EXPRESSCLUSTER X for Windows
Quick Start Guide for Microsoft Exchange Server 2013

Version 2

NEC EXPRESSCLUSTER X 3.x for Windows
Microsoft Exchange 2013 Quick Start Guide

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Contents

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 Exchange Server 2013 CU6. 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 Exchange.

This guide covers the following topics:

Chapter 1: Overview – describes the general steps of 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: Microsoft Exchange 2013 Installation – describes the installation of Microsoft Exchange 2013 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: Preparing Servers To Execute Scripts – describes configuration steps for preparing cluster nodes to execute EC X PowerShell failover scripts.

Chapter 8: Microsoft Exchange 2013 Cluster Setup – describes required configuration to enable full cluster functionality.

Chapter 9: Configure Outlook Client – describes steps to set up a Microsoft Outlook client to test an EC X cluster with Microsoft Exchange 2013 Server.

Chapter 10: Final Deployment in a LAN Environment – describes steps to verify the cluster and complete the deployment on a Primary and a Standby Server.

Chapter 11: 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/expresscluster/en/support/manuals.html

- **Getting Started Guide** – 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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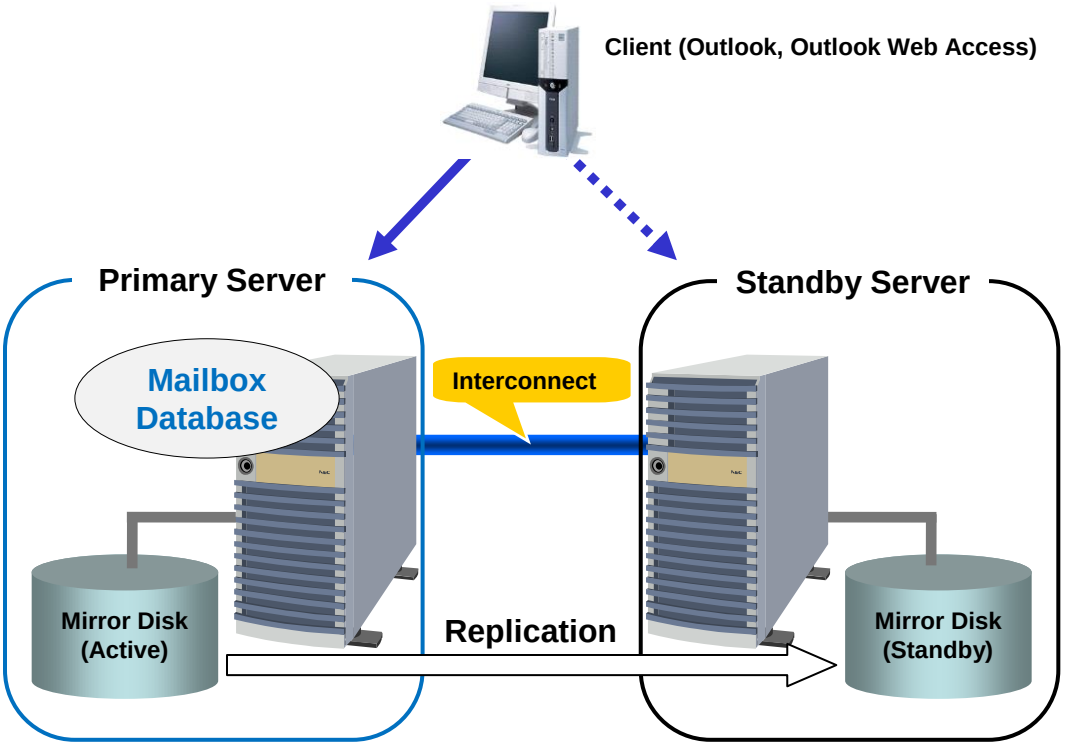
1 Overview

The general procedure to deploy Microsoft Exchange Server 2013 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 the start of actual system installation and configuration.
2. Prepare the Primary and Standby Servers, including OS installation and configuration.
3. Install, configure, and verify Microsoft Exchange 2013 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 Microsoft Exchange 2013.
6. Upload the configuration file and start the cluster to complete deployment in the mirror disk configuration.



Note

The EC software is run using the domain administrator account.

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 Client**
CPU	Pentium 4 – 3.0 GHz or better		Pentium 4 – 3.0 GHz or better
Memory	8GB or more		512MB or more
Disk	1 physical disk **OS partition**: 50GB or more space available (to include the installation of Microsoft Exchange 2013) **Cluster partition**: Partition of 17MB or more, available for EC X Management – the same size for each server system **Data partition**: enough partition space to store Microsoft Exchange 2013 data		1 physical disk with 20GB or more space available
OS	Windows Server 2012 R2 (Standard or Datacenter) with the latest Service Pack		Windows 7 or newer
Software	Java Version 6.0 Update 20 (or later) enabled Web browser Microsoft Exchange 2013 CU6		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: Example System Planning Worksheet 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, and log files for a given Microsoft Exchange 2013 installation 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		
Domain 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 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 Version 4 (TCP/IPv4)**.
   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 Version 4 (TCP/IPv4)**.
   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). Click **Close**.
5. Configure network interface binding order:
   a. In the **Network Connections** 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 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. Make sure 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 17MB or greater. 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).
   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 Microsoft Exchange 2013 Installation

4.1 Microsoft Exchange 2013 setup on the Primary Server (Machine 1)

Installation steps for Microsoft Exchange 2013

1. Log onto the server with a user account which has permissions to install Microsoft Exchange Server 2013.
2. Install the Remote Tools Administration Pack by opening a Windows PowerShell window as Administrator and executing the following command:

   Install-WindowsFeature RSAT-ADDS

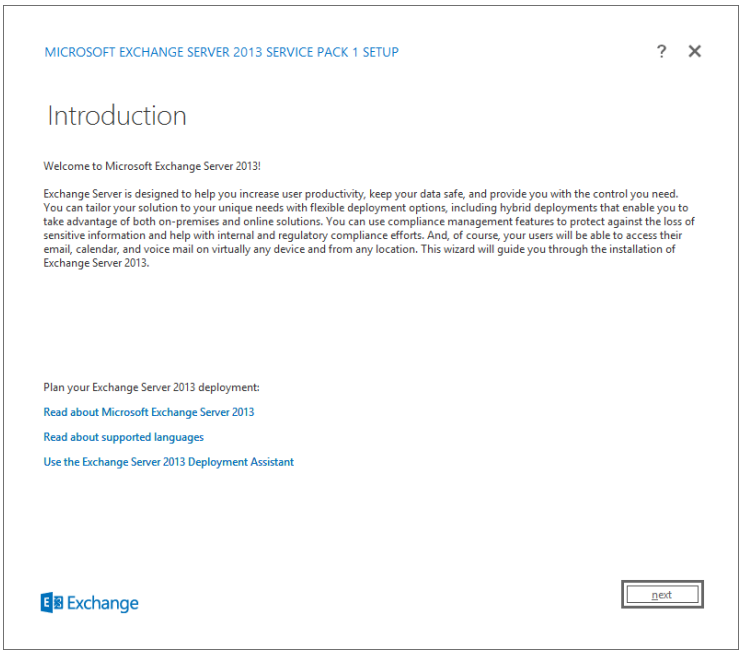
3. Next run the following command to install the required windows components:

   Install-WindowsFeature AS-HTTP-Activation, Desktop-Experience, NET-Framework-45-Features, RPC-over-HTTP-proxy, RSAT-Clustering, RSAT-Clustering-CmdInterface, RSAT-Clustering-Mgmt, RSAT-Clustering-PowerShell, Web-Mgmt-Console, WAS-Process-Model, Web-Asp-Net45, Web-Basic-Auth, Web-Client-Auth, Web-Digest-Auth, Web-Dir-Browsing, Web-Dyn-Compression, Web-Http-Errors, Web-Http-Logging, Web-Http-Redirect, Web-Http-Tracing, Web-ISAPI-Ext, Web-ISAPI-Filter, Web-Lgcy-Mgmt-Console, Web-Metabase, Web-Mgmt-Console, Web-Mgmt-Service, Web-Net-Ext45, Web-Request-Monitor, Web-Server, Web-Stat-Compression, Web-Static-Content, Web-Windows-Auth, Web-WMI, Windows-Identity-Foundation

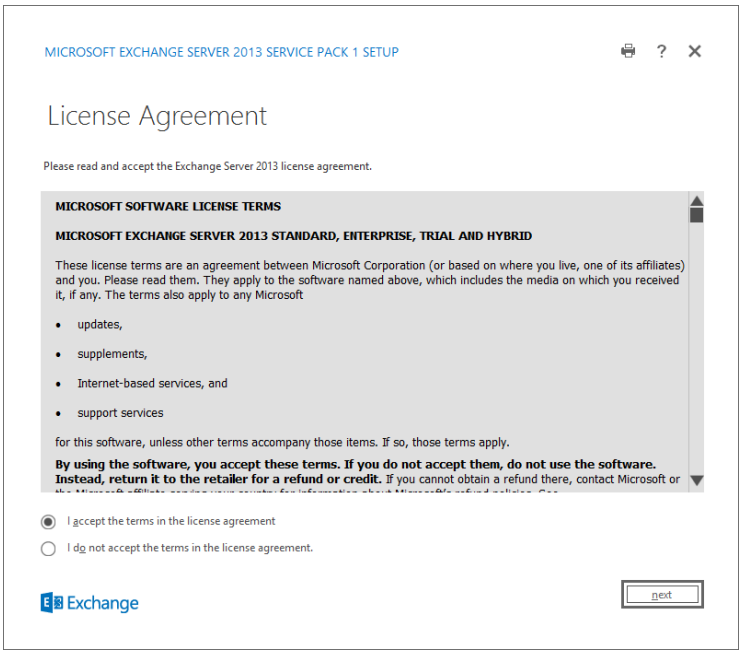
   Restart the server when prompted.

4. Install Microsoft Unified Communications Managed API 4.0, Core Runtime 64-bit from http://go.microsoft.com/fwlink/p/?LinkId=258269.
5. Next Install the Microsoft Office 2010 Filter Packs – Version 2.0 from http://go.microsoft.com/fwlink/?LinkID=191548.
6. Then Install the Microsoft Office 2010 Filter Packs – Version 2.0 – Service pack 1 from http://go.microsoft.com/fwlink/?LinkID=262358.
7. To install Exchange 2013, open the Exchange 2013 installer source path and execute setup.exe. The Installation wizard will start.
8. On the **Check for Updates?** page, select either option and click **next**.
   Note: If the option to download updates was selected, wait for the download to finish, and click **next**.

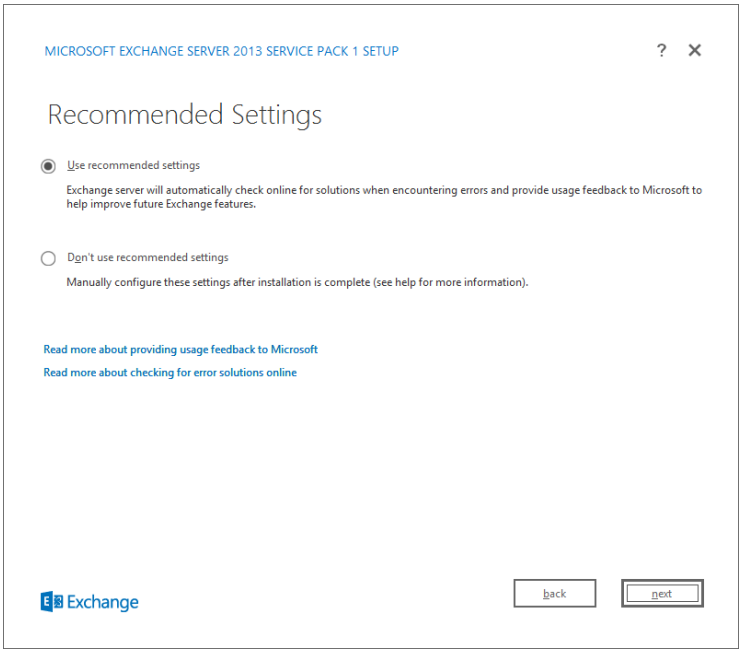
9. After files are copied and the setup is initialized, click **next** on the **Introduction** page.



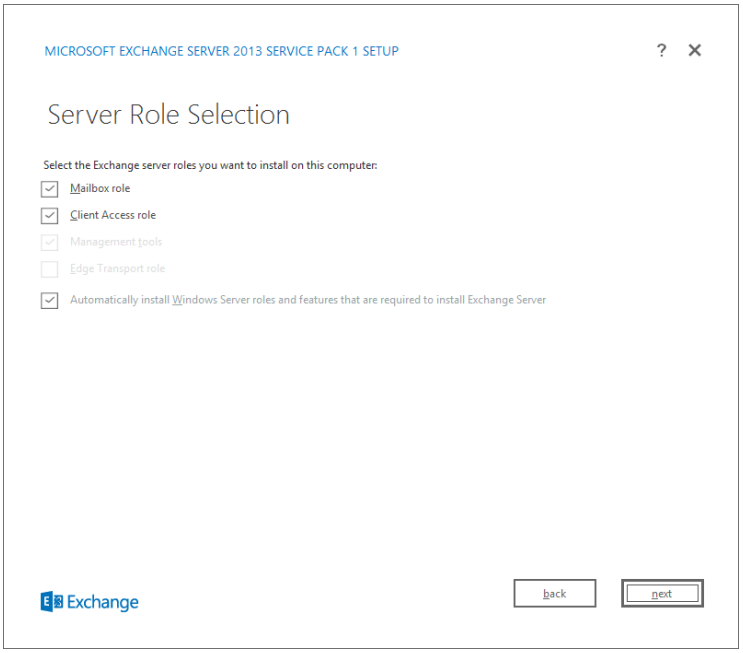
10. Accept the license agreement. Click **next**.



11. Select a setting for providing usage feedback. Click **next**.

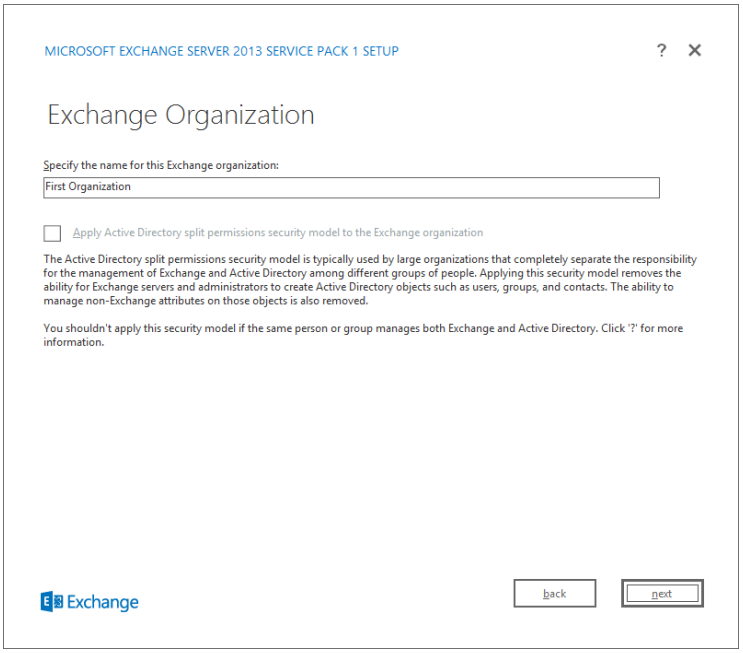


12. Select the Server Roles (Mailbox and Client Access). Click **next**.

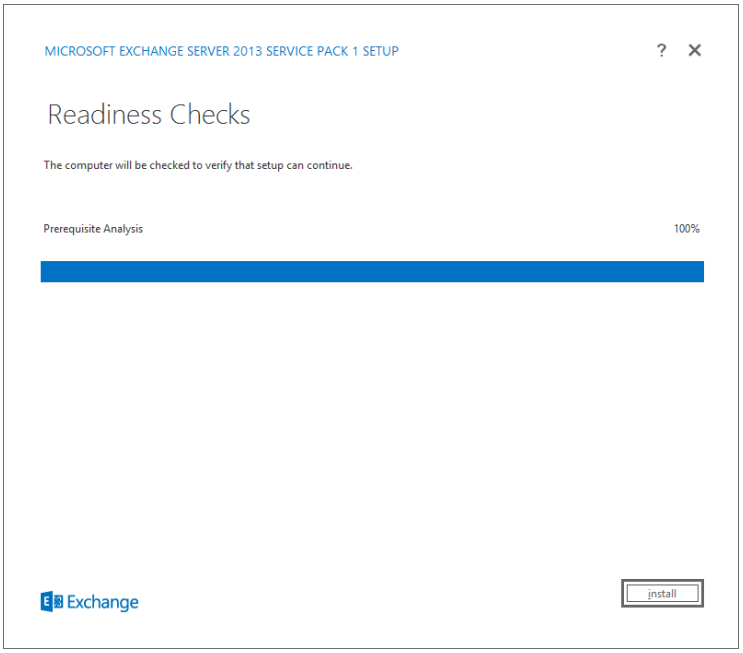


13. Specify the Exchange Server installation path and click **next**.

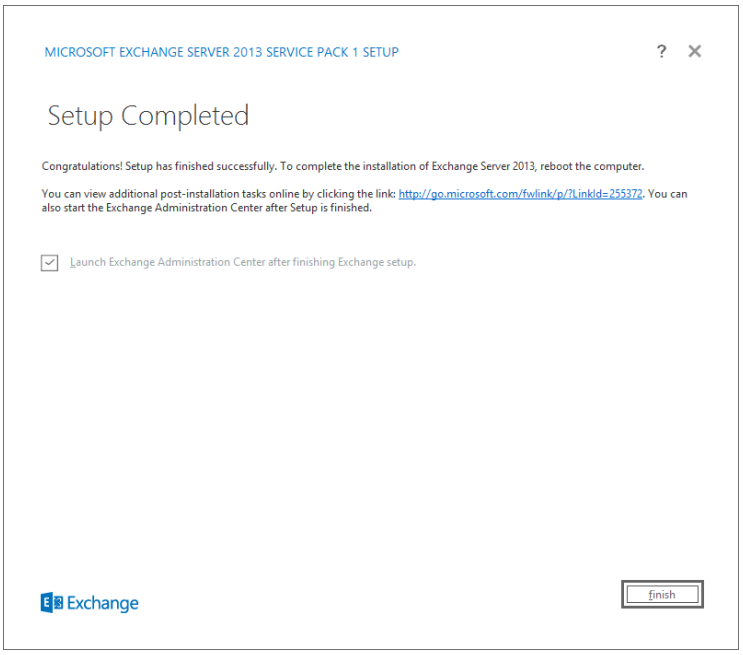
14. Type the name of Exchange Organization. Click **next**.



15. Select an option in the Malware Protection Settings window. Click **next**.
16. After the Readiness Checks have run and Exchange is ready to be installed, click **install** or **next** and installation begins.



17. To complete the Exchange 2013 installation, click **finish**.



18. Restart the server.

Note

Post-installation tasks can be performed in Exchange Administration Center (https://%machine name%/ECP) before or after restarting the server.

Edge Transport server setup and configuration is not addressed in this document.

4.2 Microsoft Exchange 2013 setup on the Standby Server (Machine 2)

Perform the steps under 4 ("Microsoft Exchange 2013 Installation") on the Standby Server (Machine 2).

Note

Reboot the Server whenever required.

Some steps are not available on the second installation.

5 EC X Server Installation

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

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

5.2 Install EC X 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 Version 6.0 Update20 or newer is installed on Test Client (Machine 3). Also install on the nodes (Machine1 and Machine2) if they might be used for cluster management. If necessary, install JRE by performing the following steps:

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

6.2 Start the cluster manager

Start by accessing port 29003 from the Web browser of Test Client (Machine 3). Example: http://10.1.1.1:29003. 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 is opened for the first time, there is a pop-up window with three options. Click **Start cluster generation wizard for standard edition**.
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 second server, and then click **OK**.
6. Both servers are now on the list. If the Primary Server 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 network to use the Heartbeat path in the **Kernel Mode** type. The primary network is for mirroring the data; set Type to **Mirror Communication** and the MDC as **mdc1**. Click **Next**.
8. In the **NP Resolution** 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**.

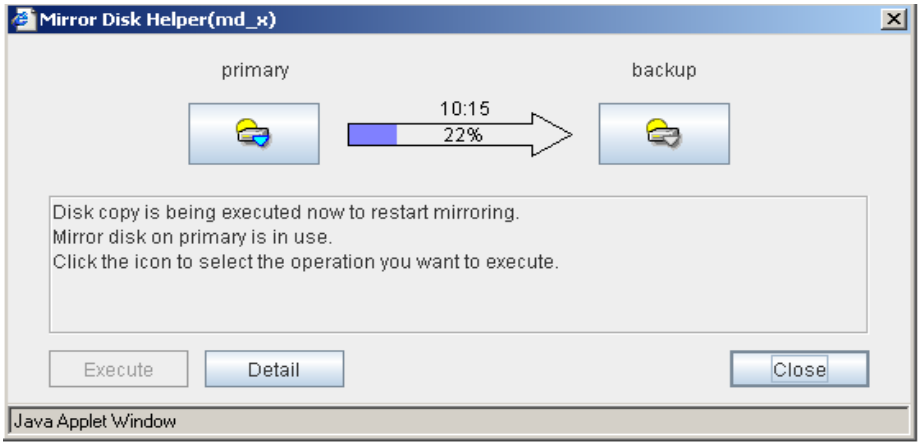
2. In the next window, select **failover** for group type. Name the group (Example: Exchange_Failover), click **Next**, and then click **Next**. (Two times total).
3. Select the default options for the Group Attribute Settings, and then click **Next**.

6.5 Create Floating IP and Mirror Disk Resources

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 the floating IP address that is not used by any other network element, and then click **Finish**.
6. To **Add** a mirror disk (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** 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 9-11 for the second server.
14. Click **Finish**.
15. Click **Finish**, and then click **Next**.
16. If a version of EXPRESSCLUSTER previous to version 3.x is used, the **floating ip monitor** (fipw1) may not be automatically created. If it is missing, add it with the following six steps:
17. In the **Monitor Resource** section, click **Add**.
18. Select **floating ip monitor**, and then click **Next**.
19. In the **Target Resource** box, click on **Browse**. Select the %**fip resource%**, and then click **OK**. Click **Next**. Click **Next**. (Two times total).
20. In the **Recovery Target** box, click **Browse**.
21. Click **%failover group%** (Example: Exchange_Failover), and then click **OK**.
22. To add the FIP monitor, click **Finish**.
23. Click **Finish**.
24. Click **Yes** to enable recovery action when an error occurs in a monitor resource.

6.6 Upload the cluster configuration and initialize the cluster

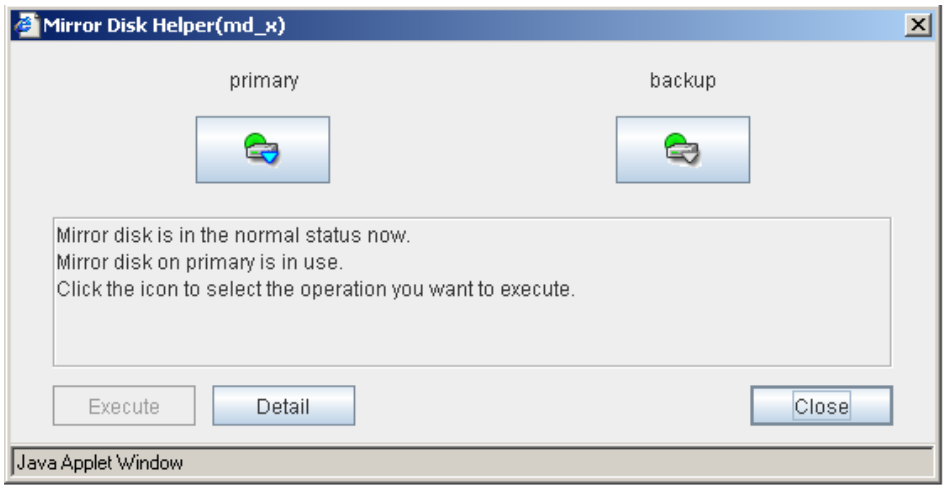
1. In the **Cluster Manager** window, click the **File** menu and then **Apply the Configuration File**. Click **OK**. Click **OK**. (Two times total).
2. After the upload is complete, change to **Operation Mode**.
3. Restart **Cluster Manager**. Click the **Service** menu, and then click **Restart Manager**. Click **OK**.
4. Click the **Service** menu, and then click **Start Cluster**. Click **OK**.
5. When the cluster tree displays, in the left pane of the **Cluster Manager** window, expand the **%failover group%** section, right click **%mirror disk%**, and click **Details**. Mirror disk copy starts automatically, replicating data from the Primary to the Standby server. Refer to the figure below.



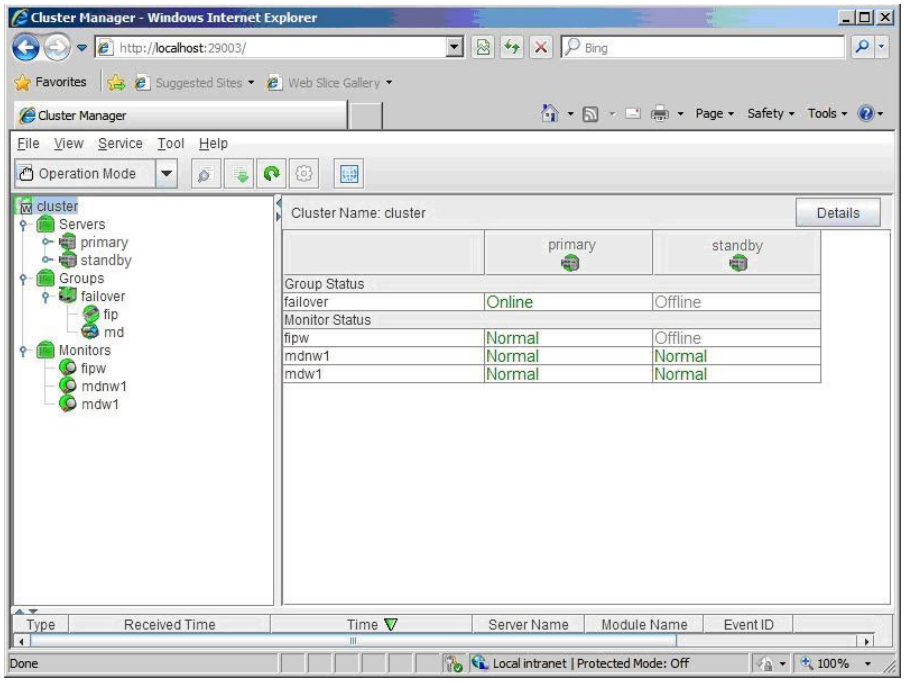
Note

This step 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 the figure below.



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



7 Preparing Servers To Execute Scripts

7.1 Set Powershell's Script Execution Policy

1. Launch **PowerShell** on the Primary Server.
2. Use **Get-ExecutionPolicy** to check the current script execution policy.
3. Set the execution policy to **RemoteSigned** or **Unrestricted** using **Set-ExecutionPolicy** in order to run EC failover scripts.

   PS> Set-ExecutionPolicy RemoteSigned

4. Repeat this process on the Standby Server.

7.2 Create Copy of RemoteExchange.ps1 and Modify the Copy

1. Navigate to the Exchange 'Bin' folder (e.g. C:\Program Files\Microsoft\Exchange Server\V15\Bin) on the Primary Server.
2. Copy RemoteExchange.ps1 to the same folder and rename the copy to **RemoteExchange-ECX.ps1**.
3. Edit RemoteExchange-ECX.ps1 by adding the line **.\ControlMailboxDatabase.ps1** to the section where the functions are called. Comment out **get-banner** and **get-tip** in this section. Also add the error handling code as shown in the example below.

   ## now actually call the functions

   #***get-exbanner***
   #***get-tip***

   $ErrorControlMailboxDatabase = 90

   .\ControlMailboxDatabase.ps1
   $bRet = $?
   if ($bRet –eq $False)
   {
   exit $ErrorControlMailboxDatabase
   }

4. Repeat this process on the Standby Server

8 Microsoft Exchange 2013 Cluster Setup

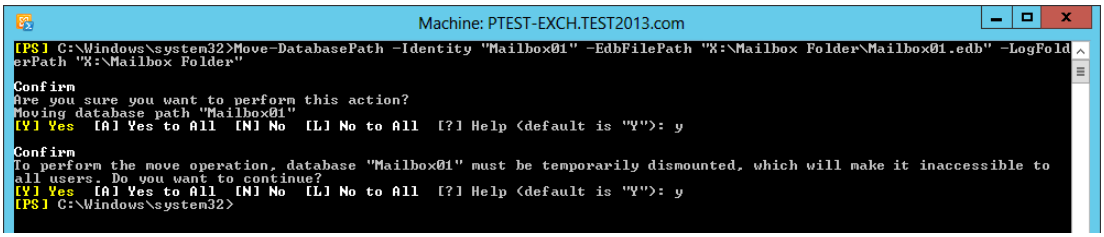
To configure the Microsoft Exchange 2013 cluster, services are configured with EC. Move the Microsoft Exchange 2013 data to the data partition and change the path using the Exchange Management Shell on the Primary Server (Machine 1).

8.1 Move the Mailbox Database from default location to Data Partition

1. Create a folder (Mailbox Folder) on the Data Partition (example: X:\Mailbox Folder).
2. Before moving the Mailbox Database and LogFolderPath, make a backup copy of all files.
3. Once the backup is made, click on Start and click on Exchange Management Shell.
4. Run the following command at the prompt:

   Move-DatabasePath –Identity <MDB name> -EdbFilePath <new path to .edb file> -LogFolderPath <new path to folder>

   Example: Move-DatabasePath –Identity “Mailbox01” –EdbFilePath “X:\Mailbox Folder\Mailbox01.edb” –LogFolderPath “X:\Mailbox Folder”
   Refer to the figure below.



5. Run the following command at the prompt:

   Set-MailboxDatabase –Identity “Mailbox01” –MountAtStartup $False

6. To verify the change, run the command (using mailbox name in example above):

   Get-MailboxDatabase Mailbox01 | Fl Name,*Path*

8.2 Configure services on the Primary Server (Machine 1)

1. Right-click **Start** and then click **Run.**
2. Type **services.msc** and click **OK** to open the Services management console.
3. Right-click on the service Microsoft Exchange Search Host Controller and then select **Properties.**
4. Set the Startup type to Disabled and then stop the service.

8.3 Adding Application Resources to Control a Mailbox Database

1. Download the script files from NEC web site; http://www.nec.com/en/global/prod/expresscluster/en/support/Setup.html.
2. Copy all script files to the EXPRESSCLUSTER bin folder (example. C:\Program Files\EXPRESSCLUSTER\bin) and configure as shown below on all cluster nodes.
3. Open **SetEnvironment.bat** with a text editor and change the parameters to match your environment.
4. Start **Cluster Manager**.
5. In the **Cluster Manager** window, change to **Config Mode**.
6. Right-click on the **%failover group%**, and then click **Add Resource**.
7. From the drop down list, select **application resource**, and give a name to the resource (example. appli-check-service). Click **Next**.
8. Uncheck **Follow the default dependency** and click **Next**.
9. Click **Next** if the default values are acceptable. Make changes first if necessary.
10. Check **Non-Resident** and set the following parameter for **Start Path**.
    Start Path : CheckExchangeServices01.bat
    Stop Path : N/A
11. Click **Tuning** and set **0** for **Normal Return Value** and set a **Timeout** value for **Start** on the **Parameter** tab (see Note below). Click **OK** and then click **Finish**.
    Note
    The 1st application resource (example. appli-check-service) uses the following parameters in **SetEnvironment.bat** to wait for all Exchange services to be running.
    RetryCount : 30
    RetryInterval : 60
    By default, the application resource waits 1800 (= RetryCount x RetryInterval) seconds for all Exchange services to be running. If any services are not running, the application resource starts them and waits 1800 seconds for them to be running. Services can take up to 3600 seconds to start. **It is recommended to set the Timeout value to 3600 or longer** (= RetryCount x RetryInterval + some buffer).
12. Right-click the floating IP resource and click **Properties**.
13. Uncheck **Follow the default dependency**. Click the application resource just created (example: appli-check-service) and click **Add**. Click **OK**.
14. Right-click on the **%failover group%**, and then click **Add Resource**.

15. From the drop down list, select **application resource**, and give a name to the resource (example. appli-control-AD). Click **Next**.
16. Uncheck **Follow the default dependency**. Click the floating IP resource and click **Add**. Click **Next**.
17. Click **Next** if the default values are acceptable. Make changes first if necessary.
18. Check **Non-Resident** and set the following parameter for **Start Path**.
    Start Path : ControlActiveDirectory01.bat <MDB name>
    Stop Path : N/A
19. Click **Tuning** and set **0** for **Normal Return Value** on the **Parameter** tab.
20. Click the **Start** tab and set the following parameters.
    Domain : your domain name
    Account : a user belonging to the **Schema Admins** group
    Password : password for the above user
21. Click **OK** and then click **Finish**.
22. Right-click the mirror disk resource and click **Properties**.
23. Uncheck **Follow the default dependency**. Click the application resource just created (example: appli-control-AD) and click **Add**. Click **OK**.
24. Right-click on the **%failover group%**, and then click **Add Resource**.
25. From the drop down list, select **application resource**, and give a name to the resource (example. appli-control-DB). Click **Next**.
26. Uncheck **Follow the default dependency**. Click the mirror disk resource and click **Add**. Click **Next**.
27. Click **Next** if the default values are acceptable. Make changes if necessary.
28. Check **Non-Resident** and set the following parameters for **Start Path** and **Stop Path**.
    Start Path : ControlMailboxDatabase01.bat <MDB name> Mount
    Stop Path : ControlMailboxDatabase01.bat <MDB name> Dismount
29. Click **Tuning** and set **0** for **Normal Return Value** on the **Parameter** tab.
30. Click the **Start** tab and set the following parameters.
    Domain : your domain name
    Account : a user belonging to the **Organization Management**[1] group
    Password : password of the above user
31. Click the **Stop** tab and set the following parameters.
    Domain : your domain name
    Account : a user belonging to the **Organization Management** group
    Password : password of the above user
32. Click **OK** and then click **Finish**.

[1] The Organization Management group belongs to **Microsoft Exchange Security Group**.

33. Click **Entire Dependency** in the right pane and check the dependencies.

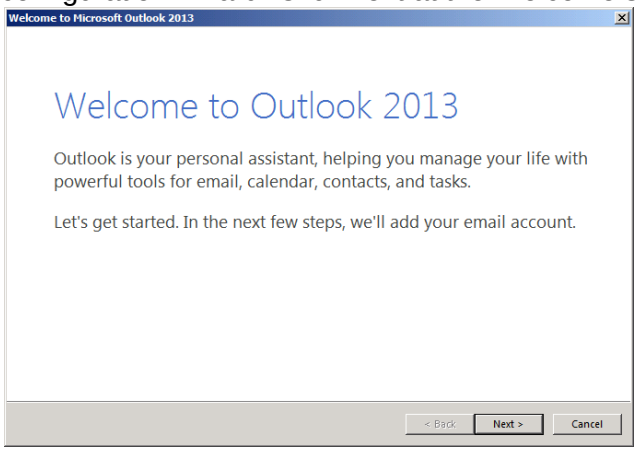
Depth	Resource	Name
0	1st application resource	appli-check-service
1	Floating IP resource	fip
2	2nd application resource	appli-control-AD
3	Mirror disk resource	md
4	3rd application resource	appli-control-DB

8.4 Upload the cluster configuration and start the cluster.

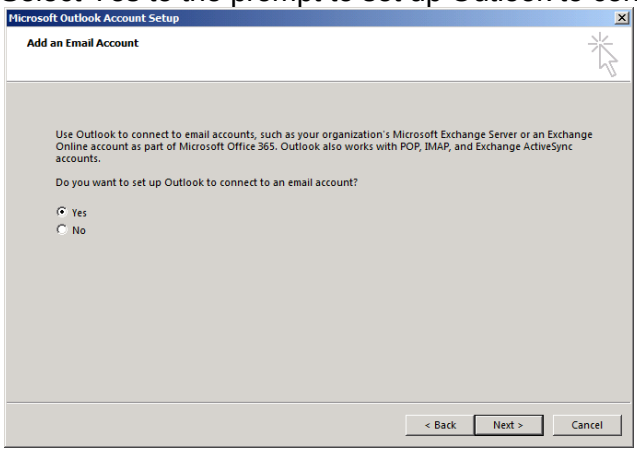
1. In the **Cluster Manager** window, click the **File** menu, and then **Apply the Configuration File**. Click **Yes**. Click **OK**.
2. After the upload is complete, change to the **Operation Mode**.
3. Restart **Cluster Manager**. Click the **Service** menu, and then click **Restart Manager**. Click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

9 Configure Outlook Client

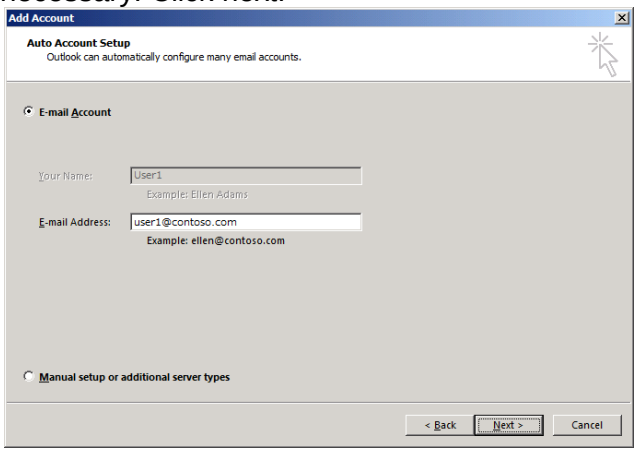
1. Install Outlook 2013.
2. Double-click the Outlook icon or run Outlook.exe to launch the email account configuration wizard. Click next at the Welcome screen.



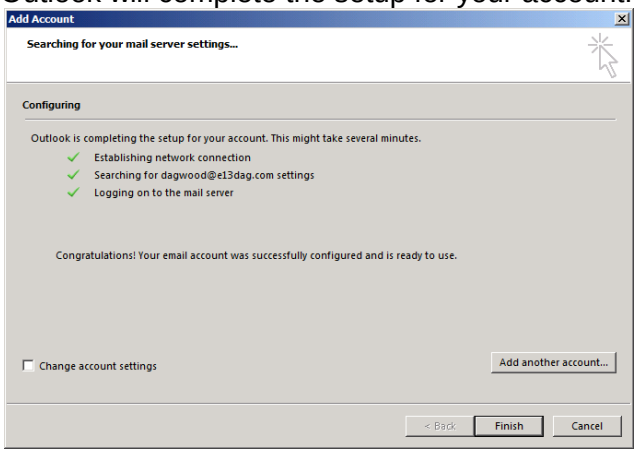
3. Select Yes to the prompt to set up Outlook to connect to an email account. Click next.



4. If logged on as a user with an email account, your name and email address will be automatically populated in the appropriate fields. Enter a valid email address if necessary. Click next.



5. Outlook will complete the setup for your account. Click Finish to start using Outlook.



Note
Configure an email client such as Outlook 2007 SP3 (with November 2012 Cumulative Update) or higher to test the system. Outlook 2013 is recommended.

10 Final Deployment in a LAN Environment

1. Verify the connection between the Primary and Standby Servers to meet 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 Secondary Servers from the test system, and verify 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.

11 Common Maintenance Tasks

11.1 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 the cluster management server application.
Use *during* the initial setup.

Method 2
Through the floating IP address of 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/

11.2 Reboot/shutdown one or all servers

1. Start Cluster Manager. (refer to 11.1)
2. Shutdown one server.
   Right-click the **%machinename%,** and then click **Shutdown**.

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

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

11.3 Startup/stop/move failover groups

1. Start **Cluster Manager** (refer to 11.1).
2. Under **Groups**, right-click **%failover group%** and then click **Start/Stop/Move**.
3. In the **Confirmation** window, click **OK**.

11.4 Isolate a server for maintenance

1. Start **Cluster Manager** (refer to 11.1).
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.

11.5 Return an isolated server to the cluster

11.5.1 Automatic Recovery

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

11.5.2 Manual Recovery

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

11.6 Rebuild a mirror disk

1. Start **Cluster Manager** (refer to 11.1).
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 name of the destination server to copy files to [Standby Server (Machine 2)].
5. Click the **Execute** button. In the **Confirmation** window, click **OK**.

Appendix A: EC X Server Uninstallation

1. On the Test Client (Machine 3), in **Cluster Manager**, click the **Service** menu, and then click **Stop Cluster**.
2. Close **Cluster Manger**.
3. On the server where starting the uninstall process, stop all EC X services. To stop all services, follow the steps below:
   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. To start the uninstall process, in the **Confirmation** window, click **Yes**.
7. In the next window, click **Yes** to reset the registry settings to disable the media sense functions of TCP/IP disconnect detection.
8. In the first **Install Wizard Complete** window, click **Finish**.
9. On 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 system.

Note

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

After the installation 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 ----------
3	Test Client	Public	10.1.1.6	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 2012 R2 Std. Ed. or later	**Boot Partition:** Drive Letter: C Size: 75GB	*** Cluster Partition:** Drive Letter: W Size: 24MB **Data Partition:** Drive Letter: X Size: 50GB
2	Win Server 2012 R2 Std. Ed. or later	**Boot Partition:** Drive Letter: C Size: 75GB	
3	Win 7 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