

ESN 1.0

Installation, Deployment, and Upgrade Guide

January 2017

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About This Guide

Best Practice Deployments

To create a production-viable, best practice ESN deployment, complete the sections below in the order presented.

- ♦ [Chapter 1, “Overview,” on page 9](#)
- ♦ [Chapter 2, “Planning Is Critical,” on page 11](#)
- ♦ [Chapter 3, “System Requirements,” on page 13](#)
- ♦ [Chapter 4, “Setting Up Shared Storage,” on page 21](#)
- ♦ [Chapter 5, “Downloading and Preparing the ESN Software,” on page 25](#)
- ♦ [Chapter 6, “Deploying the Virtual Machines,” on page 29](#)
- ♦ [Chapter 7, “Starting and Configuring the Appliances,” on page 43](#)
- ♦ [Chapter 8, “Creating an Expandable ESN Deployment,” on page 49](#)
- ♦ [Chapter 9, “Setting Up ESN Services,” on page 65](#)

Test and Evaluation Deployments

To create an evaluation or test deployment, see the following sections.

- ♦ [Appendix A, “Creating an All-in-one \(Small\) Deployment,” on page 91](#)
- and
- ♦ [Appendix B, “Creating a Non-Expandable Deployment,” on page 93](#)

Upgrade Instructions

To upgrade an existing deployment, see

- ♦ [Chapter 11, “Upgrading ESN,” on page 79](#)

Audience

This guide is intended for ESN Administrators.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the **comment on this topic** link at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of this guide, visit the [ESN 1.0 Documentation web site \(http://www.novell.com/documentation/filr-3\)](http://www.novell.com/documentation/filr-3).

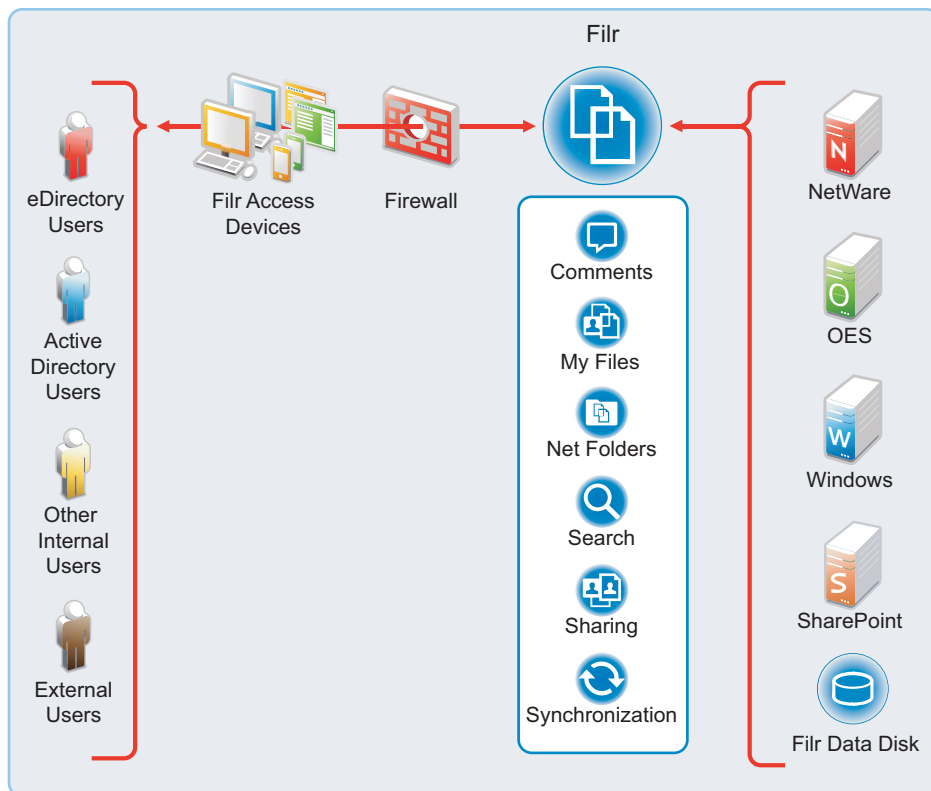
Additional Documentation

For other documentation on ESN 1.0, see the [ESN 1.0 Documentation web site \(http://www.novell.com/documentation/filr-3\)](http://www.novell.com/documentation/filr-3).

1 Overview

What Is Micro Focus ESN?

Micro Focus ESN is an enterprise file sharing tool that leverages your current file server and security infrastructure to provide multi-device access to organizational and personal files.



For more detail about this illustration and for more illustrations and explanations, see the [ESN 1.0: Understanding How ESN Works](#).

What Is “ESN Clustering”?

“ESN clustering” is a term that is sometimes used in the ESN product and means that multiple ESN appliances access a shared storage location, which contains deployment-level configuration settings and data. “ESN clustering” provides a measure of

- ♦ Fault tolerance
- And
- ♦ High availability

“ESN clustering” is not related to Novell Cluster Services.

This guide refers to “ESN-clustered” deployments as “Expandable” deployments.

2 Planning Is Critical

Creating a successful ESN deployment requires that you

1. Involve pertinent stakeholders.
2. Conduct a thorough needs assessment.
3. Plan your deployment based on the needs assessment.

The instructions that follow assume that you have:

1. Completed the planning processes outlined in the [ESN 1.0 Planning Your ESN Deployment—Best Practices](#) guide.
2. Filled in the [ESN 1.0 Planning Worksheets](#) associated with the Planning Best Practices guide.

3 System Requirements

Expandable Deployments Are the Focus of This Guide

Other deployment types are covered in

- ♦ [Appendix A, “Creating an All-in-one \(Small\) Deployment,” on page 91](#)
- ♦ [Appendix B, “Creating a Non-Expandable Deployment,” on page 93.](#)

The following sections outline platform, version, and other requirements for your expandable ESN deployment.

- ♦ [“Administrative Workstations and Browsers” on page 13](#)
- ♦ [“Appliance Disk Space” on page 13](#)
- ♦ [“Appliance Memory and CPU” on page 14](#)
- ♦ [“Appliance Shared Storage \(/vashare Mount Point\) Platforms” on page 14](#)
- ♦ [“Desktop Platforms \(for the Desktop Application\)” on page 15](#)
- ♦ [“Desktop Web Application Access” on page 15](#)
- ♦ [“File Servers \(Backend Storage\)” on page 17](#)
- ♦ [“ESN Software” on page 17](#)
- ♦ [“IP Addresses” on page 17](#)
- ♦ [“LDAP Directory Services \(Users and Groups\)” on page 19](#)
- ♦ [“Mobile Device Platforms” on page 19](#)
- ♦ [“SQL Database Server” on page 20](#)
- ♦ [“Virtualization Hypervisor Platform” on page 20](#)

Administrative Workstations and Browsers

Table 3-1 *Administrative Workstations and Browsers*

Platform	Browser	Requirement
Windows, Mac, or Linux	Mozilla Firefox	Latest version
Capable of running a listed browser	Microsoft Internet Explorer	11
	Microsoft Edge	Latest version
	Chrome	Latest version
	Safari	Latest version

Appliance Disk Space

- ♦ See Worksheet 25—Storage Planning Summary

Planning for disk space varies widely according to organization needs and the planning process is covered in the [ESN 1.0 Planning Your ESN Deployment—Best Practices](#) guide.

General guidelines are summarized in the following sections of the [Planning Best Practices](#) guide:

- ♦ [ESN Appliance Sizing Guidelines](#)
- ♦ [ESNsearch Appliance Sizing Guidelines](#)
- ♦ [SQL Server Sizing Guidelines](#)

For an overview of ESN storage, see “[Appliance Storage Illustrated](#)” in the *ESN 1.0: Understanding How ESN Works*.

Appliance Shared Storage (/vashare Mount Point) Platforms

- ♦ See Worksheet 25—Storage Planning Summary

The ESN appliances in an Expandable deployment access a commonly-shared CIFS or NFS storage disk that you will identify and create in [Chapter 4, “Setting Up Shared Storage,”](#) on page 21.

Table 3-2 Shared Storage Platforms (/vashare Mount Point)

Protocol	Requirement
CIFS	♦ A Windows-based CIFS share
NFS	Exported mount point on one of the following: <ul style="list-style-type: none">♦ SLES 11 SP4♦ SLES 12 NFS on Windows is not supported.

Appliance Memory and CPU

Table 3-3 Memory and CPU

Appliance	Recommended	Minimum
ESN	♦ 12 GB RAM 2 GB Operating System 10 GB Java Heap ♦ 4 CPUs	♦ 8 GB RAM 1.5 GB Operating System 6.5 GB Java Heap ♦ 4 CPUs
ESNsearch	Less than 1,000 Users ♦ 8 GB RAM ♦ 2 CPUs More than 1,000 Users ♦ 12 GB RAM ♦ 2 CPUs	Same

Appliance	Recommended	Minimum
MySQL	Less than 1,000 Users <ul style="list-style-type: none"> ♦ 8 GB RAM 2 GB Operating System 2 GB Memcached 4 GB Java Heap ♦ 2 CPUs More than 1,000 Users <ul style="list-style-type: none"> ♦ 12 GB RAM 2 GB Operating System 3 GB Memcached 7 GB Java Heap ♦ 2 CPUs 	Same

Desktop Platforms (for the Desktop Application)

For more information about the ESN desktop application, see the [Desktop for Windows Quick Start](#) or the [Desktop for Mac Quick Start](#).

Table 3-4 Desktop Platforms (Desktop Application)

Platform	Versions
Windows	IMPORTANT: Always make sure that the latest patches and support packs are installed. <ul style="list-style-type: none"> ♦ Windows 7 SP1 (x86 & x64) ♦ Windows 8.1 (x64 only) ♦ Windows 10 (x64 only)
Mac	IMPORTANT: Always make sure that the latest patches and support packs are installed. <ul style="list-style-type: none"> ♦ 10.11 (El Capitan) ♦ 10.12 (Sierra)

Desktop Web Application Access

Three components apply:

- ♦ [A Browser](#)
- ♦ [Java](#)
- ♦ [An Office Application](#)

Table 3-5 Browsers for Web Application Access

Platform	Requirement
Linux	Mozilla Firefox; Google Chrome (latest versions)
Windows	Microsoft Edge Microsoft Internet Explorer 11 Mozilla Firefox; Google Chrome (latest versions)
Mac	Safari; Mozilla Firefox (latest versions)

Table 3-6 Java for Web Application Functionality

Version	Functionality
Java v1.7.0_72	<ul style="list-style-type: none"> ♦ Editing files with Edit-in-Place as described in “Editing Files with Edit-in-Place” in the ESN 1.0: Web Application User Guide. ♦ Uploading folders to ESN as described in “Adding Folders” in the ESN 1.0: Web Application User Guide. <p>If the browser does not support HTML 5, uploading both files and folders requires this version of Java to be installed.</p>

Table 3-7 Office Application for Edit-in-Place Functionality

NOTE: OpenOffice and LibreOffice are used synonymously throughout the Micro Focus ESN documentation.

For more information about Edit-in-Place, see “Editing Files with Edit-in-Place” in the ESN 1.0: Web Application User Guide:

Linux	<ul style="list-style-type: none"> ♦ OpenOffice.org (latest version) ♦ LibreOffice (latest version)
Windows	<ul style="list-style-type: none"> ♦ LibreOffice (latest version) ♦ OpenOffice (latest version) ♦ MS Office 2013 ♦ MS Office 2010 ♦ MS Office 365
Mac	<ul style="list-style-type: none"> ♦ LibreOffice (latest version) ♦ OpenOffice (latest version) ♦ MS Office 2011 for MAC ♦ MS Office 2013 for MAC ♦ MS Office 365 for MAC

File Servers (Backend Storage)

NOTE: Your organization's file servers provide the backend storage for Net Folders.

If you use ESN only for user personal storage (My Files), then file servers aren't required.

Table 3-8 File Servers

Platform	Supported Versions
Windows	<ul style="list-style-type: none">♦ Windows 2008 R2 (CIFS)♦ Windows 2012 R2 (CIFS) <p>Windows native DFS-N and DFS-R with replication are supported</p>
OES	<ul style="list-style-type: none">♦ OES 11 SP1 (NCP and CIFS) <p>IMPORTANT: You must apply at least the December 2012 Scheduled Maintenance Update, otherwise the NCP server can fail.</p> <ul style="list-style-type: none">♦ OES 11 SP2 (NCP and CIFS)♦ OES 2015 (NCP and CIFS)♦ OES 2015 NSS AD (CIFS) <p>DFS and DST for OES are supported.</p> <p>Domain Services for Windows (DSfW) is not supported.</p>
NetWare	<ul style="list-style-type: none">♦ NetWare 6.5.8
SharePoint	<ul style="list-style-type: none">♦ 2013
Other	<p>In addition to storage that is directly attached to the file servers listed in Net Folders can provide access to files that are being stored on any of the following storage methods:</p> <ul style="list-style-type: none">♦ NetApp NAS device♦ EMC♦ Other Microsoft Active Directory joined NAS devices that support the CIFS protocol.♦ Storage Area Network (SAN)

ESN Software

You will download and prepare the ESN software in [Chapter 5, "Downloading and Preparing the ESN Software,"](#) on page 25.

IP Addresses

Each appliance requires the following.

Table 3-9 IP Addresses

Component	Requirement
IP Address	<ul style="list-style-type: none"> ♦ A static address that is associated with a DNS host name. <p>Example: 192.168.1.61</p>
Network Mask	<ul style="list-style-type: none"> ♦ The appropriate network mask for the IP address. <p>Example: 255.255.255.0</p>
Gateway IP Address	<ul style="list-style-type: none"> ♦ The gateway for the IP address subnet. <p>Example: 192.168.1.254</p>
DNS Host Name	<ul style="list-style-type: none"> ♦ The DNS name associated with the IP address. <p>Example: ESN-1.myorg.local</p>
DNS IP Address	<ul style="list-style-type: none"> ♦ Up to three IP addresses of DNS servers for the IP address subnet. <p>Example: 192.168.1.1</p>
NTP IP Address or DNS Name	<ul style="list-style-type: none"> ♦ Up to three IP addresses or DNS names of reliable NTP servers used to coordinate time on your organization's network—especially your LDAP directory servers. <p>Example: time.myorg.local</p> <p>If using VMware, Novell recommends setting up NTP in accordance with the VMware best practices guidelines (http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1006427).</p>

LDAP Directory Services (Users and Groups)

Table 3-10 LDAP Directory Services

Directory Service	Platform Version
eDirectory	<ul style="list-style-type: none">◆ NetIQ eDirectory 8.8.x.x (8.8.8.3 is recommended). <p>For more information, see the NetIQ eDirectory 8.8 Documentation website (http://www.novell.com/documentation/edir88).</p> <ul style="list-style-type: none">◆ NetIQ eDirectory version 8.8.x.x on standalone Windows. <p>IMPORTANT: eDirectory running on Windows servers with file shares is not supported.</p>
Active Directory	<ul style="list-style-type: none">◆ Windows Server 2008 R2 Active Directory with the latest Service Pack◆ Windows Server 2012 R2 Active Directory with the latest Service Pack <p>For more information, see Windows Server 2008 Active Directory (http://www.microsoft.com/windowsserver2008/en/us/active-directory.aspx).</p>

Mobile Device Platforms

IMPORTANT: Accessing ESN through a web browser on a mobile device is not supported. Instead, download the ESN mobile app that is compatible with your mobile device.

For more information about the ESN mobile app, see the [Mobile App Quick Start](#).

Table 3-11 Mobile Devices

Platform	Supported Versions
iOS Phones and Tablets	<ul style="list-style-type: none">◆ iOS 8.x or later <p>The native app is available as a free download in the Apple App Store.</p>
Android Phones and Tablets	<ul style="list-style-type: none">◆ Android phones and tablets for Android 2.3 or later <p>The native app is available as a free download in the Google Play App Store, the Amazon Appstore for Android, and the Samsung Knox Apps store.</p>
Windows Phones	<ul style="list-style-type: none">◆ Windows 8.0 and 8.1 <p>IMPORTANT: Windows tablets are not currently supported.</p>
BlackBerry PlayBook and Z10	<p>The native application is available in the BlackBerry World app store.</p> <p>ESN documentation for BlackBerry is the same as for Android devices.</p>

SQL Database Server

Table 3-12 SQL Database Server

Database Type	Supported Versions
MySQL	<ul style="list-style-type: none">♦ 5.6 on Linux♦ 5.6.x on Windows
Microsoft SQL	<ul style="list-style-type: none">♦ 2008 R2 on Windows 2008 R2♦ 2012 SP2 on Windows 2012 R2♦ 2014 on Windows 2012 R2
MariaDB	<ul style="list-style-type: none">♦ SLES 12

Virtualization Hypervisor Platform

Table 3-13 Virtualization Hypervisor Platform

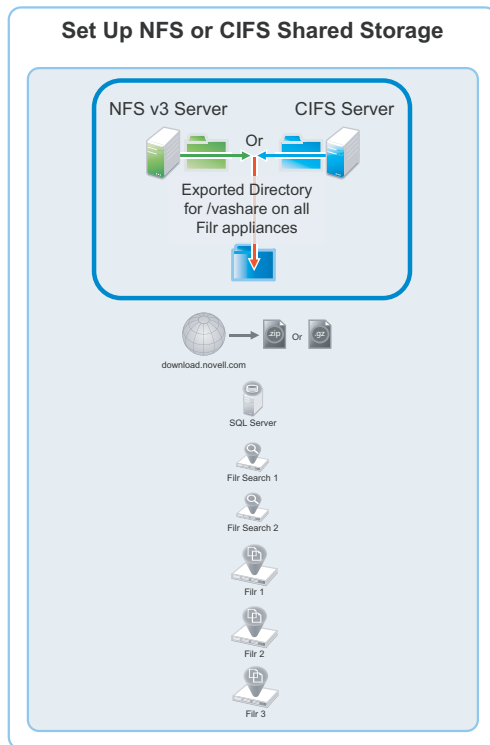
Hypervisor Type	Supported Versions
VMware	<ul style="list-style-type: none">♦ One of the following VMware host servers for hosting the appliance VMs.<ul style="list-style-type: none">♦ ESXi 6.0 with the latest update♦ ESX 5.5 with the latest update <p>For the most up-to-date compatibility matrix of supported VMware host servers, see the VMware Compatibility Guide (http://www.vmware.com/resources/compatibility/search.php?deviceCategory=software&testConfig=16) provided by VMware.</p> <ul style="list-style-type: none">♦ A VMware vSphere client 5.1.x or later for accessing the host server and the appliances for initial configuration. <p>Not all versions of the vSphere client are compatible with versions of VMware ESX and ESXi. See the VMware Product Interoperability Matrixes (http://partnerweb.vmware.com/comp_guide2/sim/interop_matrix.php) provided by VMware.</p> <ul style="list-style-type: none">♦ VMware vMotion is supported when running ESN on VMware ESXi or 5.5 with the latest updates
Hyper-V	<ul style="list-style-type: none">♦ The following platforms<ul style="list-style-type: none">♦ Windows 2008 R2 Server (as a Role)♦ Hyper-V Server 2012 R2 (Core)♦ Hyper-V Manager to deploy, set up, and configure the appliances.
Xen	<p>IMPORTANT: Apply all Xen and kernel patches before installing.</p> <ul style="list-style-type: none">♦ One of the following servers with the Xen packages installed and the Xen bootloader running by default.<ul style="list-style-type: none">♦ SLES 11 SP4, 64-bit♦ SLES 12, 64-bit♦ Virtual Machine Manager to deploy, set up, and configure the appliances.
Citrix Xen	<ul style="list-style-type: none">♦ Citrix XenServer 6.5 and later♦ Citrix XenCenter to deploy, set up, and configure the appliances.

4 Setting Up Shared Storage

- ♦ See Worksheet 25—Storage Planning Summary

Figure 4-1 is the first in a series of illustrations that visually track deployment order.

Figure 4-1 Export an NFS Directory or Create a CIFS share for the /vashare mount point



Complete the instructions in the section below that applies to the plans you have made on Worksheet 25:

- ♦ “Exporting an NFS Directory for the /vashare Mount Point” on page 21

Or

- ♦ “Creating a CIFS Share for the /vashare Mount Point” on page 22

Exporting an NFS Directory for the /vashare Mount Point

IMPORTANT: ESN does not support remote NFS from a Novell Storage Services (NSS) volume.

If you plan to use a CIFS share for ESN shared storage (/vashare) in Worksheet 25, skip to “[Creating a CIFS Share for the /vashare Mount Point](#)” on page 22. Otherwise, export an NFS directory on a Linux server by doing the following:

Table 4-1 Task 1: Exporting an NFS Directory for /vashare

Page, Dialog, or Option	Do This
1 - Verify that the server has adequate disk space.	
	<ol style="list-style-type: none"> 1. Make sure that the Linux server that you are targeting has the available disk space you identified in “Recording Your Plan” in the ESN 1.0 Planning Your ESN Deployment—Best Practices guide and recorded on Worksheet 25. If necessary, add disk space to the Linux server.
	<ol style="list-style-type: none"> 1. On the Linux server, launch YaST2.
YaST Control Center	<ol style="list-style-type: none"> 1. In the Network Services section, click NFS Server. The NFS Server Configuration dialog box displays.
NFS Server Configuration	<ol style="list-style-type: none"> 1. Make sure that the NFS Server is set to Start, that Open Port in Firewall is selected (running firewall required for option), and that Enable NFSv4 is <i>not selected</i> - i.e. NFS v4 is disabled. 2. Click Next.
Directories to Export	<ol style="list-style-type: none"> 1. Click Add Directory.
YaST2	<ol style="list-style-type: none"> 1. Click Browse and choose the directory or share path identified on Worksheet 25 that has the required disk space. You can add a directory name, such as /shared to the path if desired. IMPORTANT: The directory path must not be located in the /var directory structure on the NFS server, as explained in “NFS Mount Point Must Not Point to /var on Target Server” in the ESN 1.0 Release Notes. 2. Click OK. As your first ESN appliance is deployed, a directory named ESN will be created within the directory path you have specified. 3. If you added to the directory path, click Yes to confirm directory creation. 4. Leave the asterisk (*) in the Host Wild Card field. 5. Click the Options field to edit it and change the following options: <ul style="list-style-type: none"> ◆ ro to rw (read-only to read-write) ◆ root_squash to no_root_squash. 6. Click OK.
Directories to Export	<ol style="list-style-type: none"> 1. Click Finish. 2. Skip to Chapter 5, “Downloading and Preparing the ESN Software,” on page 25.

Creating a CIFS Share for the /vashare Mount Point

Table 4-2 Task 1: Creating a CIFS Share for /vashare

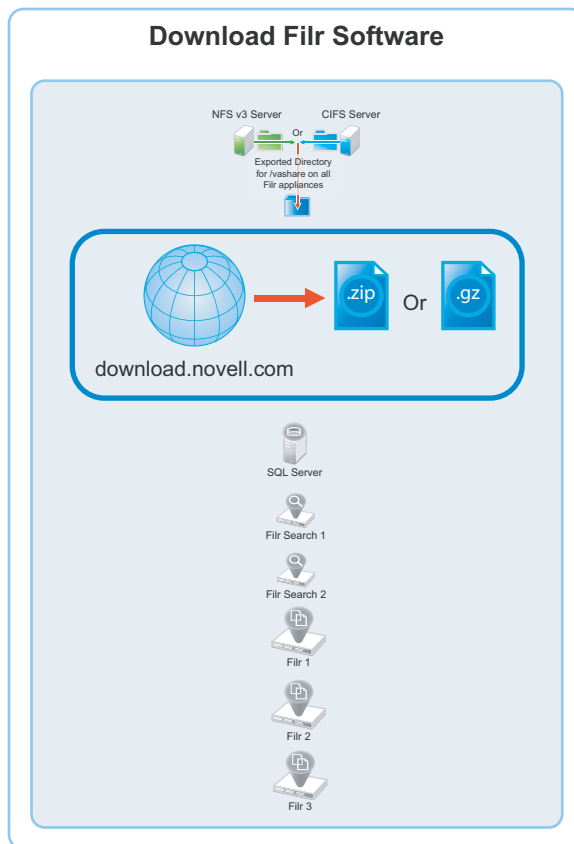
Page, Dialog, or Option	Do This
1 - Verify that the Windows server has adequate disk space.	

Page, Dialog, or Option	Do This
	<ol style="list-style-type: none"> 1. Make sure that the Windows server that you are targeting has the available disk space you identified in “Recording Your Plan” in the ESN 1.0 Planning Your ESN Deployment—Best Practices guide and recorded on Worksheet 25. If necessary, add disk space to the server. 2. Open Windows Explorer
Windows Explorer	<ol style="list-style-type: none"> 1. In Windows Explorer, navigate to the folder that you identified on Planning Worksheet 25. This folder will be the shared storage location (/vashare) for ESN. 2. Right-click the folder, then click Properties.
folder Properties	<ol style="list-style-type: none"> 1. Click the Sharing tab. 2. Click Share.
ESN Sharing	<ol style="list-style-type: none"> 1. Add a user (new or existing) to the list and assign the Read/Write permission to the user. IMPORTANT: You will need the username and password when you select the CIFS share while deploying the ESN appliances. 2. Click Share > Done > Close.
Directories to Export	<ol style="list-style-type: none"> 1. Continue with Chapter 5, “Downloading and Preparing the ESN Software,” on page 25.

5 Downloading and Preparing the ESN Software

After [planning your deployment](#) and making sure you have the necessary [system requirements](#) in place, you are ready to download and prepare the ESN software that applies to your virtualization platform.

Figure 5-1 Download the ESN Software for your VM platform



- ♦ "VMWare" on page 25
- ♦ "Hyper-V" on page 26
- ♦ "Xen" on page 27
- ♦ "Citrix Xen" on page 27

VMWare

- 1 As planned in Worksheets 21, 22, and 23 [download the ESN software](#) shown below to your management workstation.

IMPORTANT: Registration with Micro Focus is required to receive an email with a download link.

Appliance Type	Filename
ESN	ESN.x86_64-version.ovf.zip
Search	ESNsearch.x86_64-version.ovf.zip
MySQL (only if no in-house SQL server is available)	MySQL.x86_64-version.ovf.zip

- 2 Extract each .ovf.zip file on your management workstation until an *ApplianceType-version* folder appears.
- 3 Continue with [“Deploying a VMware VM” on page 30.](#)

Hyper-V

- 1 Log in to the Hyper-V host server either locally or from a remote workstation using Remote Desktop.
- 2 As planned in Worksheets 21, 22, and 23 [download the ESN software](#) shown below to the location where you plan to host your VMs as identified on Planning Worksheet 25.

IMPORTANT: Registration with Micro Focus is required to receive an email with a download link.

Appliance Type	Filename
ESN	ESN.x86_64-version.vhd.zip
Search	ESNsearch.x86_64-version.vhd.zip
MySQL (only if no in-house SQL server is available)	MySQL.x86_64-version.vhd.zip

- 3 Extract each .vhd.zip file in the directory where you downloaded it until an *ApplianceType-version.vhd* archive file appears.
- 4 As planned in Worksheets 21, 22, and 23, create a new directory for each virtual machine.
As a best practice, name these directories with the name that you plan to use for your different appliances.
Consider including information in the names that easily identifies the appliance type and other information, such as the IP address.
For example,
 - ♦ ESN-1-30-192.168.1.61
 - ♦ ESN-2-30-192.168.1.62
 - ♦ ESNsearch-1-30-192.168.1.71
 - ♦ ESNsearch-2-30-192.168.1.72
- 5 Move the *ESN-version.vhd* archive file to the first ESN appliance-type folder and then copy the archive file to the remaining ESN appliance type folders.
- 6 Move the *ESNsearch-version.vhd* archive file to the first ESNsearch appliance-type folder and then copy the archive file to the second ESNsearch folder.
- 7 (Optional) If you are deploying a MySQL appliance rather than using an in-house SQL server, move the *mysql-version.vhd* archive file to the MySQL appliance folder.
- 8 Continue with [“Deploying a Hyper-V VM” on page 33.](#)

Xen

- 1 Log in to the Xen VM host server either locally or from a remote workstation.

If you are connecting from a remote Linux workstation, use the following command:

```
ssh -X root@host_ip_address
```

The -X in the command is required for the GUI installation program upon which the steps in this section are based.

- 2 As planned in Worksheets 21, 22, and 23 [download the ESN software](#) shown below to the Xen VM host server in the location where you plan to host your VMs as identified on Planning Worksheet 25.

IMPORTANT: Registration with Micro Focus is required to receive an email with a download link.

Appliance Type	Filename
ESN	ESN.x86_64-version.xen.tar.gz
Search	ESNsearch.x86_64-version.xen.tar.gz
MySQL (only if no in-house SQL server is available)	MySQL.x86_64-version.xen.tar.gz

- 3 Untar each *.gz file in the directory where you downloaded it.

You can use the following command to untar the file:

```
tar -Sxvzf ApplianceType.x86_64-version.xen.tar.gz
```

An *ApplianceType-version* directory is created for each appliance type.

- 4 Copy and rename the *ApplianceType* directories until you have one directory for each appliance that you have planned to deploy.

Consider including information in the name that easily identifies the appliance, such as the IP address. For example:

1. Rename the *ESN-version* directory to *ESN-30-192.168.1.61*.
2. Copy the *ESN-30-192.168.1.61* directory and rename it to *ESN-30-192.168.1.62*, and so on until you have the Correct number of ESN appliances you identified in Worksheet 21.
3. In a similar manner, copy and rename the *ESNsearch-version* directory until you have two ESNsearch appliances.
4. If you need a MySQL appliance, follow the same methodology.

IMPORTANT: Do not change the names of the .raw or .xenconfig files within the directories that you have copied and renamed.

- 5 Continue with [“Deploying a Xen VM”](#) on page 36.

Citrix Xen

- 1 On a workstation with Citrix XenCenter installed, [download the ESN software](#) shown below, as planned in Worksheets 21, 22, and 23.

IMPORTANT: Registration with Micro Focus is required to receive an email with a download link.

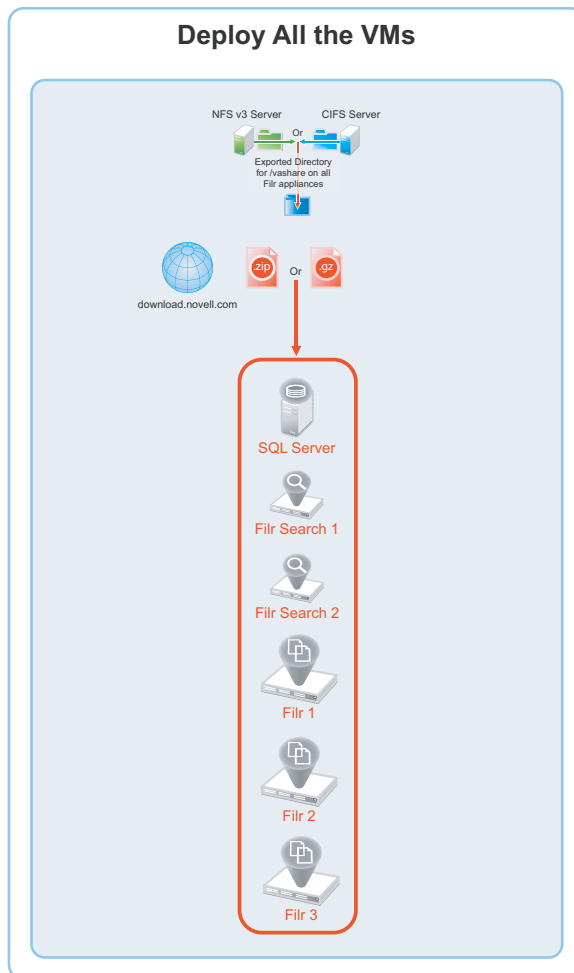
Appliance Type	Filename
ESN	ESN.x86_64-version.xva.tar.gz
Search	ESNsearch.x86_64-version.xva.tar.gz
MySQL (only if no in-house SQL server is available)	MySQL.x86_64-version.xva.tar.gz

- 2 Using a program such as 7-Zip, extract each `.xva.tar.gz` file on your management workstation until an *ApplianceType-version* folder appears.
- 3 Continue with [“Deploying a Citrix Xen VM” on page 39](#).

6 Deploying the Virtual Machines

After downloading and preparing the ESN software as instructed in [Chapter 5, “Downloading and Preparing the ESN Software,”](#) on page 25, complete the instructions in the section for your virtualization platform.

Figure 6-1 Deploy All VMs



- ♦ “Deploying a VMware VM” on page 30
- ♦ “Deploying a Hyper-V VM” on page 33
- ♦ “Deploying a Xen VM” on page 36
- ♦ “Deploying a Citrix Xen VM” on page 39

Deploying a VMware VM

Complete the steps in [Table 6-1](#) for each appliance that you planned in the following worksheets:

- ♦ Worksheet 21—ESN Appliances
- ♦ Worksheet 22—ESNsearch Appliances
- ♦ Worksheet 23—SQL Database (if applicable)

Table 6-1 *Deploying a VMware VM*

Page, Dialog, or Option	Do This
1 - Identifying the appliance.	
	<ol style="list-style-type: none"> Referring to the worksheets listed in the introduction, choose an appliance to deploy. <p>IMPORTANT: Your ESN deployment must be set up in the order specified in Chapter 8, “Creating an Expandable ESN Deployment,” on page 49.</p>
2 - Launching the vSphere Client, naming the VM, and choosing the datastore.	
vSphere Client	<ol style="list-style-type: none"> On your management workstation, start the vSphere Client. Click File > Deploy OVF Template.
Deploy OVF Template	<ol style="list-style-type: none"> Click Browse.
Open	<ol style="list-style-type: none"> For the appliance type you are deploying, navigate to the contents of the appropriate folder extracted in Step 2 on page 26. <p>TIP: Check to be sure that the appliance type matches the worksheet you are following.</p> <ol style="list-style-type: none"> Select the .ovf file. Click Open.
Deploy OVF Template	<ol style="list-style-type: none"> Click Next > Next. In the Name field, type the name of the appliance as planned on the worksheet you are following. For example ESN-30-192.168.1.61. Click Next. Choose the datastore you identified as the Location on VM Host Server on <i>Worksheet 25—Storage Planning Summary</i>. Click Next to accept the default for the disk format. Do not select Power on after deployment. Click Finish. <p>The boot disk is created and the appliance is deployed as specified to this point.</p>
3 - Editing the VM settings.	
vSphere Client	<ol style="list-style-type: none"> In the vSphere Client, right-click the VM you just deployed and select Edit Settings. <p>The Virtual Machine Properties dialog displays.</p>

Page, Dialog, or Option	Do This
Virtual Machine Properties	<ol style="list-style-type: none"> 1. The ESN VMware VMs ship with Memory and CPU settings that are appliance-type appropriate in most circumstances. <p>You can adjust them at this point if desired, or you can adjust them later if required for performance tuning purposes.</p> <p>If you increase or decrease server memory for a ESN or ESNsearch appliance, you should also modify the Java heap size, as described in “Changing JVM Configuration Settings” in the <i>ESN 1.0: Administrative UI Reference</i>.</p>
4 - Adding and configuring disk 2 (/vastorage)	
Virtual Machine Properties	<ol style="list-style-type: none"> 1. Click Add.
Add Hardware	<ol style="list-style-type: none"> 1. Select Hard Disk. 2. Click Next. 3. Click Next (create a new virtual disk). 4. Adjust the Disk Size field value specified for disk 2 on this appliance in the Worksheet 25—Storage Planning Summary. 5. Under Disk Provisioning, select either: <ul style="list-style-type: none"> ♦ Thick Provision Eager Zeroed or ♦ Support clustering features such as Fault Tolerance <p>Depending on the VMware version that you are running.</p> 6. Under Location, select Specify a datastore or Datastore cluster 7. Click Browse. 8. Select a datastore 9. Click OK. 10. Click Next. 11. Under Virtual Device Node section, select SCSI (1:0). 12. Under Mode, select Independent and Persistent. 13. Click Next. 14. Click Finish.
5 - Adding and Configuring disk 3 (/var)	
Virtual Machine Properties	<ol style="list-style-type: none"> 1. Click Add.

Page, Dialog, or Option	Do This
Add Hardware	<ol style="list-style-type: none"> 1. Select Hard Disk. 2. Click Next. 3. Click Next (create a new virtual disk). 4. Adjust the Disk Size field value specified for disk 3 on this appliance in the Worksheet 25—Storage Planning Summary. 5. Under Disk Provisioning, select either: <ul style="list-style-type: none"> ♦ Thick Provision Eager Zeroed or ♦ Support clustering features such as Fault Tolerance <p>Depending on the VMware version that you are running.</p> 6. Under Location, select Specify a datastore or Datastore cluster 7. Click Browse. 8. Select a datastore 9. Click OK. 10. Click Next. 11. Under Virtual Device Node section, select SCSI (2:0). 12. Click Next. 13. Click Finish. 14. If you need to add network adapters, continue with 6 - (Optional) Adding a Network Adapter. <p>Otherwise, click OK, return to the top of Table 6-1, and deploy the next appliance you have planned for.</p>
6 - (Optional) Adding a Network Adapter <p>You can add a network adapter if your ESN deployment accesses a separate network for one or more of the following reasons:</p> <ul style="list-style-type: none"> ♦ Appliance administration. ♦ NFS mount or CIFS access to the /vashare mount point. ♦ Security of memcached. <p>IMPORTANT: Bonding or teaming NICs is not supported with ESN.</p>	
Virtual Machine Properties	<ol style="list-style-type: none"> 1. Click Add.
Add Hardware	<ol style="list-style-type: none"> 1. Select Ethernet Adapter. 2. Click Next. 3. Under Network Connection, select the secondary network associated with the ESN installation. 4. Click Next > Finish > OK.
vSphere Client	<ol style="list-style-type: none"> 1. Repeat the steps in this table until all of your planned appliances have been deployed, then continue with Chapter 7, “Starting and Configuring the Appliances,” on page 43.

Deploying a Hyper-V VM

Complete the steps in [Table 6-2](#) for each appliance that you planned in the following worksheets:

- ♦ Worksheet 21—ESN Appliances
- ♦ Worksheet 22—ESNsearch Appliances
- ♦ Worksheet 23—SQL Database (if applicable)

Table 6-2 *Deploying a Hyper-V VM*

Page, Dialog, or Option	Do This
1 - Identifying the appliance.	
	<ol style="list-style-type: none"> Referring to the worksheets listed in the introduction, choose an appliance to deploy. <p>IMPORTANT: Your ESN deployment must be set up in the order specified in Chapter 8, “Creating an Expandable ESN Deployment,” on page 49.</p>
2 - Open Hyper-V Manager.	
Hyper-V Host Server	<ol style="list-style-type: none"> Open the Hyper-V Manager.
3 - Create a new VM.	
Hyper-V Manager	<ol style="list-style-type: none"> In the left pane, right-click the server where you have planned to create the new virtual machine, then click New > Virtual Machine. <p>The New Virtual Machine Wizard displays.</p> <ol style="list-style-type: none"> Click Next.
Specify Name and Location	<ol style="list-style-type: none"> Referring to the appropriate appliance worksheet, specify the appliance name. For example, <code>ESN-1-30-192.168.1.61</code>. Click Next.
Specify Generation	<ol style="list-style-type: none"> Make sure that Generation 1 is selected. Click Next.
4 - Specify memory	
Assign Memory	<ol style="list-style-type: none"> In the Startup RAM field, specify the amount of memory (in MB) that you planned on the worksheet for this VM. Click Next.
5 - Assign network adapter	
Configure Networking	<ol style="list-style-type: none"> On the Configure Networking page, select the networking card for this VM, then. Click Next.
6 - Identify the system disk	

Page, Dialog, or Option	Do This
Connect Virtual Hard Disk	<ol style="list-style-type: none"> 1. Select Use an existing virtual hard disk. 2. Browse to and select the .vhd file in the folder you created for this appliance. 3. Click Open. 4. Click Next.
Summary	<ol style="list-style-type: none"> 1. Click Finish. <p>The VM is created and appears in the list of Virtual Machines.</p>
7 - Specify processors	
Hyper-V Manager	<ol style="list-style-type: none"> 1. In Hyper-V Manager, right-click the VM that you just created. 2. Click Settings.
Processor	<ol style="list-style-type: none"> 1. Click Processor. 2. In the Number of virtual processors field, specify the number of processors that you planned on the worksheet for this VM. 3. Click Next.
8 - Add hard disk 2 (/vstorage).	
Settings for VM on Host Server	<ol style="list-style-type: none"> 1. Under Hardware, select IDE Controller 1 2. Click Hard Drive. 3. Click Add. <p>A Hard Drive entry is added below the controller.</p>
Hard Drive	<ol style="list-style-type: none"> 1. Under Media, select Virtual hard disk. 2. Click New.
New Virtual Hard Disk Wizard	<ol style="list-style-type: none"> 1. Click Next.
Choose Disk Format	<ol style="list-style-type: none"> 1. Select VHD. 2. Click Next.
Choose Disk Type	<ol style="list-style-type: none"> 1. On the Choose Disk Type page, select Fixed size 2. Click Next.
Specify Name and Location	<ol style="list-style-type: none"> 1. Specify the following: <ul style="list-style-type: none"> ♦ Name: A descriptive name for the virtual disk. For example, <code>ESN-1-Disk-2</code>. ♦ Location: Specify the location where you want the virtual disk to be located. 2. Click Next.
Configure Disk	<ol style="list-style-type: none"> 1. Select Create a new blank virtual hard disk. 2. Size: Specify the amount calculated for disk 2 on this appliance in the Worksheet 25—Storage Planning Summary. 3. Click Next.
Summary	<ol style="list-style-type: none"> 1. Review the summary information. 2. Click Finish
9 - Add hard disk 3 (/var).	

Page, Dialog, or Option	Do This
Hyper-V Manager	<ol style="list-style-type: none"> 1. In Hyper-V Manager, right-click the VM that you just created. 2. Click Settings.
Settings for <i>VM on Host Server</i>	<ol style="list-style-type: none"> 1. Under Hardware, select SCSI Controller. 2. Click HardDrive. 3. Click Add. A Hard Drive entry is added below the controller.
Hard Drive	<ol style="list-style-type: none"> 1. Under Media, select Virtual hard disk. 2. Click New.
New Virtual Hard Disk Wizard	<ol style="list-style-type: none"> 1. Click Next.
Choose Disk Format	<ol style="list-style-type: none"> 1. Select VHD. 2. Click Next.
Choose Disk Type	<ol style="list-style-type: none"> 1. On the Choose Disk Type page, select Fixed size 2. Click Next.
Specify Name and Location	<ol style="list-style-type: none"> 1. Specify the following: <ul style="list-style-type: none"> ♦ Name: A descriptive name for the virtual disk. For example, <code>ESN-1-Disk-3</code>. ♦ Location: Specify the location where you want the virtual disk to be located. 2. Click Next.
Configure Disk	<ol style="list-style-type: none"> 1. Select Create a new blank virtual hard disk. 2. Size: Specify the amount calculated for disk 3 on this appliance in the Worksheet 25—Storage Planning Summary. 3. Click Next.
Summary	<ol style="list-style-type: none"> 1. Review the summary information. 2. Click Finish > OK
10 - (Optional) Add a Network Adapter You can add a network adapter if your ESN deployment accesses a separate network for one or more of the following reasons: <ul style="list-style-type: none"> ♦ Appliance administration. ♦ NFS mount or CIFS access to the /vashare mount point. ♦ Security of memcached. IMPORTANT: Bonding or teaming NICs is not supported with ESN.	
Hyper-V Manager	<ol style="list-style-type: none"> 1. In Hyper-V Manager, right-click the virtual machine for which you want to create an additional NIC, then click Settings.
Settings for <i>VM on Host Server</i>	<ol style="list-style-type: none"> 1. Under Hardware, select Add Hardware.
Add Hardware	<ol style="list-style-type: none"> 1. Click Network Adapter. 2. Click Add. A Network Adapter entry is added to the hardware list.

Page, Dialog, or Option	Do This
Network Adapter	<ol style="list-style-type: none"> 1. Under Virtual Switch, select the secondary network associated with the ESN installation. 2. Specify any other required settings for the new network adapter. 3. Click OK.
Hyper-V Manager	<ol style="list-style-type: none"> 1. Repeat the steps in this table until all of your planned appliances have been deployed, then continue with Chapter 7, "Starting and Configuring the Appliances," on page 43.

Deploying a Xen VM

Complete the steps in [Table 6-3](#) for each appliance that you planned in the following worksheets:

- ♦ Worksheet 21—ESN Appliances
- ♦ Worksheet 22—ESNsearch Appliances
- ♦ Worksheet 23—SQL Database (if applicable)

Table 6-3 *Deploying a Xen VM*

Page, Dialog, or Option	Do This
1 - Before you deploy the first Xen VM.	
	<ol style="list-style-type: none"> 1. If you have not already done so, before you begin this process, you must set up shared storage for your ESN appliances by either: <ul style="list-style-type: none"> ♦ Exporting an NFS directory or ♦ Creating a CIFS share <p>See the "Network-Based Shared Disk Space for /vashare" section of <i>Worksheet 25</i> and complete the instructions in Section 4, "Setting Up Shared Storage," on page 21.</p>
2 - Identifying the appliance.	
	<ol style="list-style-type: none"> 1. Referring to the worksheets listed in the introduction, choose an appliance to deploy. <p>IMPORTANT: Your ESN deployment must be set up in the order specified in Chapter 8, "Creating an Expandable ESN Deployment," on page 49.</p>
3 - Launch the installer.	
Terminal prompt on Xen VM Host Server	<ol style="list-style-type: none"> 1. Run the following command to launch the GUI configuration menu: <pre>vm-install</pre> <p>The Create a Virtual Machine wizard is displayed.</p>
Create a Virtual Machine	<ol style="list-style-type: none"> 1. Click Forward.

Page, Dialog, or Option	Do This
Install an Operating System?	<ol style="list-style-type: none"> 1. Select I have a disk or disk image with an installed operating system. 2. Click Forward.
Type of Operating System	<ol style="list-style-type: none"> 1. Select SUSE Linux Enterprise Server 11. 2. Click Forward.
4 - Name the VM.	
Summary	<ol style="list-style-type: none"> 1. Click Name of Virtual Machine.
Name of Virtual Machine	<ol style="list-style-type: none"> 1. In the Name field, type the name of one of the appliances that you prepared a directory for in Step 4 on page 27. For example, ESN-1-30-192.168.1.61. 2. (Optional) In the Description field, type additional information about the appliance. 3. Click Apply.
5 - Specify the RAM and Virtual Processors.	
Summary	<ol style="list-style-type: none"> 1. Click Hardware.
Hardware	<ol style="list-style-type: none"> 1. Change the Initial Memory and Maximum Memory specify the amount of memory (in MB) that you planned on the worksheet for this VM. 2. Change the Virtual Processors setting to the number that you planned on the worksheet for this VM. 3. Click Apply.
6 - Configure the boot disk	
Summary	<ol style="list-style-type: none"> 1. Click Disks.
Disks	<ol style="list-style-type: none"> 1. Click the Harddisk button.
Virtual Disk	<ol style="list-style-type: none"> 1. Click the Browse button.
Locate Disk or Disk Image.	<ol style="list-style-type: none"> 1. Navigate to the contents of the folder for the appliance you are creating. 2. Select the <code>.raw</code> file. 3. Click Open.
Virtual Disk	<ol style="list-style-type: none"> 1. Click OK.
7 - Configure disk 2 (/vastorage)	
Disks	<ol style="list-style-type: none"> 1. Click the Harddisk button.
Virtual Disk	<ol style="list-style-type: none"> 1. Click the Browse button.
Locate Disk or Disk Image.	<ol style="list-style-type: none"> 1. Select the <code>.raw</code> file. 2. Click Open.

Page, Dialog, or Option	Do This
Virtual Disk	<ol style="list-style-type: none"> 1. Click in the Source field. 2. Press the End key. 3. Use the Backspace key to erase the filename so that the path ends with the forward slash (/) that follows the appliance's folder name. 4. Type a disk name that reflects the appliance name and that this is disk 2. For example, ESN-192.168.1.61-disk-2. 5. Do not change the Storage Format. 6. Change the Size field value according to the appliance type as specified in the Worksheet 25—Storage Planning Summary. 7. Make sure that Create Sparse Image File is selected. 8. Click OK.
8 - Configure disk 3 (/var)	
Disks	<ol style="list-style-type: none"> 1. Click the Harddisk button.
Virtual Disk	<ol style="list-style-type: none"> 1. Click the Browse button.
Locate Disk or Disk Image.	<ol style="list-style-type: none"> 1. Select the <code>.raw</code> file. 2. Click Open.
Virtual Disk	<ol style="list-style-type: none"> 1. Click in the Source field. 2. Press the End key. 3. Use the Backspace key to erase the filename so that the path ends with the forward slash (/) that follows the appliance's folder name. 4. Type a disk name that reflects the appliance name and that this is disk 3. For example, ESN-192.168.1.61-disk-3. 5. Do not change the Storage Format. 6. Change the Size field value according to the appliance type as specified in the Worksheet 25—Storage Planning Summary. 7. Click OK.
Disks	<ol style="list-style-type: none"> 1. Click Apply. 2. If you need to add network adapters, continue with “9 - (Optional) Add a Network Adapter”. Otherwise, click OK. The virtual machine is created, the appliance starts, and the configuration process begins. 3. Go to Chapter 7, “Starting and Configuring the Appliances,” on page 43. 4. After completing the instructions in Chapter 8, return to Table 6-3 on page 36 to deploy your next appliance.

Page, Dialog, or Option	Do This
	9 - (Optional) Add a Network Adapter You can add a network adapter if your ESN deployment accesses a separate network for one or more of the following reasons: <ul style="list-style-type: none"> ♦ Appliance administration. ♦ NFS mount or CIFS access to the /vashare mount point. ♦ Security of memcached. IMPORTANT: Bonding or teaming NICs is not supported with ESN.
Summary	1. Click Network Adapters .
Network Adapters	1. Click New .
Virtual Network Adapter	1. Specify the settings for the adapter. 2. Click Apply .
Network Adapters	1. Click Apply .
Summary	1. Click OK . The virtual machine is created, the appliance starts, and the configuration process begins. 2. Go to “4 - Accept the license and specify the keyboard layout.” on page 44 , then return to Table 6-3 on page 36 to deploy your next appliance.

Deploying a Citrix Xen VM

Complete the steps in [Table 6-4](#) for each appliance that you planned in the following worksheets:

- ♦ Worksheet 21—ESN Appliances
- ♦ Worksheet 22—ESNsearch Appliances
- ♦ Worksheet 23—SQL Database (if applicable)

Table 6-4 Deploying a Citrix Xen VM

Page, Dialog, or Option	Do This
	1 - Identify the appliance to deploy. 1. Referring to the worksheets listed in the introduction, choose an appliance to deploy. IMPORTANT: Your ESN deployment must be set up in the order specified in Chapter 8, “Creating an Expandable ESN Deployment,” on page 49 .
	2 - Launch XenCenter.
Management Workstation	1. Start XenCenter.

Page, Dialog, or Option	Do This
XenCenter	<ol style="list-style-type: none"> 1. Connect to the Citrix XenServer where you planned to deploy ESN in <i>Worksheet 23 - VM Host Servers</i>. 2. Right-click the server and select Import.
3 - Import the system disk	
Locate the File you want to import	<ol style="list-style-type: none"> 1. Browse to and select the <code>.xva</code> file on your management workstation for the appliance type that you are deploying. 2. Click Open. 3. Click Next.
Select the location where the imported VM will be placed	<ol style="list-style-type: none"> 1. Select the XenServer. 2. Click Next.
Select target storage	<ol style="list-style-type: none"> 1. Select the storage repository for the VM. 2. Click Import.
4 - Select the network adapter	
Select network to connect VM	<ol style="list-style-type: none"> 1. Select the virtual network adapter. 2. Click Next.
Review the import settings	<ol style="list-style-type: none"> 1. Deselect Start VM(s) after import. 2. Click Finish. <p>IMPORTANT: Depending on network latency and other factors, it can take a while to import the system disk.</p>
5 - Specify Memory	
	<ol style="list-style-type: none"> 1. If you need to adjust the memory to the amount of memory that you planned on the worksheet for this VM, select the newly created VM selected in the left pane. 2. Click the Memory tab. 3. Click Edit, change the setting, and click OK.
6 - Specify Processors	
	<ol style="list-style-type: none"> 1. If you need to adjust the CPUs to the number that you planned on the worksheet for this VM, right-click the newly created VM in the left pane. 2. Select Properties. 3. Click CPU, change the setting, and click OK.
7 - Add Disk 2 (/vastorage)	
	<ol style="list-style-type: none"> 1. With the newly created VM selected in the left pane, click the Storage tab.
Virtual Disks	<ol style="list-style-type: none"> 1. Click Add....
Add Virtual Disk	<ol style="list-style-type: none"> 1. Type a disk name that reflects the appliance name and that this is disk 2. For example, ESN-1-disk-2. 2. Change the Size field value according to the appliance type as specified in the Worksheet 25—Storage Planning Summary. 3. Click Add.
8 - Add Disk 3 (/var)	

Page, Dialog, or Option	Do This
Virtual Disks	1. Click Add....
Add Virtual Disk	<ol style="list-style-type: none"> 1. Type a disk name that reflects the appliance name and that this is disk 3. For example, ESN-1-disk-3. 2. Change the Size field value according to the appliance type as specified in the Worksheet 25—Storage Planning Summary. 3. Click Add.
9 - (Optional) Add a Network Adapter You can add a network adapter if your ESN deployment accesses a separate network for one or more of the following reasons: <ul style="list-style-type: none"> ♦ Appliance administration. ♦ NFS mount or CIFS access to the /vashare mount point. ♦ Security of memcached. IMPORTANT: Bonding or teaming NICs is not supported with ESN.	
	<ol style="list-style-type: none"> 1. With the newly created VM selected in the left pane, click the Networking tab. 2. Select the secondary network associated with the ESN installation..
XenCenter	1. Repeat the steps in this table until all of your planned appliances have been deployed, then continue with Chapter 7, “Starting and Configuring the Appliances,” on page 43.

7 Starting and Configuring the Appliances

After the VMs are deployed with the necessary disks added and other settings adjusted according to your plans, it is time to start and configure the appliance software on each appliance. When this step is completed, all of the appliances will be running and ready to be deployed as an integrated ESN infrastructure.

Figure 7-1 Starting and Configuring the Appliances

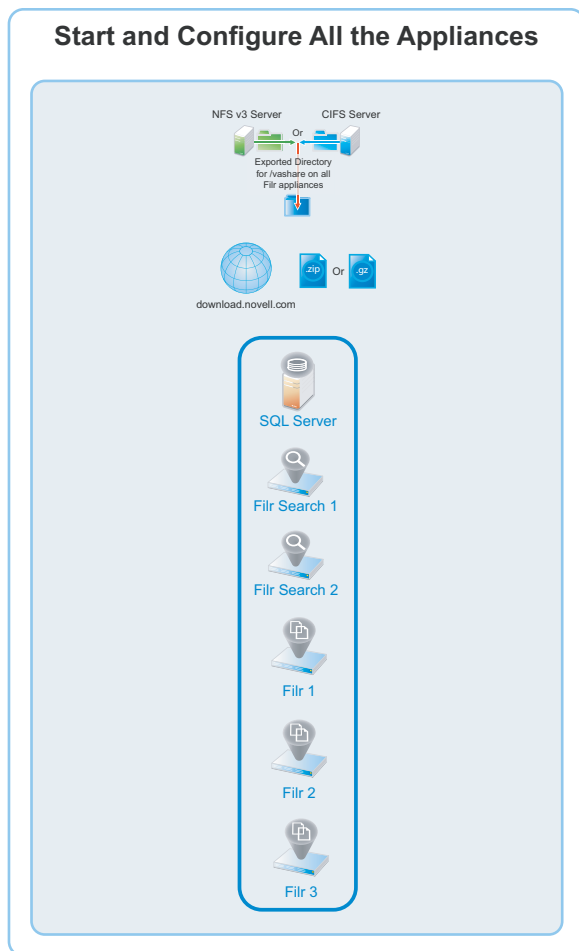


Table 7-1 Starting and Configuring the Appliances

Page, Dialog, or Option	Do This
	<p>NOTE: For Xen, after you have completed the instructions in “Deploying a Xen VM” on page 36, skip to “4 - Accept the license and specify the keyboard layout.” in this table.</p>
	<p>1 - Before you deploy the first VM.</p>

Page, Dialog, or Option	Do This
	<ol style="list-style-type: none"> If you have not already done so, before you begin this process, you must set up shared storage for your ESN appliances by either: <ul style="list-style-type: none"> Exporting an NFS directory or Creating a CIFS share <p>See the “Network-Based Shared Disk Space for /vashare” section of <i>Worksheet 25</i> and complete the instructions in Section 4, “Setting Up Shared Storage,” on page 21 before continuing.</p>
	2 - Select an appliance.
	<ol style="list-style-type: none"> Choose one of the appliances that you deployed in Chapter 6, “Deploying the Virtual Machines,” on page 29 and refer to its planning worksheet as you start and configure it. <p>IMPORTANT: You must set up your ESN deployment in the order specified in Chapter 8, “Creating an Expandable ESN Deployment,” on page 49.</p>
	3 - Start the appliance.
	<ol style="list-style-type: none"> After you have downloaded the ESN software and configured your appliances, you must start and configure each appliance in turn. <ul style="list-style-type: none"> VMware: In the vSphere Client, power on the first appliance, then click the Console tab. Hyper-V: In Hyper-V Manager, right-click the VM and select Start. Citrix Xen: In XenCenter, right-click the appliance and select Start.
	4 - Accept the license and specify the keyboard layout.
License Agreement	<ol style="list-style-type: none"> After the appliance boots, the License Agreement screen displays. Select your preferred keyboard layout in the Keyboard Language drop-down. (Optional) use the License Language drop-down to change the license language. (Optional) use the Keyboard Language drop-down to change the keyboard layout. Accept the license agreement.

Page, Dialog, or Option	Do This
Passwords and Time Zone	<ol style="list-style-type: none"> On the configuration page, specify the following information: <p>IMPORTANT: Keep a confidential record of the passwords you set for the root and vaadmin users below.</p> <p>Root password and confirmation: The root password provides root access to the appliance terminal prompt. Do not access appliances as the root user unless specifically requested by ESN support personnel.</p> <p>Vaadmin password and confirmation: The preferred user for accessing the appliance as requested by ESN support personnel.</p> <p>Consider using a different password for each appliance for enhanced security.</p> <p>NTP Server: The IP address or DNS name of the reliable external Network Time Protocol (NTP) server for your network.</p> <p>Example: time.example.com.</p> <p>For the best results, set up NTP in accordance with the VMware best practices guidelines (http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1006427).</p> <p>Region: Your local region.</p> <p>Time Zone: The time zone of all file servers that ESN will provide access to.</p> Click Next.
Network Settings	<ol style="list-style-type: none"> Specify the following: <p>Hostname: The fully qualified DNS host name associated with the appliance's static IP address.</p> <p>Example: myESN.mynetwork.example.com.</p> <p>IP Address: The static IP address for the appliance.</p> <p>Example: 172.17.2.3.</p> <p>Network Mask: The network mask associated with the appliance's IP address.</p> <p>Example: 255.255.255.0.</p> <p>Gateway: The IP address of the gateway on the subnet where your ESN virtual appliance is located.</p> <p>Example: 172.17.2.254.</p> <p>IMPORTANT: ESN appliances do not tolerate latency and should be installed in the same subnet or a near-subnet.</p> <p>DNS Servers: The IP address of a primary DNS server for your network.</p> <p>Example: 172.17.1.1.</p> <p>Domain Search: The domain that is associated with the ESN host name.</p> Click Next.

Page, Dialog, or Option	Do This
Additional LAN Card Configuration	<ol style="list-style-type: none"> (Conditional) If you configured multiple network adapters for this appliance, select from the following options, then click Next: <ul style="list-style-type: none"> ♦ Do Not Configure: Select this option to configure this network at a later time as described in “Changing Network Settings” in the <i>ESN 1.0: Administrative UI Reference</i>. ♦ DHCP Dynamic Address: Select this option to have an IP address assigned dynamically on the secondary network. ♦ Statically Assigned IP Address: Select this option to assign a static IP address on the secondary network. Then specify the IP address, network mask, and host name.
Data Store Location	<ol style="list-style-type: none"> Hard Disk 2 is automatically detected and the disk designation is displayed in the hard drive drop-down. <p>Accept the defaults for the other options on this page by clicking Next.</p> <p>WARNING: If you have not already created additional disks 2 and 3 for each of your VMs and prepared a shared storage location for your ESN appliances as described in early sections of this guide and in Recording Your Plan in the <i>ESN 1.0 Planning Your ESN Deployment—Best Practices</i> guide, power off the virtual machine and make sure you have the required disk space in place for your deployment before proceeding. Otherwise, there is a substantial risk that your deployment will not meet your organization’s needs.</p>
Data Log Location	<ol style="list-style-type: none"> Hard Disk 3 is automatically detected and the disk designation is displayed in the hard drive drop-down. <p>ESN: Accept the defaults for the other options on this page by clicking Next.</p> <p>ESNsearch and MySQL: Accept the defaults for the other options on this page by clicking Configure.</p>
Shared Storage Type (ESN only)	<ol style="list-style-type: none"> If you are configuring a ESNsearch or MySQL appliance, this page doesn’t appear. Go to “Configuring Password, Time, and Network Settings” on page 47. If you are configuring a ESN appliance in an expandable deployment (the default for this guide) <ol style="list-style-type: none"> Select the option for the type of shared storage (Remote NFS or Remote CIFS) that you identified and configured in Chapter 4, “Setting Up Shared Storage,” on page 21. Click Next and continue with the steps for the page matching your selection. If you are configuring a small or non-expandable deployment <ol style="list-style-type: none"> Select Do Not Configure Shared Storage. Click Next. Go to “Configuring Password, Time, and Network Settings” on page 47.

Page, Dialog, or Option	Do This
Shared Storage NFS Location	<p>Referring to the work you did in “Exporting an NFS Directory for the /vashare Mount Point” on page 21, do the following:</p> <ol style="list-style-type: none"> 1. For the NFS Server Hostname field, click Browse and select the NFS server that you identified. 2. For the Remote Directory field, click Browse and select the directory that you exported. 3. Click Configure. 4. Go to “Configuring Password, Time, and Network Settings” on page 47.
Shared Storage CIFS Location	<p>Referring to the work you did in “Creating a CIFS Share for the /vashare Mount Point” on page 22, do the following:</p> <ol style="list-style-type: none"> 1. Type the UNC path to the share that you created. 2. Type the user name of the CIFS user that you identified or created. 3. Type the password of the CIFS user. 4. Click Configure.
Configuring Password, Time, and Network Settings	<ol style="list-style-type: none"> 1. The settings you have specified are configured, storage is verified, and the appliance starts. <p>Continue as indicated for your deployment type:</p> <p>Expandable Deployment: Repeat the above steps starting with “2 - Select an appliance.” on page 44 until all of your appliances are started, configured, and running. Then go to Chapter 8, “Creating an Expandable ESN Deployment,” on page 49.</p> <p>All-in-one (Small) Deployment: Return to Appendix A, “Creating an All-in-one (Small) Deployment,” on page 91.</p> <p>Non-expandable Deployment: Repeat the above steps starting with “2 - Select an appliance.” on page 44 until all of your appliances are started, configured, and running. Then return to Appendix B, “Creating a Non-Expandable Deployment,” on page 93.</p>

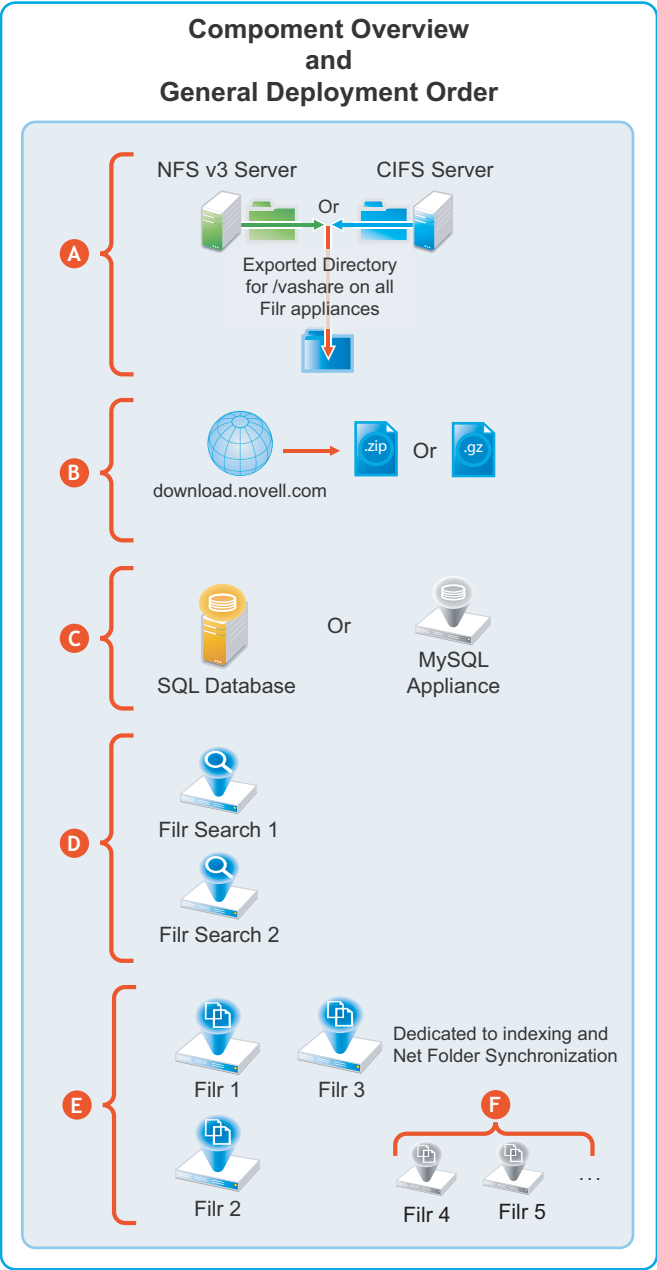
8 Creating an Expandable ESN Deployment

Figure 8-1 illustrates the general order for deploying ESN components. Letters reference brief component/process descriptions in the table that follows.

The first process (shared storage) was completed in [Chapter 4, “Setting Up Shared Storage,” on page 21](#) and illustrated in [Figure 4-1 on page 21](#).

The illustrations that follow are to help you track deployment progress.

Figure 8-1 Creating an Expandable Deployment



Letter	Details
A	Exported NFS Directory or CIFS Share: All of the ESN appliances in an expandable deployment share this directory, which stores <ul style="list-style-type: none">♦ Mutually accessed configuration files♦ Personal storage♦ Temporary files used by upload and conversion processes♦ HTML renderings

Letter	Details
B	ESN Software: You download ESN software that you then deploy as a boot/system disk on your VM host server.
C	SQL Database: Each ESN appliance in an expandable deployment accesses the same SQL database. If available, an SQL server should be used, but if that is not an option, the MySQL appliance can be deployed in its place.
D	ESNsearch Appliances: Micro Focus best practices require that each ESN cluster be configured with two ESNsearch appliances.
E	ESN Appliances: By definition, a ESN cluster must contain at least two ESN appliances. Micro Focus recommends three ESN appliances with the third appliance dedicated to Net Folder synchronization and maintaining the search index.
F	Additional ESN Appliances: More ESN appliances can be included as the service load increases.

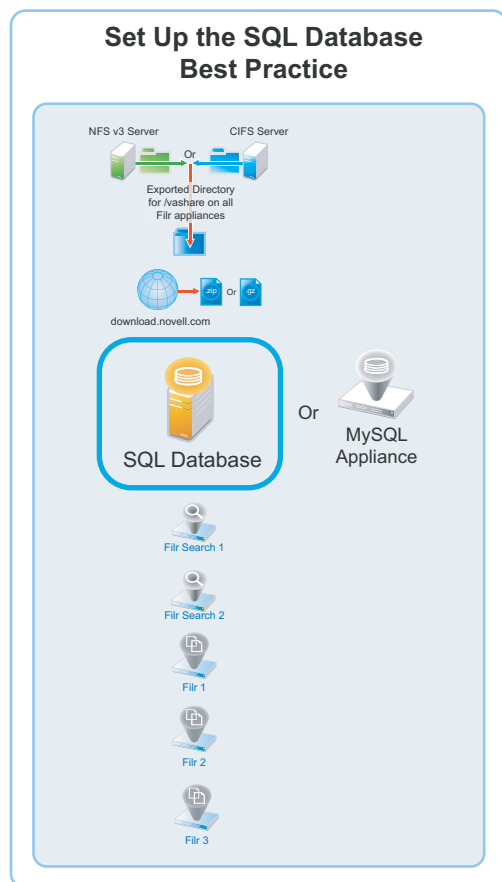
To create an expandable ESN deployment, complete the following sections in the order presented.

- ♦ [“Setting Up the SQL Database” on page 51](#)
- ♦ [“Setting Up Two ESN Search Appliances” on page 54](#)
- ♦ [“Setting Up the ESN Appliances” on page 56](#)
- ♦ [“Completing the Expandable ESN Deployment” on page 61](#)
- ♦ [“Dedicating a ESN Appliance to Indexing and Net Folder Synchronization” on page 63](#)
- ♦ [“Using the Dedicated ESN Appliance to Complete the Indexing Setup” on page 64](#)

Setting Up the SQL Database

[Figure 8-3](#) illustrates that an SQL database is the second component deployed (after shared storage) when creating an expandable ESN deployment.

Figure 8-2 Set Up an SQL Database



IMPORTANT: As noted elsewhere, Micro Focus recommends using an existing SQL database if one is available.

If you need to use a MySQL appliance, prepare that now by completing the instructions in [Appendix C, “Configuring the MySQL Appliance to Provide the SQL Database \(Alternate Practice\),”](#) on page 95 and then continue with [“Setting Up the ESN Appliances”](#) on page 56.

Prepare your in-house SQL server by completing the steps in one of the following sections:

- ♦ [“Configuring a MySQL or MariaDB Server”](#) on page 52
- ♦ [“Configuring a Microsoft SQL Server”](#) on page 53

Configuring a MySQL or MariaDB Server

IMPORTANT: Do not create the ESN database on your MySQL or MariaDB server manually.

Let the ESN configuration wizard create the database to ensure the correct configuration.

Table 8-1 Configuring MySQL or MariaDB for ESN

File	Do This
1 - Edit the configuration file.	
MySQL or MariaDB server > /etc/my.cnf file	<ol style="list-style-type: none">1. Edit the file as follows: <pre>[client] default-character-set = utf8 [mysqld] character-set-server = utf8 max_connections = 900 transaction-isolation = READ-COMMITTED expire_logs_days = 7</pre><p>The <code>expire_logs_days</code> setting is optional, but is recommended because it cleans up <code>mysql-bin-*</code> files.</p><p>Unless this is done regularly, the files will consume significant disk space in the <code>vastorage</code> directory.</p>2. Uncomment the InnoDB tables section.3. Increase the buffer pool size to approximately 60 percent of the amount of RAM that has been allocated to the dedicated server. For example, a dedicated server with 4 GB of RAM should have a buffer pool size of 2560 MB, as follows: <pre>innodb_buffer_pool_size = 2560M</pre>4. Identify or create a user account with sufficient rights to create and manage the ESN database.
Worksheet 23	<ol style="list-style-type: none">1. Record the username and password on Worksheet 23.2. Continue with “Setting Up Two ESN Search Appliances” on page 54.

Configuring a Microsoft SQL Server

IMPORTANT: Do not create the ESN database on your MS SQL server manually.

Let the ESN configuration wizard create the database to ensure the correct configuration.

Table 8-2 Configuring Microsoft SQL Server for ESN

File	Do This
1 - Configure the server.	
Server management console	<ol style="list-style-type: none">1. Enable remote access to the Microsoft SQL database server.2. Open port 1433 on the Windows firewall where the database server is running.3. Identify or create a user account that is configured with SQL Server Authentication and has sufficient rights to create and manage the ESN database. IMPORTANT: ESN supports only SQL Server Authentication. Windows Authentication and Windows Domain User Authentication to Microsoft SQL are not supported.
Worksheet 23	<ol style="list-style-type: none">1. Record the username and password on Worksheet 23.
Server management console	<ol style="list-style-type: none">1. Run the following queries against the database: <pre>ALTER DATABASE <i>database-name</i> SET READ_COMMITTED_SNAPSHOT ON ALTER DATABASE <i>database-name</i> COLLATE Latin1_General_CI_AS_KS_WS</pre>2. Continue with “Setting Up Two ESN Search Appliances” on page 54.

Setting Up Two ESN Search Appliances

ESN best practices require that every expandable deployment have two ESNsearch appliances. There are no advantages to having more than two.

Best practices allow for operating ESN with one search appliance, but only under special circumstances, such as when reindexing is required. One appliance continues to service user requests while the other is focused on rebuilding the search index.

[Figure 8-3](#) shows that two ESN Search appliances are the third and fourth components deployed in an expandable deployment.

Figure 8-3 Set up Two ESN Search Appliances

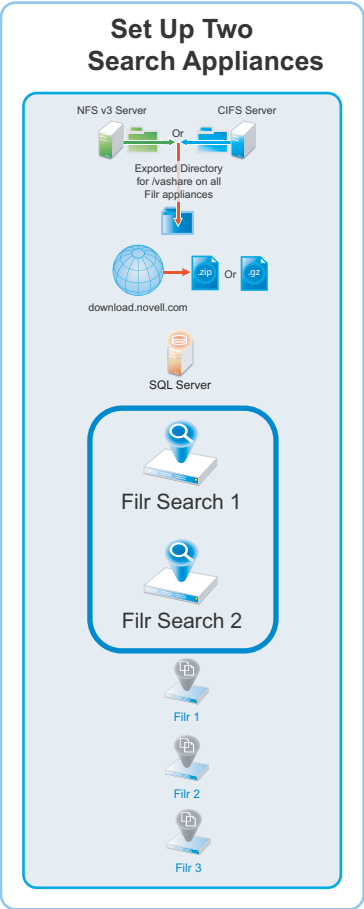



Table 8-3 Setting Up the ESNsearch Appliances

Page, Dialog, or Option	Do This
	<ol style="list-style-type: none">Open a management browser on your administrative workstation and access the Port 9443 Administration Utility on the first ESNsearch appliance using the following URL: <code>https://ESNsearch_IP_Address:9443</code> Where <i>IP_Address</i> is the IP address of the first ESNsearch appliance.
ESN Search Appliance Sign In	<ol style="list-style-type: none">Log in as the <code>vaadmin</code> user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 45.
ESN Search Tools	<ol style="list-style-type: none">Click the Configuration button  to launch the ESN Search Configuration Wizard.
ESN Search Configuration Wizard	<ol style="list-style-type: none">Click Next.Type and confirm a password for the Lucene Service User (use the same password for both appliances). Make a note of the password for later.Click Finish.

Page, Dialog, or Option	Do This
Search Settings	1. Scroll down and click Submit > OK .
	1. Repeat the steps in this table for the second ESNsearch appliance, then close the browser.
	2. Continue with “Setting Up the ESN Appliances” on page 56

Setting Up the ESN Appliances

[Figure 8-4](#) illustrates that the ESN appliances are deployed after all other components are in place.

Figure 8-4 *The ESN Appliances Are Set Up Last*

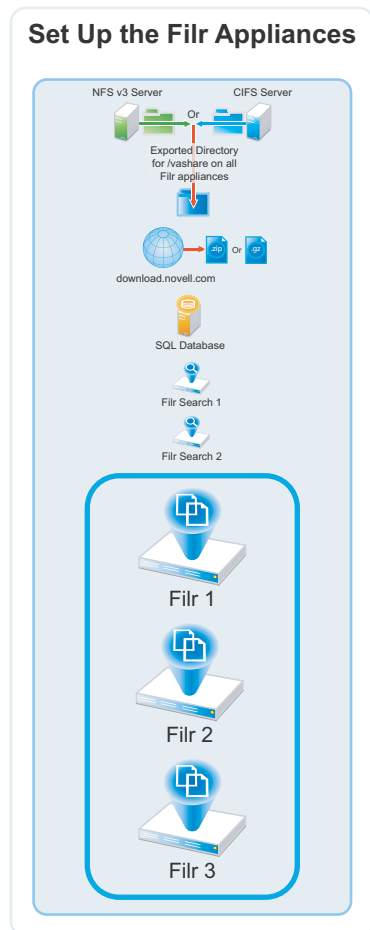


Table 8-4 Logging in and Starting the Configuration Wizard


Page, Dialog, or Option	Do This
	<div>1. Open a management browser on your administrative workstation and access the Port 9443 Administration Utility on the first ESN appliance using the following URL: <code>https://ESN_IP_Address:9443</code> Where <i>IP_Address</i> is the IP address of the first ESN appliance.</div>
ESN Appliance Sign In	<div>1. Log in as the <code>vaadmin</code> user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 45.</div>
ESN Appliance Tools	<div>1. Click the Configuration icon  to launch the ESN Configuration Wizard.</div>
ESN Configuration Wizard	<div>1. Large Deployment is automatically selected. Click Next.</div>

Figure 8-5 Each ESN Appliance Needs the Database Connection Information

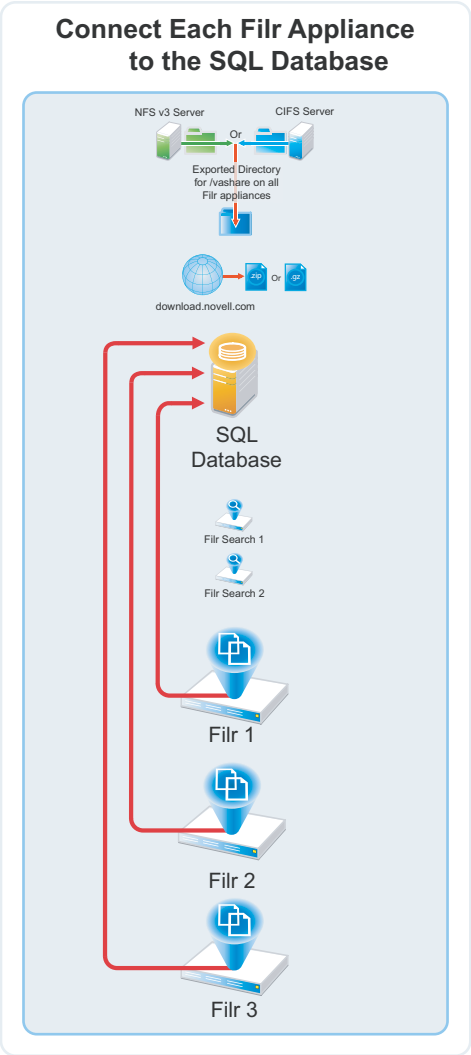


Table 8-5 *Configuring each ESN to connect to the SQL Database*

Page, Dialog, or Option	Do This
Database	<ol style="list-style-type: none">Specify the following configuration options for the database: Database Type: Select the type of database that you prepared in “Setting Up the SQL Database” on page 51. Host Name: The host name or IP address of the database server. Port: The wizard selects the standard port for the database type. If your server communicates using a non-standard port, adjust the number accordingly Database Name: The name of the database you want the wizard to create (first appliance) and then connect to (subsequent appliances). User Name: The administrative user name you identified in “Setting Up the SQL Database” on page 51. For the MySQL appliance, the default is <code>ESN</code>. Password: The administrative user’s password.Click Next.

Figure 8-6 Initially, Each ESN Appliance Is Configured to Work with One ESN Search Appliance

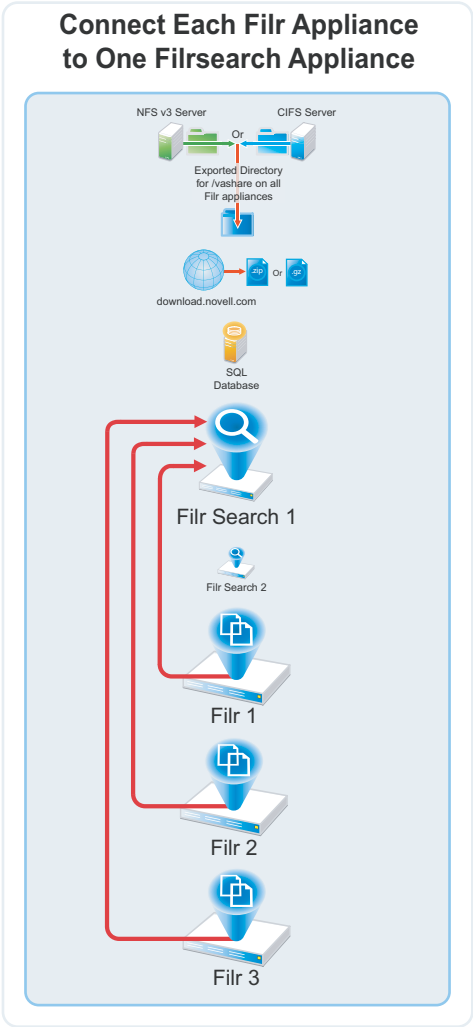


Table 8-6 Specify the First Search Appliance, Locale, and Admin user

Page, Dialog, or Option	Do This
Search Appliance	<ol style="list-style-type: none">1. Specify the first ESNsearch appliance's DNS name and Lucene password, then click Finish. IMPORTANT: If you specify the IP address, it must be resolvable to the DNS hostname of the search appliance.2. Click Next.
Default Locale	<ol style="list-style-type: none">1. Select a Default Locale.2. If desired, specify a name other than <code>admin</code> for appliance administration on port 8443.3. Click Finish. IMPORTANT: Wait for the appliance to start before closing the tab or navigating away from the page.4. When the "Congratulations!" message displays, return to Table 8-4 and deploy the next ESN appliance.5. After all of the ESN appliances are deployed, continue with "Completing the Expandable ESN Deployment."

Completing the Expandable ESN Deployment

Figure 8-7 When One ESN Appliance Is Configured for “ESN Clustering,” All of Them Are

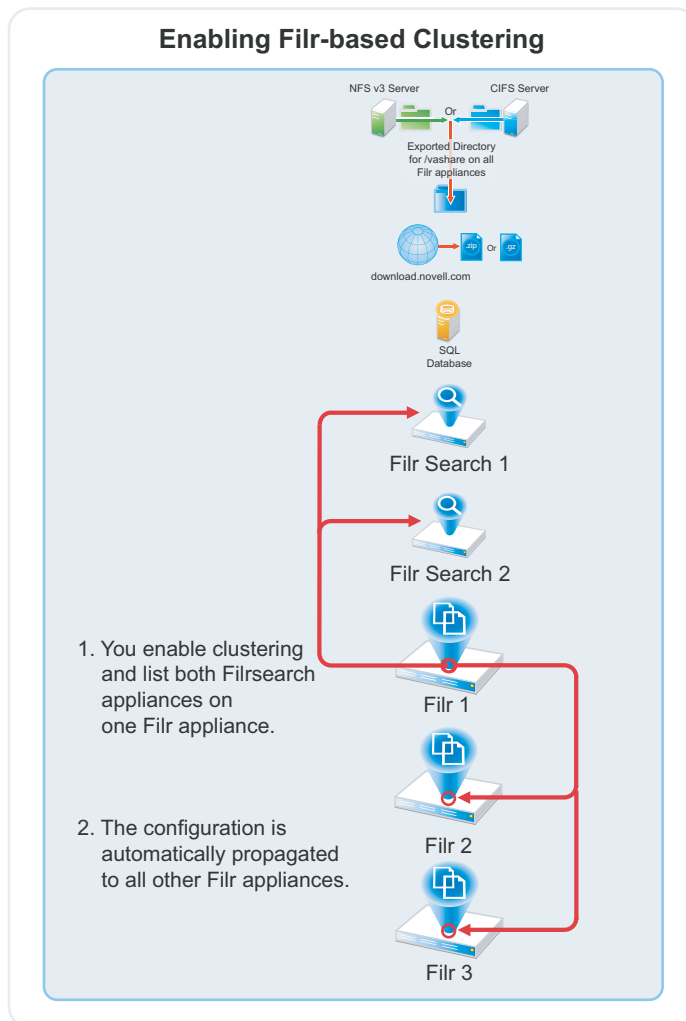


Table 8-7 Enabling ESN-based Clustering

Page, Dialog, or Option	Do This
Configuration Summary	1. In the Configuration panel, click Clustering .
Clustering	<ol style="list-style-type: none"> 1. Select Enable Clustered Environment. 2. The JVM Route field is used only if you are setting up Apache load balancing, and is used to uniquely identify this appliance. In many cases, the hostname (automatically supplied) will suffice, but you can customize it if needed. 3. In the Server Address field, make sure that both ESNsearch appliances in your deployment are listed. Separate the appliances with a space. Use either IP addresses or fully-qualified hostnames to identify the appliances. 4. Click OK. 5. Click Reconfigure ESN Server. <p>The ESN appliance is reconfigured and restarted.</p> <p>Subsequently, the configuration is shared by each ESN appliance through the /vashare mount point.</p>

Figure 8-8 The ESN Appliances Are Individually Configured to Use Both ESNsearch Appliances

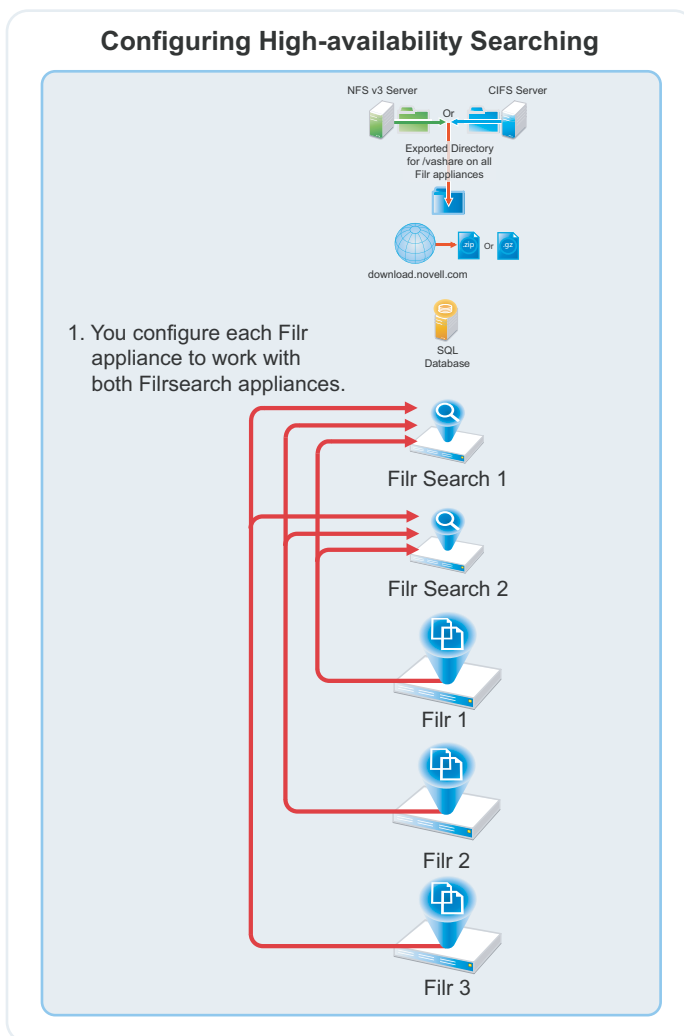


Table 8-8 Configuring High-availability Searching

Page, Dialog, or Option	Do This
Configuration Summary	1. In the Configuration panel, click Search Appliance .
Search Appliance	<ol style="list-style-type: none"> 1. Click the Configuration Type drop-down list and select High Availability. 2. Type the Lucene service password that you set in Table 8-3 on page 55. 3. Notice that the ESNsearch appliance you configured for this ESN appliance is listed under Name. Click Add.
New Search Node	<ol style="list-style-type: none"> 1. In the Name: field, type an arbitrary name for the second appliance. 2. In the Host Name: field, type the DNS host name of the other ESNsearch appliance. 3. Click OK.
Search Appliance	1. Click OK .
Configuration	<ol style="list-style-type: none"> 1. Click Reconfigure ESN Server. The appliance is reconfigured and restarted. However, in contrast with the process in Table 8-7, the Search Appliance configuration is not propagated to the other ESN appliances. 2. In the upper-right corner, click Log out.
	<ol style="list-style-type: none"> 1. Log in to the next ESN appliance and repeat the steps in this table. 2. When all of the ESN appliances have been configured for high-availability searching, continue with Dedicating a ESN Appliance to Indexing and Net Folder Synchronization.

Dedicating a ESN Appliance to Indexing and Net Folder Synchronization

As a best practice, Micro Focus recommends dedicating one ESN appliance to Indexing and Net Folder Synchronization, which are very resource-intensive tasks.

Do the following:

- ♦ **Allow Net Folder Synchronization on only the dedicated appliance:** Disable Net Folder Synchronization on all other ESN appliances as follows:
 1. Access the Port 9443 administration console.
 2. Click **Net Folders**.
 3. De-select **Allow Synchronization**.
 4. Repeat on all other ESN appliances except the one you are dedicating to Net Folder Synchronization.

Now when a Full synchronization occurs (either as a result of a scheduled or manual synchronization), the ESN appliance that you set aside is the one that handles the load.

NOTE: Just-in-time synchronization (JITS) is unaffected and takes place on whichever ESN appliance receives the user request that triggers JITS.

- ♦ **Use Load Balancing to isolate the dedicated appliance from user requests:** When you set up load balancing, don't include the dedicated ESN appliance in the round-robin rotation.
- ♦ **Rebuild the search index using the dedicated appliance:** Follow the steps in the next section.

Thereafter, the dedicated appliance will handle all of the re-indexing workload.

Using the Dedicated ESN Appliance to Complete the Indexing Setup

Table 8-9 Index with the Dedicated Appliance

Page, Dialog, or Option	Do This
	<ol style="list-style-type: none"> 1. Open a management browser on your administrative workstation and access the Port 8443 Administration Utility on the <i>Dedicated ESN Appliance</i> using the following URL: <code>https://dedicated_ESN_IP_Address:8443</code> Where <i>IP_Address</i> is the IP address of the dedicated ESN appliance.
ESN 1.0 Sign In Dialog	<ol style="list-style-type: none"> 1. Log in as user <code>admin</code> with password <code>admin</code>, or with the alternate administrator name/password if you specified one for this appliance in Table 8-6 on page 60. 2. When prompted, change the user password.
Product Improvement (first login only)	<ol style="list-style-type: none"> 1. Click OK.
ESN Main Window (Web access)	<ol style="list-style-type: none"> 1. Click the Admin user name in the upper-right corner. 2. Select Administration Console.
Administration Console	<ol style="list-style-type: none"> 1. Click Index in the left frame.
Search Index	<ol style="list-style-type: none"> 1. Select Re-Index Everything. 2. Under Select the Nodes to Apply Re-Indexing to, select the second, write-only ESNsearch appliance. 3. Click OK. <p>Indexing should complete with no errors.</p>
Indexing has finished!	<ol style="list-style-type: none"> 1. Click Close.
Administration Console	<ol style="list-style-type: none"> 1. Click Nodes in the left frame.
Search Nodes	<ol style="list-style-type: none"> 1. Change the User Mode Access option for the second ESNsearch appliance to Read and Write. 2. Click Apply > Close. <p>the dedicated ESN appliance will now handle all of the re-indexing workload.</p>

9 Setting Up ESN Services

Complete the following steps to prepare your ESN site and make it available to users.

- 1 Using the [Port 9443 > License](#) dialog, install the same valid license on each ESN appliance in your system.
- 2 Referring to the Worksheets indicated below, change any ESN infrastructure configuration settings that require restarting ESN.

This prevents interrupting ESN services after users begin accessing ESN services.

Worksheet 13 - Notifications

1. (Optional) Using the [Port 9443 > Configuration > Outbound E-mail](#) dialog, configure your system for integration with an external email system.
 2. Using the [Port 8443 > System > E-Mail](#) dialog, review the default notification settings and make any required configuration changes.
-

Worksheet 20 - Networking Support

1. Review the settings in the [Port 9443 > Firewall](#) dialog and make sure that the port and firewall settings on your network are configured to support ESN services.
 2. If you are enabling port redirection so that users don't need to include :8443 in ESN requests, configure that now.
Path: [Port 9443 Appliance Console > Configuration > Network](#)
 3. If you are using NetIQ Access Manager.
Path: [Port 9443 Appliance Console > Configuration > Reverse Proxy](#)
-

- 3 Referring to the worksheets below, add users and groups to your ESN site and set up the LDAP synchronization processes.

Worksheet 4 - Users and Groups (LDAP and Non)

1. Configure your ESN system to connect to an existing LDAP source, such as eDirectory or Active Directory, to control user access to the system.
Path: [Port 8443 ESN Admin Console > System > LDAP](#)
 2. Manually create any non-LDAP users and groups that need access to ESN services.
For more information, see “[ESN Admin Created Users and Groups](#),” in [ESN 1.0: Understanding How ESN Works](#) and “[the New User button](#)” in the [ESN 1.0: Administrative UI Reference](#).
-

Worksheet 5 - LDAP Synchronization

1. Configure the ESN system to synchronize with your LDAP servers.
For assistance, see “[LDAP Servers and Synchronization](#)” in the [ESN 1.0: Administrative UI Reference](#).
-

- 4 If you want users to be able to share through ESN, you must enable sharing for the ESN system.

Worksheet 14 - System-Level Sharing Settings

1. Configure the system-level share settings.

For more information about allowing users to share documents within ESN, see [“Managing Sharing, License Terms, and Comments”](#) in the *ESN 1.0: Administrative UI Reference*.

- 5 if you want users to be able to upload personal files and folders directly to the ESN site, you must enable personal storage.

Worksheet 11 - Personal Storage

1. Configure Personal Storage.

For more information about allowing users to share documents within ESN, see [“Enabling Personal Storage for Users and Groups”](#) in the *ESN 1.0: Administrative UI Reference*.

For more information about personal storage, as well as how personal storage relates to users’ Home folders, see [“Enabling Personal Storage for Users and Groups”](#) in the *ESN 1.0: Administrative UI Reference*.

- 6 Configure Home Net Folder servers.

Worksheet 8 - Net Folder Servers

1. Configure Home Net Folder servers.

For more information, see [“Creating and Managing Net Folder Servers”](#) in the *ESN 1.0: Administrative UI Reference*.

If the search context of your LDAP synchronization contains an OES or Windows server that has a Home folder attribute associated with at least one user, a Net Folder Server is ready to be configured immediately after running the LDAP synchronization process. You need to consider the amount of data in users’ Home folder directories when performing an LDAP synchronization.

The following points are critical to successful Home NF Server creation and the synchronization of access privileges.

- ♦ **Import Both Groups and Users:** If you import only LDAP users and not the groups they belong to, then file system group permissions won’t map to ESN group permissions when Net Folders are created.
- ♦ **Register User Profiles Automatically (default):** If you deselect this option, then users won’t be created until after they log in. This causes the following issues:
 - ♦ You must wait until users log in to their home folders before you can configure the proxy users and passwords for any HOME Net Folder Servers.
 - ♦ Net Folder access permissions that key off user-based file system permissions will not be set or updated during Net Folder Synchronizations.
- ♦ **Register Group Profiles Automatically (default):** If you deselect this option, groups will not be created and Net Folder access permissions that key off group-based file system permissions will not be set or updated during Net Folder Synchronizations.

- 7 Configure Net Folder Servers.

Worksheet 8 - Net Folder Servers	1. Configure the other Net Folder servers that are identified on the worksheet.
Worksheet 10 - Home Folder Net Folder Servers	For more information, see “Creating and Managing Net Folder Servers” in the <i>ESN 1.0: Administrative UI Reference</i> .
Worksheet 17 - Net Folder Server Synchronization	

8 Configure Net Folders.

Worksheet 9 - Net Folders	1. Configure the Net Folders that are identified on the worksheet.
Worksheet 15 - Net Folder Sharing Settings	For more information, see “Managing Net Folders” in the <i>ESN 1.0: Administrative UI Reference</i> .
Worksheet 16 - Net Folder Global Settings	
Worksheet 18 - Net Folder Synchronization	

Net Folders in ESN provide access to files on your corporate OES, Windows, or NetWare file servers by synchronizing file metadata. In essence, a Net Folder is simply a pointer or a reference to a specific folder on a specific file server.

ESN can be configured to index the content of Net Folders to make the content searchable.

For more information about Net Folders, see [“Managing Net Folders”](#) the *ESN 1.0: Administrative UI Reference*.

9 Enable additional ESN Users for Administrative Access.

Worksheet 19 - Administrative Access	1. Configure users for administrative access to ESN. For more information, see “Assigning and Managing Port 8443 Direct Administrators” in the <i>ESN 1.0: Administrative UI Reference</i> .
--------------------------------------	---

10 (Optional) Allow access to the ESN site through NetIQ Access Manager.

For more information about using NetIQ Access Manager with ESN, see [Appendix E, “Integrating ESN and NetIQ Access Manager,”](#) on page 99.

IMPORTANT: When you use NetIQ Access Manager with ESN, external users cannot access your ESN site. This means that the following features are not functional:

- ♦ Users are not able to share with external users, as described in [“Sharing with People Outside Your Organization”](#) in the *ESN 1.0: User Access Guide*.
- ♦ Users cannot make items accessible to the public, as described in [“Making Files Accessible to the Public”](#) in the *ESN 1.0: User Access Guide*.

This means that public users cannot access the ESN site as the Guest user. For more information about the Guest user, see [“Guest Users:”](#) in *ESN 1.0: Understanding How ESN Works*.

For more information about external users in ESN, see [“External, Self-Provisioned Users:”](#) in *ESN 1.0: Understanding How ESN Works*.

11 Configure mobile device access to the ESN site, as described in [“Mobile Device Access—Default Settings”](#) in the *ESN 1.0: Administrative UI Reference*.

- 12 Configure the ESN desktop application to access files from the ESN site.

For more information about configuring the ESN desktop application, see “[Desktop Access—Default Settings](#)” in the *ESN 1.0: Administrative UI Reference*.

IMPORTANT: For optimal performance of the ESN system when using the ESN desktop application, consider the following:

- ♦ Users should not configure the ESN desktop application to synchronize more than 1,000 total files, or to synchronize individual files that are larger than 1 GB to their workstations. For information about how users can configure the ESN desktop application to synchronize files to their workstations, see the *Micro Focus ESN 1.0 Desktop Application Guide for Windows* (<https://www.novell.com/documentation/filr-3/esn-user-desktop/data/bookinfo.html>) and the *Micro Focus ESN 1.0 Desktop Application Guide for Mac* (<https://www.novell.com/documentation/filr-3/esn-user-desktop-mac/data/bookinfo.html>).

-
- 13 Configure ESN to support WebDAV on a Windows 7 environment, as described in “[WebDAV Support on Windows 7](#)” in the *ESN 1.0: Maintenance Best Practices Guide*.
 - 14 If your ESN site needs to support multiple languages, configure the site as described in “[UI Language](#)” in the *ESN 1.0: Administrative UI Reference*.
 - 15 After you have completed all of the topics in this list that are relevant to your ESN environment, you can invite users to use the ESN site. For information about how to use the ESN site, see *ESN 1.0: User Access Guide*.

10 Setting Up Sharing

Before users can share, they must have sharing enabled for them at the ESN system level, either individually or as a member of a group.

After that, sharing of My Files is enabled by default, but sharing in Net Folders requires additional steps.

Use the following sections as a guide through the process of setting up sharing.

- ♦ [“Enabling Users to Share” on page 69](#)
- ♦ [“Do Not Enable Sharing for All Internal Users and All External Users” on page 74](#)
- ♦ [“System-Level Sharing Must Be Configured First” on page 75](#)
- ♦ [“My Files Sharing Is Automatic” on page 75](#)
- ♦ [“Net Folder Sharing Must Be Explicitly Allowed At Two Levels” on page 76](#)

Enabling Users to Share

- ♦ [“Best Practices for Setting Up Sharing” on page 69](#)
- ♦ [“General Order for Setting Up Sharing” on page 70](#)
- ♦ [“Enabling Sharing for Specific Net Folders” on page 74](#)

Best Practices for Setting Up Sharing

- ♦ **Enable Sharing for the ESN System:** You must enable the sharing feature before any sharing can take place on the ESN system.

As a best practice, enable sharing in an unrestricted way for those users and groups that will be allowed to share.

- ♦ **If Needed, Restrict My Files Sharing:** Enabling sharing automatically lets all users share files in their My Files area, including in their Home folder and in personal storage.

You can restrict My Files sharing on a per-user basis if desired.

- ♦ **Carefully Restrict Net Folder Sharing:** Net Folder sharing must be explicitly allowed for each Net Folder.

IMPORTANT: Make sure that only those who need to share a Net Folder’s contents are granted sharing rights on that Net Folder.

For example, Group A is granted rights to share files in Net Folder A. User A (a member of Group A) then shares a file with User B (a member of Group B). Because the file contains sensitive information, User A doesn’t grant User B permission to reshare the file.

As long as User B doesn’t have rights to share files in Net Folder A, there is no problem.

However, if Group B also has permission to share Net Folder A’s files, then User B can reshare the file even though User A assumed otherwise.

General Order for Setting Up Sharing

When you set up sharing for your ESN site, complete the necessary steps in the following order:

- 1 Set up sharing for the entire ESN site (as described in [“Enabling Sharing in ESN” on page 70](#)).
- 2 Configure sharing for individual users (as described in [“Restricting Personal Storage Sharing” on page 73](#)).

After you have enabled sharing for the entire ESN system, you can fine-tune share rights throughout the site on the user level.

For example, if you want only a few groups of users to be allowed to share with external users, you first need to enable sharing to external users at the site level. After you have enabled it at the site level, you can then remove this ability from the users who you do not want to have this ability.

- 3 Set up sharing for specific Net Folders (as described in [“Enabling Sharing for Specific Net Folders” on page 74](#)).

Users who are given share rights on a specific Net Folder are able to share files within that Net Folder that they have rights to at least view on the file system.

Enabling Sharing in ESN


After you set up sharing for the entire ESN site, all users by default are granted rights to share files in the My Files area (this includes files in the Home folder and files in personal storage), with the site-wide access rights that you specify. If you want only certain users to be allowed to share files from their My Files area, you must enable sharing for the entire site as described in this section. Then you must restrict sharing privileges at the user level, as described in [“Restricting Personal Storage Sharing” on page 73](#).

- 1 Log in to the ESN site as the ESN administrator.
 - 1a Launch a web browser.
 - 1b Specify one of the following URLs, depending on whether you are using a secure SSL connection:

```
http://ESN_hostname:8080  
https://ESN_hostname:8443
```

Replace *ESN_hostname* with the hostname or fully qualified domain name of the ESN server that you have set up in DNS.

Depending on how you have configured your ESN system, you might not be required to enter the port number in the URL. If you are using NetIQ Access Manager, the ESN login screen is not used.

- 2 Click the **admin** link in the upper-right corner of the page, then click the **Administration Console** icon .
- 3 Under **System**, click **Share Settings**.

The Share Settings page is displayed.

Share Settings

Rights Whitelist / Blacklist

☒ Allow all users to share with groups that have been imported from LDAP

Select a user or group to add to the list and then grant share rights.

User or Group:

Name	Rights	Type
No one has been selected.		

- 4 Select **Allow all users to share with groups that have been imported from LDAP** to enable users to share with LDAP groups.

If you select this option, groups that were imported from the LDAP directory are displayed in the **Share with** field when users are sharing an item (as described in “[Sharing Files and Folders](#)” in the *ESN 1.0: User Access Guide*). All users in the LDAP group then have access to the item that was shared.

Enabling Users and Groups for Net Folder Sharing

- 1 To enable sharing for all internal users on the ESN site, go to the **User or Group** field, begin typing `All Internal Users`, then select it when it appears in the drop-down list.

or

To enable sharing on a per-user or per-group basis, go to the **Select user/group** field, begin typing the name of the user or group for whom you want to grant share rights, then select the name when it appears in the drop-down list.

The Edit Share Rights dialog box is displayed. Select from the following options:

Re-share items: When users share a file or folder, they can give the users they are sharing with the ability to re-share the file or folder. The user receiving the share can share the file only if that user has been given administrative rights to share the file or folder.

IMPORTANT: When selecting this option, be aware that if one user's access rights to an item are removed, it does not remove the access rights of the user with whom the item was re-shared.

For example, suppose User A shares an item with User B and grants re-share rights. User B then shares the item with User C. If User A revokes User B's access rights to the item, User C continues to have access to the shared item.

Share with Internal users: Allows users to share items with internal users.

Share with “All Internal Users” group: Allows users to perform a mass share to all internal users by sharing with the `All Internal Users` group.

Share with External users: Allows users to share items with users external to the organization.

Users external to the organization receive an email notification with a link to the shared item, and they can then log in to the ESN site. For more information, see “[Sharing with People Outside Your Organization](#)” in the *ESN 1.0: User Access Guide*.

Share with Public: Allows users to make items publicly available. This means that anyone with the correct URL to the shared item can access the shared item without logging in to the ESN site.

In addition to selecting this option, you also need to enable Guest access to the ESN site if you want to allow users to share items with the public. For information about how to enable Guest access to the ESN site, see

Share using File Link: Allows users to share a link to a file in ESN. Any user with the link can then access the file. However, the file is not displayed in the Public area, so users must have direct access to the link in order to access the file.

For more information about File Links, see “[Distributing a Link to a File](#)” in the [ESN 1.0: User Access Guide](#).

- 2 (Optional) Click the **Whitelist / Blacklist** tab to configure which email addresses and domains users can share with when sharing externally.

Share Settings

Rights **Whitelist / Blacklist**

Specify email addresses and domains that may (whitelist) or may not (blacklist) be shared with as external shares.

Mode

- ☒ No restrictions - Lists are ignored
- ☐ Whitelist - Email addresses and domains that may be shared with
- ☐ Blacklist - Email addresses and domains that may not be shared with

Email addresses

Add... Delete

Domains

Add... Delete

☐ Delete shares that don't meet the criteria

The following options are available when configuring a whitelist or blacklist for sharing:

No restrictions: Select this option to disregard any email addresses or domains that might already exist in the **Email addresses** and **Domains** fields. Selecting this option means that users can share with any email address.

Whitelist: Select this option to allow sharing only with email addresses and domains that have been specified in the **Email addresses** and **Domains** fields.

Blacklist: Select this option to disallow sharing with any email addresses and domains that have been specified in the **Email addresses** and **Domains** fields.

Email addresses: Click **Add**, specify the email address that you want to add to the whitelist or blacklist, then click **OK**.

Repeat this process to add multiple email address.

Domains: Click **Add**, specify the domain that you want to add to the whitelist or blacklist (for example, yahoo.com), then click **OK**.

Repeat this process to add multiple domains.

Delete shares that don't meet the criteria: Select this option to delete all existing shares in the ESN system that do not match the criteria you set.

For example, if you selected **Blacklist** and then specified **yahoo.com** in the **Domains** field, selecting this option would delete all ESN shares made to Yahoo email addresses.

- 3 Click **OK**.

Restricting Personal Storage Sharing

After you have enabled sharing of files for the entire ESN system (as described in [“Enabling Sharing in ESN” on page 70](#)), you can restrict shared-access right granting on an individual-user basis.

You cannot grant individual users more rights than are currently defined for the site-wide setting.

To restrict share rights for specific users:

- 1 Log in to the ESN site as the ESN administrator.


- 1a Launch a web browser.

- 1b Specify one of the following URLs, depending on whether you are using a secure SSL connection:

```
http://ESN_hostname:8080  
https://ESN_hostname:8443
```

Replace *ESN_hostname* with the hostname or fully qualified domain name of the ESN server that you have set up in DNS.

Depending on how you have configured your ESN system, you might not be required to enter the port number in the URL. If you are using NetIQ Access Manager, the ESN login screen is not used.

- 2 Click the **admin** link in the upper-right corner of the page, then click the **Administration Console** icon .
- 3 Under **Management**, click **Users**.
- 4 Select the users whose sharing rights you want to manage, then click **More > Workspace Share Rights**.

Set User Workspace Sharing Rights (1 users)

Allow Sharing with:	Allow	Clear
Internal Users	<input checked="" type="radio"/>	<input type="radio"/>
External Users	<input checked="" type="radio"/>	<input type="radio"/>
Public	<input checked="" type="radio"/>	<input type="radio"/>
Filtr Link	<input checked="" type="radio"/>	<input type="radio"/>

	Allow	Clear
Allow Re-Sharing of granted rights	<input checked="" type="radio"/>	<input type="radio"/>

OK Cancel

- 5 Select the radio button in the **Clear** column next to the sharing right that you want to remove from the user or group, then click **OK**.

or

If you have already removed a share right and you want to add it again, select the radio button in the **Allow** column next to the sharing right that you want to add to the user or group, then click **OK**.

Enabling Sharing for Specific Net Folders

- 1 Ensure that you have configured sharing as described in [“Enabling Sharing in ESN” on page 70](#).
- 2 Configure sharing for the Net Folder as described in).

Do Not Enable Sharing for All Internal Users and All External Users

Prior to the release of ESN 2.0, the documentation stated that enabling sharing for `All Internal Users` and `All External Users` was an acceptable method of enabling sharing on the system.

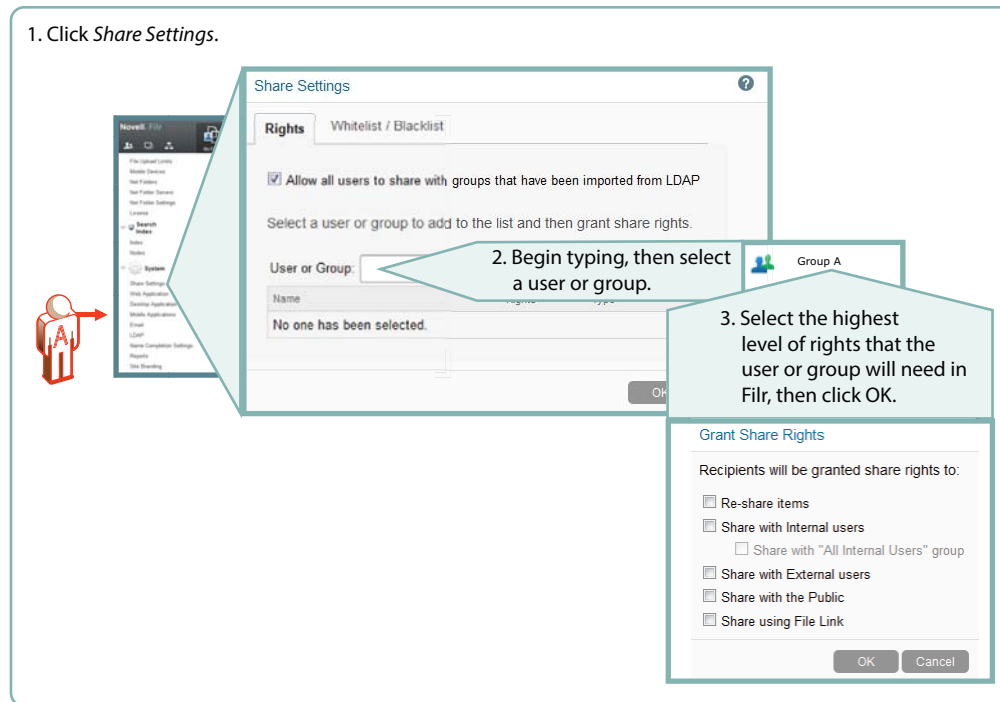
Unfortunately, this shortcut results in significant system overhead and often leads to serious performance degradation.

We strongly recommend that you enabling sharing only for specific users and/or groups, as outlined in the sections that follow.

System-Level Sharing Must Be Configured First

The first step in allowing ESN sharing to take place is to list the users and groups who are allowed to share in the Share Settings dialog. When you add the user or group, you also specify the upper limits of possible sharing rights for them. You can further restrict the rights, but you can't expand them beyond this limit.

Figure 10-1 Setting Up System-Level Sharing Rights

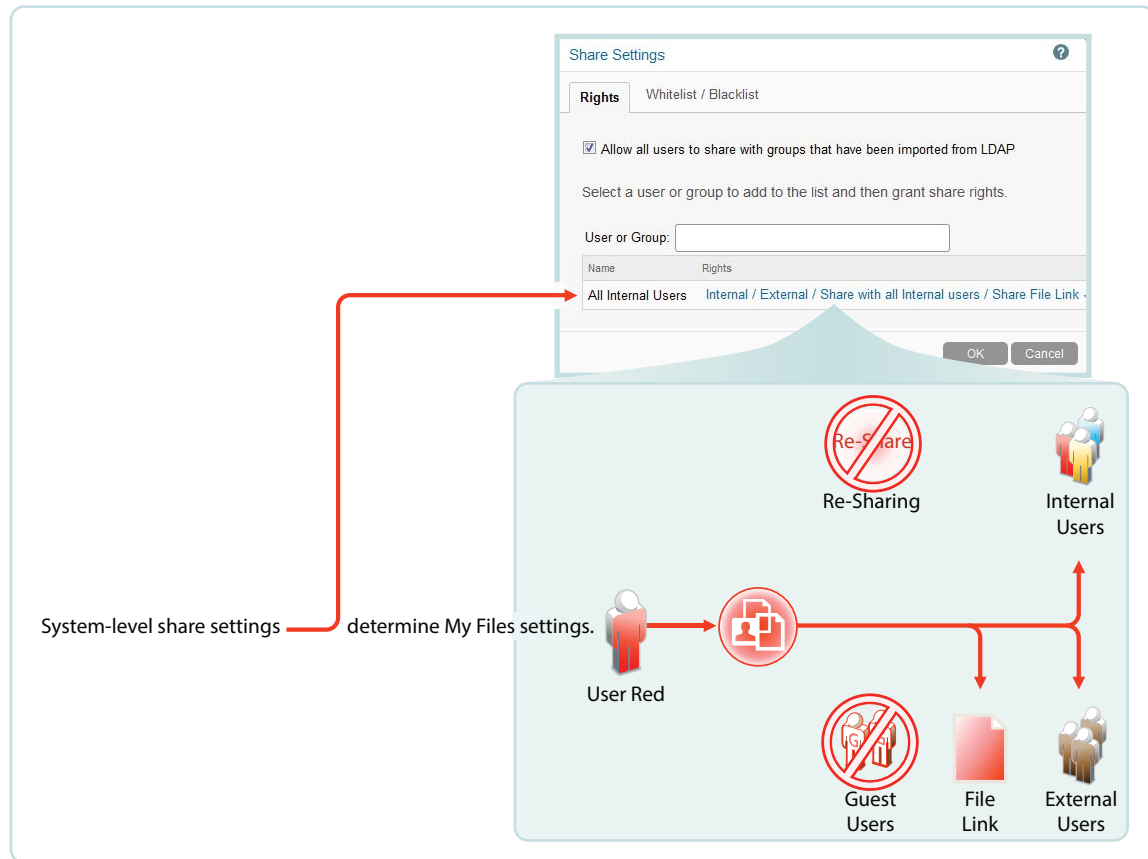


My Files Sharing Is Automatic

After sharing is enabled at the system level for users individually or as members of groups, then if those users have personal storage enabled, they can share their files and folders within the limitations set for the system.

Administrators can disable sharing of files and folders in My Files on an individual user basis.

Figure 10-2 My Files Share Settings



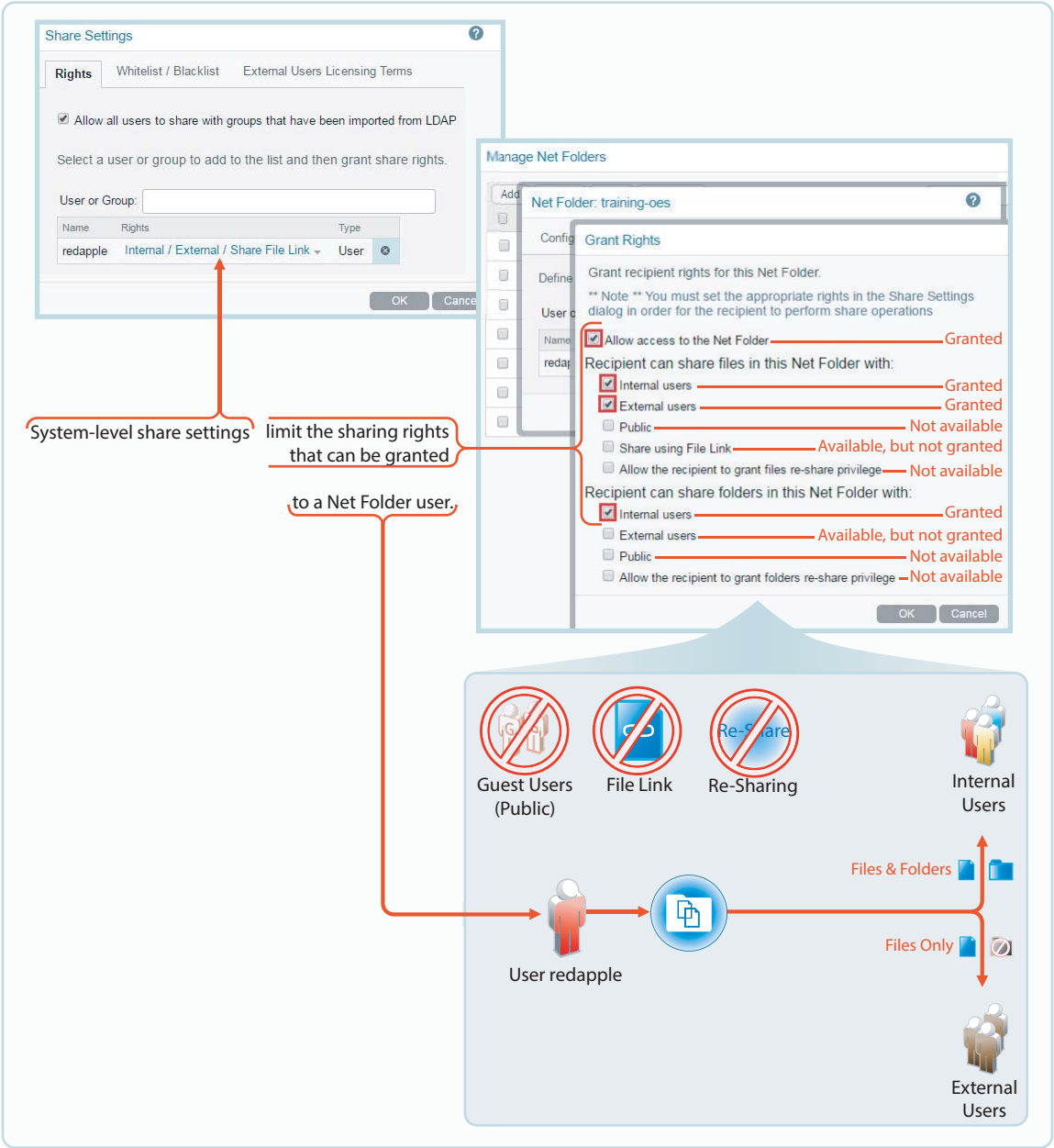
Net Folder Sharing Must Be Explicitly Allowed At Two Levels

Before the users or groups listed in the Share Settings dialog can share files and folders in their assigned Net Folders, they must have sharing enabled on those Net Folders.

When enabling Net Folder access for a user or group, a ESN administrator can only assign up to the maximum sharing rights that are set at the system level.

In [Figure 10-3](#), user red can only be assigned sharing rights that are allowed at the system level.

Figure 10-3 An Example of Net Folder Sharing



11 Upgrading ESN

Prerequisites and Cautions for Successful Upgrades

Failure to comply with any of the following critical points can result in a non-functional ESN system.

NOTE: As an additional resource to the information in this section, [TID 7017288](#) has a “Pre-Flight Checklist” that can help you ensure a successful upgrade.

Critical Points	Details
<ul style="list-style-type: none">♦ Additional, unformatted disk space is required. <p>TIP: After you confirm that the new upgraded appliances are providing ESN services as expected, you can delete the old appliances and reclaim their disk space for other VMs, etc.</p>	<ul style="list-style-type: none">♦ Additional unformatted disk space is required for the following:<ul style="list-style-type: none">♦ System Disk: You deploy a new / system (first) disk by using the newly downloaded .zip or .gz files.♦ /vastorage Disk: You copy the / vastorage (second) disk and point to it when deploying the new (upgraded) appliance. Use the tools provided by your hypervisor to copy the disk. TIP: Citrix Xen requires “exporting” the existing disk to create a copy.♦ /var Disk: You create a new /var (third) disk of the same size as the current /var disk for storing system event log files.♦ /vashare NFS directory or CIFS share: This is automatically linked to the upgraded appliance.

Critical Points	Details
<ul style="list-style-type: none"> Appliance Upgrade Order must be strictly followed 	<ul style="list-style-type: none"> Successful upgrades require that appliances in the ESN infrastructure be upgraded in the order of their dependency upon each other, as follows: <ol style="list-style-type: none"> If you are using a MySQL appliance instead of an in-house SQL server, you must upgrade that appliance first. Upgrade the ESN Search appliances next, one at a time. <p>WARNING: Attempting to start and configure multiple upgraded appliances at the same time can cause configuration and other problems within the upgraded appliances.</p> When the upgraded MySQL and ESN search appliances are up and running, upgrade the first ESN appliance. Then upgrade the additional ESN appliances, one at a time. <p>IMPORTANT: All of the ESN and ESNsearch appliances in an expandable deployment must be upgraded to the same version.</p>
<ul style="list-style-type: none"> Cross-platform upgrades - Not supported 	<ul style="list-style-type: none"> You can only upgrade within a virtualization platform. <p>For example, if your original ESN system was deployed on VMware, you can upgrade only to VMware.</p>
<ul style="list-style-type: none"> Migrating the ESN database to Microsoft SQL as part of your upgrade 	<ul style="list-style-type: none"> Carefully follow the instructions in “Migrating the ESN’s MySQL Database to Microsoft SQL” in the <i>ESN 1.0: Maintenance Best Practices Guide</i>, including running the Post-Migration script.
<ul style="list-style-type: none"> Mixed-versions - Not supported 	<ul style="list-style-type: none"> All of the ESN and ESNsearch appliances in an expandable deployment must be upgraded to the same version.
<ul style="list-style-type: none"> Multiple Network Adapters 	<ul style="list-style-type: none"> Carefully follow the instructions in “Preparing Network Interface Controllers to Be Upgraded” on page 84, including running the <code>networkprep</code> script.
<ul style="list-style-type: none"> MySQL Non-standard Port Settings Not Retained 	<ul style="list-style-type: none"> If you use a port other than 3306 for MySQL communications, the setting is not retained. <p>After the upgrade, you must reset the port for each ESN appliance using the Port 9443 administration utility.</p>

Critical Points	Details
<ul style="list-style-type: none"> ♦ Non-expandable to expandable - Not supported 	<ul style="list-style-type: none"> ♦ If you have a non-expandable deployment, and you need an expandable deployment, you must install a new system. <p>Or</p> <ul style="list-style-type: none"> ♦ Contact Micro Focus Consulting to assist you with the migration.
<ul style="list-style-type: none"> ♦ OES 11 SP1 target servers must be fully patched. 	<ul style="list-style-type: none"> ♦ Ensure that any ESN target servers running OES 11 SP1 have at least the December 2012 Scheduled Maintenance Update applied. This ensures that the NCP server can keep up with ESN service requests. <p>Failure to update your OES 11 SP1 servers can cause the configured eDirectory (LDAP) servers to fail.</p>
<ul style="list-style-type: none"> ♦ Small to Large - Not supported 	<ul style="list-style-type: none"> ♦ If you have a small, all-in-one deployment, and you need an expandable (or a non-expandable) deployment, you must install new appliances.
<ul style="list-style-type: none"> ♦ Software and hardware requirements 	<ul style="list-style-type: none"> ♦ See Chapter 3, “System Requirements,” on page 13 and make sure the appliances you are upgrading meet the requirements for the new version.
<ul style="list-style-type: none"> ♦ VM Copying - Not Supported 	<ul style="list-style-type: none"> ♦ Copying an entire VM is not supported. <p>Attempting this causes various problems, including the reassignment of the Eth0 interface to Eth1. ESN supports only Eth0 as the primary network interface.</p> <ul style="list-style-type: none"> ♦ Copy only the datastore disk to the new VM location, as specified in “Copying Each Appliance’s /vstorage Disk (Disk 2)” on page 85.
<ul style="list-style-type: none"> ♦ VMware Snapshots - Not supported 	<ul style="list-style-type: none"> ♦ You must remove all VMware snapshots before upgrading. <p>This ensures that the correct disk file and the latest configuration settings are on the /vstorage disk when it is copied.</p>

After ensuring that you have met the prerequisites and cautions above, complete the instructions in the following sections in order.

- ♦ [“Understanding the Appliance Upgrade Process” on page 82](#)
- ♦ [“Planning for ESN 1.0 System Requirements” on page 83](#)
- ♦ [“Planning When to Upgrade” on page 84](#)
- ♦ [“Checking the Release Notes” on page 84](#)
- ♦ [“Downloading and Preparing Software for the Upgrades” on page 84](#)
- ♦ [“Preparing Network Interface Controllers to Be Upgraded” on page 84](#)
- ♦ [“Copying Each Appliance’s /vstorage Disk \(Disk 2\)” on page 85](#)

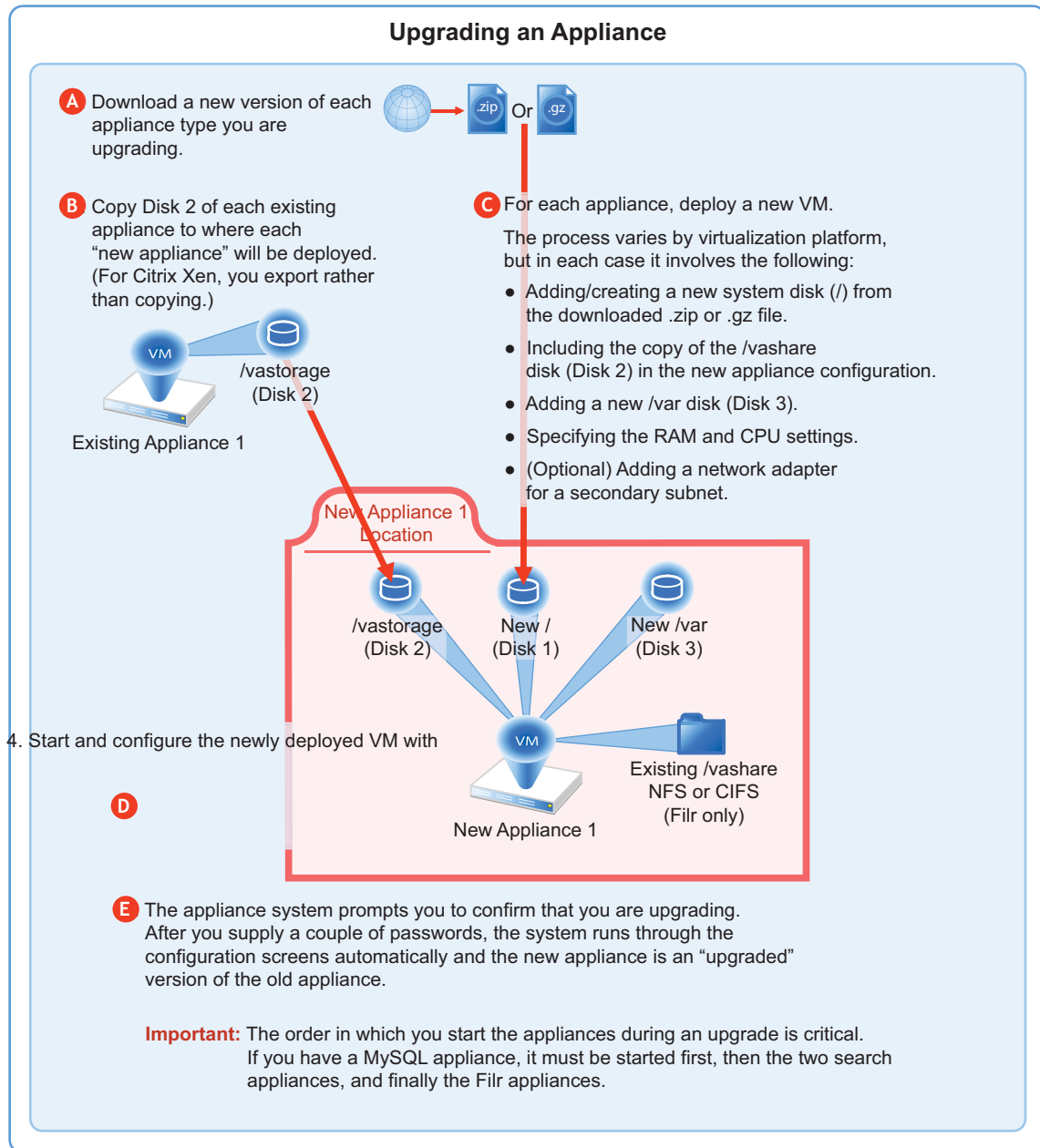
- ♦ [“Upgrading the Appliances in the Correct Order” on page 85](#)
- ♦ [“Upgrading the VMs” on page 85](#)
- ♦ [“Performing Post-Upgrade Tasks” on page 87](#)

Understanding the Appliance Upgrade Process

The process of upgrading Micro Focus appliances is illustrated in [Figure 11-1 on page 83](#) and consists of

- ♦ Installing new appliances to replace the existing ones.
- ♦ Applying and linking the existing configuration settings (`/vastorage`) and data (`/vashare`) to the new appliances.

Figure 11-1 Overview of Appliance Upgrade Process



Planning for ESN 1.0 System Requirements

Make sure that your upgraded systems meet the requirements found in [Chapter 3, “System Requirements,”](#) on page 13.

As illustrated in [Figure 11-1 on page 83](#), the only new disk that you manually create for each upgraded appliance is Disk 3 (/var).

- ♦ **Each System Disk (/):** Is created automatically as you deploy the downloaded software and requires 20 GB of unallocated disk space on the VM host server.

- ♦ **Each Disk 2 (/vastorage):** Is a copy of the old appliance's Disk 2 and requires an equivalent amount of unallocated disk space on the VM host server.
- ♦ **Each Disk 3 (/var):** Is a new disk that you create manually on the VM host server in conjunction with the upgrade process.

Disk space, RAM, and CPU requirements are summarized in the following sections of the [Planning Best Practices guide](#):

- ♦ [ESN Appliance Sizing Guidelines](#)
- ♦ [ESNsearch Appliance Sizing Guidelines](#)
- ♦ [SQL Server Sizing Guidelines](#)

Planning When to Upgrade

Your ESN services must be offline from the time that you start the first ESNsearch (or MySQL) upgraded appliance until the ESN appliances are upgraded and functioning.

- 1 Schedule the upgrade for a block of time that is least disruptive from a production standpoint.
- 2 Notify ESN users about the upgrade.

Checking the Release Notes

- 1 Check “[Upgrade](#)” in the [ESN 1.0 Release Notes](#) before continuing.

Downloading and Preparing Software for the Upgrades

- 1 Download and prepare the software for your virtualization platform just as you would for a new installation.

For help with the software download and preparation process, refer to the section for your virtualization platform in [Chapter 5, “Downloading and Preparing the ESN Software,”](#) on [page 25](#).

- 2 Continue with “[Preparing Network Interface Controllers to Be Upgraded](#)” on [page 84](#).

Preparing Network Interface Controllers to Be Upgraded

If any of your appliances have two Network Interface Controllers (NICs), you must run a script on each appliance that prepares the additional NIC to be upgraded.

- 1 Download the `networkprep.zip` file from the ESN software downloads page.
- 2 Enable SSH on the appliance, as described in “[Managing System Services](#)” in the [ESN 1.0: Administrative UI Reference](#).
- 3 Using an SSH client (such as WinSCP), log in to the appliance as the `root` user.
- 4 Copy the `networkprep.zip` file that you downloaded to the `/root/` directory on the appliance.
- 5 Unzip the `networkprep.zip` file:

```
unzip networkprep.zip
```

The networkprep folder is created.

- 6 Change to the network prep folder:

```
cd /root/networkprep
```

- 7 Run the script:

```
sh run-networkprep.sh
```

- 8 Close the remote SSH connection to the appliance.

- 9 Continue with [“Copying Each Appliance’s /vastorage Disk \(Disk 2\)”](#) on page 85.

Copying Each Appliance’s /vastorage Disk (Disk 2)

- 1 Using the tools provided by your hypervisor, copy the /vastorage (second disk) to the location where your upgraded appliances will be located.

VMware requires shutting down the appliances before making copies.

- 2 Continue with [“Upgrading the Appliances in the Correct Order”](#) on page 85

Upgrading the Appliances in the Correct Order

Successful upgrades require that appliances in the ESN infrastructure be upgraded separately, and in the order of their dependencies upon each other.

- 1 Prepare a checklist for your appliances in the correct upgrade order:
 - ♦ **MySQL (if applicable):** If you are using a MySQL appliance instead of an in-house SQL server, you must upgrade that appliance first.
 - ♦ **ESNsearch:** You must upgrade the ESNsearch appliances before the ESN appliances.
 - ♦ **ESN:** When the upgraded MySQL and ESNsearch appliances are up and running, upgrade the first ESN appliance. Then upgrade the additional ESN appliances, one at a time.
- 2 If there are things you need to remember about individual appliances, include those reminders in the upgrade list.
- 3 Make sure that you upgrade the appliances one at a time.

Attempting to start and configure appliances simultaneously during an upgrade, can cause configuration and other problems.
- 4 Use the checklist as you complete the steps in [“Upgrading the VMs.”](#)

Upgrading the VMs

- ♦ [“Before You Begin Upgrading”](#) on page 85
- ♦ [“Upgrading Your VMs”](#) on page 86

Before You Begin Upgrading

- ♦ **Upgrade the appliances one at a time:** Attempting to start and configure multiple upgraded appliances at the same time can cause timing, synchronization, and other problems.

- ♦ **Make sure everything is ready:** Do not begin upgrading your appliances until you have:
 - ♦ [Reviewed the prerequisites and cautions section \(page 79\)](#)
 - ♦ Checked “[Upgrade Notes](#)” in the *ESN 1.0 Release Notes*
 - ♦ Made sure your upgraded system will meet [ESN 1.0 System Requirements \(page 13\)](#)
 - ♦ [Downloaded and prepared the software \(page 84\)](#)
 - ♦ [Prepared any secondary network cards for upgrading \(page 84\)](#)
 - ♦ [Copied the /vastorage disk to where the new appliances will be deployed \(page 85\)](#)
 - ♦ [Prepared a checklist that reflects the order in which you are upgrading the appliances \(page 85\)](#)

Upgrading Your VMs

Do the following:

- 1 Shut down your existing appliances in the following order: ESN, ESNsearch, MySQL (if applicable).
After all of the existing appliances are shut down, continue with [Step 2](#).
- 2 Deploy the new/replacement VMs one-at-a-time in the order that you planned in “[Upgrading the Appliances in the Correct Order](#)” on page 85.
- 3 Deployment tasks vary, depending on your hypervisor and are similar to the installation instructions in [Chapter 6, “Deploying the Virtual Machines,” on page 29](#), with the following changes:
 - 3a As you name each new/replacement VM, consider using a name that reflects the name of the existing VM and also indicates that the VM is new. (This name is for VM-management purposes only and does not impact the DNS name, which is unchanged.)
 - 3b Do not add a new Disk 2 (/vastorage).
Instead, make sure that you attach to the [copied Disk 2](#) for the VM you are upgrading.
 - 3c Add a new Disk 3 (/var) for the appliance type.
For help, see the guidelines in the [Planning Best Practices guide](#):
 - ♦ [ESN /var disk guidelines](#)
 - ♦ [ESNsearch /var disk guidelines \(also applies to the MySQL appliance if used\)](#)
 - 3d Make sure the RAM and CPU allocations meet the requirements in the following sections of the [Planning Best Practices guide](#):
 - ♦ [ESN Appliance Sizing Guidelines](#)
 - ♦ [ESNsearch Appliance Sizing Guidelines](#)
 - 3e After you start the replacement appliance, you are prompted for the root and vaadmin passwords.
Enter the passwords.

IMPORTANT: If you have removed the gateway address on the appliance you are upgrading, you are prompted to enter an address.
The installation code requires a default gateway value to run. You can remove the address information again after the upgrade completes.

- 3f The appliance automatically configures itself using the information from the copied Disk 2.

- 4 When the appliance displays the final screen in the console window, open your management browser and log in to the appliance on port 9443.
- 5 Depending on the appliance type you are upgrading, check the following:

MySQL (optional)	ESNsearch	ESN
<ol style="list-style-type: none"> 1. Click the phpMyAdmin icon. 2. Verify that the database is populated as expected. 	<ol style="list-style-type: none"> 1. Click the ESNsearch configuration icon. 2. Ensure that all of the settings are in place as expected. 3. If the configuration wizard displays, there was a problem with the configuration. Resolve the configuration issues, then click Finish to reconfigure the system. 	<ol style="list-style-type: none"> 1. Click the ESN configuration icon. 2. Ensure that all of the settings are in place as expected. 3. If the configuration wizard displays, there was a problem with the configuration. Resolve the configuration issues, then click Finish to reconfigure the system. <p>Common configuration issues include:</p> <ul style="list-style-type: none"> ♦ If your system is not using DNS, the most likely problem is unresolvable DNS names and missing <code>/etc/hosts</code> entries. ♦ If the appliance doesn't have access to the database, ensure that all of the settings are as expected.

- 6 When the appliance is running, return to [Step 2 on page 86](#) and upgrade the next appliance in your plan (“[Upgrading the Appliances in the Correct Order](#)” on page 85).
- 7 When all of your appliances are running, continue with “[Performing Post-Upgrade Tasks](#).”

Performing Post-Upgrade Tasks

After upgrading to a new version of ESN, you should perform the following tasks to ensure a fully functional ESN system:

- ♦ “[\(Optional\) Enable Net Folder Sharing](#)” on page 87
- ♦ “[Re-Enabling SSH on the ESN Search and Database Appliances](#)” on page 88
- ♦ “[Install Your New ESN License](#)” on page 88

(Optional) Enable Net Folder Sharing

Folder sharing is a new feature in ESN 1.0.

If you have Net Folders where you want users to be able to share folders as well as files, you must grant folder sharing rights using the [Recipient can share folders in this Net Folder with:](#) option as documented in “[Grant Rights dialog](#)” in the *ESN 1.0: Administrative UI Reference*.

Re-Enabling SSH on the ESN Search and Database Appliances

If you enabled SSH on the search or database appliances before upgrading your ESN system, it is disabled after upgrading, and you need to re-enable it. For more information about how to enable SSH, see “[Managing System Services](#)” in the *ESN 1.0: Administrative UI Reference*.

Install Your New ESN License

Upgraded ESN appliances have a 60-day evaluation license installed.

To prevent a service interruption, you must install your new license by following the instructions in “[Installing/Updating the ESN License](#)” in the *ESN 1.0: Administrative UI Reference*.

Appendixes

The following

- ♦ [Appendix A, “Creating an All-in-one \(Small\) Deployment,” on page 91](#)
- ♦ [Appendix B, “Creating a Non-Expandable Deployment,” on page 93](#)
- ♦ [Appendix C, “Configuring the MySQL Appliance to Provide the SQL Database \(Alternate Practice\),” on page 95](#)
- ♦ [Appendix D, “Configuring ESN to Work with OES 2015 NSS AD,” on page 97](#)
- ♦ [Appendix E, “Integrating ESN and NetIQ Access Manager,” on page 99](#)
- ♦ [Appendix F, “VMware—Changing the SCSI Controller Type,” on page 107](#)
- ♦ [Appendix G, “Troubleshooting the ESN Installation and Upgrade,” on page 109](#)
- ♦ [Appendix H, “Third-Party Materials,” on page 111](#)

A Creating an All-in-one (Small) Deployment

To create an all-in-one deployment, you install one ESN appliance. By default ESN also includes the MySQL database and ESNsearch functions.

Ensuring All-in-One Suitability

With few exceptions, small deployments are only suitable for proof-of-concept deployments, which, by definition, do not require extensive planning.

For a production deployment, you should use the [ESN 1.0 Planning Your ESN Deployment—Best Practices](#) guide and associated planning worksheets to gauge whether a small deployment could meet your organization's production needs.

The Micro Focus best practice recommendation is always an expandable deployment, which is the focus of this guide.

All-in-One System Requirements

Most of the requirements in [Chapter 3, "System Requirements," on page 13](#) apply to small deployments.

However, minimum RAM and CPU recommendations are increased to handle the database and search functions running in addition to ESN.

- ♦ 12 GB of RAM (16 GB is recommended)
- ♦ 4 CPUs.

80% of the RAM should be dedicated to the Java heap.

For information about adjusting the Java heap settings, see ["Changing JVM Configuration Settings"](#) in the [ESN 1.0: Administrative UI Reference](#).

All-in-One Deployment


To deploy an all-in-one ESN appliance, complete the instructions in the following sections:

Table A-1

Section	Additional Information
Chapter 5, "Downloading and Preparing the ESN Software," on page 25	You only need to download the ESN software for your virtualization platform.
Chapter 6, "Deploying the Virtual Machines," on page 29	Follow the instructions in the section for your virtualization platform.
Chapter 7, "Starting and Configuring the Appliances," on page 43	Follow the instructions in the referenced section, then continue with

Setting Up an All-in-One (small) ESN Appliance

Table A-2 Logging in and Setting Up a Small ESN Appliance

Page, Dialog, or Option	Do This
	<ol style="list-style-type: none">1. Open a management browser on your administrative workstation and access the Port 9443 Administration Utility on the ESN appliance using the following URL: <code>https://ESN_IP_Address:9443</code> Where <i>IP_Address</i> is the IP address of the ESN appliance.
ESN Appliance Sign In	<ol style="list-style-type: none">1. Log in as the <code>vaadmin</code> user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 45.
ESN Appliance Tools	<ol style="list-style-type: none">1. Click the Configuration icon  to launch the ESN Configuration Wizard.
ESN Configuration Wizard	<ol style="list-style-type: none">1. Click Next.
Database	<ol style="list-style-type: none">1. Type and confirm a password for the ESN user in the MySQL database.
Default Locale	<ol style="list-style-type: none">1. Select your Locale from the dropdown list.2. Change the Administrator User ID if you want to. The User ID that you enter is also the password for the initial login for the Port 8443 administration console.3. Click Finish.4. Do not close or exit the browser page until the warning message disappears.

B Creating a Non-Expandable Deployment

The steps required to create a non-expandable ESN deployment are almost identical to those for an expandable deployment.

Do the following:

1. Begin with [Chapter 2, “Planning Is Critical,” on page 11](#) and complete all of the instructions that apply to your virtualization platform and plans.
2. Skip [Chapter 4, “Setting Up Shared Storage,” on page 21](#).
3. Follow the instructions in the remaining sections as they apply.

C Configuring the MySQL Appliance to Provide the SQL Database (Alternate Practice)

Figure 8-3 illustrates that the MySQL appliance is configured to recognize the ESN appliances and allow them to connect before they are set up and deployed.

Figure C-1 Deploying MySQL

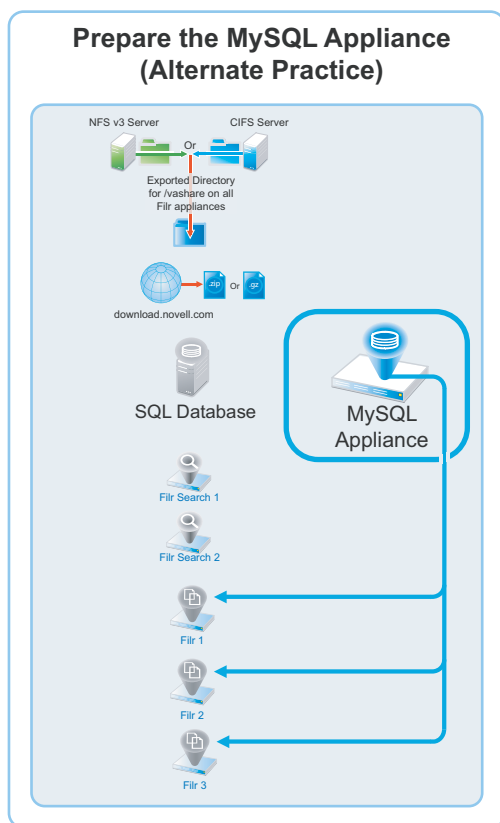


Table C-1 Configuring a MySQL Appliance

Page or Dialog	Do This
	IMPORTANT: The following steps assume that you installed and prepared a MySQL appliance as documented in the previous chapters, in addition to your ESN and ESNsearch appliances.

Page or Dialog	Do This
	<ol style="list-style-type: none"> Using a browser on your management workstation, access the Port 9443 Administration Utility on the MySQL appliance by entering the following URL: <code>https://mysql_IP_Address:9443</code> Where <i>IP_Address</i> is the IP address of the MySQL appliance.
MySQL Appliance Sign In	<ol style="list-style-type: none"> Log in as the <code>vaadmin</code> user with the password that you set for the appliance in “Vaadmin password and confirmation:” on page 45.
MySQL Tools	<ol style="list-style-type: none"> Click the phpMyAdmin button to launch the phpMyAdmin utility. Log in as <code>root</code> with password <code>root</code>.
phpMyAdmin	<ol style="list-style-type: none"> Under General Settings, click Change Password. Type and retype (confirm) a new password for the phpMyAdmin <code>root</code> user, then click Go. IMPORTANT: If you click the Generate button, the generated password takes precedence over your typed passwords. Be sure to note the generated password and use it when configuring ESN. Click the Users tab.
Users Overview	<ol style="list-style-type: none"> Under New, click Add User.
Login Information	<ol style="list-style-type: none"> Type <code>ESN</code> in the User Name field. TIP: You can specify any name for the user and associated database. If you specify a different name, then when you set up the ESN appliances, you will need to use that name instead of <code>ESN</code>. For the Host field, select Use Host Table. In the Host field, type the IP addresses for each of the ESN appliances that you will configure. In the Password and Re-type fields, type and re-type (confirm) a password for the new <code>ESN</code> user, then scroll down. IMPORTANT: You will need this password when you configure the ESN appliances.
Database for user	<ol style="list-style-type: none"> Select Create database with same name and grant all privileges. In the bottom right corner of the dialog, click Go. A <code>ESN</code> user entry is added and the corresponding database is created.
Users Overview	<ol style="list-style-type: none"> Notice that the ESN user is listed with the appliances' IP addresses shown in the Host column. Return to “Setting Up the ESN Appliances” on page 56.

D Configuring ESN to Work with OES 2015 NSS AD

Although both ESN 1.0 and OES 2015 NSS AD support SMB v2, ESN configures Net Folder connections that point to NSS AD servers to use the SMB v1 protocol.

If you have Net Folder Server connections that point to NSS AD servers, you should change ESN to use SMB v2 for the connections by doing the following:

- 1 Ensure that the OES 2015 NSS AD server has the latest patches applied.
- 2 If SSH is not enabled on the ESN appliance, do the following:
 - 2a Log in to the ESN appliance at https://server_url:9443 as the `vaadmin` user.
 - 2b Click **System Services**, then click **SSH > Action > Start**.
- 3 Using an SSH client, log in to the ESN appliance as the root user.
- 4 Run the following command:

```
/opt/novell/ESN/bin/famtconfig -s ncifsSMB 2
```

- 5 Restart famtd by running the following command.

```
# rcnovell-famtd restart
```

IMPORTANT: If you do not restart famtd, then the SMB v1 protocol is used for connections made prior to doing [Step 4](#).

- 6 For large, clustered deployments, repeat these steps for all of the ESN servers in the cluster

NOTE: To reset the ESN connections with OES 2015 NSS AD servers from SMB v2 back to SMB v1, run the following commands:

```
/opt/novell/ESN/bin/famtconfig -s ncifsSMB 1
```

```
# rcnovell-famtd restart
```



Integrating ESN and NetIQ Access Manager

- ♦ “NetIQ Access Manager” on page 99
- ♦ “Caveats for External User Access” on page 100
- ♦ “Understanding Reverse Proxy and NetIQ Access Manager” on page 100
- ♦ “Configuring a Protected Resource for a Micro Focus ESN Server” on page 101
- ♦ “Bypassing NetIQ Access Manager to Log In to ESN and Perform Administrative Tasks” on page 106
- ♦ “HTTP/HTTPS Ports When You Use NetIQ Access Manager with ESN” on page 106
- ♦ “Port Configuration” on page 106

To allow access to the ESN site through NetIQ Access Manager, you need to make configuration changes in NetIQ Access Manager to configure a protected resource for a Micro Focus ESN server as described in “[Configuring a Protected Resource for a Micro Focus ESN Server](#)” on page 101.

NetIQ Access Manager

Using Micro Focus ESN in conjunction with NetIQ Access Manager adds enterprise-level security to your ESN system.

Only a version of Access Manager that supports Transport Layer Security (TLS) can be used when using Access Manager with ESN. For information about which versions of Access Manager support TLS and how to enable it, see [Enabling Transport Layer Security 1.1 and 1.2 for Access Manager](https://www.netiq.com/documentation/netiqaccessmanager4/enable_tls_nam40/data/enable_tls_nam40.html#) (https://www.netiq.com/documentation/netiqaccessmanager4/enable_tls_nam40/data/enable_tls_nam40.html#).

IMPORTANT: NetIQ Access Manager cannot grant external users access through the generated URL links that ESN includes in email notifications. This means that the following features are not functional for external or Guest users:

- ♦ Users are not able to share with external users, as described in “[Sharing with People Outside Your Organization](#)” in the [ESN 1.0: User Access Guide](#).

A possible work-around for this issue is documented in [TID 7014912](https://www.novell.com/support/kb/doc.php?id=7014912) (<https://www.novell.com/support/kb/doc.php?id=7014912>).

- ♦ Users are not able to share a File Link with external users, as described in “[Distributing a Link to a File](#)” in the [ESN 1.0: User Access Guide](#).
- ♦ Users cannot make items accessible to the public, as described in “[Making Files Accessible to the Public](#)” in the [ESN 1.0: User Access Guide](#).

This means that public users cannot access the ESN site as the Guest user. For more information about the Guest user, see “[Guest Users:](#)” in [ESN 1.0: Understanding How ESN Works](#).

For more information about external users in ESN, see “[External, Self-Provisioned Users:](#)” in [ESN 1.0: Understanding How ESN Works](#).

Before internal users can access your ESN site through NetIQ Access Manager, you must first configure specific protected resources in Access Manager to be public, as described in [Appendix E, “Integrating ESN and NetIQ Access Manager,” on page 99](#).

Furthermore, you can configure NetIQ Access Manager to work with Micro Focus ESN in the following way:

- ◆ Configure NetIQ Access Manager to provide single sign-on access to the ESN site.

For more information, see “Reverse Proxy Configuration Settings” in the [ESN 1.0: Administrative UI Reference](#).

When you set up NetIQ Access Manager to work with ESN, ensure that you specify the correct HTTP/HTTPS port numbers during the configuration of the ESN appliance, as described in “[HTTP/HTTPS Ports When You Use NetIQ Access Manager with ESN](#)” on page 106.

Caveats for External User Access

NetIQ Access Manager cannot grant external users access through the generated URL links that ESN includes in email notifications. This means that the following features are not functional for external or Guest users:

- ◆ Users are not able to share with external users, as described in “[Sharing with People Outside Your Organization](#)” in the [ESN 1.0: User Access Guide](#).

A possible work-around for this issue is documented in [TID 7014912 \(https://www.novell.com/support/kb/doc.php?id=7014912\)](#).

- ◆ Users are not able to share a File Link with external users, as described in “[Distributing a Link to a File](#)” in the [ESN 1.0: User Access Guide](#).
- ◆ Users cannot make items accessible to the public, as described in “[Making Files Accessible to the Public](#)” in the [ESN 1.0: User Access Guide](#).

This means that public users cannot access the ESN site as the Guest user. For more information about the Guest user, see “[Guest Users:](#)” in [ESN 1.0: Understanding How ESN Works](#).

For more information about external users in ESN, see “[Guest Users:](#)” in [ESN 1.0: Understanding How ESN Works](#).

Understanding Reverse Proxy and NetIQ Access Manager

NetIQ Access Manager can provide secure single sign-on access to your Micro Focus ESN site by functioning as a reverse proxy server. When using Access Manager with Micro Focus ESN, Access Manager 4.1.1 or later is required and is an additional add-on product. You can download the required version of Access Manager from the [NetIQ Downloads site \(https://dl.netiq.com/index.jsp\)](#).

For background information about setting up NetIQ Access Manager 4.1.1, see the [Access Manager 4.1 Documentation website \(https://www.netiq.com/documentation/access-manager-41/\)](#). For instructions specific to ESN, see “[Configuring a Protected Resource for a Micro Focus ESN Server](#)” on page 101.

After you have configured NetIQ Access Manager, you must configure your ESN site with the IP address of one or more Access Gateway servers and with the logout URL. When you configure the ESN site to use the Access Gateway, the IP addresses that you specify are the only locations from which the ESN site accepts logins. The logout URL is the location where users find themselves when they log out of the ESN site.

When you enable the Access Gateway for use with your ESN site, all ESN users must log in through the Access Gateway. It is not possible to set up the ESN site so that some users log in through the Access Gateway and some do not.

Configuring a Protected Resource for a Micro Focus ESN Server

The following sections explain how to configure the Access Gateway with a domain-based multi-homing service. The instructions assume that you have a functioning Micro Focus ESN appliance and a functioning Access Manager system (4.1.1 or higher) with a reverse proxy configured for SSL communication between the browsers and the Access Gateway.

The ESN server needs to be configured to trust the Access Gateway to allow single sign-on with Identity Injection and to provide simultaneous logout. You also need to create an Access Gateway proxy service and configure it.

- ♦ [“Configuring the Micro Focus ESN Server to Trust the Access Gateway” on page 101](#)
- ♦ [“Configuring a Reverse-Proxy Single Sign-On Service for Micro Focus ESN” on page 101](#)

Configuring the Micro Focus ESN Server to Trust the Access Gateway

To use Micro Focus ESN as a protected resource of an Access Gateway and to use Identity Injection for single sign-on, the ESN server needs a trusted relationship with the Access Gateway. With a trusted relationship, the ESN server can process the authorization header credentials. The ESN server accepts only a simple user name (such as user1) and password in the authorization header.

To configure a trusted relationship and simultaneous logout, specify the reverse proxy configuration settings for your ESN appliance, as described in “Reverse Proxy Configuration Settings” in the [ESN 1.0: Administrative UI Reference](#).

Configuring a Reverse-Proxy Single Sign-On Service for Micro Focus ESN

To configure a reverse-proxy single sign-on service for ESN, complete the following tasks:

- ♦ [“Creating a New Reverse Proxy” on page 102](#)
- ♦ [“Configuring the Domain-Based Proxy Service” on page 102](#)
- ♦ [“Creating Policies” on page 102](#)
- ♦ [“Creating a Word Rewriter Profile for Each ESN Host” on page 104](#)
- ♦ [“Configuring Protected Resources” on page 104](#)
- ♦ [“Disabling a Rewriter Profile and Enabling Port Redirection” on page 105](#)

Creating a New Reverse Proxy

Before you can configure the domain-based proxy service, you need to create a new reverse proxy. For information, see [“Managing Reverse Proxies and Authentication”](#) in the [NetIQ Access Manager 4.1 Administration Guide](#).

Configuring the Domain-Based Proxy Service

- 1 In the Administration Console, click **Devices > Access Gateways > Edit**, then click the name of the reverse proxy that you created in [“Creating a New Reverse Proxy”](#) on page 102.
- 2 Click the reverse proxy link that you have previously created. In the **Reverse Proxy List**, click **New**, then fill in the following fields:
 - ♦ **Proxy Service Name:** Specify a display name for the proxy service that the Administration Console uses for its interfaces.
 - ♦ **Published DNS Name:** Specify the DNS name that you want the public to use to access your site. This DNS name must resolve to the IP address that you set up as the listening address. For example, `ESN.doc.provo.novell.com`.

IMPORTANT: To avoid incomplete logout problems, you must also create a an **Additional Strings to Replace** entry for each ESN appliance that points to this DNS name.
See [“Creating a Word Rewriter Profile for Each ESN Host”](#) on page 104.

 - ♦ **Web Server IP Address:** Specify the IP address of the ESN server.
 - ♦ **Host Header:** Select the **Forward received host name**.
 - ♦ **Web Server Host Name:** Because of your selection in the **Host Header** field, this option is dimmed.
- 3 Click **OK**.
- 4 Click the newly added proxy service, then select the **Web Servers** tab.
- 5 Configure the **Connect Port** to match the **Reverse Proxy Secure HTTP Port** setting that you configured from the ESN appliance, as described in “Reverse Proxy Configuration Settings” in the [ESN 1.0: Administrative UI Reference](#). This will be either port 443 or 8443.
- 6 When using SSL, select **Use SSL** in the Access Manager configuration, then select one of the following:
 - ♦ **Any in reverse proxy store:** Select this option if your ESN and Access Manager servers are in separate geographical locations, or if you want added security within your local network.
 - ♦ **Do not verify:** Select this option if your ESN and Access Manager servers are part of the same local network.
- 7 Click **TCP Connect Options**.
- 8 Click **OK**.
- 9 Continue with [“Configuring Protected Resources”](#) on page 104.

Creating Policies

You need to create two policies: LDAP Identity Injection and X-Forward-Proto:

- ♦ [“Creating the LDAP Identity Injection Policy”](#) on page 103
- ♦ [“Creating the X-Forward-Proto HTTP Header Policy”](#) on page 103

Creating the LDAP Identity Injection Policy

- 1 In the Administration Console, click **Policies > Policies**.
- 2 Select the policy container, then click **New**.
- 3 Specify `ldap_auth` as the name for the policy, select **Access Gateway: Identity Injection** for the type, then click **OK**.
- 4 (Optional) Specify a description for the injection policy. This is useful if you plan to create multiple policies to be used by multiple resources.
- 5 In the **Actions** section, click **New**, then select **Inject into Authentication Header**.
- 6 Fill in the following fields:
User Name: If users are provisioned with `cn` or `uid` attributes, select **Credential Profile**, then select **LDAP Credentials:LDAP User Name**. In the **Refresh Data Every** drop-down, select **Session**.
or
If users are provisioned with `mail` attributes, select **LDAP Attribute**, then select `mail`. In the **Refresh Data Every** drop-down, select **Session**.
Password: Select **Credential Profile**, then select **LDAP Credentials:LDAP Password**.
- 7 Leave the default value for the **Multi-Value Separator**, which is comma.
- 8 Click **OK**.
- 9 To save the policy, click **OK**, then click **Apply Changes**.
For more information on creating such a policy, see [“Configuring an Authentication Header Policy”](#) in the .

Creating the X-Forward-Proto HTTP Header Policy

When communicating over HTTPS from the browser to Access Manager, and over HTTP from Access Manager to ESN, the X-Forwarded-Proto is a best practice.

- 1 In the Administration Console, click **Policies > Policies**.
- 2 Select the policy container, then click **New**.
- 3 Specify `x-forward` as the name for the policy, select **Access Gateway: Identity Injection** for the type, then click **OK**.
- 4 (Optional) Specify a description for the injection policy. This is useful if you plan to create multiple policies to be used by multiple resources.
- 5 In the **Actions** section, click **New**, then select **Inject into Custom Header**.
- 6 Fill in the following fields:
Custom Header Name: Specify `X-Forward-Proto` as the name.
Value: Select **String Constant** in the drop-down, then specify `https`.
- 7 Leave the other settings at the defaults.
- 8 Click **OK**.
- 9 To save the policy, click **OK**, then click **Apply Changes**.
For more information on creating such a policy, see [“Configuring an Authentication Header Policy”](#) in the [.NetIQ Access Manager 4.1 Administration Guide](#)

Creating a Word Rewriter Profile for Each ESN Host

Due to a security fix in ESN 2.0 and later, when users log out of ESN, they are taken to the ESN DNS name rather than the NAM host. This results in a condition where it appears that they are logged out although they actually are not.

To avoid these incomplete login conditions, create a word rewriter for each ESN host that points to the DNS name of the NAM host.

The NetIQ Access Manager Best Practices Guide contains pertinent rewriter examples in a section that deals with SharePoint. See [Table 3-2 in the above-mentioned guide](#) and also refer to the instructions associated with the table.

Configuring Protected Resources

You need to create two protected resources, one for HTML content and a public protected resource:

1 Create a protected resource for HTML content:

1a In the **Protected Resource List**, click **New**, specify `Basic auth with redirection` for the name, then click **OK**.

1b (Optional) Specify a description for the protected resource. You can use it to briefly describe the purpose for protecting this resource.

1c Click the **Edit** icon  next to the **Authentication Procedure** drop-down list.

1d Create a new authentication procedure by clicking **New**, specifying a name for the authentication procedure, and then clicking **OK**.

1e In the dialog box that is displayed, fill in the following fields.

Contract: Select the **Secure Name/Password - Form** contract.

Non-Redirected Login: Select this option.

Realm: Specify a name that you want to use for the ESN server. This name does not correspond to a ESN configuration option. It appears when the user is prompted for credentials.

Redirect to Identity Server When No Authentication Header is Provided: Select this option.

1f Click **OK** twice.

1g In the **URL Path List**, add the following paths for HTML content:

```
/*
/ssf/*
/ssf/s/readFile/share/*
```

1h On the configuration page for the protected resource, select the authentication procedure that you just created from the **Authentication Procedure** drop-down list, then click **OK**.

2 Create a public protected resource for Web Services:

NetIQ Access Manager is not designed to protect certain public resources. You must complete the following steps to allow these resources to be protected by the ESN server itself, rather than by NetIQ Access Manager.

2a In the **Protected Resource List**, click **New**, specify `public` for the name, then click **OK**.

2b (Optional) Specify a description for the protected resource. You can use it to briefly describe the purpose for protecting this resource.

2c For the **Authentication Procedure**, select **None**.

2d Click **OK**.

2e In the **URL Path List**, remove the `/*` path and add the following paths:

For public content:

```
/ssf/atom/*  
/ssf/ical/*  
/ssf/ws/*  
/ssf/rss/*  
/ssr/*  
/rest/*  
/rest  
/  
/dave/*  
/my_files/*  
/net_folders/*  
/shared_with_me  
/desktopapp/*
```

The `/ssf/rss/*` path enables non-redirected login for RSS reader connections.

ESN provides authentication for all of the paths listed above.

2f Click **OK**.

3 Assign the X-Forward-Proto Header policy to both protected resources that you created:

3a Click **Access Gateways** > **Edit** > **[Name of Reverse Proxy]** > **[Name of Proxy Service]** > **Protected Resources**.

3b For each ESN protected resource, click the **Identity Injection** link, select the **x-forward** policy that you created, click **Enable**, then click **OK**.

3c Click **OK**.

4 Assign the Identity Injection policy to the HTML protected resource that you created, specifically, **Basic auth with redirection**.

4a Click **Access Gateways** > **Edit** > **[Name of Reverse Proxy]** > **[Name of Proxy Service]** > **Protected Resources**.

4b For each ESN protected resource, click the **Identity Injection** link, select the **ldap_auth** policy that you created, click **Enable**, then click **OK**.

4c Click **OK**.

5 To save the configuration changes, click **Devices** > **Access Gateways**, then click **Update**.

6 In the **Protected Resource List**, ensure that the protected resources that you created are enabled.

7 To apply your changes, click **Devices** > **Access Gateways**, then click **Update**.

8 Continue with [“Disabling a Rewriter Profile and Enabling Port Redirection” on page 105](#).

Disabling a Rewriter Profile and Enabling Port Redirection

NOTE: If you have changed the ESN and Access Manager ports from their defaults (8443 for ESN and 443 for Access Manager), you cannot disable the rewriter profile and enable port redirection as described in this section. Instead, you must configure a rewriter profile in Access Manager, as described in [“Creating or Modifying a Rewriter Profile”](#) in the .

To disable the HTML Rewriter and enable port redirection:

- 1 In the Proxy Service List in Access Manager, ensure that the HTML Rewriter is disabled.
- 2 Under the **Web Servers** tab, ensure that the Connect Port has been modified to port 443. (This matches the configuration that you made in [Step 5](#) in “Configuring the Domain-Based Proxy Service” on page 102.)
- 3 Enable port redirection on the ESN server, as described in “Changing Network Settings” in the [ESN 1.0: Administrative UI Reference](#).

This allows ESN to listen on port 8443, and allows Access Manager to forward client requests to port 443.

Bypassing NetIQ Access Manager to Log In to ESN and Perform Administrative Tasks

To perform administrative tasks on your ESN system, you need to log in to bypass NetIQ Access Manager and log in to ESN directly as the ESN administrator.

To allow administrator access to the ESN system when your ESN system is fronted by Access Manager:

- 1 Add another IP address to the **Access Gateway address(es)** field, as described in “Reverse Proxy Configuration Settings” in the [ESN 1.0: Administrative UI Reference](#).
- 2 Access this IP address that you added in [Step 1](#) at port 8443. For example, 172.17.2.3:8443.

HTTP/HTTPS Ports When You Use NetIQ Access Manager with ESN

If you are fronting ESN with NetIQ Access Manager, ensure that you have configured the HTTP/HTTPS ports.

Configuring ESN in this way configures NetIQ Access Manager to access ESN over port 80, which is the standard port.

Port Configuration

Use the following port configuration when NetIQ Access Manager is fronting your ESN system on Linux:

- ♦ HTTP Port: 80
- ♦ Secure HTTP Port: 443

You need to make these configuration settings in the **Reverse Proxy** section. For more information, see “Reverse Proxy Configuration Settings” in the [ESN 1.0: Administrative UI Reference](#).

F VMware—Changing the SCSI Controller Type

To change the SCSI controller type on a VMware-based appliance to **VMware Paravirtual**:

1. Finish the installation and power on the ESN system.
2. Ensure that the ESN system is running. (Log in as the ESN administrator, create a user, and log in as that user.)
3. Shut down each appliance in the ESN system. (For information about how to safely shut down an appliance, see “[Shutting Down and Restarting the Micro Focus Appliance](#)” in the *ESN 1.0: Administrative UI Reference*.)
4. In VMware, change the controller to **VMware Paravirtual**.
5. Power on each appliance in the ESN system.

G Troubleshooting the ESN Installation and Upgrade

- “Unable to Access a Newly Installed Appliance” on page 109
- “The Upgrade Dialog Box Is Not Displayed during an Upgrade” on page 109
- “Rolling Back to the Previous Version after an Unsuccessful Upgrade” on page 110

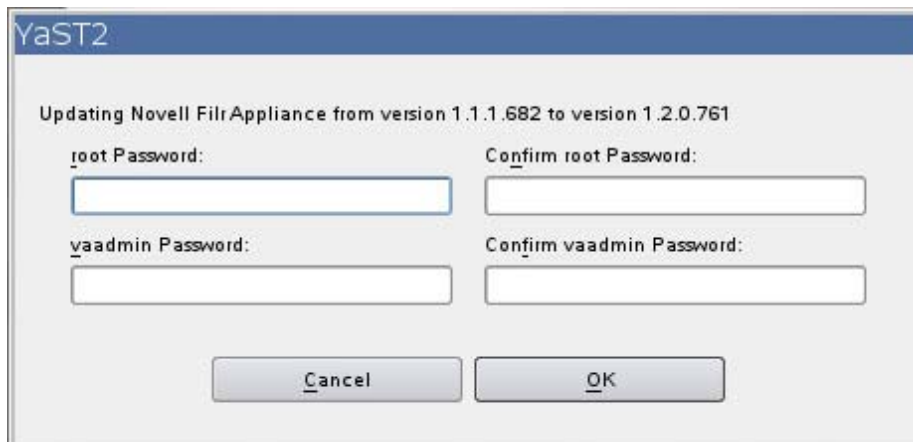
Unable to Access a Newly Installed Appliance

If you are unable to access a newly installed appliance and you need to change appliance settings, such as the IP address, use the VACONFIG utility from the ESN command prompt.

For more information, see “Using VACONFIG to Modify Network Information” in the *ESN 1.0: Maintenance Best Practices Guide*.

The Upgrade Dialog Box Is Not Displayed during an Upgrade

The following dialog box should be displayed when powering on the new appliance.



If it is not displayed, the data storage location was not successfully copied or attached to the new ESN system. Begin the upgrade process again and ensure that you have configured the new ESN system to point to the data storage location of the source ESN system.

Rolling Back to the Previous Version after an Unsuccessful Upgrade

You can roll the ESN system back to the previous version if the upgrade is unsuccessful.

- ♦ [“Rolling Back a Small or Non-Clustered ESN System” on page 110](#)
- ♦ [“Rolling Back a Clustered ESN System” on page 110](#)

Rolling Back a Small or Non-Clustered ESN System

You should have created a copy of the data storage location (`/vastorage`) to be used in the new ESN system (as described in [“Copying Each Appliance’s /vastorage Disk \(Disk 2\)” on page 85](#)).

If you experience complications when upgrading the ESN system, your existing ESN system is still intact and you are able to power it on at any time.

Rolling Back a Clustered ESN System

A clustered ESN system (multiple ESN appliances) consists of not only a data storage location (`/vastorage`), but also shared storage (`/vashare`).

- ♦ [“Rolling Back the Data Storage Location \(/vastorage\)” on page 110](#)
- ♦ [“Rolling Back the Shared Storage Location \(/vashare\)” on page 110](#)

Rolling Back the Data Storage Location (/vastorage)

You should have created a copy of the data storage location (`/vastorage`) to be used in the new ESN system (as described in [“Copying Each Appliance’s /vastorage Disk \(Disk 2\)” on page 85](#)).

If you experience complications when upgrading the ESN system, the data storage location of your existing ESN system is still intact.

Rolling Back the Shared Storage Location (/vashare)

After an unsuccessful upgrade, you can roll back the shared storage location (`/vashare`) to the previous version by reconfiguring clustering on the ESN server:

- 1 On the ESN appliance that you are rolling back to, log in as the ESN administrator.

`https://ip_address:9443`

Replace `ip_address` with the IP address of your ESN appliance.

- 2 Sign in to the ESN appliance using the `vaadmin` user and the password that you set during installation.

The Micro Focus ESN Appliance landing page is displayed.

- 3 Click the **ESN Server Configuration**  icon.

- 4 Click **Clustering**.

- 5 In the **Server Address** field, add the port number to the server address of each search index appliance.

For example, change `172.17.2.2` to `172.17.2.2:11211`



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PDF documents with complete information about the use of Oracle technology in ESN are located in the following directory on the ESN server:

`/opt/novell/ESN/stellent-converter`

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