Setup.

9. At the Installation Rules screen, setup will check for any additional impediments. When it finishes, click Next.
10. At the Instance Configuration screen, accept the default selections, and click Next.
11. At the Disk Space Requirements screen, click Next.
12. At the Server Configuration screen, do the following:

   a. On the Service accounts tab, enter the account name and password you want to use. You must qualify the account name with the domain name: <domain>\<account>. If you want to use a single account for all SQL Server services, click Use the same account for all SQL Server services and enter the appropriate account and password information.
   b. On the Collation tab, accept the defaults unless you have a specific requirement for other collations, and click Next to continue.

13. On the Account Provisioning tab of the Database Engine Configuration screen, select whether you want to run

SQL Server 2008 in mixed mode or Windows Authentication only. We recommend leveraging Active Directory security and selecting Windows Authentication. However, if you have to migrate SQL Server logins, you must select mixed mode. You must also specify at least one SQL Server administrator. We clicked Add Current User. If you run SQL Server 2008 in mixed mode, you must enter a password for the "sa" account here.

14. On the Error and Usage Reporting screen, SQL Server provides two options for participating in Microsoft's data collection program: Send error reports to Microsoft or your corporate report server, and Send anonymous feature usage data to Microsoft. Leave these unchecked if you do not want to participate in Microsoft's data collection program. Click Next to continue.

15. The Installation Configuration Rules screen runs a check to see if the installation will be blocked. When it is finished, click Next.

16. The Ready to install screen offers one last chance to review your choices. After you do so, click Install.

17. At the Installation Progress screen, wait until Setup is complete, and click Next.

18. The next screen notifies you that your installation was completed successfully. Click Close to exit.

To enable instant file initialization, you must give the SE_MANAGE_VOLUME_NAME permission to the Windows account under which you run the Microsoft SQL Server 2008 service:

1. Click Start→Administrative Tools→Local Security Policy.

2. At the Local Security Policy screen, expand the Local Policies folder in the left pane, and click User Rights Assignment (Figure 8).
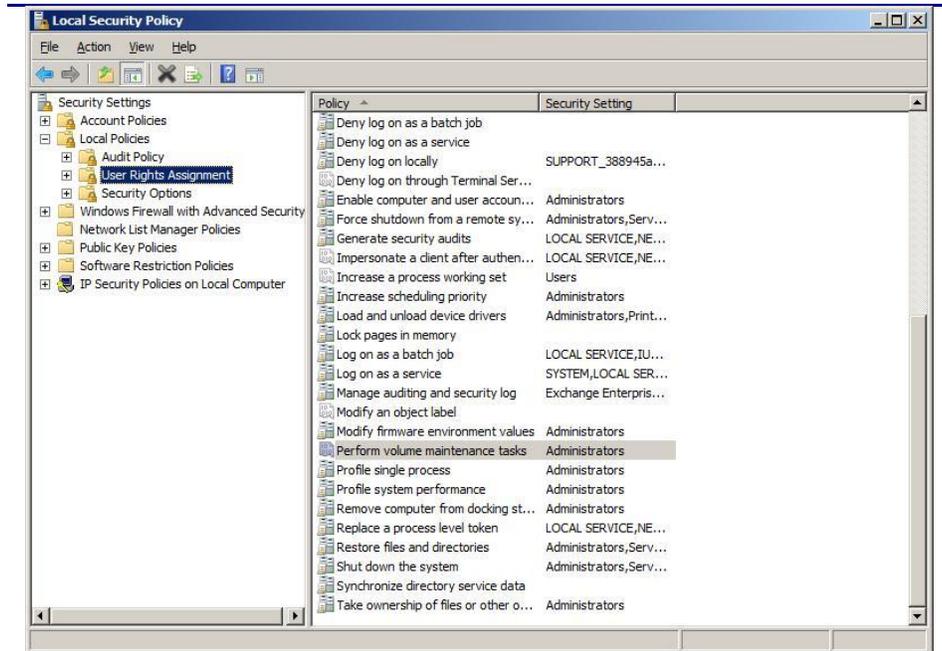
Figure 8. Local Security Policy screen.

3. In the right pane, right-click Perform volume maintenance tasks, and click Properties. Click Add User or Group.
4. At the Select users, Computers, or Groups screen, type `system` in the Enter the object names to select field, and click Check Names.
5. At the Multiple Names Found screen, click SYSTEM, and click OK.
6. Click OK twice to return to the Local Security Policy screen, and close the window.

Using the Microsoft SQL Server 2008 R2 Upgrade Advisor

The Microsoft SQL Server 2008 R2 Upgrade Advisor is a major aid in migration research. This utility scans old databases and SQL Server components for compatibility issues, features, and syntax the newer database management system does not support, and many other critical components. The utility lets you view reports quickly in the Upgrade Advisor interface or save reports for later review.

You can install and execute the Upgrade Advisor on machines running Microsoft Windows XP SP2, Microsoft Windows Vista®, Microsoft Windows Server 2003 SP1 or later, or Microsoft Windows Server 2008 R2. The Microsoft .NET 2.0 framework is also a requirement to execute Upgrade Advisor.

To install the Microsoft SQL Server 2008 R2 Upgrade Advisor, complete the following steps on your legacy server running SQL Server 2005:

1. Insert the Microsoft SQL Server 2008 DVD if your Windows Small Business Server 2003 R2 server has a DVD drive, or download the Upgrade Advisor from http://www.microsoft.com/downloads/details.aspx?FamilyID=CEB4346F-657F-4D28-83F5-AAE0C5C83D52&displaylang=de&displaylang=en.

2. If you are prompted to install Microsoft .NET Framework when beginning the installation process, click OK and follow these instructions:

   a. In the Welcome to Setup window, click I have read and ACCEPT the terms of the License Agreement radio button, and click Install.
   b. In the Setup Complete window, click Exit.
   c. A Software Update Installation Wizard appears for Hotfix for Windows Server 2003 (KB942288-v4). Click Next.
   d. In the License Agreement window, click the I Agree radio button, and click Next.
   e. In the KB942288-v4 Setup pop-up window, click Continue.
   f. When the installation is complete, click Finish.
   g. When notified that one of the Prerequisites requires you to restart the computer, click OK.
   h. Restart the server if it does not restart automatically.
   i. Navigate to the location of your installation, and double-click it to continue onto Step 3.

3. On the splash screen, click Install Upgrade Advisor.
4. Click Next to begin the installation wizard, accept the licensing terms, and click Next.
5. Click Next after verifying your Registration information, click Next at the Feature Selection screen, and finally click Install to begin the installation.
6. When the installation is complete, click Finish.

Once you have installed the Microsoft SQL Server 2008 R2 Upgrade Advisor, you can use this software to scan your Microsoft SQL Server 2005 instances for potential migration issues by following these steps:

1. Select Start→All Programs→Microsoft SQL Server 2008 R2→SQL Server 2008 R2 Upgrade Advisor.

2. Click the Launch Upgrade Advisor Analysis Wizard link, and click Next to begin.

3. Enter the SQL Server 2005 server name, and select the features you want the Upgrade Advisor to analyze. Alternatively, click Detect to have the Upgrade Advisor remotely scan the SQL Server 2005 instance and detect which components are running on the SQL Server 2005 instance.

4. Select the Instance name and provide proper authentication to SQL Server 2005.

5. Select the Databases you want to analyze. If you want to analyze trace files or SQL batch files, you may specify their location here. Click Next to continue.

6. Click Run to begin the analysis. Run times vary.

7. Following the analysis of your SQL Server 2005 server, you can view the Upgrade Advisor report by clicking on Launch Report, which lists warnings and errors (Figure 9).
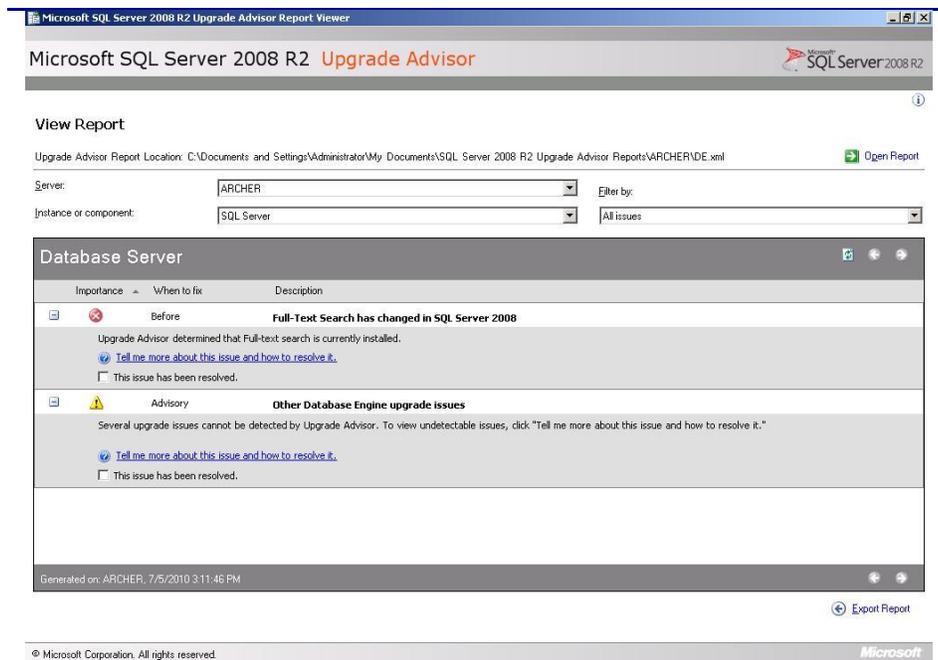
Figure 9. Sample Upgrade Advisor output report.

Implementing the migration

This section features detailed information on how to migrate a Microsoft SQL Server 2005 database and users on a legacy SQL server to Microsoft SQL Server 2008 R2 on your new server. Be aware that various methods exist for migrating databases between instances and versions of SQL Server, including detach/attach,

backup/restore, and the Copy Database Wizard. We chose to use the backup/restore method for its simplicity and relative ease.

Here is an overview of the migration process using the backup/restore method:

1. Create a backup of your database on your legacy SQL server.
2. Transfer the database to your new server using a network shared folder.
3. Transfer your user logins.
4. Restore your database on the destination server.
5. Transfer your SQL Server Agent jobs.

To keep users from issuing updates during the migration process, you can either set the database to read-only mode, or set the access property to SINGLE_USER. Both choices will mean that the database will be unavailable to users during the migration. We chose to set the database to SINGLE_USER mode. Be aware that in SQL Server Management Studio, it may be necessary to close the Object Explorer Details pane, the Summary pane, and any other parts of the user interface that you may have active. These panes open database connections to the relevant database, and may cause your SINGLE_USER operation to fail. See Appendix F for details on setting the database to single-user mode.

Setting the database to single-user mode immediately disconnects all users, causing them to lose any work in progress. You must notify your users well in advance of setting the database to single-user mode.

Creating a backup of your SQL Server 2005 database
Creating a backup of your database is a relatively easy process that you can complete using the following steps on your legacy SQL server:
1. Open SQL Management Studio by clicking Start→Microsoft SQL Server 2005→SQL Server Management Studio.
2. At the Connect to Server screen, log onto the SQL server with Windows Authentication, and click Connect.
3. At the Microsoft SQL Server Management Studio, expand the server and Databases, right-click the database you wish to move, select Tasks, and select Back Up…
4. This brings up a Back Up Database screen (Figure 10). Select the following options under General:
   - Under Backup type, choose Full from the drop-down menu.
   - Under Backup set, give your database backup a name.

- Under Destination, you may leave the default destination. This will save your database backup to C:\Program Files\Microsoft SQL Server\MSSQL\Backup where you can copy it onto the network shared folder.
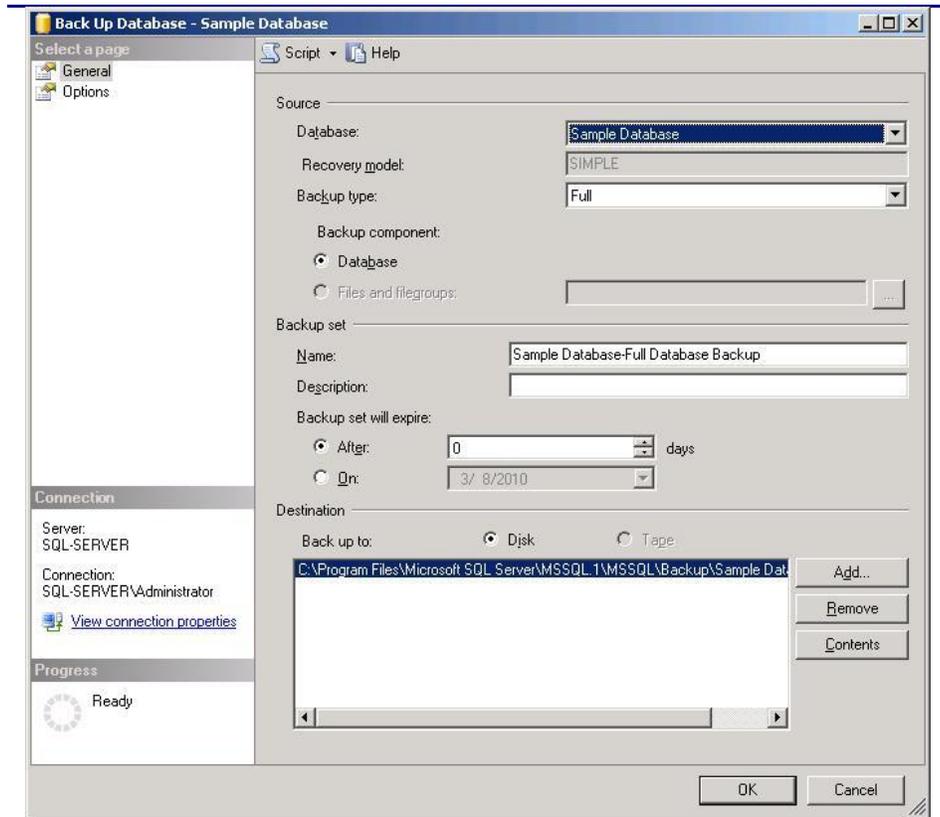
Figure 10. Backing up your SQL Server 2005 database.

5. Optionally, on the Options tab, select the checkbox to Verify your database backup upon completion.

NOTE: This option increases backup time but checks the integrity of the backup file.

6. Click OK to begin your backup creation. When the backup process completes successfully, a pop-up screen appears.

Transferring the database to your new server using a network shared folder
Because your servers are all now on the same network, you can take advantage of shared folders across a network to transfer your SQL Server databases from the legacy SQL server to the destination server.

In the following steps, you create a new folder on the C:\ drive of your legacy SQL server and enable sharing the folder temporarily on the network.

1. Navigate to the C:\ drive of your legacy SQL server. The easiest way to access this is by clicking Start→My Computer, and then double-clicking on C:\
2. Right-click in the white space of the C:\ drive screen, select New, and click Folder.
3. Select an appropriate name for the folder.
4. Right-click your newly created folder, and select Sharing and Security.
5. At the new folder Properties screen, click the Sharing tab.
6. Click the Share this folder radio button, and click Permissions.
7. At the Permissions screen, highlight the user Everyone, select the Allow checkboxes for Full Control, and click OK (Figure 11).
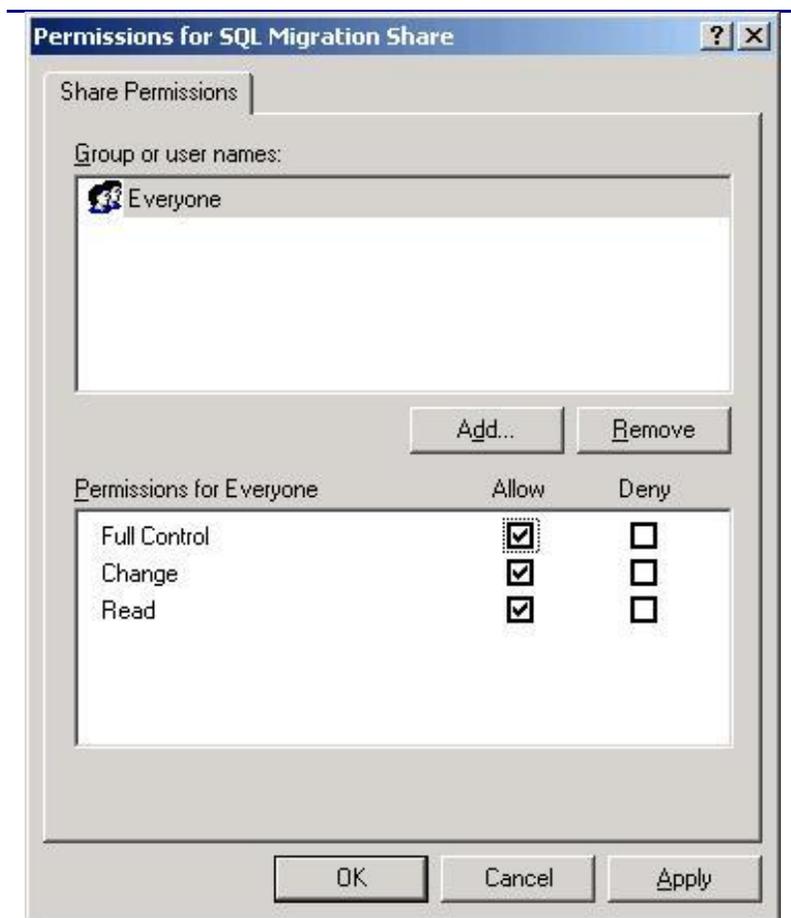
Figure 11. Sharing permissions for your new folder.

8. Click OK to close your new folder Properties.

9. Once you have created the network shared folder, copy your SQL Server 2005 database backup into the shared folder. By default, your database backup can be found in C:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\Backup.

10. Once your database is finished copying over to the shared folder, go to your destination server, open any Windows Explorer window, and enter

   `\\<legacysqlservername>\c$\<sharedfoldername>\`

   where <legacysqlservername> is the name of the server you are transferring your database from, and <sharedfoldername> is the name of the shared folder you created.

   Example: `\\SQL-SERVER\c$\SQL Migration Share\`

You should then see your database backup file in the folder contents. Copy this file into C:\Program Files\Microsoft SQL Server\MSSQL 10_50.MSSQLSERVER\MSSQL\Backup, the default SQL Server database backup location on your destination server. If a Destination Folder Access Denied warning window pops up, click Continue.

Transferring your user logins
Before you restore your database, it is important to transfer your SQL User Logins so that your users will be able to access any relevant databases after the migration.

Microsoft support provides an excellent guide to transferring your logins, available at
http://support.microsoft.com/kb/918992

For step-by-step instructions on how to transfer your user logins using the Microsoft knowledge base article above, see Appendix F.

Restoring your database on the destination server
The database restoration process is just as simple as the database backup process.

1. Open the Microsoft SQL Server Management Studio window, and connect to your default instance. Generally, the default instance is your server name.

2. Right-click Databases in the object explorer pane, and select Restore Database...

3. At the Restore Database screen, select the following options:

    a. In the To database field, enter the name of the database you wish to restore.

       ➲ **NOTE:** It is critical to use the same database name as on your Microsoft SQL Server 2005 server. If the database name does not match, applications that depend on the database name may break.

    b. Under Specify the source and location of backup sets to restore, select the From device radio button, and click the … button to the left of the field.

    c. At the Specify Backup screen, select File as your Backup media, and click Add.

    d. Navigate to C:\Program Files\Microsoft SQL Server\MSSQL 10_50.MSSQLSERVER\MSSQL\Backup, and select the name of the backup file (Figure 12). Click OK.
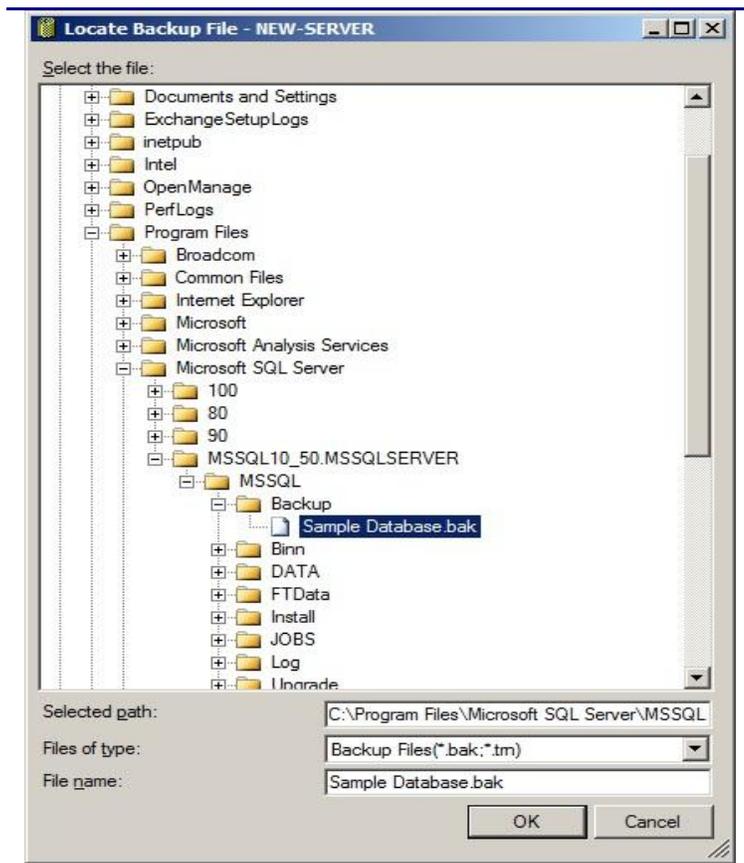
Figure 12. Selecting the database to restore.

e. Click OK again to return to the Restore Database screen (Figure 13). Check the Restore checkbox, and click OK.
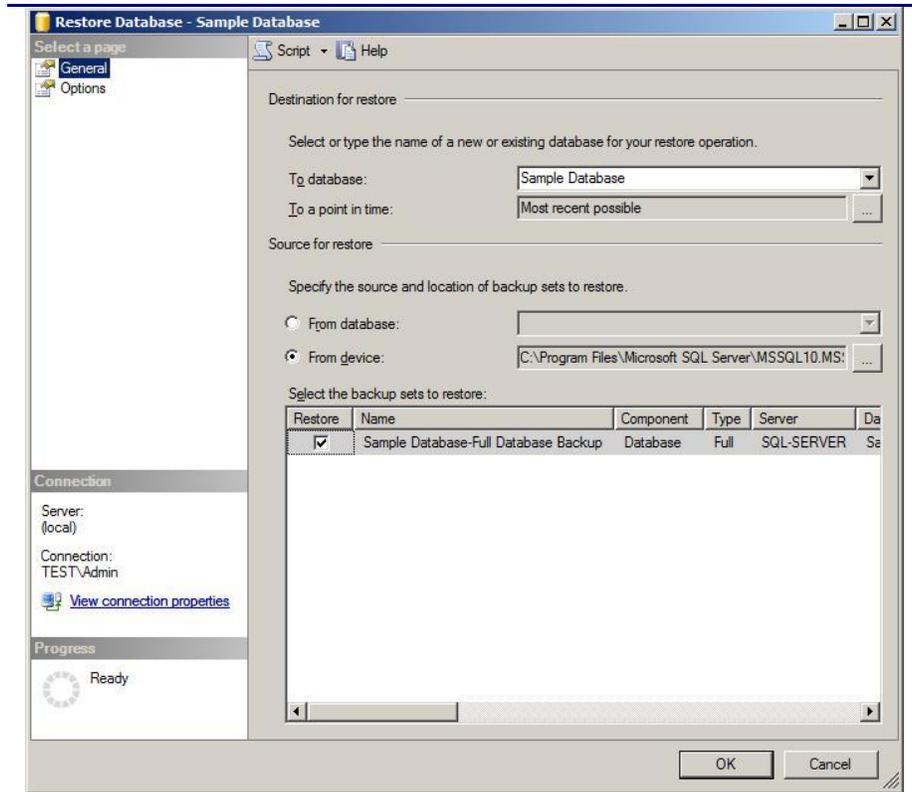
Figure 13. Restoring your selected database.

4. When the Restore of database completed successfully screen appears, click OK.
5. While in SQL Server Management Studio, reset the database access property to multi-user. See Appendix F for details.

Transferring SQL Server Agent jobs

Almost all installations schedule SQL Server Agent jobs that run against their databases. You must migrate these jobs to your new Microsoft SQL Server 2008 server. Locate the jobs you need to migrate in SQL Server Management Studio (on your Microsoft SQL Server 2005 server) under the SQL Server Agent, right-click each one, and select Script Job As→Create To→New Query Window. Connect to the SQL Server 2008 server, and run the resulting script in a query window.

Decommissioning the source server

There are just a few final steps left before the migration is complete. First, we will migrate the DHCP role, and, finally, we will demote the source server as a domain controller so that it can be safely decommissioned.

Migrating DHCP

Migrating the DHCP role from your source server to your destination server is a simple export/import procedure that can be completed relatively quickly.

To export your DHCP database and configuration, follow these steps on the source server:

1. Click Start, Run, type `cmd` and click OK to open a command prompt window.
2. Type `netsh dhcp server export C:\dhcpinfo.txt all` and press Enter.

To install the DHCP Server service on an existing Windows Server 2003-based computer:

1. Click Start, Administrative Tools, Server Manager.
2. In the left pane, click Roles.
3. In the right pane, click Add Roles.
4. Click Next to continue.
5. At the Select Server Roles screen, check the DHCP Server checkbox, and click Next.
6. Click Next to continue.
7. At the Select Network Connection Bindings screen, check the IP address of the network the DHCP server will use for servicing clients, and click Next.
8. At the Specify IPv4 DNS Server Settings screen, verify that the parent domain and preferred DNS address is accurate, and click Next.
9. At the Specify IPv4 WINS Server Settings screen, leave the default selection, and click Next.
10. At the Add or Edit DHCP Scopes screen, click Next.
11. At the Configure DHCPv6 Stateless Mode screen, click Next.
12. At the Specify IPv6 DNS Server Settings screen, verify that the parent domain and DNS addresses are accurate, and click Next.
13. At the Authorize DHCP Server, select the use current credentials radio button, and click Next.

14. Click Install.
15. Click Close.

To import your DHCP database and configuration, follow these steps on the destination server:

1. Copy the dhcpinfo.txt exported DHCP database file from the source server to the root of the C: drive of the destination server.
2. Click Start, Run, type `cmd` and click OK to open a command prompt window.
3. At the command prompt, type `netsh dhcp server import c:\dhcpinfo.txt all` and press Enter.
4. Upon successful completion of the import, you may close the command prompt window.
5. Restart your system.

Demoting the source server as a domain controller

This is the final step before the source server can be decommissioned or repurposed. Because Windows Small Business Server 2003 R2 cannot be demoted via the traditional dcpromo methods, we will demote the domain controller by removing manually as a domain controller from the new server.

To complete this section, follow these steps:

1. On the destination server, click Start, Administrative Tools, Active Directory Sites and Services.
2. Expand Sites, <sitename>, Servers, <sourceserver> where <sitename> is the location and <sourceserver> is the name of your source server. By default <sitename> is Default-First-Site-Name.
3. Right-click NTDS Settings, and click Properties.
4. In the General tab, uncheck the Global Catalog checkbox, click Apply, then click OK.
5. Restart your source server to ensure that the change takes effect. As a way to verify that your source server is no longer the Global Catalog server, you may open a command prompt window in the source server once it reboots, and type `ping test.local` and it should display the IP address of the destination server four times after `Reply from`.
6. Shut down your source server, and once it is off, physically unplug the source server from the network by unplugging the Ethernet cable that connects the source server to the network switch.

7. Restart your destination server.
8. On the destination serverlick Start, Administrative Tools, Server Manager.
9. In the left pane of Server Manager, expand Roles, and click Active Directory Domain Services.
10. In the right pane, scroll down to the Advanced Tools section, and click ADSI Edit in the AD DS Tools subsection.
11. In ADSI Edit, click Action, Connect to…
12. In the Connection Settings window, click the Select a well known Naming Context: radio button, and select Configuration from the drop-down menu. Click OK.
13. In the left pane, click Configuration [<servername>] and expand the node.
14. Click CN=Configuration, and expand the node.
15. Click CN=Sites, and expand the node.
16. Click CN=<sitename>, where <sitename> is the location of your source server, and expand the node. By default, the site name is Default-First-Site-Name.
17. Click CN=Servers, and expand the node.
18. Click CN=<servername>, where <servername> is the name of your source server, and expand the node.
19. Right-click CN=NTDS Settings, click Delete, and click Yes twice.
20. In the left pane, right-click ADSI Edit, and click Connect to…
21. In the Connection Settings window, click the Select a well known Naming Context: radio button, and select Default naming context from the drop-down menu. Click OK.
22. In the left pane, click Default naming context [<servername>], and expand the node. Click and expand the single node below it.
23. Click CN=System, and expand the node.
24. Click CN=File Replication Service, and expand the node.
25. Click CN=Domain System Volume (SYSVOL share), and expand the node.
26. Right-click the CN=<servername> and click Delete, where <servername> is the name of your source server.
27. Click Yes to confirm, and close ADSI Edit.
28. Click Start, Administrative Tools, Active Directory Sites and Services.
29. Expand Sites, <sitename>, Servers, where <sitename> is the location of your source server. By default <sitename> is Default-First-Site-Name.

30. Right-click your source server, and click Delete. Click Yes.
31. Close Active Directory Sites and Services.
32. Click Start, Administrative Tools, DNS.
33. Expand <servername>, Forward Lookup Zones, and click <domainname>, where <servername> is the name of your destination server, and <domainname> is the name of your domain.
34. Right-click <sourceserver> and click Properties, where <sourceserver> is the name of your source server.
35. In the IP address space, change the IP address so that it is the IP address of the new server.
36. Click Apply, and click OK.
37. Right-click the `(same as parent folder)` record with the corresponding IP address of the source server, and click Delete.
38. Close DNS Manager.

Summing up

Microsoft Windows Server R2 2008 Standard Edition running on a Dell PowerEdge T410 server introduces many new features and performance enhancements to your small-business network. As we explained in this Guide, performing the simple migration from two older servers onto one Dell PowerEdge T410 server provides a small-to-medium-sized business with better performance, allows more users as a business expands, maintains headroom for future growth, and provides numerous cost benefits. With some up-front time spent preparing and planning, you can complete this migration with minimal downtime.

Appendix A. Configuring backups

Configuring Microsoft Windows Small Business Server 2003 R2 Backup for a manual backup

1. Click Start→Server Management.
2. Click Backup, and click Configure Backup.
3. At the Welcome to the Windows Small Business Server Backup Configuration Wizard screen, click Next.
4. At the Backup Location screen, select the media type where you wish to save your backup, browse to it if applicable, and click Next.
5. At the Backup Data Summary screen, click Next.
6. At the Define Backup Schedule screen, leave defaults, and click Next.
7. At the Storage Allocation for Deleted Files and E-mail screen, verify that both checkboxes are selected, and click Next.
8. At the Completing the Windows Small Business Server Backup Configuration Wizard screen, click Finish.
9. At the Backup Configuration Wizard screen, click Close.

Backing up a member server running Microsoft Windows Server 2003 R2

1. Click Start→All Programs→Accessories→System Tools→Backup.
2. At the Welcome to Backup or Restore Wizard screen, click Next.
3. At the Backup or Restore screen, click the Back up files and settings radio button, and click Next.
4. At the What to Back Up screen, click the All information on this computer radio button, and click Next.
5. At the Backup Type, Destination, and Name screen, enter the desired location for your backup in the Choose a place to save your backup field, and enter a name in the Type a name for this backup field. Click Next.
6. At the Completing the Backup or Restore Wizard screen, click Finish.

NOTE: Using this backup software to create a full system backup requires a floppy disk. This floppy disk will be formatted as a bootable disk in case of a system crash.

Appendix B. Reconfiguring networks

Disabling the second network adapter in your source server

1. Click Start→Control Panel.
2. Right-click Network Connections, and select Open.
3. Right-click the Local Area Connection that is connected to the Internet, and select Disable.
4. Close the Network Connections window.

Changing the IP address of your Microsoft Windows Small Business Server 2003 R2 server internal network adapter

1. Click Start→Control Panel.
2. Right-click Network Connections, and select Open.
3. Double-click Server Local Area Connection.
4. Click Internet Protocol (TCP/IP), and click Properties.
5. In the IP address field, enter the new IP address.
6. Click OK.
7. Click OK.
8. Close the Network Connections window.

Running the Connect to the Internet wizard

1. Click Start→Server Management.
2. Click Internet and E-mail, and click Connect to the Internet.
3. At the Welcome to the Configure E-mail and Internet Connection Wizard screen, click Next.
4. At the Connection Type screen, click the Broadband radio button, and click Next.
5. At the Broadband Connection screen, select A local router device with an IP address from the My server uses drop-down menu. Click Next.
6. At the Router Connection screen, enter the preferred DNS server and the Local IP address in the appropriate fields. Check the My server uses a single network connection for other Internet access and the local network checkbox, and click Next.
7. If a warning pops up about configuring an external firewall device, click Yes to view additional information or click No to continue.
8. When the network adapter warning pops up, click No.
9. At the Web Serviced Configuration screen, leave the default selections, and click Next.
10. At the Web Server Certificate screen, select the appropriate radio button if you have an existing certificate, or create a new one, and click Next.
11. At the Internet E-mail screen, click Do not change Internet e-mail configuration, and click Next.
12. At the E-mail Delivery Method screen, click the use DNS to route e-mail radio button, and click Next.
13. At the E-mail Retrieval Method screen, select the appropriate settings. In our case, we checked the Use

Exchange checkbox. Click the E-mail is delivered directly to my server radio button, and click Next.

14. At the E-mail Domain Name screen, enter your domain name in the E-mail domain name field, and click Next.

15. At the Remove E-mail Attachments screen, accept defaults, and click Next.

16. At the Completing the Configure E-mail and Internet Connection Wizard, review the settings, and click Finish.

17. When the wizard finishes, click Close.

18. If you are prompted to create password policies when the configuration is complete, click No because you will be decommissioning this server after the migration.

Appendix C. Preparing the domain controller

Migrating from Microsoft Exchange Server 2003 to Microsoft
Exchange Server 2010 is not possible with default Microsoft
Exchange Server 2003 permissions. Use the following steps to
prepare your domain permissions for Microsoft Exchange Server
2010.

Raising the domain and forest functional levels

Before setting up the new server, you must set the existing domain
controller to run in Microsoft Exchange Server 2003 native mode.

1. Click Start→Administrative Tools→Active Directory
   Domains and Trust.
2. In the console tree, right-click Active Directory Domains
   and Trusts, and select Raise Forest Functional Level.
3. Under Select an available forest functional level, click
   Windows Server 2003, and click Raise.
4. In the console tree, right-click the domain for which you
   want to raise functionality, and select Raise Domain
   Functional Level.
5. Under Select an available domain functional level, click
   Windows Server 2003, and click Raise to raise the
   Domain Functional level to Windows Server 2003.

Appendix D. Installing and configuring the Microsoft Exchange Server 2010 Client Access Services, Hub Transport, and Mailbox roles

Here, you will install and configure your server with the Microsoft Exchange Server 2010 Client Access Services, Hub Transport, and Mailbox roles. You need to install a number of pre-requisites before you can begin installing Exchange roles.

Installing .NET Framework 3.5.1 features

To install .Net Framework 3.5.1 features, complete the following steps (this is required to install Exchange Server 2010):

1. Click Start→Administrative Tools→Active Directory Domains and Trust.
2. Select Start→Administrative Tools→Server Manager.
3. Click Features.
4. Click Add Features.
5. Select .NET Framework 3.5.1 Features, and click Install.
6. When the installation finishes, click OK.

Installing Internet Information Services (IIS)

To install IIS, complete the following steps (this is required to install Exchange Server 2010):

1. Select Start→Administrative Tools→Server Manager.
2. Click Add Roles.
3. At the Select Server Roles screen, click Web Server (IIS), and click Next.
4. At the Introduction to Web Server (IIS) screen, click Next.
5. At the Select Role Services screen, select the IIS 6 Metabase Compatibility, IIS 6 Management Console, Basic Authentication, Windows Authentication, Digest Authentication, and Dynamic content Compression checkboxes. Click Next.
6. At the Confirm Installation Selections screen, click Install.
7. At the Installation Results screen, click Close.

Installing Microsoft Filter Pack 1.0

To install Microsoft Filter Pack 1.0, complete the following steps (this is required to install Exchange Server 2010):

1. Double-click the FilterPackx64 installer.
2. At the Welcome screen, click Next.

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3. At the License Agreement screen, accept the terms in the agreement by checking the checkbox, and click Next.
4. Click OK to close the installation.

Installing Microsoft Exchange Server 2010

Install and configure Microsoft Exchange Server 2010 by completing the following steps:

1. Select Start→Administrative Tools→Server Manager.
2. Click Start, type `services` and press Enter.
3. Right-click the Net.Tcp Port Sharing service, and click Properties.
4. Change the Net.Tcp Port Sharing startup type to Automatic, and click OK.
5. Open a command prompt, and run `ServerManagerCmd –i RSAT-ADDS`
6. Restart the server.
7. Download Exchange Server 2010 from the following location: http://www.microsoft.com/downloads/details.aspx?FamilyID=05741f65-2a7b-4070-879f-d74208d6171d&displaylang=en.
8. Double-click Exchange2010x64.exe.
9. Select a folder to extract the installation files to, and click OK.
10. Open a command line at the location the files were extracted to.

➲ **NOTE:** The two Run commands that follow only need to be run once per domain that is being configured.

11. Run Setup /PrepareAD
12. Run Setup /PrepareDomain
13. Run Setup.EXE
14. The installer should consider Steps 1 and 2 complete, and gray them out.
15. Click the link to Step 3: Choose Exchange Language Option.
16. Click Install only languages from the DVD.
17. Click the link to Step 4: Install Microsoft Exchange Server 2010.
18. Click Next to proceed past the introduction screen.
19. Accept the license agreement, and click Next.
20. Select No for error reporting, and click Next.

21. Select Custom Exchange Server Installation, and click Next.
22. Select Client Access Services, Hub Transport, and Mailbox (Exchange will automatically select Exchange Management Tools as well).
23. Leave the organization name at default (First Organization), and click Next.
24. At the question about client computers running Outlook 2003 and earlier, select Yes, and click Next.
25. On the Configure Client Access server external domain screen, check the box for The Client Access server role will be Internet-facing, and enter the domain of your server.
26. At the Mail Flow settings screen, click browse, select the appropriate Exchange server, and click OK. Click Next.
27. At the Customer Experience Improvement Program screen, select I don't wish to join the program at this time, and click Next.
28. If a warning about a lack of SMTP appears after the check finishes, ignore it.
29. Click Install to start the installation process.
30. Once installation is complete, click Finish. Exchange should automatically open the Exchange Management Console.
31. Open a command prompt, and run `ServerManagerCmd.exe –I RPC-over-HTTP-proxy`.

Configuring the Client Access Services role

Here, you will configure Client Access Services, including Outlook Web Access, Outlook Anywhere, and ActiveSync.

➡ **NOTE:** If you use SSL, as part of the migration, you will also need to move your certificates to the Microsoft Exchange Server 2010 server.

1. If Exchange does not automatically open the Exchange Management Console, click Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. In the left pane, expand Server Configuration, and select Client Access.
3. Right-click and select Configure External Client Access Domain…
4. On the Server selection screen, enter your mailserver address, for example: `mail.mailserver.com`.

5. Click Add…
6. Select the appropriate server, and click OK.
7. Click Configure.
8. Once the settings have been configured, click Finish.
9. In the center pane of Client Access, right-click the appropriate server.
10. Select Enable Outlook Anywhere.
11. On the Enable Outlook Anywhere screen, enter your mailserver address, for example:
`mail.mailserver.com.`
12. Select basic authentication.
13. Ensure that the Allow secure channel (SSL) offloading is unchecked.
14. Click Enable.
15. Click Finish.

Configuring the Hub Transport role

Here, you will configure the Hub Transport role, which is responsible for routing all mail messages to and from your mailboxes.

1. Click Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. In the left pane, expand Organization Configuration, and select Hub Transport.
3. In the action pane on the far right, select New Send Connector.
4. Type `SMTP` as the send connector, select the intended use as Internet, and click Next.
5. In the Address space window, click Add.
6. In the SMTP Address Space window, type * as the address, ensure that the installer has checked Include all subdomains, and click OK.
7. Click Next.
8. Accept defaults for the next two pages by clicking Next.
9. At the New Connector page, click New to create the connector.
10. Click Finish to close the New SMTP Send Connector wizard.
11. Close the Exchange Management Console, and reboot the server.

Configuring the Mailbox role

Here, you will configure the Mailbox role, by completing the following steps:

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1. Click Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. In the left pane, expand Organization Configuration and Mailbox so the Database Management tab is visible.
3. Right-click Mailbox Database, and select Properties.
4. Select the Maintenance tab.
5. Check the Enable circular logging box.
6. Click OK.
7. Click OK to any warnings about circular logging being applied after the database is remounted.
8. Right-click the Mailbox Database, click Dismount Database, and click Yes to confirm.
9. Right-click the Mailbox Database, and click Mount Database.
10. Right-click Public Folder Database, and select Properties.
11. Check the Enable circular logging box.
12. Click OK.
13. Click OK to any warnings about circular logging being applied after the database is remounted.
14. Right-click the Public Folder Database, click Dismount Database, and click Yes to confirm.
15. Right-click the Public Folder Database, and click Mount Database.

Configuring the Offline Address Book and enabling Web distribution

Here, you will set up the Offline Address Book. You are also enabling Web distribution from both mailbox VMs.

1. Click Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. In the left pane, expand Organization Configuration, and select Mailbox.
3. In the center pane, click the Offline Address Book tab.
4. Right-click the Default Offline Address List, and click Move…
5. On the Move Offline Address Book screen, click Browse…
6. Select the first mailbox server, and click OK.
7. Click Move.
8. Once the move is complete, click Finish.
9. Right-click Default Offline Address List, and click Properties.
10. Click the Distribution Tab.
11. Click Enable Web-based distribution.
12. Click Add…
13. Select both OAB sites, and click OK.

14. Click Apply, and click OK.
15. Restart your server.

Appendix E. Migrating user mailboxes to the new server

Here, you will need to migrate user mailboxes off the Microsoft Exchange Server 2003 server and onto your Microsoft Exchange Server 2010 server. This is the final step in the Exchange Server migration process.

➡ **NOTE:** Depending on the size of your organization, you may find it easier to manage the mailbox moves using the Move-Mailbox cmdlet in the Exchange Management Shell.

1. Click Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. Expand Recipient Configuration, and select Mailbox.
3. Select the mailboxes you wish to move to the new server.
4. On the lower right panel, click New Local Move Request.
5. On the Introduction screen, click Browse…
6. Select the new mailbox server, and click OK.
7. Click Next.
8. On the Move Options Screen, keep defaults, and click Next.
9. Click New to create the move requests.
10. After the move requests are created, the servers will start transferring the mailboxes you selected. You can check the status of the moves in Move Requests, under Recipient Configuration.

Appendix F. Microsoft SQL Server migration steps

Setting the access property of a database to single-user or multi-user

1. Start SQL Server Management Studio by selecting Start→All Programs→Microsoft SQL Server 2005→SQL Server Management Studio.
2. Enter your server name, select Windows Authentication, and click Connect.
3. To set the database to single-user mode to ensure no updates occur, close any query window, Object Explorer details window, or summary windows that may be open. Leave Object Explorer open. If Object Explorer is not visible, you can invoke it by pressing F8.
4. Expand Databases, right-click the database in Object Explorer, and select Properties.
5. On the left side of Database Properties screen, click Options.
6. Scroll down to the last option on the Other Options section.
7. Change the Restrict Access option from MULTI_USER to SINGLE_USER, or vice versa, by selecting it from the drop-down menu.
8. Click OK.
9. If prompted, click Yes to agree to shutting down other connections.

Transferring SQL logins and passwords between SQL Server 2005 and 2008 instances using Microsoft Knowledge Base article 918992

To transfer your SQL logins and passwords, complete the following steps on your legacy SQL server:

1. Open an Internet Explorer window, and navigate to http://support.microsoft.com/kb/918992.
2. Scroll down the Knowledge Base article to step 2 under More Information, and highlight all of the text within the blue box, beginning with the words USE master, and ending with the words RETURN 0 GO. Right-click the highlighted text, and select Copy.
3. Minimize the Internet Explorer window.
4. Click Start→Microsoft SQL Server 2005→SQL Server Management Studio, and connect to the default instance.
5. Select the default instance you are connected to, and click New Query.

6. In the blank right pane, right-click, and click Paste.
7. Ensure that the entire block of text copied successfully, and click Execute.
8. If the query execution is successful, the following message will appear in the Messages window: Command(s) completed successfully.
9. Click New Query, and type `EXEC sp_help_revlogin` in the New Query window.
10. Click Execute.
11. When the command completes, view the Messages pane and highlight all of the users you wish to transfer to Microsoft SQL Server 2008 R2. As a general guideline, the user logins you need to transfer do not include the default system accounts. Each user will have two lines, the first stating their login name, and the second line beginning with the words CREATE LOGIN. Once you have highlighted all of the users you want to transfer, right-click, and select Copy.
12. Click Start→Accessories→Notepad.
13. Right-click in the Notepad window, and click Paste.
14. Click File, and click Save As.
15. Save the file as SQLusersscript.sql in the File name field, and click Save.

You must transfer the SQLusersscript.sql file to the destination (new) server using either a network shared folder or a USB flash drive.

To complete the transfer process, follow these steps on the destination server:

1. Click Start→All Programs→Microsoft SQL Server 2008 R2→SQL Server Management Studio, and connect to the default instance. Generally, the default instance is your server name.
2. Navigate to the location where you have transferred the SQLuserscript.sql file, and double-click it to open it as a new query window in SQL Server 2008 R2.
3. When the file opens in Microsoft SQL Server Management Studio, click Execute.
4. If the query execution is successful, the following message appears: Command(s) completed successfully.

About Principled Technologies

Principled Technologies®

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We provide industry-leading fact-based marketing and technology assessment services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

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