NEC

EXPRESSCLUSTER X for Windows server
Quick Start Guide for Microsoft Office SharePoint Server 2007

Version 1

NEC EXPRESSCLUSTER X 3.0/3.1 for Windows
Microsoft Office SharePoint Server 2007 Quick Start Guide

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About this Guide

Using this guide

This guide provides a hands-on "Quick Start" set of instructions to install and configure EXPRESSCLUSTER X (EC X) for Windows with Microsoft SharePoint Server. The guide assumes users have Microsoft Windows system administration knowledge and skills with experience in installation and configuration of Microsoft Windows operating systems, networks, and SharePoint Server.

This guide covers the following topics:

Chapter 1: Overview **–** describes the general steps of the setup procedures.

Chapter 2: System Requirements and Planning – describes the overall system and network requirements, and includes a set of tables for planning the installation and configuration.

Chapter 3: Base System Setup – describes the configurations required for each system before installing target application.

Chapter 4: IIS and SQL Server Installation – describes the installation of IIS and SQL Server on the Primary and Standby Servers.

Chapter 5: EC X Server Installation – describes EC X installation on the Primary and Standby Servers.

Chapter 6: Base Cluster Setup – describes the process of generating a cluster, creating a failover group, and uploading a configuration.

Chapter 7: SharePoint 2007 Installation – describes the installation of SharePoint on the Primary and Standby Servers.

Chapter 8: SharePoint Cluster Setup – describes required configurations to enable full cluster functionality.

Chapter 9: Final Deployment in a LAN Environment – describes steps to verify the cluster and complete the deployment on a Primary and a Standby Server.

Chapter 10: Common Maintenance Tasks – describes how to perform common maintenance tasks using the EC X Manager.

Where to go for more information

Refer to additional documentation under the "documentation" directory on the EC X distribution CD.

For more information, go to: http://www.nec.com/expresscluster

Other EC X guides are at:
http://www.nec.com/global/prod/expresscluster/en/support/manuals.html

- **GettingStartedGuide** – General cluster concepts and overview of EC X functionality.
- **Installation and Configuration Guide** – EC X installation and configuration procedures.
- **Reference Guide** – Commands for EC X scripts and maintenance commands to execute from the command prompt.

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1 Overview

The general procedure to deploy SharePoint 2007 with EC X on two servers (Primary and Standby) consists of the following major steps:

1. Perform system planning to determine requirements and specify configuration settings *prior* to start of actual system installation and configuration.
2. Prepare the Primary and Standby Servers, including OS installation and configuration.
3. Install, configure, and verify SharePoint, IIS, and SQL Server on the Primary and Standby Servers.
4. Install and configure EC X on the Primary and Standby Servers.
5. Create and configure the EC X failover group to enable continuous protection and automatic recovery for SharePoint Server.
6. Upload the configuration file and start the cluster to complete deployment in the mirror disk configuration.

2 System Requirements and Planning

2.1 System Requirements

Machine 1: Primary Server
Machine 2: Standby Server
Machine 3: Test Client

	Machine 1 **Primary Server**	**Machine 2** **Standby Server**	**Machine 3** **Test Machine**
CPU	Pentium 4 – 3.0 GHz or better		Pentium 4 – 3.0 GHz or better
Memory	2GB or more		1GB or more
Disk	1 physical disk **OS partition**: 15GB or more space available (to include the installation of SharePoint and SQL) **Cluster partition**: Partition of 17 MB or more, available for ECX management - the same size for each server system **Data partition**: enough partition space to store SQL data.		1 physical disk with 20GB or more space available
OS	Windows Server 2008 (Standard or Enterprise) with latest service pack		Windows XP or later
Software	Java Version 6.0 Update 20 (or later) enabled web browser SQL Server 2005 SharePoint 2007 standard or enterprise IIS version 7		Java Version 6.0 Update 20 (or later) enabled web browser
Network	2 – 100Mbit or faster Ethernet network interface cards		1 – 100Mbit or faster Ethernet network interface card

2.2 System Planning

Review the requirements from the last section and then fill in the tables of the worksheet below. Refer to Appendix B for an example worksheet.

Machine 1: Primary Server
Machine 2: Standby Server
Machine 3: Test Client

Table 1: System Network Configuration

Machine	Host name	Network Connection	IP Address	Subnet Mask	Default Gateway	Preferred DNS Server
1		Public:				
		Interconnect:				
2		Public:				
		Interconnect:				
3						

Floating IP (FIP) address:

Web Management Console FIP: (1) _____
Cluster FIP: (2) _____

Table 2: System OS and Disk Configuration

Machine	OS	Disk 0 (OS Disk)	Disk 1 (Data Disk)
1		**Boot Partition:** Drive Letter: Size:	**Cluster Partition:** Drive Letter: Size (>20MB) : ***Data Partition:** Drive Letter: Size:
2		**Boot Partition:** Drive Letter: Size:	
3			

* The size must be large enough to store all data for a given SharePoint Server to meet current and expected future needs.

Table 3: System Logins and Passwords

Computer/Account	Login	Password
Machine 1 Administrator		
Machine 2 Administrator		
Machine 3 Administrator		

3 Base System Setup

3.1 Setup the Primary Server (Machine 1)

1. If necessary, install hardware components, OS, and Service Packs (refer to Chapter 2).
2. Verify the basic system boot and administrator login functionality, and availability of required hardware components (refer to Chapter 2).
3. Configure network interface names:
   a. Rename the network interface for network communication with client systems to **Public**.
   b. Rename the network interface for internal EC X management and data mirroring network communication between servers to **Interconnect**.
4. Configure the Network interface TCP/IP settings:
   a. In the **Network Connections** window, right-click **Public**, and then click **Properties**.
   b. In the **Properties** window, double-click **Internet Protocol (TCP/IP)**.
   c. Click the **Use the following IP address:** option button.
   d. Type the **IP address**, **Subnet mask**, and **Default gateway** (refer to section 2.2).
   e. Click the **Use the following DNS server addresses:** option button and then type the address of the **Preferred DNS server** (refer to section 2.2).
   f. Go back to the **Network Connections** window. Right-click **Interconnect** and then click **Properties**.
   g. In the **Properties** window, double-click **Internet Protocol (TCP/IP)**.
   h. Click the **Use the following IP address:** option button.
   i. Type the **IP address** and **Subnet mask** (refer to section 2.2).
   j. Click **OK**. Click **OK**. (Two times total).

5. Configure the network interface binding order:
   a. In the **NetworkConnections** window, click the **Advanced** menu, and click **Advanced Settings**. If the menu bar is not visible, press the Alt key.
   b. On the **Adapters and Bindings** tab, under **Connections:**, use the up and down arrow buttons to move **Public** to the first (top) position. Click **OK**.
   c. Close the **Network Connections** window.
6. Connect the network interfaces:
   a. Connect the network interface **Interconnect** to the **Cluster Interconnect Network** and verify there is a healthy physical link status.
   b. Connect the network interface **Public** to the **Public Network** and verify connectivity to the Test Client (Machine 3).
7. Configure the Data Disk:
   a. Verify the disk device or LUN is initialized as a Windows Basic disk device.
   b. Create a mirrored disk cluster partition on the disk and verify it is 20MB or larger. Assign a drive letter to the partition, but do *not* format (refer to Table 2).
   c. Create a mirrored disk data partition on the disk. Assign a drive letter to the partition and format to NTFS (refer to Table 2). The drive letter 'O' is an example in this document.
   d. Verify the mirrored disk cluster and data partitions are visible in Windows Explorer under their assigned drive letters.

3.2 Setup the Standby Server (Machine 2)

Perform steps 1-8 in Section 3.1 on the Standby Server (Machine 2).

4 IIS and SQL Server Installation

4.1 IIS Installation

1. Starting on the Primary Server (Machine 1), on the Windows desktop, click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
2. In the left pane, select **Roles**.
3. In the right pane, click **Add Roles**.
4. Select **Web Server (IIS)**. If the **Add Roles Wizard** window displays, click **Add Required Features**, and then click **Next**.
5. Click **Next.** Continue with setup, selecting all of the defaults.
6. Click **Next**.
7. In the confirmation window, click **Install**.
8. After the installation is complete, click **Close.**

4.2 SQL Server 2005 Installation

1. Insert the SQL Server 2005 CD into a disc drive on the Primary Server (Machine 1).
2. If the splash screen does not display, on the Windows desktop, click **Start**, and then select **Run**. In the Run window, for the disc drive, browse to find **splash.hta**.
3. Under **Install**, click **Server components**, **tools**, **Books Online**, and **samples**.
4. After the **Program Compatibility Assistant** window displays, click **Run Program**.
5. In the **End User License Agreement** window, select the **I accept the licensing terms and conditions** check box. Click **Next**.
6. In the **Installing Prerequisites** window, click **Install**.
7. In the next window, click **Next**.
8. In the **Welcome to the Microsoft SQL Server Installation Wizard** window, click **Next**.
9. In the **System Configuration Check** window, click **Next**.
10. In the **Registration Information** window, type the **Name**, **Company**, and **Product Key**. Click **Next**.
11. In the **Components to Install** window, select the **SQL Server Database Services** check box, and then click the **Advanced** button.
12. In the **Feature Selection** window, from the drop-down menu of **Database Services**, select **Entire feature will be installed on local hard drive**. Expand **Client Components**, and from the drop-down menu of **Management Tools**, select **Entire feature will be installed on local hard drive**. Click **Next**.
13. In the **Instance Name** window, select the **Default instance** option button, and then click **Next**.
14. In the **Service Account** window, select the **Use the built-in System account** option button. From the drop-down list, select **Local System**. Below **Start services at the end of setup**, select the **SQL Server** check box. Click **Next**.

15. In the **Authentication Mode** window, select the **Mixed Mode** option button. Type a **password**, and then type again for **Confirm password**. Click **Next**.
16. In the **Collation Settings** window, select the **SQL collations** option button. Click **Next**.
17. In the **Error and Usage Report Settings** window, clear the two check box options. Click **Next**.
18. In the **Ready to Install** window, Click **Install**.
19. After all of the Setup Progress items finish, click **Next**.
20. In the **Completing Microsoft SQL Server 2005 Setup** window, Click **Finish**.
21. Reboot the computer.
22. Once the installation is complete, click **Start**, point to **All Programs**, point to **Microsoft SQL Server 2005**, point to **Configuration Tools**, and then click **SQL Server Configuration Manager**.
23. In the **SQL Server Configuration Manager** window, expand **SQL Server Network Configuration**, and then click **Protocols for MSSQLSERVER**.
24. Right-click **Named Pipes** and then click **Enable**. In the next window, click **OK**.
25. Verify **TCP/IP** is enabled. Verify the **VIA** protocol is disabled.
26. Reboot the Primary Server (Machine 1).

4.3 Install IIS and SQL Server 2005 on the Standby Server (Machine 2)

Perform all of the steps in Sections 4.1 and 4.2 on the Standby Server.

Note

Windows Server 2008 R2 requires SQL Server 2005 SP3.

5 EC X Server Installation

5.1 Install EC X on the Primary Server (Machine 1)

1. Insert the EXPRESS CLUSTER X CD-ROM into a CD-ROM drive on the server.
2. In the **License Agreement** window, click **I Agree**.
3. In the pop-up window, click **NEC EXPRESSCLUSTER for Windows**.
4. Click **NEC EXPRESS CLUSTER X 3.0 for Windows**.
5. In the **Welcome** window, click **Next**.
6. In the **Choose Destination Location** window, click **Next**.
7. In the next window, click **Install**.
8. In the **Port Number** window, if necessary, modify the default port numbers. Click **Next**.
9. On the **Filter Settings of Shared Disk** window, click **Next**.
10. In the **Confirmation** window, click **Yes**.
11. In the **License Manager** window, click **Register**.
12. In the **License Registration** window, click **Register with License Information**.
13. In the **Product Selection** window, select the **OS** and **Product/Trial** types. For **Product Name**, click **EXPRESSCLUSTER X 3.x for Windows**. Click **Next**.
14. In the **License Unit Selection** window, depending on the type of license, enter the number of **CPU** or **Node Units**. Click **Next**.
15. In the **License Key Entry** window, enter the **Serial No.** and **License Key**. Click **Next**.
16. In the **License Registration Confirmation** window, confirm the information entered is correct. Click **Next**.
17. Click **OK**. If the license registration fails, start again from step 11.
18. Repeat steps 11-17 again for the **EXPRESSCLUSTER X Replicator 3.x for Windows** product license. Select **EXPRESSCLUSTER X Replicator 3.x for Windows** as the **Product Name** in step 13.
19. In the next window, click **Finish**.
20. On the **InstallShield Wizard Complete** window, click the **No, I will restart my computer later** option button, and then click **Finish**.
21. In the next window, click **Exit**. Click **Exit**. (Two times total).

5.2 Install ECX on the Standby Server (Machine 2)

Perform all of the steps in Section 5.1 on the Standby Server.

5.3 Restart the Primary and Standby Servers (Machines 1 & 2)

First restart the Primary Server, and then restart the Standby Server.

6 Base Cluster Setup

6.1 Install Java Runtime Environment (JRE)

Verify JRE Version6.0 Update20 or newer is installed on the Test Client (Machine 3). If necessary, install JRE:

1. Run **jre-<build and platform version>.exe** (a compatible JRE distribution is in the jre folder on the EC X CD).
2. In the **License Agreement** window, verify the default **Typical setup** option button is selected. Click **Accept**.
3. In the **Installation Completed** window, click **Finish**.

6.2 Start the cluster manager

From the web browser of the Primary or Standby Server (Machine 1 or 2), access port 29003. (Example: http://localhost:29003). When the security warning window displays, select the **Always trust content from this publisher** check box. Click **Run**.

6.3 Create a cluster

For all of the steps below, refer to Table 1 for the IP addresses and server names.

1. When the cluster manager opens for the first time, there is pop-up window with three options. Click **Start cluster generation wizard**.
2. In the new window, type a **Cluster Name**. (Example: cluster).
3. Type the **Management IP address** and click **Next**.
4. In the next window, to add another server to the cluster, click **Add**.
5. Type the hostname or the IP address of the Standby Server (Machine 2) and then click **OK**.
6. Both servers are now on the list. If the Primary Server (Machine 1) is not in the top (Master) Server position, then move it up. Click **Next**.
7. EC X automatically detects the IP addresses of the servers. Select the networks to use the Heartbeat path in the **Kernel Mode** type. The primary network is for mirroring the data; set the MDC as **mdc1**. Click **Next**.
8. In the **NP Resolutions Resources** window, click **Next**.

6.4 Create a failover group

For all of the steps below, refer to Table 1 for the IP addresses and server names.

1. To add a group, in the Cluster Generation Wizard, in the **Group** section, click **Add**.
2. In the next window, select **failover** for group type. Name the group (Example: SharePoint_Failover), click **Next**, and then click **Next** (Two times total).
3. Select the default options for the Group Attribute Settings and then click **Next**.

6.5 Enter floating IP address & mirror resources and select data & cluster partitions

1. In the **Group Resources** section of the Cluster Generation Wizard, to add a resource, click **Add**.

2. In the next window, to add a Floating IP Resource (FIP), from the drop-down menu, select **floating ip resource**, and then click **Next**.
3. By default, the FIP resource is not dependent on any other resource. Click **Next**.
4. Verify the default options are correct and then click **Next**.
5. Type a floating IP address that is not used by any other network and then click **Finish**.
6. To **Add** a mirror disk resource (MD), click **Add**.
7. In the next window, from the drop-down menu, select **mirror disk resource**, and then click **Next**.
8. Verify the **Follow the default dependency** check box is selected and then click **Next**.
9. Verify the default options are correct and then click **Next**.
10. Click **Add** to add the first server.
11. Click **Connect** to populate the server partitions.
12. Select the data and cluster partitions. Click **OK**.
13. Repeat steps 10-12 for the Standby Server (Machine 2).
14. Click **Finish**.
15. Click **Add** to add a virtual computer name resource.
16. In the next window, from the drop-down menu, select virtual **computer name resource**. Give a name to the resource (Example: vcom). Click **Next**.
17. By default, the **Follow the default dependency** check box is selected. Click **Next**.
18. In the next window, verify that the default options are correct, and click **Next**.
19. Enter a Virtual Computer Name (Example: vshare). From the Target FIP Resource Name drop-down menu, select the recently created **%fip resource%**. Click **Next**.
20. Click **Finish** and then click **Next**.
21. In the **Monitor Resource** section, click **Add**.
22. Select **floating ip monito**r and then click **Next**.
23. In the **Target Resource** box, click **Browse**. Select the **%fip resource%** and then click **OK**. Click **Next**. Click **Next** (Two times total).
24. In the **Recovery target** box, click **Browse**.
25. Click **%failover group%** (Example: SharePoint_Failover) and then click **OK**.
26. To add the FIP monitor, click **Finish**.
27. Click **Finish**.

6.6 Upload the cluster configuration and initialize the cluster

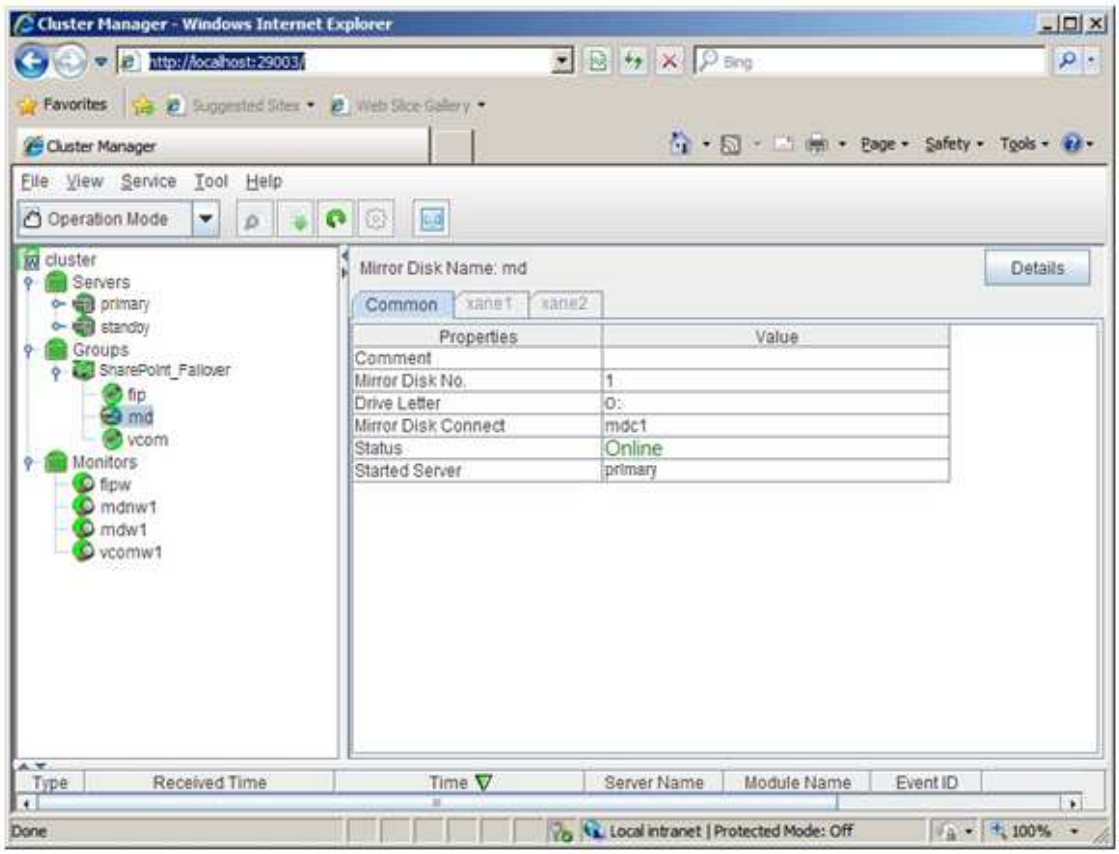
1. In the **Cluster Manager** window, click the **File** menu, and then **Apply the Configuration File**. Click **OK**. Click **OK**. (Two times total).
2. After the upload is complete, change to the **Operation Mode**.
3. Restart **Cluster Manage**r. Click the **Service** menu and then click **Restart Manager**. Click **OK**.

4. Click the **Service** menu and then click **Start Cluster**. Click **OK**.
5. Right-click **Servers** and select **Mirror Disks**. Click **Details** to monitor MD replication. Mirror disk copy starts automatically, replicating data from the Primary to the Standby Server. Refer to the figure below.

Note
Mirror disk copy may take a while, depending on the size of the data in the mirrored disk data partition.

6. After the copy completes, in the **Mirror Disk Helper** window, click **Close**. Refer to figure below.

7. In the **Cluster Manager** window, all icons in the tree view are now green. Refer to the figure below.



7 SharePoint 2007 Installation

7.1 SharePoint Pre-Install Steps on Primary Server

1. On the Windows desktop, click **Start**, point to **All Programs**, **Administrative Tools**, and double-click **Server Manager**.
2. In the left pane, select **Features**. In the right pane, click **Add Features**.
3. Select **.NET Framework 3.5.1 Features**. In the **Add Features Wizard**, click **Add Required Role Services**. Click **Next**.
4. After **Introduction to Web Server (IIS)** displays, click **Next**.
5. Click **Next** (a second time).
6. Click **Install**. After completion, click **Close**.

7.2 SharePoint Installation on Primary Server

1. Double-click **Setup**. After a security warning window opens, click **Run** (if Autoplay is enabled).
2. Type the **Product Key** and click **Continue**.
3. Select the **I accept the terms of this agreement** check box. Click **Continue**.
4. In the Choose the installation you want window, click **Advanced**.
5. Select the **Complete – Install all components** option button and then click **Install Now**.
6. In the next window, verify the **Run the SharePoint Products and Technologies Configuration Wizard now** check box is selected, and then click **Close**.
7. In the **Welcome to SharePoint Products and Technologies** window, click **Next**.
8. In the next window, click **Yes**.
9. In the **Connect to a server farm** window, select the **No, I want to create a new server farm** option button, and then click **Next**.
10. In the **Specify Configuration Database Settings** window, in the text box next to **Database server**, type **vshare**.
11. In the text box next to **Database name**, verify the default is **SharePoint_Config**.
12. Type a **Username** (Example: dc\administrator) and **Password**, and then click **Next**.
13. In the **Configure SharePoint Central Administration Web Application** window, verify the **Specify port number** check box is *not* selected. Select the **Negotiate (Kerberos)** option button. Click **Next**.
14. In the next window, click **Yes**.
15. In the **Completing the SharePoint Products and Technologies Configuration Wizard**, verify the configuration settings are correct, and then click **Next**.
16. In the **Configuration Successful** window, click **Finish**.

7.3 SharePoint Installation on Standby Server

Repeat all steps from 7.1 on the Standby Server. Then repeat steps 1 - 8 from 7.2 on the Standby Server. Continue with the following steps:

1. In the **Connect to a server farm** window, select **Yes, I want to connect to an existing server farm**.
2. In the **Specify Configuration Database Settings** window, in the text box next to Database server, type **vshare**. Click the **Retrieve Database Names** button. The **Database name** and **Username** fields are then populated.
3. Verify the **Database name** is **SharePoint_Config** and the **Username** is correct. Enter the **Password** and click **Next**. The Username and Password will match those created during installation on the Primary Server.
4. In the **Completing the SharePoint Products and Technologies Configuration Wizard**, verify the configuration settings are correct and click on the **Advanced Settings** button.
5. In the **Advanced Settings** window, select **Use this machine to host the web site**. Click **OK**.
6. Click **Next**.
7. Click **Finish**.

Note

Configure server farm using SharePoint Central Administration.

8 SharePoint Cluster Setup

8.1 Move the MSSQL Master and Resource Database Files to the Data Partition on the Primary Server

1. On the Windows desktop, click **Start**, point to **Run**, and then type **services.msc**. Click **OK**.
2. Right-click **SQL Server (MSSQL)** and click **Stop**.
3. Run Windows Explorer. Create the folder structure for SQL Server data on the mirror disk. Example: %Data partition drive letter%:\MSSQL\DATA.
4. Use copy and paste to move the **master.mdf**, **mastlog.ldf**, and all SharePoint database files to the mirror disk. The default path of the data file is C:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\DATA\.
5. On the Windows desktop, click **Start**, point to **All Programs,** point to **Microsoft SQL Server 2005**, point to **Configuration Tools**, and then click **SQL Server Configuration Manager**.
6. Select the **SQL Server 2005 Services** node, in the right pane, right-click **SQL SERVER (MSSQLSERVER)**, and click **Properties**.
7. In the **SQL Server (MSSQLSERVER) Properties** window, click the **Advanced** tab.
8. Edit the **Startup Parameters** values to point to the planned location for the master database data and log files. Change the path of **master.mdf** and **mastlog.ldf** to the mirror disk drive. Click **OK**. Click **OK** (a second time). Optional: Move the error log file path.

   The parameter value for the data file must follow the –d parameter; the value for the log file must follow the –l parameter.

   Example The parameter values for the default locations of the master data and log files:

   -dC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\DATA\master.mdf
   -eC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\LOG\ERRORLOG
   -lC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\DATA\mastlog.ldf

   The planned relocation for the master data and log files is on the mirror disk: %Data Partition drive letter%:\MSSQL\DATA.

Change the following parameter values:
-d %Data Partition drive letter%:\MSSQL\DATA\master.mdf
-eC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\LOG\ERRORLOG
-l: %Data Partition drive letter%:\MSSQL\DATA\mastlog.ldf

9. Start the SQL Server (MSSQLSERVER) instance: right-click the instance name and select **Start**.

8.2 Move the MSSQL Master Database File Location to the Data Partition on the Standby Server

1. Move the **SharePoint_Failover group** from Primary to Standby Server: In the web browser, open the **Cluster Manager**, right-click the **%failover group%**, and then click **Move**. Select the **Standby Server** and click **OK**.
2. On the Windows desktop, click **Start**, point to **All Programs**, point to **Microsoft SQL Server 2005**, point to **Configuration Tools**, and then click **SQL Server Configuration Manager**.
3. In the **SQL Server 2005 Services** node, in the right pane, right-click **SQL SERVER (MSSQLSERVER)**, and then click **Properties**.
4. In the **SQL Server (MSSQLSERVER) Properties** window, click the **Advanced** tab.
5. Edit the **Startup Parameters** values to point to the planned location for the master database data and log files. Change the path of **master.mdf** and **mastlog.ldf** to the mirror disk drive. Click **OK**. Click **OK** (a second time). Optional: Move the error log file path.

   The parameter value for the data file must following the –d parameter; the value for the log file must follow the –l parameter.

   Example The parameter values for the default locations of the master data and log files:

   -dC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\DATA\master.mdf
   -eC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\LOG\ERRORLOG
   -lC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\DATA\mastlog.ldf

The planned relocation for the master data and log files is on the mirror disk:
%Data Partition drive letter%:\MSSQL\DATA

Change the following parameter values:
-d%Data Partition drive letter%:\MSSQL\DATA\master.mdf
-eC:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\LOG\ERRORLOG
-l:%Data partition drive letter%:\MSSQL\DATA\mastlog.ldf

6. Stop the SQL Server (MSSQLSERVER) instance: right-click the instance name and select **stop**.
7. Start the SQL Server (MSSQLSERVER) instance: right-click the instance name and select **start**.
8. Close the **SQL Server Configuration Manager**.

8.3 Attach the Replicated MSSQL Resource Database File to the Standby Server

1. On the Windows desktop of the Standby Server, click **Start**, point to **All Programs**, point to **Microsoft SQL Server 2005**, and then click **SQL Server Management Studio**.
2. Change the **Server name** to VCOM name (**vshare**), and click **Connect**.
3. Expand the **Databases** container. Delete all SharePoint databases: right click on each database and then click **Delete**. After a pop-up window opens, click **OK**.
4. Attach the SharePoint replicated databases: right-click on the **Databases** container and then click **Attach**.
5. A pop-up window opens. Click **Add**. Browse to find the path of the **data partition** (%Data partition drive letter%:\MSSQL\DATA). Select the **SharePoint_Config.mdf** file.
6. Click **OK** to add the database. Click **OK**. (a total of two times).
7. Right-click on the **Databases** container and then click **Attach**. A pop-up window opens.
8. Click **Add**. Browse to find the path of the **data partition**. Select the **SharePoint_AdminContent_XXXXXX.mdf** file.
9. Click **OK** to add the database. Attach any additional databases following the same steps as above.
10. Close the Microsoft SQL Server Management Studio.

8.4 Binding SharePoint Application with attached SharePoint Database on the Standby Server

1. On the Windows desktop, click **Start**, click **Run**, and then type **cmd**. Click **OK**.
2. Change the directory path by typing **cd "C:\Program Files\Common Files\microsoft shared\Web Server Extensions\12\BIN"**.

3. Type the following: **stsadm.exe –o setconfigdb –connect –databaseserver target_sql_server –databasename databasename –farmuser farm_sql_account –farmpassword farm_sql_password**

   target_sql_server: the FIP or VCOM name.
   Databasename: the name used during SharePoint installation.
   farm_sql_account: the domain account used during SharePoint installation
   farm_sql_password: the password used during SharePoint installation.

   Example: stsadm.exe –o setconfigdb –connect –databaseserver vshare –databasename SharePoint_config –farmuser dc\administrator –farmpassword <pwd>

4. On the Windows desktop, click **Start**, point to **Administrative Tools**, and then click **SharePoint 3.0 Central Administration.** Verify the website opens with the name of the Primary Server.

8.5 Change the Alternate Access Mappings of SharePoint URL on the Primary Server

1. Move the **SharePoint_Failover** group from the Standby to Primary Server: In the web browser, open the **Cluster Manager**. Right-click the **%failover group%** and then click **Move**. Select the Primary Server and click **OK**.
2. On the Windows desktop of the Primary Server, click **Start**, point to **Administrative Tools**, and then click **SharePoint 3.0 Central Administration**.
3. After the pop-up window opens, type the domain administrator **User name** and **Password**.
4. In the **Central Administration** window, click the **Operations** tab. Under **Global Configuration**, click **Alternate access mappings**. Click the **Internal URL** and edit the hostname URL. Change the Primary Server name to the VCOM name (**vshare**). Click **OK**. Close the window.
5. On the Windows desktop, click **Start**, point to **Administrative Tools**, and then click **SharePoint 3.0 Central Administration**. Verify the website opens with the VCOM name (**vshare**). Close the window.
6. Move the **SharePoint_Failover** group from Primary to the Standby Server: Refer to 8.5, step 1.
7. On the Windows desktop, click **Start**, point to **Administrative Tool**, and then click **SharePoint 3.0 Central Administrator**. Verify the website points to the VCOM name (**vshare**). This time the website does not open.

8.6 Export IIS Data from Primary Server and Import to Standby Server

1. Move the SharePoint_Failover group from the Standby to Primary Server: Refer to 8.5, step 1.
2. Open Windows Explorer and create a folder on the mirror disk data partition. Example: %Data partition drive letter%:\inetpub.
3. On the Primary Server, on the Windows desktop, open IIS Manager. Click **Start**, click **Run**, and then type **inetmgr**. Click **OK**.
4. In the **IIS Manager** window, expand the **server node**. Under **Management**, go to **Shared Configuration**, and in the right pane, click **Export Configuration**.
5. Type the path of the data partition and set an encryption key password.
6. Move the **%failover group%** to the Standby Server. Refer to 8.5, step 1.
7. Open the IIS Manager. Refer to 8.6, step 3.
8. In the **IIS Manager window**, in the left pane, expand and then select the **server node**. Scroll down the middle pane until the **Management** section is visible. Under **Management**, double-click **Shared Configuration,** and then select the **Enable shared configuration** check box. For the Physical path, type (or browse to) the location (Example: %Data partition drive letter%:\inetpub), and then in the right pane, click **Apply**.
9. After the prompt for the encryption password, type the password set during export on the Primary Server. Click **OK**. Click **OK**. Click **OK** (a total of three times).
10. Reset the IIS services. Click **Start** and click **Run**.
11. At the command prompt type **iisreset /restart** and press the **Enter** key.
12. After resetting IIS, go back to the **Shared Configuration** window and clear the **Enabled shared configuration** check box. Click **Apply**. After the pop-up window opens, click **Yes** and **OK**. Close **IIS Manager**.
13. Stop all IIS, SharePoint, and MSSQL services on the Primary and Standby Servers. Copy the **Inetpub** folder from the Primary Serve. Paste it to the Standby Server, overwriting the existing files.
14. Start all IIS, SharePoint, and MSSQL services on the Primary and Standby Servers.

8.7 Move IIS Data from the OS to Data Partition on the Primary and Standby Servers

1. On the Windows desktop of the Standby Server, click **Start**, click **Run**, and then type **notepad.exe**.
2. Copy the contents in the box below into Notepad. Save as **moveiis7root.bat** on the C:\ drive.

```
REM PLEASE BE AWARE: SERVICING (I.E. HOTFIXES AND SERVICE PACKS)
WILL STILL REPLACE FILES
REM IN THE ORIGINAL DIRECTORIES. THE LIKELIHOOD THAT FILES IN THE
INETPUB DIRECTORIES HAVE
```

```
REM TO BE REPLACED BY SERVICING IS LOW BUT FOR THIS REASON
DELETING THE ORIGINAL DIRECTORIES
REM IS NOT POSSIBLE.

@echo off
IF "%1" == "" goto err
setlocal
set MOVETO=%1:\

REM simple error handling if drive does not exist or argument is wrong
IF NOT EXIST %MOVETO% goto err

REM Backup IIS config before start changing config to point to the new path
%windir%\system32\inetsrv\appcmd add backup beforeRootMove



REM Stop all IIS services
iisreset /stop

REM Copy all content
REM /O - copy ACLs
REM /E - copy sub directories including empty ones
REM /I - assume destination is a directory
REM /Q - quiet

REM echo on, because user will be prompted if content already exists.
echo on
xcopy %systemdrive%\inetpub %MOVETO%inetpub /O /E /I /Q
@echo off
REM Move AppPool isolation directory
reg add HKLM\System\CurrentControlSet\services\WAS\Parameters /v
ConfigIsolationPath /t REG_SZ /d %MOVETO%inetpub\temp\appPools /f

REM Move logfile directories
%windir%\system32\inetsrv\appcmd set config -section:system.applicationHost/sites
-
siteDefaults.traceFailedRequestsLogging.directory:"%MOVETO%inetpub\logs\Failed
ReqLogFiles"
```

```
%windir%\system32\inetsrv\appcmd set config -section:system.applicationHost/sites
-siteDefaults.logfile.directory:"%MOVETO%inetpub\logs\logfiles"
%windir%\system32\inetsrv\appcmd set config -section:system.applicationHost/log -
centralBinaryLogFile.directory:"%MOVETO%inetpub\logs\logfiles"
%windir%\system32\inetsrv\appcmd set config -section:system.applicationHost/log -
centralW3CLogFile.directory:"%MOVETO%inetpub\logs\logfiles"

REM Move config history location, temporary files, the path for the Default Web Site
and the custom error locations
%windir%\system32\inetsrv\appcmd set config -
section:system.applicationhost/configHistory -path:%MOVETO%inetpub\history
%windir%\system32\inetsrv\appcmd set config -section:system.webServer/asp -
cache.disktemplateCacheDirectory:"%MOVETO%inetpub\temp\ASP Compiled
Templates"
%windir%\system32\inetsrv\appcmd set config -
section:system.webServer/httpCompression -
directory:"%MOVETO%inetpub\temp\IIS Temporary Compressed Files"
%windir%\system32\inetsrv\appcmd set vdir "Default Web Site/" -
physicalPath:%MOVETO%inetpub\wwwroot
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='401'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='403'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='404'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='405'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='406'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='412'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='500'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='501'].prefixLanguageFilePath:%MOVETO%inetpub\custerr
%windir%\system32\inetsrv\appcmd set config -section:httpErrors
/[statusCode='502'].prefixLanguageFilePath:%MOVETO%inetpub\custerr

REM Make sure Service Pack and Hotfix Installers know where the IIS root
```

```
directories are
reg add HKLM\Software\Microsoft\inetstp /v PathWWWRoot /t REG_SZ
/d %MOVETO%\inetpub\wwwroot /f
reg add HKLM\Software\Microsoft\inetstp /v PathFTPRoot /t REG_SZ
/d %MOVETO%\inetpub\ftproot /f
REM Do the same for x64 directories
if not "%ProgramFiles(x86)%" == "" reg add
HKLM\Software\Wow6432Node\Microsoft\inetstp /v PathWWWRoot /t
REG_EXPAND_SZ /d %MOVETO%inetpub\wwwroot /f
if not "%ProgramFiles(x86)%" == "" reg add
HKLM\Software\Wow6432Node\Microsoft\inetstp /v PathFTPRoot /t
REG_EXPAND_SZ /d %MOVETO%inetpub\ftproot /f

REM Restart all IIS services
iisreset /start
echo.
echo.
echo
================================================================
===============
echo Moved IIS7 root directory from %systemdrive%\ to %MOVETO%.
echo.
echo Please verify if the move worked.
echo If something went wrong restore the old settings via
echo     "APPCMD restore backup beforeRootMove"
echo and
echo     "REG delete
HKLM\System\CurrentControlSet\Services\WAS\Parameters\ConfigIsolationPath"
echo reset the PathWWWRoot and PathFTPRoot registry values
echo in HKEY_LOCAL_MACHINE\Software\Microsoft\InetStp.
echo
================================================================
===============
echo.
echo.
endlocal
goto success

REM error message if no argument or drive does not exist
```

```
:err
echo.
echo New root drive letter required.
echo Here an example how to move the IIS root to the F:\ drive:
echo.
echo MOVEIISROOT.BAT F
echo.
echo.

:success
```

3. On the Windows desktop, click **Start**, click **Run**, and then type **cmd**.
4. Change the directory to the location of **moveiis7root.bat**.
5. Type **moveiis7root.bat O** (Assuming that O is the Data partition drive letter).
6. If prompted to overwrite, type **A**.
7. Copy the **Microsoft Office Servers** folder from **C:\Programs Files** to the data partition.
8. On the Windows desktop, click **Start**, point to **Administrative Tools**, and select **Internet Information Services (IIS) Manager.**
9. Open **%local computer%** and expand **Sites**.
10. For each website listed, verify the default path. If the path is not pointing to the data partition, then change the default path: right-click each site and select **Manage Web Site**, and then click on **Advanced Settings**. For the **Physical Path,** type the new path of the data partition where the folder is copied after running the above script. Click **OK**.

11. Move the **%failover group%** to the Primary Server and follow 8.7, steps 1-10.

Note

a) Whenever a **root website** is created through a central administrator, set the **URL** name as the VCOM name and correct the **Path value** to the data partition. After creating the root website, verify the newly created website path in IIS Manager. If it is not pointing to correct path (data partition) then change.

b) In IIS Manager, click **Application pools**, right-click the newly created application pool, and then click **Advanced settings**. Verify the identity. If it is not pointing to the **Domain Account** (Domain Name\Domain Account), click on the **Identity** line and change the identity value by clicking the ellipses button. A new window opens. Click **Set** and enter the Domain username and Password. Click **OK**. Click **OK**. Click **OK** (a total of three times).

c) Follow the steps in 8.6 to export the IIS configuration from Primary Server and import to Standby Server.

8.8 Change the IIS, MSSQL and SharePoint Service Startup Types to Manual

1. After the IIS, MSSQL, and SharePoint Server setup is complete on both servers, set the startup type of **IISADMIN, W3SVC, MSSQLSERVER, SPAdmin, SPTimerV3**, and **SPTrace** services to manual. Verify each service is stopped.
2. To stop and change the startup type of the services: on the Windows desktop, click **Start**, click **Run**, and then type **services.msc**. Go to the services below; one-by-one, right-click each and select **Properties**. Stop each service and then change the **Startup type** to **Manual**.
   - IIS Admin Service
   - World Wide Web Publishing Service
   - SQL Server (MSSQLSERVER)
   - Windows SharePoint Services Administration
   - Windows SharePoint Services Timer
   - Windows SharePoint Services Tracing

8.9 Cluster Configuration Resource Setup

8.9.1 Stop the Cluster

1. Open the cluster: access port 29003 from the web browser of the Primary Server. (Example: http://localhost:29003).
2. Right-click the **%cluster name%**, select **Service**, and then click **Stop Cluster**. Or in the **Cluster Manager** menu, select **Service**, and then click **Stop Cluster**.
3. In the confirmation window, click **OK**.
4. From the drop-down list at the top left corner, click **Config Mode**.

8.9.2 Add MSSQLSERVER resource

1. Right-click **%failover group%** and click **Add Resource**.
2. From the drop-down list, select **service resource**, and enter **service_sql** (a name for the resource). Add optional comments (if required). Click **Next**.
3. Verify the **Follow the default dependency** check box is selected, and then click **Next**.
4. Click **Next**. Assume all default values are acceptable.
5. Enter **MSSQLSERVER** (the name of the service).
6. Click **Tuning**. Set the **START** and **STOP** timeouts. The default is 1800s.
7. Click **OK** and then click **Finish**.

8.9.3 Add SPAdmin resource

1. Right-click **%failover group%** and click **Add Resource**.
2. From the drop-down list, select **service resource**, and enter **service_spadmin** (a name for the resource). Add optional comments (if required). Click **Next**.
3. Clear the **Follow the default dependency** check box. Select the **service_sql** resource as a dependent resource, and click **Add**. Click **Next**.
4. Click **Next** (assume all default values are acceptable).
5. Enter **SPAdmin** (the name of the service).
6. Click **Tuning**. Set the **START** and **STOP** timeouts. The default is 1800s.
7. Click **OK** and then click **Finish**.

8.9.4 Add SPTimerV3 resource

1. Right-click **%failover group%** and click **Add Resource**.
2. From the drop-down list, select **service resource**, and enter **service_sptimerv3** (a name for the resource). Add optional comments (if required). Click **Next**.
3. Clear the **Follow the default dependency** check box. Select **service_sql** and **service_spadmin** resources as dependent resources, and click **Add**. Click **Next**.
4. Click **Next**. Assume all default values are acceptable.
5. Enter **SPTimerV3** (the name of the service).
6. Click **Tuning**. Set the **START** and **STOP** timeouts. The default is 1800s.
7. Click **OK** and then click **Finish**.

8.9.5 **Add SPTrace resource**

1. Right-click **%failover group%** and click **Add Resource**.
2. From the drop-down list, select **service resource**, and enter **service_sptrace** (a name for the resource). Add optional comments (if required). Click **Next**.
3. Clear the **Follow the default dependency** check box. Select **service_sql**, **service_spadmin**, and **service_sptimerv3** resources as dependent resources, and click **Add**. Click **Next**.
4. Click **Next**. Assume all default values are acceptable.
5. Enter **SPTrace** (the name of the service).
6. Click **Tuning**. Set the **START** and **STOP** timeouts according to the requirements. The default is 1800s.
7. Click **OK** and then click **Finish**.

8.9.6 **Add IISADMIN resource**

1. Right–click **%failover group%** and click **Add Resource**.
2. From the drop-down list, select **service resource** and enter **service_iisadmin** (a name for the resource). Add optional comments (if required). Click **Next**.
3. Clear the **Follow the default dependency** check box. Select **service_sql**, **service_spadmin**, **service_sptimerv3**, and **service_sptrace** resources as dependent resources, and click **Add**. Click **Next**.
4. Click **Next**. Assume all default values are acceptable.
5. Enter **IISADMIN** (the name of the service).
6. Click **Tuning**. Set the **START** and **STOP** timeouts. The default is 1800s.
7. Click **OK** and then Click **Finish**.

8.9.7 **Add W3SVC resource**

1. Right-click **%failover** g**roup%** and click **Add Resource.**
2. From the drop-down list, select **service resource** and enter **service_w3svc** (a name for the resource). Add optional comments (if required). Click **Next**.
3. Click to clear the **Follow the default dependency** check box. Select **service_sql**, **service_spadmin**, **service_sptimerv3**, **service_sptrace**, and **service_iisadmin** resources as dependent resources, and click **Add**. Click **Next**.
4. Click **Next**. Assume all default values are acceptable.
5. Enter **W3SVC** (the name of the service).
6. Click **Tuning**. Set the **START** and **STOP** timeouts. The default is 1800s.
7. Click **OK** and then click **Finish**.

8.9.8 **Add MSSQLServer monitor resource**

1. Right-click **Monitors**. Click **Add Monitor Resource**.
2. From the drop-down list, select **service monitor**, and enter **sql** (a name for the resource). Click **Next**.
3. In the **Target Resource** box, click **Browse**.
4. Select **service_sql** (the service resource). Click **OK**.
5. Set the **Monitoring Interval** and **Timeout**, and then click **Next**.
6. In the **Recovery Target** box, click **Browse**.
7. Select the **%failover group%** name (Example: SharePoint_Failover) and click **OK**. Click **Finish**.

8.9.9 **Add SPAdmin monitor resource**

1. Right-click **Monitors**. Click **Add Monitor Resource**.
2. From the drop-down list, select **service monitor**, and enter **SPAdmin** (a name for the resource). Click **Next**.
3. In the **Target Resource** box, click **Browse**.
4. Select **service_spadmin** (the service resource). Click **OK**.
5. Set the **Monitoring Interval** and **Timeout**, and then click **Next**.
6. In the **Recovery Target** box, click **Browse**.
7. Select the **%failover group%** name and click **OK**. Click **Finish**.

8.9.10 **Add SPTimerV3 monitor resource**

1. Right-click **Monitors**. Click **Add Monitor Resource**.
2. From the drop-down list, select **service monitor**, and enter **SPTimerV3** (a name for the resource). Click **Next**.
3. In the **Target Resource** box, click **Browse**.
4. Select **service_sptimerv3** (the service resource). Click **OK**.
5. Set the **Monitoring Interval** and **Timeout**. Click **Next**.
6. In the **Recovery Target** box, click **Browse**.
7. Select the **%failover group%** name and click **OK**. Click **Finish**.

8.9.11 **Add SPTrace monitor resource**

1. Right-click **Monitors**. Click **Add Monitor Resource**.
2. From the drop-down list, select **service monitor**, and enter **SPTrace** (a name for the resource). Click **Next**.
3. In the **Target Resource** box, click **Browse**.
4. Select **service_sptrace** (the service resource). Click **OK**.
5. Set the **Monitoring Interval** and **Timeout**. Click **Next**.
6. In the **Recovery Target** box, click **Browse**.
7. Select the **%failover group%** name and click **OK**. Click **Finish**.

8.9.12 **Add IISADMIN monitor resource**

1. Right-click **Monitors**. Click **Add Monitor Resource**.
2. From the drop-down list, select **service monitor**, and enter **IISADMIN** (a name for the resource. Click **Next**.
3. In the **Target Resource** box, click **Browse**.
4. Select **service_iisadmin** (the service resource). Click **OK**.
5. Set the **Monitoring Interval** and **Timeout**. Click **Next**.
6. In the **Recovery Target** box, click **Browse**.
7. Select the **%failover group%** name and click **OK**. Click **Finish**.

8.9.13 **Add W3SVC monitor resource**

1. Right-click **Monitors**. Click **Add Monitor Resource**.
2. From the drop-down list, select **service monitor**, and enter **W3SVC** (a name for the resource). Click **Next**.
3. In the **Target Resource** box, click **Browse**.
4. Select **service_s3svc** (the service resource). Click **OK**.
5. Set the **Monitoring Interval** and **Timeout.** Click **Next**.
6. In the **Recovery Target** box, click **Browse**.
7. Select the **%failover group%** name and click **OK**. Click **Finish**.

8.9.14 **Upload the configuration file and start the cluster**

1. In the **Cluster Manager** window, click the **File** menu, and then **Apply the Configuration File**. Click **Yes**. Click **OK**.
2. After the upload is complete, change to the **Operation Mode**.
3. Restart **Cluster Manager**. Click the **Service** menu and then click **Restart Manager**. Click **OK**.
4. Click the **Service** menu and then click **Start Cluster**. Click **OK**.

9 Final Deployment in a LAN Environment

1. Verify the connection between the Primary and Standby Servers meets the following requirements:
   - Two logically separate IP protocol networks: one for the Public Network and one for the Cluster Interconnect.
   - The Public Network must be a single IP subnet that spans the Primary and Standby servers to enable transparent redirection of the client connection to a single floating server IP address.
   - The Cluster Interconnect is a single IP subnet that spans the Primary and Standby Servers to simplify system setup.
   - A proper IP network between client and server machines on the Public Network on both the Primary and Standby Servers.
2. Verify the Primary Server is in active mode with a fully functional target application and the Standby Server is running in passive mode.
3. Ping both the Primary and Standby Servers from the Test Client, and verify that the Standby Server has all the target services in manual and stopped mode.
4. Start the cluster and try accessing the application from the Primary Server, and then move the cluster to the Standby Server. Verify the availability of the application on the Standby Server after failover. Deployment is complete.

10 Common Maintenance Tasks

10.1 Start Cluster Manager

There are two methods to start/access Cluster Manager through a supported Java enabled web browser.

Method 1

Through the IP address of the physical server running cluster management server application.
Use *during* the initial setup.

Method 2

Through the floating IP address for the cluster management server within a cluster.
Use *after* the initial setup.

1. Start **Internet Explorer** or any other supported Java enabled web browser.
2. **Method 1**: Type the URL with the IP address of the *active physical server*; a colon (:); and then the cluster server port number.
   Example: http://10.1.1.1:29003/

   Method 2: Type the URL with the IP address of the *cluster management server*; a colon (:); and then the cluster management server port number.
   Example: http://10.1.1.3:29003/

10.2 Shutdown/Reboot one or all servers

1. Start **Cluster Manager** (refer to 10.1).
2. Shutdown one server.
   Right-click the **%machine name%**, and then click **Shutdown**.

   Shutdown all servers
   Right-click the **%cluster name%**, and then click **Shutdown**.

   Reboot all servers
   Right-click **%cluster name%**, and then click **Reboot**.

10.3 Startup/stop/move failover groups

1. Start **Cluster Manager** (refer to 10.1)
2. Under **Groups**, right-click **%failover group%**, and then click **Start/Stop/Move**.
3. In the **Confirmation** window, click **OK**.

10.4 Isolate a server for maintenance

1. Start **Cluster Manager** (refer to 10.1).
2. In the **Cluster Manager** window, change to **Config Mode**.
3. Right-click the **%cluster name%**, and then select **Properties**.
4. Click the **Auto Recovery** tab. To manually return the server to the cluster, select **Off** for the **Auto Return** option. Otherwise, leave it set to **On** for automatic recovery when the server is turned back on. Click **OK**.
5. If a change was made, upload the configuration file.
6. Shut down the server to isolate for maintenance. The server is now isolated and ready for maintenance tasks.

10.5 Return an isolated server to the cluster

10.5.1 Automatic Recovery

1. Turn the machine back on.
2. Recovery starts automatically to return the server to the cluster.

10.5.2 Manual Recovery

1. Turn the machine back on and wait until the boot process is complete.
2. Start **Cluster Manager**.
3. In the **Cluster Manager** window, right-click the name of the isolated server, and then select **Recover**. The isolated server returns to the cluster.

10.6 Rebuild a mirror disk

1. Start **Cluster Manager** (refer to 10.1).
2. In the **Cluster Manager** window, in the left pane, right-click **Servers**, and then click **Mirror Disks**.
3. In the **Mirror Disks** window, click the **Details** button.
4. In the next window, click the button below the **%machine name%** of the machine to copy files from [Primary Server (Machine 1)], and then click the button below the **%machine name%** of the machine to copy files to [Standby Server (Machine 2)]. (The arrow indicates the direction of the copy).
5. Click the **Execute** button. In the **Confirmation** window, click **OK**.

Appendix A: ECX Server Uninstallation

1. On the Test Client (Machine 3), in **Cluster Manager**, click the **Service** menu, and then click **Stop Cluster**.
2. Close **Cluster Manager**.
3. On the server where starting the uninstall process, stop all EC X services:
   a. On the **Start** menu, point to **Programs**, point to **Administrative Tools**, and then click **Services**.
   b. In the right pane, scroll down and double-click the entry for **EXPRESSCLUSTER**. Click the **Stop** button.
   c. In the **Stop Other Services** window, click **Yes**. Click **OK**.
   d. Repeat step 3.b. above for the entry for **EXPRESSCLUSTER EVENT**, and then click **OK**.
4. On the **Start** menu, point to **Settings**, and click **Control Panel**. Double-click **Add or Remove Programs**.
5. In the **Add or Remove Programs** window, under **Currently installed programs**, click **NEC EXPRESSCLUSTER Server**. Click **Uninstall**.
6. In the **Confirmation** window, to start the uninstall process, click **Yes**.
7. In the next window, to reset the registry settings to disable the media sense functions of TCP/IP disconnect detection, click **Yes**.
8. In the first **Install Shield Wizard Complete** window, click **Finish**.
9. In the next **Install Wizard Complete** window, select the **Yes, I want to restart my computer now** option button. Click **Finish**. This completes the uninstall process for an individual server.

Note
To uninstall an ECX Server, you must be logged on as an administrator or have an account with administrator privileges.

After the uninstallation is complete, if any shared disks are in use, unplug all disk cables connected to the servers.

Appendix B: Example System Planning Worksheet

Machine 1: Primary Server
Machine 2: Standby Server
Machine 3: Test Client

Table 1: System Network Interfaces

Machine	Host name	Network Connection	IP Address	Subnet Mask	Default Gateway	Preferred DNS Server
1	Primary	Public Interconnect	10.1.1.1 192.168.1.1	255.255.255.0 255.255.255.0	10.1.1.5 ----------	10.1.1.5 ----------
2	Standby	Public Interconnect	10.1.1.2 192.168.1.2	255.255.255.0 255.255.255.0	10.1.1.5 ----------	10.1.1.5 ----------

Table 2: System OS and Disks

Machine	OS	Disk 0 (OS Disk)	Disk 1 (Data Disk)
1	Win Server 2008 Std. Ed. or later	**Boot Partition:** Drive Letter: C Size: 50GB	*** Cluster Partition:** Drive Letter: W Size: 25MB **Data Partition:** Drive Letter: O Size: 150GB
2	Win Server 2008 Std. Ed. or later	**Boot Partition:** Drive Letter: C Size: 50GB	
3	Win XP SP1 or later	C: 20GB	

* Must be a raw partition and larger than 17MB.

Floating IP (FIP) address:
Web Management Console FIP: (1) 10.1.1.3
Cluster FIP: (2) 10.1.1.4

Table 3: System Logins and Passwords

Computer/Account	Login	Password
Machine 1 Administrator	Administrator	admin1234
Machine 2 Administrator	Administrator	admin1234