ZENworks® 2017
Server Installation Guide

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Legal Notice

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About This Guide

This *ZENworks 2017 Server Installation Guide* includes information to help you successfully install the ZENworks Primary Server software on Windows and Linux servers.

The information in this guide is organized as follows:

- Part I, "System Requirements," on page 9
- Part II, "Windows Installation," on page 19
- Part III, "Linux Installation," on page 61
- Part IV, "Appendixes," on page 103

Audience

This guide is intended for ZENworks administrators.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Additional Documentation

ZENworks is supported by other documentation (in both PDF and HTML formats) that you can use to learn about and implement the product. For additional documentation, see the ZENworks 2017 documentation web site (http://www.novell.com/documentation/zenworks2017/).

System Requirements

The following section provides the system requirements for installing a ZENworks Primary Server:

1 Primary Server Requirements

Ensure that the server where you install the Primary Server software meets the following requirements:

NOTE: The operating systems listed below are the ones on which the ZENworks Primary Server software can be installed. The list does not necessarily represent the operating systems that ZENworks Patch Management can update. For this list, see the *ZENworks Patch Management Content Report*.

Item	Requirements	Additional Details
Server Usage	Your server might be capable of handling tasks in addition to the tasks that a Primary Server performs. However, we recommend that any server where you install the Primary Server software be used only for ZENworks.	For example, you might not want the server to do the following: ◆ Host NetIQ eDirectory ◆ Host Active Directory ◆ Host Terminal Services
Operating System Windows	◆ Windows 2012 Server x86_64 (Foundation, Essential, Standard, and Datacenter editions) ◆ Windows 2012 Server R2 x86_64 (Foundation, Essential, Standard, and Datacenter editions) ◆ Windows 2016 Server x86_64 (Essential, Standard, Datacenter and Storage editions)	Installation on a server in a clustered environment is not supported.
Operating System Linux	◆ SLES 11 SP3 x86_64 ◆ SLES 11 SP4 x86_64 ◆ SLES 12 x86_64 ◆ SLES 12 SP1 x86_64 ◆ SLES 12 SP2 x86_64 ◆ SLES 12 SP3 x86_64	**IMPORTANT** ◆ SLES 12 requires the libXtst6-32bit-1.2.2-3.60.x86_64.rpm to install ZENworks Server. This rpm is available on the SLES 12 media. ◆ Remote management is not supported on Linux devices at runlevel 3 (text-only, no X server). ◆ If ZENworks is already installed on the system, do not perform a major in-place upgrade of the operating system (for example, from SLES 11 SP4 to SLES 12) as this might cause issues and the Primary Servers might have to be replaced. For information on how to replace the servers, see Replacing Primary Servers in the *ZENworks Disaster Recovery Reference*.

Item	Requirements	Additional Details
Processor	Speed:2.0 GHz or faster Type: Quad-core or faster	
RAM	8 GB minimum; 12 GB and above recommended	8 GB for the first 3000 devices Add 1 GB RAM for every 3000 additional devices
Disk Space	20 GB for installation. Depending on the amount of content you need to distribute the space. For ZENworks database add 10 GB for every 1000 devices and for Audit database add 10 GB for every 5000 devices. 500 MB is recommended for the tmp directory. This disk space is required for rebuilding and editing the packages. Patch Management file storage (downloaded patch content) requires at least 25 GB of additional free disk space. All content replication servers also require this same amount of additional free disk space if Patch Management is enabled. If you use Patch Management in additional languages, each server also requires this additional amount of free space for each language.	Because the ZENworks database file and ZENworks content repository can each become very large, you might want a separate partition or hard drive available. For information on changing the default content repository location on a Windows server, see "Content Repository" in the *ZENworks Primary Server and Satellite Reference*. For Linux servers, you might want the /var/opt directory to be located on a large partition. This is where the database (if embedded) and content repository are stored. The /etc directory requires less space.
Display Resolution	Video Adaptor: 256 colors Screen Resolution: 1024 × 768 minimum	
File System	If you have installed embedded Sybase on your device, ensure that the file system of the drive where you have installed ZENworks Configuration Management supports files larger than 4 GB.	
DNS Resolution	The servers and workstations in the Management Zone must use properly configured DNS to resolve device hostnames; otherwise, some features in ZENworks will not work properly. If the DNS is not properly configured, the servers cannot communicate with each other, and the workstations cannot communicate with the servers. Server names must support DNS requirements, such as not including underscores; otherwise, ZENworks login fails. Acceptable characters include the letters a-z (uppercase and lowercase), numbers, and the hyphen (-). **NOTE:** If the host name of a Linux Primary Server contains upper case characters, the server host name should be included in the /etc/hosts file located on that server.	

Item	Requirements	Additional Details
IP Address	The server must have a static IP address or a permanently leased IP address in the case of DHCP configuration. An IP address must be bound to all NICs on your target server.	Installation hangs if it is trying to use a NIC that does not have an IP address bound to it.
Microsoft .NET (Only for Windows)	The Microsoft `.NET 4.5 Framework` and its latest updates must be installed and running on the Windows Primary Server in order to install ZENworks 2017. Ensure that the full `.NET 4.5 Framework` is installed on the device and not the `.NET 4.5 Client Profile`.	On Windows Server 2012, .NET 4.5 is available by default. However, you need to enable it. You are given the option to enable .NET during the ZENworks installation. If you select the option, .NET is automatically enabled.
Firewall Settings: TCP and UDP Ports	Many TCP and UDP ports are opened by the ZENworks Installer during installation. If a port required by ZENworks is in use, the ZENworks Installer prompts you to configure an alternate port. **IMPORTANT:** If the firewall is disabled during installation or upgrade, ensure that you manually open the ports in the firewall settings when the firewall is enabled.	For the list of TCP and UDP ports and how ZENworks uses them, see "TCP and UDP Ports Used by ZENworks Primary Servers" in the *ZENworks Primary Server and Satellite Reference*.
Supported Hypervisors	Primary server software can be installed in the following virtual machine environments: ◆ VMware Workstation 11.0 onwards ◆ XEN on SLES 11 SP4, SLES 12 and SLES 12 SP1, SP2, SP3 ◆ VMware ESXi 5.*x* ◆ Microsoft Hyper-V Server Windows 2012, 2012 R2 and 2016.	◆ Only released versions of guest operating systems (VMs) are supported. Experimental guest operating systems are not supported. ◆ The guest operating system must match the operating system specified when creating the VM. For example, if during creation of the VM, the guest operating system is specified as Windows Server 2012, the actual guest operating system must be Windows Server 2012.

2 Database Requirements

If you choose to use a database for the ZENworks database other than the embedded Sybase SQL Anywhere database that is available as the default for ZENworks 2017, the database must meet the following requirements:

Item	Requirement
Database Version	- Oracle 11g R2 with version 11.2.0.4 Standard, Enterprise Edition and Oracle RAC (with or without partitioning). For information about partitioning, see Oracle Enterprise with Partitioning. - Oracle 12c R1 with version 12.1.0.2 Standard, Enterprise Edition and Oracle RAC (with or without partitioning). - Microsoft SQL 2008 SP3 and higher, including Cluster (Standard and Enterprise editions) - Microsoft SQL 2008 R2 and higher, including Cluster (Datacenter, Standard and Enterprise editions) - Microsoft SQL Server 2012 SP3 and later, including Cluster (Standard, Enterprise, and Business Intelligence editions) - Microsoft SQL Server 2014 SP1and later, including Cluster (Standard, Enterprise, and Business Intelligence editions) - Microsoft SQL Server 2016, including Cluster (Standard and Enterprise editions) - Sybase Anywhere 17 (and latest Electronic Bug Fix) - PostgreSQL 9.5.4 (Experimental support)
Database Server Hostname	The database server hostname must be resolvable by the Domain Name Server Service.
TCP Ports	The server must allow Primary Server communication on the database port. For MS SQL, ensure that you configure static ports for the database server. Default Ports: 1433 for MS SQL 2638 for Sybase SQL 2639 for Audit Sybase DB 1521 for Oracle 54327 for embedded PostgreSQL 5432 for external PostgreSQL (you can assign a different port, if required.) You can change the default port number if there is a conflict. However, you must ensure that the port is opened for the Primary Server to talk to the database.
UDP Ports	1434 for MS SQL (if ZENworks uses named instance of the database)
WAN Consideration	Primary Servers and the ZENworks database must reside on the same network segment. Primary Servers cannot write across a WAN to the ZENworks database.

Item	Requirement
Default Character Set	For Sybase, the UTF-8 character set is required.
	For MS SQL, ZENworks does not require any specific character set. ZENworks supports all character sets supported by MS SQL.
	For Oracle, the NLS_CHARACTERSET parameter must be set to AL32UTF8, and the NLS_NCHAR_CHARACTERSET parameter must be set to AL16UTF16. If the existing Oracle Database is installed with another character set, then to migrate to the AL32UTF8 character set, contact Oracle Support.
Collation	ZENworks is not supported with a case-sensitive instance of the MS SQL database. Therefore, you must ensure that the database is case insensitive before setting it up.
Database User	Ensure that there is no restriction for the ZENworks database user to connect to a remote database.
	For example, if the ZENworks database user is an Active Directory user, ensure that the Active Directory policies allow the user to connect to a remote database.

3 Administration Browser Requirements

Ensure that the workstation or server where you run ZENworks Control Center to administer your system meets the following requirements:

Item	Requirements
Web Browser	The following web browsers are supported: ♦ Internet Explorer 11 ♦ Firefox version 30 and higher ♦ Firefox ESR versions 31.4 and 31.5 ♦ Edge 40 ♦ Chrome version 55 and higher (experimental support) **NOTE:** Administration of features dependent on ZCC Helper is supported only on Windows and SUSE Linux Enterprise devices.
TCP Ports	To fulfill a user's request for a remote session on a managed device, you must open port 5550 on the device, in order to run Remote Management Listener.

Windows Installation

The following sections provide information and instructions to help you install the ZENworks Primary Server software on a Windows server:

4 Windows Installation Workflow

The tasks you must complete to install your first ZENworks Primary Server are different from the tasks required for additional Primary Servers. The following sections provide the workflows for both processes:

- ◆ "Installation Workflow for Your First Primary Server" on page 21
- ◆ "Installation Workflow for Additional Primary Servers" on page 23

Installation Workflow for Your First Primary Server

To install the first ZENworks Primary Server and create your ZENworks Management Zone, complete the tasks in the order listed below.

To add a Primary Server to an existing ZENworks Management Zone, see "Installation Workflow for Additional Primary Servers" on page 23.

Task	Details
☐ Review what the ZENworks installation program does when installing the first Primary Server and Management Zone.	When installing the first Primary Server, the installation program performs operations to install the Primary Server software, set up the ZENworks databases, and establish the Management Zone.
	For more information, see Chapter 5, "Understanding What the ZENworks Installation Does," on page 25.
☐ Burn the ZENworks ISO image to a DVD to create an installation DVD.	You cannot extract the ISO image and use it to install. The installation must be run from an installation DVD.
☐ Update the software on the Windows server where you will install the ZENworks Primary Server.	Ensure that the Windows server software is up to date and that any software, such as anti-virus software, that might interfere with the Primary Server installation is updated and configured correctly.
	For more information, see Chapter 6, "Updating Windows Server Software," on page 27.

Task	Details
☐ (Optional) Create an external certificate for your Primary Server.	ZENworks Primary Servers communicate with ZENworks managed devices using the HTTPS protocol. This secure communication requires that the ZENworks Management Zone has a defined Certificate Authority (CA) and that each Primary Server has its own server certificate issued by the zone's CA. ZENworks includes an internal ZENworks CA. If you use the internal ZENworks CA, it is created during installation of the first Primary Server, and each subsequent Primary Server you install is issued a certificate signed by the ZENworks CA. Novell recommends you use the internal ZENworks CA unless your corporate security policies do not allow you to do so. The internal ZENworks CA lasts 10 years and simplifies use of various ZENworks features, such as Remote Management. If you cannot use the internal ZENworks CA, you can use an external CA and provide external server certificates for each Primary Server you install. If you want to use external certificates, see Chapter 7, "Creating an External Certificate," on page 29.
☐ Install external database software to use for the ZENworks databases.	ZENworks requires two databases, one for general data and another for audit data. For these databases, you can use the embedded Sybase database software provided with ZENworks, or you can use supported external database software (see Chapter 2, "Database Requirements," on page 15). If you want to use an external database, see Chapter 8, "Installing an External ZENworks Database," on page 33.
☐ Install external database software to use for the Audit databases.	You can use the embedded Sybase database software provided with ZENworks, or you can use supported external database software (see Chapter 2, "Database Requirements," on page 15). If you want to use an external database, see Chapter 8, "Installing an External ZENworks Database," on page 33. After configuring the ZENworks database, configure the Audit database. The fields for ZENworks and Audit are same.
☐ Install the ZENworks Primary Server software on a supported Windows server.	For instructions, see "Installing the Primary Server Software" on page 45.

Task	Details
☐ Verify that the Primary Server is running.	There are specific checks you can perform to ensure that installation of the software was successful and that the Primary Server is running.
	For instructions, see "Verifying the Installation" on page 48.
☐ Activate the ZENworks products for which you are licensed or that you want to evaluate.	All ZENworks products are installed. However, you need to provide the license keys for the products that you have licensed. If desired, you can also activate unlicensed products for a 60-day evaluation period.
	For instructions, see "Licensing Products" on page 57.
☐ Back up the ZENworks Primary Server and other ZENworks components.	You should back up the Primary Server at least one time and schedule regular back ups of the ZENworks databases.
	For instructions, see "Backing Up ZENworks Components" on page 59.
☐ Review the post-installation tasks and complete any that apply to your Primary Server installation.	There are several post-installation tasks that you might need to perform for your Primary Server. Review the list of tasks and complete any that apply.
	For instructions, see Chapter 10, "Completing Post-Installation Tasks," on page 57.

Installation Workflow for Additional Primary Servers

To install a ZENworks Primary Server and add it to your existing ZENworks Management Zone, complete the tasks in the order listed below.

Task	Details
☐ Review what the ZENworks installation program does when adding a Primary Server to an existing Management Zone.	When installing an additional Primary Server in a Management Zone, the installation program performs operations to install the Primary Server software, add the Primary Server to the existing Management Zone, install ZENworks Control Center, and start the ZENworks services.
	For more information, see Chapter 5, "Understanding What the ZENworks Installation Does," on page 25.
☐ Burn the ZENworks ISO image to a DVD to create an installation DVD.	You cannot extract the ISO image and use it to install. The installation must be run from an installation DVD.

Task	Details
☐ Update the software on the Windows server where you will install the ZENworks Primary Server.	Ensure that the Windows server software is up to date and that any software, such as anti-virus software, that might interfere with the Primary Server installation is updated and configured correctly.
	For more information, see Chapter 6, "Updating Windows Server Software," on page 27.
☐ (Optional) Create an external certificate for your Primary Server.	If your ZENworks Management Zone is using the internal ZENworks Certificate Authority (CA), the new Primary Server is automatically issued a server certificate during installation.
	If your zone is using an external CA, you must provide the new Primary Server with a valid certificate issued from the external CA.
	For instructions about creating a certificate from an external CA, see Chapter 7, "Creating an External Certificate," on page 29.
☐ Install the ZENworks Primary Server software on a supported Windows server.	Installation of an additional Primary Server is less complex than installation of the first Primary Server. The installation program only requires you to provide a target location for the software files, authentication information for the Management Zone (Primary Server address and Administrator login credentials), and files for the external certificate (if the zone is using an external CA).
	For instructions about running the installation program, see "Installing the Primary Server Software" on page 45.
☐ Verify that the Primary Server is running.	There are specific checks you can perform to ensure that installation of the software was successful and that the Primary Server is running.
	For instructions, see "Verifying the Installation" on page 48.
☐ Back up the ZENworks Primary Server.	You should back up the Primary Server at least one time.
	For instructions, see "Backing Up ZENworks Components" on page 59.
☐ Review the post-installation tasks and complete any that apply to your Primary Server installation.	There are several post-installation tasks that you might need to perform for your Primary Server. Review the list of tasks and complete any that apply.
	For instructions, see Chapter 10, "Completing Post-Installation Tasks," on page 57.

5 Understanding What the ZENworks Installation Does

The ZENworks installation program does the following during installation of your first Primary Server:

- ◆ Creates the Management Zone
- ◆ Creates a password that you supply for the default ZENworks Administrator account
- ◆ Establishes and populates the ZENworks database and Audit database

The ZENworks installation program does the following during installation of any Primary Server:

- ◆ Installs the ZENworks Agent so that the server can be managed
- ◆ Installs ZENworks Control Center, the web console used to manage your ZENworks System
- ◆ Installs the zman command line utility
- ◆ Installs and starts the ZENworks services

6 Updating Windows Server Software

Before installing ZENworks Primary Server software to a Windows server, ensure that you update the software on the server:

- Run Windows Update on the server to ensure that all available updates are installed. When finished, disable Windows Update to prevent failure of the Primary Server software installation due to parallel installation of updates.

- Update other software (for example, anti-virus) to prevent failure of the Primary Server software installation due to parallel installation of updates.

- If you are testing or reviewing ZENworks 2017, we recommend that you deploy the product in a non-production environment.

7 Creating an External Certificate

ZENworks Primary Servers communicate with ZENworks managed devices using the HTTPS protocol. This secure communication requires that the ZENworks Management Zone have a defined Certificate Authority (CA) and that each Primary Server have its own server certificate issued by the zone's CA.

ZENworks includes an internal ZENworks CA. If you use the internal ZENworks CA, it is created during installation of the first Primary Server. Each subsequent Primary Server you install is issued a certificate signed by the ZENworks CA.

We recommend that you use the internal ZENworks CA unless your corporate security policies do not allow you to do so. The internal ZENworks CA lasts 10 years and simplifies use of various ZENworks features such as Remote Management.

If you cannot use the internal ZENworks CA, you can use an external CA and provide external server certificates for each Primary Server you install.

See the following sections for detailed instructions on using external certificates:

- ◆ "Generating a Certificate Signing Request (CSR)" on page 29
- ◆ "Generating a Certificate by Using NetIQ ConsoleOne" on page 30
- ◆ "Generating a Certificate by Using NetIQ iManager" on page 30

Generating a Certificate Signing Request (CSR)

For each Windows server where you will install the ZENworks Primary Server software, you need to create an individual server certificate with the subject being the server's Fully Qualified Domain Name (FQDN).

1 Install OpenSSL.

2 To generate a private key that is needed to create a certificate signing request (CSR), enter the following command:

```
openssl genrsa -out zcm.pem 2048
```

3 To create a CSR that can be signed by a Certificate Authority, enter the following command:

```
openssl req -new -key zcm.pem -out zcm.csr
```

When you are asked for "YOUR name," enter the full DNS name assigned to the server where you are installing the Primary Server software domain names include *www.company.com*, *payment.company.com* and *contact.company.com*.

4 To convert the private key from PEM format to the DER encoded format, enter the following command:

```
openssl pkcs8 -topk8 -nocrypt -in zcm.pem -inform PEM -out zcmkey.der -outform
DER
```

The private key must be in the PKCS8 DER encoded format. You can use the OpenSSL command line tool to convert your keys to the proper format.

5 Use the CSR to generate a certificate by using ConsoleOne, iManager, or a true external CA such as Verisign.

If you are using a true external CA such as Verisign, refer to Verisign for information about using the CSR to generate a certificate. If you are using ConsoleOne or iManager as your Certificate Authority, instructions are provided in the following sections:

- "Generating a Certificate by Using NetIQ ConsoleOne" on page 30
- "Generating a Certificate by Using NetIQ iManager" on page 30

Generating a Certificate by Using NetIQ ConsoleOne

1 Ensure that eDirectory is configured as the CA.

2 Issue the certificate for the Primary Server:

2a Launch ConsoleOne.

2b Log in to the eDirectory tree as an administrator with the appropriate rights.

For more information about the appropriate rights, see the Entry Rights Needed to Perform Tasks (https://www.netiq.com/documentation/crt33/crtadmin/data/a2zibyo.html) section in the *NetIQ Certificate Server 3.3* documentation.

2c From the **Tools** menu, click **Issue Certificate**.

2d Browse for and select the `zcm.csr` file, then click **Next**.

2e Complete the wizard by accepting the default values.

2f Specify the certificate basic constraints, then click **Next.**

2g Specify the validity period and the effective and expiration dates, then click **Next**.

2h Click **Finish**.

2i Choose to save the certificate in the DER-format, then specify a name for the certificate.

3 Export the Organizational CA's self-signed certificate:

3a Log in to eDirectory from ConsoleOne.

3b In the **Security** container, right-click the **CA**, then click **Properties**.

3c In the **Certificates** tab, select the self-signed certificate.

3d Click **Export**.

3e When prompted to export the private key, click **No**.

3f Export the certificate in DER format and choose the location where you want to save the certificate.

3g Click **Finish**.

You should now have the three files that you need to install ZENworks using an external CA.

Generating a Certificate by Using NetIQ iManager

1 Ensure that eDirectory is configured as the CA.

2 Issue the certificate for the Primary Server:

2a Launch iManager.

2b Log in to the eDirectory tree as an administrator with the appropriate rights.

For more information about the appropriate rights, see the Entry Rights Needed to Perform Tasks (https://www.netiq.com/documentation/crt33/crtadmin/data/a2zibyo.html) section in the *NetIQ Certificate Server 3.3* documentation.

2c From the **Roles and Tasks** menu, click **Novell Certificate Server** > **Issue Certificate**.

2d Click **Browse** to browse for and select the CSR file, `zcm.csr`, then click **Next**.

2e Accept the default values for the key type, the key usage, and the extended key usage, then click **Next**.

2f Accept the default certificate basic constraints, then click **Next.**

2g Specify the validity period and the effective and expiration dates, then click **Next**. Depending on your needs, change the default validity period (10 years).

2h Review the parameters sheet. If it is correct, click **Finish**. If it is incorrect, click **Back** until you reach the point where you need to make changes.

When you click **Finish**, a dialog box is displayed and indicates that a certificate has been created. This exports the certificate into the binary DER-format.

2i Download and save the issued certificate

3 Export the Organizational CA's self-signed certificate:

3a Log in to eDirectory from iManager.

3b From the **Roles and Tasks** menu, click **Novell Certificate Server** > **Configure Certificate Authority**.

This displays the property pages for the Organizational CA, which include a General page, a CRL Configuration page, a Certificates page, and other eDirectory-related pages.

3c Click **Certificates**, then select **Self Signed Certificate**.

3d Click **Export**.

This starts the Certificate Export wizard.

3e Deselect the **Export the Private Key** option, and choose the export format as **DER**.

3f Click **Next**, then save the exported certificate.

3g Click **Close**.

You should now have the three files that you need to install ZENworks using an external CA.

8 Installing an External ZENworks Database

ZENworks requires two databases, one for general data and another for audit data. For these databases, you can use the embedded Sybase database software provided with ZENworks, or you can use a supported external database software (see Database Requirements).

If you want to use the embedded database, skip the remainder of this section. You will install the embedded database during the installation of the ZENworks Primary Server software (see Installing the Primary Server Software).

Prerequisites for External Databases

Review the following sections to meet any prerequisites for the external database you plan to use:

Prerequisites for Remote OEM Sybase

Before installing ZENworks 2017 to create the Management Zone, you must install the remote OEM Sybase database on your remote database server so that it can be properly configured during installation of the Primary Server that hosts the database.

NOTE: For this database, Novell Support provides problem determination, provision of compatibility information, installation assistance, usage support, ongoing maintenance, and basic troubleshooting. For additional support, including extended troubleshooting and error resolution, see the Sybase Support web site (http://www.sybase.com/support).

Prerequisites for Remote Sybase SQL Anywhere

To use the Sybase SQL Anywhere database, ensure that the following prerequisites are met:

- Install and set up the Sybase SQL Anywhere database so that it can be updated during ZENworks installation.
- During ZENworks installation, you must specify a database user. Ensure that the database user has read/write permissions to create and modify the tables on the database server.

NOTE: For this database, Novell Support provides problem determination, provision of compatibility information, installation assistance, usage support, ongoing maintenance, and basic troubleshooting. For additional support, including extended troubleshooting and error resolution, see the Sybase Support web site (http://www.sybase.com/support).

Prerequisites for Microsoft SQL Server

To use the Microsoft SQL Server database for ZENworks, ensure that the Microsoft SQL Server software is installed on the database server so that the ZENworks installation program can create the new Microsoft SQL database. For instructions on installing the Microsoft SQL Server software, refer to the Microsoft documentation.

An SA user or a SYSDBA user (with sysadmin privileges), with relevant user and login credentials, are required to create a ZENworks Database or an Audit Database.

For MS SQL, set the READ_COMMITTED_SNAPSHOT setting to ON so that it allows read access to information in the database while data is being written or modified.

To set the READ_COMMITTED_SNAPSHOT setting to ON, execute the following command at the database server prompt:

```
ALTER DATABASE database_name SET READ_COMMITTED_SNAPSHOT ON;
```

Prerequisites for Oracle

During the installation of the ZENworks database on Oracle, you can choose to create a new user schema or specify an existing one that resides on a server in your network.

- **Create a new user schema:** Ensure that the following requirements are met:
  - You must have the database administrator credentials. Ensure that the administrator has Data Definition Language (DDL) and Redefinition rights with the Grant option enabled.
  - A tablespace is needed for the Oracle access user. A tablespace is a storage location where the actual data underlying database objects can be kept. It provides a layer of abstraction between physical and logical data, and serves to allocate storage for all DBMS managed segments. (A database segment is a database object which occupies physical space such as table data and indexes.) Once created, a tablespace can be referred to by name when creating database segments.
  - The tablespace can be created by ZENworks or can be created by the Database Administrator.
  - The tablespace has sufficient space to create and store the ZENworks database schema. The tablespace requires a minimum of 10 GB to create ZENworks database schema.
- **Use an existing user schema:** You can install to an existing Oracle user schema in the following scenarios:
  - The database administrator creates a user schema with the necessary rights, and you receive the credentials for that user schema from the database administrator. Database administrator credentials are not required to install to an existing Oracle user schema.
  - You create a user in the Oracle database and choose to use it during ZENworks installation.

If you choose to use an existing user schema, ensure that the following requirements are met:

- The tablespace has sufficient space to create and store the ZENworks database schema. The tablespace requires a minimum of 10 GB to create the ZENworks database schema.

- The quota for the user schema is set to Unlimited on the tablespace that is required during installation.

- **Rights to create the database:** Ensure that the user schema has the following rights to create the database:

```
CREATE SESSION
CREATE TABLE
CREATE VIEW
CREATE PROCEDURE
CREATE SEQUENCE
CREATE TYPE
CREATE TRIGGER
ALTER ANY TABLE
DROP ANY TABLE
LOCK ANY TABLE
SELECT ANY TABLE
CREATE ANY TABLE
CREATE ANY TRIGGER
CREATE ANY INDEX
CREATE ANY DIMENSION
CREATE ANY EVALUATION CONTEXT
CREATE ANY INDEXTYPE
CREATE ANY LIBRARY
CREATE ANY MATERIALIZED VIEW
CREATE ANY OPERATOR
CREATE ANY PROCEDURE
CREATE ANY RULE
CREATE ANY RULE SET
CREATE ANY SYNONYM
CREATE ANY TYPE
CREATE ANY VIEW
DBMS_DDL
DBMS_REDEFINITION
DBMS_LOCK (Execute and Debug)
```

IMPORTANT: The above privileges are used to modify tables only in ZENworks and Audit schema and not in any other schema. The DBMS_DDL and DBMS_REDEFINITION packages are used to restructure some of the tables as partitioning tables during fresh installation of ZENworks.

You can give the DBMS_DDL and DBMS_REDEFINITION rights to the user at the time of installation or upgrade. After the installation or upgrade is successful, you can revoke the DBMS_DDL and DBMS_REDEFINITION rights and also those privileges with ANY option. If these privileges are revoked, then, for the next upgrade, these privileges have to be invoked prior to performing the upgrade. The installation privileges are also applicable for upgrade and these minimum privileges should be retained for day-to-day operations. No additional privileges are required for Upgrades or System Updates.

For more details, see the Oracle database documentation (http://docs.oracle.com/cd/B28359_01/server.111/b28310/tables007.htm#i1006801).

For Oracle databases, performance can be affected by whether you configure your database to use a shared server or dedicated server processes. Each ZENworks Primary Server is configured with a database connection pool whose size fluctuates with the ZENworks system load. This pool can grow at peak loads to a maximum of 300 concurrent database connections per Primary Server. If your Oracle database is configured to use dedicated server processes, it is possible that your database server resource usage can reach undesirable levels that affect performance when there are multiple Primary Servers in your zone. If you encounter this problem, consider changing your ZENworks database to use shared server processes.

- **Day-to-Day Operations for Databases:** Ensure that the ZENworks and Audit users have the minimum rights to function during database operations.

```
CREATE TRIGGER

CREATE SESSION

CREATE SEQUENCE

CREATE TYPE

CREATE PROCEDURE

CREATE VIEW

CREATE TABLE

DBMS_LOCK (Execute & Debug)
```

Prerequisites for Oracle RAC

- Oracle database and Real Application Clusters (RAC) version must be 11.2.0.4 or above.
- Tablespaces must be created by your database administrator manually (do not use ZENworks to create the tablespaces).
- Shut down ZENworks services on all Primary Servers and Reporting Server before upgrading ZENworks.

Performing the External ZENworks Database Installation

This section provides instructions for installing the ZENworks database by running the ZENworks installation program on the database server. This method is required if you are using a remote OEM Sybase database. For other databases, this method is useful if your ZENworks administrator and database administrator are not the same person.

You can also install your external ZENworks database when you install the ZENworks Primary Server software on the target Windows server. If you want to use this method, skip this section and go to Chapter 9, "Installing a ZENworks Primary Server on Windows," on page 45.

NOTE: Currently, OEM database install and upgrade is supported only in the GUI mode. Silent or Console modes are not supported.

Ensure that the server where you plan to install the external database fulfills the requirements in Chapter 2, "Database Requirements," on page 15 and "Prerequisites for External Databases" on page 33.

1 On the server where you want to install the external database, insert the *ZENworks 2017* installation DVD.

> **IMPORTANT:** If you have not already burned the ZENworks 2017 ISO image to a DVD, you need to do so before beginning the installation. Do not extract the ISO image and use it to install.

If the DVD auto-runs the database installation program, exit the program.

Enter the following at the command prompt on the external database server:

DVD_drive:`\setup.exe -c`

or

If ZENworks 2017 has already been installed on a device, and if you want to use the device to configure another instance of the ZENworks database (on the same device or on another device) by using the external database installation program, run the following command:

DVD_drive`:\setup.exe -c --zcminstall`

2 On the Select ZENworks Database page, select one of the following:

- Select ZENworks Database
- Select Audit Database
- Select both ZENworks Database and Audit Database

> **NOTE:** When the ZENworks Database and Audit Database option is selected, you need to create the ZENworks database first and then create the audit database.

The supported combinations of ZENworks and Audit database are shown below:

ZENworks Database	Audit Database
OEM Sybase SQL Anywhere	• OEM Sybase SQL Anywhere (Default) • External Sybase SQL Anywhere
External Sybase SQL Anywhere	• External Sybase SQL Anywhere (Default) • OEM Sybase SQL Anywhere
Microsoft SQL Server	Microsoft SQL Server
Oracle	Oracle

3 On the Select Database type page, select one of the following, then click Next:

- **OEM Sybase SQL Anywhere:** Installs the default Sybase database for ZENworks. It is configured as a service, the database user is created, and the required tables for the Primary Server are established.

    You must also select the Remote Sybase SQL Anywhere option during installation of the Primary Server.

- **External Sybase SQL Anywhere:** Sets up an existing Sybase database for writing ZENworks information to it.

- **Microsoft SQL Server:** Creates a ZENworks database on a Microsoft SQL Server.

- **Oracle:** Specifies a user schema that you can use to set up an external Oracle database schema for use with ZENworks.

IMPORTANT: The server hosting the database must have time synchronization with all of the Primary Servers in the Management Zone.

4. Refer to the following information for details on the installation data that you need to know (you can also click the **Help** button for similar information):

- "OEM Sybase SQL Anywhere Database Installation Information" on page 38
- "External Sybase SQL Anywhere Database Installation Information" on page 40
- "MS SQL Database Installation Information" on page 41
- "Oracle Database Installation Information" on page 42

OEM Sybase SQL Anywhere Database Installation Information

Installation Information	Explanation
Sybase Database Installation	Specify the path where you want to install the OEM copy of the Sybase SQL Anywhere database software. On the target Windows server, only the drives that are currently mapped on the server are available.
	The default path is `drive:\novell\zenworks`, which you can change. The installation program creates the `\novell\zenworks` directory for the installation of Sybase.
Sybase Installation Path	Specify the path where you want to copy the Sybase installation file. The default path is: `drive:\Program Files(x86)\Novell\ZENworks`.
Sybase Server Configuration	Specify the port used by the Sybase SQL Anywhere database server. By default, port 2638 is used for the ZENworks database and port 2639 is used for the Audit database. Change the default port number if you have a conflict.
Sybase Access Configuration	Defaults are provided for some of the information, which you can change as necessary: • **Database Name:** Specify a name for the database to be created. Do not use *zenworks* as the database name. • **Username:** Specify a name to create a new user who can access the database. • **Password:** Specify the password to be used to access the database. • **Database Server Name:** Specify a name for the Sybase SQL Anywhere database server.

Installation Information	Explanation
Database File Location	Specify the path where you want to create the ZENworks Sybase database file. By default, the installation program creates the *drive*:\novell\zenworks directory, which you can change. A \database directory is appended to the default directory. For example, the default path is *drive*:\novell\zenworks\database. The default path for the Audit database is the same as for the ZENworks database.
Review Database Information	Review the database configuration information. The Server Address field displays the IP address configured in the hosts file. This does not impact the database installation. The hosts file is located in the c:\windows\system32\drivers\etc directory. The database driver information is automatically detected by the ZENworks database installer.
Review SQL Scripts	Review the SQL scripts to be executed during the database creation.

Review Database Creation Command	Review the commands used to create the database.
	
	NOTE:
	
	Ensure that the ports used for ZENworks database and Audit database are included in firewall exception list. Run the following command:
	
	`netsh firewall set prtopening protocol = All port = <port number> name = <port name> mode = enable`
	
	Where:
	
	◆ `port number`: By default it is 2638 for ZENworks and 2639 for Audit or any alternate port number that is configured. This command has to be executed separately for ZENworks database port and Audit database port.
	
	◆ `port name`: Specify the name used for the port.For example, *ZENworks database port*.
	
	`net start mpsSvc`

External Sybase SQL Anywhere Database Installation Information

Installation Information	Explanation
Sybase Server Configuration	◆ **Server name:** We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names. **IMPORTANT:** If you change your database server's IP address or DNS name at a later time, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync. ◆ **Port:** Specify the port used by the Sybase SQL Anywhere database server. The default is port 2638. For the Audit database, the default is port 2639. Change the default port number if you have a conflict.
Sybase Access Configuration	This server must have a Sybase SQL Anywhere database installed. Defaults are provided for some of this information, which can be changed as necessary: ◆ **Database Name:** Specify the name of the existing database ◆ **Username:** Specify the user who can modify the database. The user must have read/write permissions to modify the database. ◆ **Password:** Specify the password of an existing user with read/write permissions to the database. ◆ **Database Server Name:** Specify the name of your Sybase SQL Anywhere database server.
Review Database Information	Review the database configuration information. The database driver information is automatically detected by the ZENworks Database installer.
Review SQL Scripts	Review the SQL scripts to be executed during the creation of the database.
Review Database Creation Commands	Review the database commands used to create the database.

MS SQL Database Installation Information

Installation Information	Explanation
External Database Server Configuration	The database server must have an MS SQL database installed. Defaults are provided for some of this information, which can be changed as necessary: ◆ **Server Address:** We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names. **IMPORTANT:** If you change your database server's IP address or DNS name at a later time, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync. ◆ **Port:** Specify the port used by the MS SQL database server. The default is port 1433. Change the default port number if you have a conflict. ◆ **Named instance:** This is the name of the SQL server instance that is hosting the existing ZENworks database. You must specify the named instance if you want it to be something other than the default of `mssqlserver`. ◆ **Database Name:** Specify the name of the existing MS SQL database on which you want to host the ZENworks database. This option is available only for an existing database. ◆ **Username:** Specify the user who can modify the database. The user must have read/write permissions to modify the database. **NOTE:** Ensure that the special character ' is not part of the database name. For Windows authentication, provide a user name on the current device or in the domain. **IMPORTANT:** The installer wizard continues without validating the credentials; therefore, ensure that the correct credentials are provided. Else, the installation might fail towards the end of the installation process. For SQL authentication, provide a user name that matches that of a valid SQL user. ◆ **Password:** Type the password of the user specified in the **Username** field. ◆ **Domain:** It is important to know whether you installed the SQL Server by using SQL authentication, Windows authentication, or mixed. Ensure that you select the option that coincides with your SQL Server options; otherwise, the authentication will fail. If you are using MS SQL with Windows Authentication, the host name (not FQDN) of Active Directory is used. If you are using Windows authentication, specify the Windows domain where the user you specified in the **Username** field exists. If you are not using a Windows domain, specify the server's short name.

Installation Information	Explanation
External Database Configuration > Database Location (applicable only for the new database)	Specify the path of the existing MS SQL database file on the SQL server. By default, it is `c:\database`. **NOTE:** Ensure that the specified path exists on the device hosting the database before the installation starts.
Review Database Information	Review the database configuration information.
Review SQL Scripts	Review the SQL scripts to be executed during the creation of the database. You can only view the scripts.

Oracle Database Installation Information

Installation Information	Explanation
Oracle User Schema Options	During ZENworks installation, you can select to create a new user schema or specify an existing schema that resides on a server in your network. To use an existing user schema, the user schema must be created separately by using the ZENworks database installation method (setup.exe -c). ZENworks requires tablespaces to be created on the Oracle database. A tablespace can be created either by ZENworks or Database Administrator. For an existing user schema, specify the information for the tablespace that is already created by using ZENworks database installation method.
Oracle Server information	The database server must have an Oracle database installed. Defaults are provided for some of this information, which can be changed as necessary: ♦ **Server Address:** We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names. **IMPORTANT:** If change your database server's IP address or DNS name at a later time, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync. ♦ **Port:** Specify the port used by the database server. The default is port 1521. Change the default port number if you have a conflict. ♦ **Service Name:** For a new user schema, specify the instance name (SID) on which the user schema is to be created. For an existing user schema, specify the instance name (SID) on which the user schema has been created.
Oracle Administrator (applicable only for the new user schema)	♦ **Username:** Specify the user who can modify the database. The user must have read/write permissions to modify the database. ♦ **Password:** Specify the password to be used to the access the database.

Installation Information	Explanation

Oracle Access User	◆ **Username:** For a new user schema, specify a name. For an existing user schema, specify the name of the user schema that already exists in the Oracle database.
	
	◆ **Password:** For a new user schema, specify a password to be used to access the database. For an existing user schema, specify the password used to access the user schema that already exists in the Oracle database.
	
	◆ **Tablespace:** For a new user schema, select one of the following tablespace options:
	
	    ◆ **Let ZENworks create the tablespace**: Select this if you want ZENworks to create the tablespace.
	
	    ◆ **Let DBA create the tablespace**: Select this if you want your database administrator to create the tablespace.
	
	    The following details are required to create a new tablespace:
	
	    IMPORTANT: If you are using Automatic Storage Management
	
	    (ASM) or some other Disk storage, select **Let DBA create the tablespace**.
	
	        ◆ **Tablespace name for Tables** (Ensure Tablespace name is unique and it should start with [a-z] | [A-Z].Oracle tablespace naming convention has to be followed.)
	
	        ◆ **Tablespace name for Indexes** (Ensure Tablespace name is unique and it should start with [a-z] | [A-Z].Oracle tablespace naming convention has to be followed.)
	
	        ◆ **DBF File location for Tables**
	
	        ◆ **DBF File location for Indexes** (The specified physical path of the DBF file should be an existing path. The file name must have the .dbf extension.)
	
	For an existing user schema, specify the following information:
	
	    ◆ **Tablespace name for Tables**: Specify the tablespace name for the tables that are associated with the existing database user specified in the **Username** field.
	
	    ◆ **Tablespace name for Indexes**: Specify the tablespace name for the indexes that are associated with the existing database user specified in the **Username** field.

Review Database Information	Review the database configuration information.
Review SQL Scripts	Review the SQL scripts to be executed during the creation of the database.

9 Installing a ZENworks Primary Server on Windows

Perform the tasks in the following sections to install the ZENworks Primary Server software on a Windows server:

- "Installing the Primary Server Software" on page 45
- "Performing an Unattended Installation" on page 46
- "Verifying the Installation" on page 48
- "Installation Information" on page 49

Installing the Primary Server Software

1. Log in to the installation server as a Windows administrator.

2. Insert the Novell ZENworks 2017 installation DVD.

   IMPORTANT: If you have not already burned the ZENworks 2017 ISO image to a DVD, you need to do so before beginning the installation. Do not extract the ISO image and use it to install.

3. The installation page where you can select the language is displayed. If it is not automatically displayed after inserting the DVD, run `setup.exe` from the root of the DVD.

   When installing ZENworks 2017 on Windows, Strawberry Perl is installed in the root directory to meet the Perl runtime requirement for the ppkg_to_xml tool.

4. During installation, refer to the information in "Installation Information" on page 49 for details on the installation data that you need to know.

   You can also click the **Help** button for information.

5. After installation is complete, do one of the following on the server:

   - If you selected to reboot automatically (you selected the **Yes, restart the system** option during installation; see "Rebooting (or not)" on page 55), continue with Verifying the Installation after the booting process has completed and the services have started.

   - If you selected to reboot manually (you selected the **No, I will restart the system myself** option during installation; see "Rebooting (or not)" on page 55), you must wait for the installation to complete and the services to start in order to verify it in Verifying the Installation.

   NOTE: Part of completing the installation process is for the database to be updated and for the Product Recognition Update (PRU) to be downloaded and installed, both of which cause high CPU utilization during their processes. This can cause the services to start up slowly, which can also affect how long it takes for ZENworks Control Center to open.

Performing an Unattended Installation

You can use a response file to perform an unattended installation of ZENworks 2017. You can either edit the default response file (provided at `DVD_drive:\Disk1\InstData\silentinstall.properties`), or perform an installation to create your own version of the response file that contains the basic installation information and edit that copy as needed.

For an embedded Sybase database, you must create a response file to perform an unattended installation; you cannot reuse the response file generated for a server that uses an external database.

Do the following to create the response file, and then use it to perform an unattended installation:

- "Creating Your Response File" on page 46
- "Performing the Installation" on page 47

Creating Your Response File

1. Run the ZENworks 2017 installation executable on a server by using the following command:

   `DVD_drive:\setup.exe -s`

   For more information, see Appendix A, "Installation Executable Arguments," on page 105.

2. Ensure that during the installation you select the **Yes, Generate the Response File with Restart Enabled** option is selected so that server is automatically rebooted after the silent installation has completed.

   A silent installation does not provide an installation progress bar.

3. When prompted, provide a path for your custom response file.

   When you use the `-s` argument by itself, the installation program prompts you for a path for the response file. The default file name is `silentinstall.properties`, which you can rename later (see Step 4g).

4. Add the Management Zone and external database passwords to your custom response file.

   Because the external database password that you enter during creation of the custom response file not saved in the response file, you must add the database and the Management Zone passwords in each copy of the response file in order for it to be correctly provided during an unattended installation.

   Optionally, you can create an environment variable to pass the password into the unattended installation. Instructions for this are contained in the response file where the password information is stored.

   While you are editing the response file, you can make any other changes necessary to customize it for your unattended installation. The response file contains instructions for its various sections.

   To add the external database and Management Zone passwords into the response file:

   4a. Open the response file in a text editor.

   Your custom response file is in the location that you specified in Step 3.

   If you are editing the default response file, it is located at `DVD_drive:\Disk1\InstData\silentinstall.properties`.

   4b. Search for `ADMINISTRATOR_PASSWORD=`.

   4c. Replace `$lax.nl.env.ADMIN_PASSWORD$` with the actual password.

   For example, if the password is `novell`, the entry will be:

```
ADMINISTRATOR_PASSWORD=novell
```

4d (Conditional) If you are using an external database, search for the line, `DATABASE_ADMIN_PASSWORD=`, and replace `$lax.nl.env.ADMIN_PASSWORD$` with the actual password.

4e (Conditional) If you are using an external database, search for the line, `DATABASE_ACCESS_PASSWORD=`, and replace `$lax.nl.env.ADMIN_PASSWORD$` with the actual password.

4f Save the file and exit the editor.

4g Make as many uniquely named copies as you need for your various installation scenarios, modify each copy as necessary, then copy each one to the server where it will be used.

If you want to add another Primary Server to the existing Management Zone, you must provide the following information in the response file:

```
PRIMARY_SERVER_ADDRESS=$Primary_Server_IPaddress$
```

```
PRIMARY_SERVER_PORT=$Primary_Server_port$
```

```
PRIMARY_SERVER_CERT=-----BEGIN CERTIFICATE-----
MIID9DCCLotsOfEncryptedCharactersSja+bY05Y=-----END CERTIFICATE-----
```

where

PRIMARY_SERVER_ADDRESS is the IP address or DNS name of the parent Primary Server if the secondary server is being installed to an existing Management Zone.

PRIMARY_SERVER_PORT is the SSL port used by the parent Primary Server if the secondary server is being installed to an existing Management Zone. The default port is 443.

PRIMARY_SERVER_CERT= is the certificate you specified on the parent Primary Server if the secondary server is being installed to an existing Management Zone. The certificate must be in the base64 encoded string format of an x509 certificate, and the certificate string must be specified in one line. The above is just an example of the certificate information.

5 After you have completed modifications to your custom response file, copy it from the path that you specified in Step 3 to a location on each server where you will use it for the unattended installation.

6 To use the updated response file, continue with "Performing the Installation" on page 47.

NOTE: If you want to install Microsoft .NET when using a response file, you need to manually set the value in the file to INSTALL_DOT_NET=1.

Performing the Installation

1 On the Windows server where you want to perform the unattended installation, insert the *Novell ZENworks 2017* installation DVD.

If the installation page where you can select the language is displayed, click **Cancel** to exit the GUI installation.

2 To start the unattended installation, use the `-f` option in the command:

`DVD_drive:\setup.exe -s -f path_to_file.`

where *path_to_file* is either the full path to the response file that you created in "Creating Your Response File" on page 46, or a directory containing the `silentinstall.properties` file (it must use that file name).

If you renamed the updated response file, include its new name with the path.

If a file name is not given, or if either the path or file does not exist, the `-f` parameter is ignored and the default installation is run instead of an unattended installation.

3 After the installation has completed, continue with .

Verifying the Installation

Perform the following steps to verify a successful installation.

1 After the server has rebooted, do any of the following to verify that the Primary Server is running:

◆ **Run ZENworks Control Center**

If ZENworks Control Center does not automatically start, use the following URL to open it in a Web browser:

https://*DNS_name_or_IP_address_of_Primary_Server*/zenworks

If the Primary Server is not using the default HTTPS port, you must add the port to the URL: https://*DNS_name_or_IP_address_of_Primary_Server:port_number*/zenworks

This can be done either on the Primary Server or on a qualified workstation.

◆ **Check the Windows services in the Windows Services list**

On the server, click **Start**, select **Administrative Tools** > **Services**, then review the status of the **Novell ZENworks Loader** and **Novell ZENworks Server** services.

If they are not running, start the ZENworks services. Right-click the **Novell ZENworks Server** service, then select **Start**. Right-click the **Novell ZENworks Loader** service, then select **Start**.

The **Restart** option stops all related services that are already running and starts each of them in their correct order, including **Novell ZENworks Loader**.

◆ **Check the Windows services by using a command line**

Run the following command at the server command prompt:

ZENworks_installation_path\bin\novell-zenworks-configure -c SystemStatus

This lists all ZENworks services and their statuses.

To start the services, run the following command:

ZENworks_installation_path\bin\novell-zenworks-configure -c Start

Installation Information

Installation Information	Explanation
Installation path	The default is `%ProgramFiles%`. You can change it to any path currently available on the server, except to the `%systemdrive%/Program Files` directory if the server is a 64-bit Windows device. However, the installation path that you specify must contain English characters only. **NOTE:** Installation from a mapped drive is not supported. The installation program creates the `Novell\ZENworks` directory under this path for the installation of the ZENworks software files. If you need more disk space for your content repository than what is available in the Windows path during installation, you can change the path to another location after completing the installation. For more information, see "Content Repository" in *ZENworks Primary Server and Satellite Reference*.
Response file path (optional)	If you started the installation executable with the `-s` parameter in order to create a response file for unattended installations, you are required to provide a path for the file. The default path is `C:\Documents and Settings\Administrator\`. You can change this to any path available on the current server. The Primary Server software is not installed when you run the program to create a response file. It only displays the installation pages necessary to identify and create the response file.
Prerequisites	If the required prerequisites are not met, you are not allowed to continue with the installation. The requirements that are not fulfilled are displayed. For more information, see Chapter 2, "Database Requirements," on page 15. If the .NET prerequisite is not fulfilled, you can click the **ZENworks** link in the description to install the runtime version that is bundled with ZENworks. After .NET is installed, the installation of ZENworks proceeds. This wizard might take a few seconds to launch.

Installation Information	Explanation
Management Zone	**New Zone:** If you are installing the first Primary Server, you need to know the name and password you want to use for the Management Zone. The password is used to log in to ZENworks Control Center. **Zone Name:** The zone name has a 20-character limit and should be a unique name. The zone name can contain only the following special characters: - (dash) _ (underscore) . (period). The zone name cannot contain special characters such as ~ . ` ! @ # % ^ & * + = ( ) { } [ ] | \ : ; " ' < > , ? / $ For Embedded Sybase, ensure that the zone name is unique in your environment. **IMPORTANT:** While installing ZENworks in a non-English language operating system, ensure that the Management Zone name does not use special characters from any other non-English language.For example, while installing ZENworks on a simplified Chinese operating system, ensure that the Zone name does not use "üöä" from the German Character Set. **Zone Password:** By default, the installation creates a super administrator called Administrator. This super administrator has rights to perform all management tasks in your Management Zone and cannot be deleted. You must specify a password for Administrator. The password must contain a minimum of six characters and can included a maximum of 255 characters. The password can contain only one instance of the $ character. After installation is complete, you can use ZENworks Control Center to create additional ZENworks administrator accounts for login to your Management Zone. **Port Number:** During the installation of subsequent Primary Servers, the server by default uses the ports used by first Primary Server. If the ports are in use on the second Primary Server, you are asked to specify another port. Note which port you specify because you will need to use it in the URL for accessing ZENworks Control Center from that Primary Server. **Existing Zone:** If you are installing to an existing Management Zone, you need to know the following information: ◆ The DNS name or IP address of an existing Primary Server in the zone. We recommend using the DNS name to provide ongoing synchronization with certificates that are signed with DNS names. ◆ The SSL port used by the existing Primary Server in the Management Zone. If the Primary Server uses a different port than the default (443), specify that port. ◆ A ZENworks administrator user name to log in to the zone. The default is Administrator. After completing the installation, you can use ZENworks Control Center to add other administrator names that can be used to log in to the Management Zone. ◆ The password for the administrator you specified in the **Username** field.
Database Configuration Recommendation	You can enter the number of devices used in thousands. For example enter 1 for 1000 devices, 2 for 2000, and so on.The range of devices is between 1 to 100. Based on the number of devices, the database recommendation is displayed.

Installation Information	Explanation
Database options	ZENworks requires a database. The database options are displayed only when installing the first Primary Server to the zone.

You have the following database options:

- ◆ **Embedded Sybase SQL Anywhere:** Automatically installs the embedded database on the local server.

  If you select the embedded database option, no further database installation pages are shown.

- ◆ **Remote Sybase SQL Anywhere:** This database must already exist on a server in your network. It can be on the current server.

  To select this option, you should already have followed the steps in "Prerequisites for Remote Sybase SQL Anywhere" on page 33.

  You also use this option for installing to an existing remote OEM Sybase database.

- ◆ **Microsoft SQL Server:** You can create a new SQL database or specify an existing database that resides on a server in your network. It can be on the current server.

  Creating a new SQL database at this time provides the same results as the steps in "Prerequisites for Microsoft SQL Server" on page 34.

- ◆ **Oracle:** Specifies a user schema that you can use to set up an external Oracle database schema for use with ZENworks.

  You can either create a new user schema or specify an existing one that resides on a server in your network.

  To select this option, you should already have followed the steps in "Prerequisites for Oracle" on page 34.

IMPORTANT: The following points must be considered for external databases:

- ◆ The time on the server hosting the database must be synchronized with each of the Primary Servers in the Management Zone. The external database can also reside on the Primary Server machine.

- ◆ If you have specified the database hostname, it must be DNS resolvable.

Installation Information	Explanation
Database information	For the external database options (Remote Sybase SQL Anywhere, Microsoft SQL Server, and Oracle), you need to know the information listed below. Defaults are provided for some of this information, which can be changed as necessary.

- **All Databases:** The database server must have a Sybase SQL Anywhere, Microsoft SQL, or Oracle database installed.

    - Server's name. We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names.

        IMPORTANT: If you later change your database server's IP address or DNS name, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync.

    - Port used by the database server.

        Port 2638 is the default for Sybase SQL Anywhere and port 1433 is the default for Microsoft SQL Server.

        Change the default port number if you have a conflict.

- **(Optional) SQL Server Only:** Named instance that is the name of the SQL server instance that is hosting the existing ZENworks database. You must specify the named instance if you want it to be something other than the default of mssqlserver.

- **Oracle Only:** The name of the tablespace where you want the database to be created. The default is USERS.

- **New Database:**

    - The database administrator (Username field) must have read/write permissions in order to successfully perform the required operations on the database.

    - The administrator's database password.

- **SQL Server or New Database:**

    - If you are using Windows authentication, specify the Windows domain where the user you specified in the Username field exists. If you are not using a Windows domain, specify the server's short name.

    - Whether to use Windows or SQL Server authentication. For Windows authentication, provide the credentials for a user on the current device or in the domain. For SQL authentication, provide credentials that match those of a valid SQL user.

    It is important to know whether you installed the SQL Server by using SQL authentication, Windows authentication, or mixed. Be sure to select the option that coincides with your SQL Server options; otherwise, the authentication will fail.

Installation Information	Explanation

Database access	For the external database options (**Remote Sybase SQL Anywhere, Microsoft SQL Server**, and **Oracle**), you need to know the information listed below. Defaults are provided for some of this information, which can be changed as necessary.
	
	◆ **All Databases:** This server must have a Sybase SQL Anywhere, Microsoft SQL, or Oracle database installed.
	
	   ◆ Database name. Replace **zenworks_MY_ZONE** with either the desired database name or an existing database name.
	
	   ◆ Database user name. This user must have read/write permissions to modify the database.
	
	     If Windows authentication is also selected, the specified user must already exist when you create a new SQL database. The user is granted login access to SQL Server and read/write access to the ZENworks database that is created.
	
	     For an existing database, specify a user with sufficient permissions to the database.
	
	   ◆ Database password. For a new database, this password is automatically generated if SQL authentication is selected. For an existing database, specify the password of an existing user with read/write permissions to the database.
	
	◆ **Sybase Databases Only:** The name of your Sybase SQL Anywhere database server.
	
	◆ **Oracle Databases Only:** The name of the tablespace where you want the database to be created. By default, it is USERS.
	
	◆ **Microsoft SQL Databases Only:**
	
	   ◆ If you are using Windows authentication, specify the Windows domain where the user you specified in the **Username** field exists. If you are not using a Windows domain, specify the server's short name.
	
	   ◆ Whether to use Windows or SQL Server authentication. For Windows authentication, provide the credentials for a user on the current device or in the domain. For SQL authentication, provide credentials that match those of a valid SQL user.
	
	It is important to know whether you installed the SQL Server by using SQL authentication, Windows authentication, or mixed. Be sure to select the option that coincides with your SQL Server options; otherwise, the authentication will fail.

SSL configuration (shown only for the first server installed in the Management Zone)	In order to enable SSL communications, an SSL certificate must be added to the ZENworks server. Select whether to use an internal or external certificate authority (CA). For subsequent installations of Primary Servers to the Management Zone, the CA established by the first server's installation is used for the zone. **IMPORTANT:** After you install ZENworks 2017, you can only change the internal certificate to an external certificate on Primary Servers. For more information, see "Reconfiguring the Certificate Authority before and after it Expires"in the *ZENworks Disaster Recovery Reference*. The **Restore Default** buttons restore the paths to those that were displayed when you first accessed this page.

Installation Information	Explanation
Signed SSL certificate and private key	To enter a trusted CA-signed certificate and private key, click **Choose** to browse for and select the certificate and key files, or specify paths to the signed certificate to be used for this server (**Signed SSL Certificate**) and the private key associated with the signed certificate (**Private Key**).
	For subsequent installations of Primary Servers to the zone, the CA established for the zone by the first server's installation is used. If the zone is using an internal CA, you must provide the IP address or DNS name of the Primary Server with CA role. Otherwise, the wizard will not proceed further.
	For information on creating external certificates to select when installing to a Windows server, see Chapter 7, "Creating an External Certificate," on page 29.
	For information on creating external certificates for installing to a server using a silent installation, see "Creating Your Response File" on page 46.
Root certificate (optional)	To enter a trusted CA root certificate, click **Choose** to browse for and select it, or specify the path to the CA's public X.509 certificate (**CA Root Certificate**).
Pre-installation summary	**GUI Installation:** To make changes to any information entered up to this point, click **Previous**. After you click **Install**, the installation of the files begins. During installation, you can click **Cancel** to stop, which leaves the files on your server that were installed up to that point.
Installation complete (roll back option)	If installation errors occurred, this page is displayed at this time; otherwise, it is displayed after the Post-Installation Actions page.
	Installation Recovery: If there are serious installation errors, you can roll back the installation to return your server to its previous state. This option is provided on a different installation page. Otherwise, you have two options:
	◆ If a previous installation was cut short and you install again, you might be given the option to reset the installation, depending on how far you got in the canceled installation. If you select to reset, this overwrites any configuration that might have occurred during the canceled installation.
	◆ To undo a successfully completed installation, follow the instructions in the *ZENworks Uninstall Guide*.
	If there were serious installation errors, select **Roll Back**, which returns your server to its previous state. Upon exiting the installation program, the server is not rebooted. However, to complete the installation, you must reboot the server.
	To determine whether to continue the installation or roll it back, review the log file that lists errors. This will help you determine whether any installation failures were significant enough for your action. If you select to continue, resolve the issues that are noted in the log after you have rebooted the server and completed the installation process.
	To access the log file in the GUI installation, click **View Log**.

Installation Information	Explanation

Post installation actions	Options are presented for selecting actions to perform after the installation has successfully completed:
	
	For the GUI installation, a page displays the options listed below. Some items are selected by default. Click any check box to select or deselect the option, then click **Next** to continue.
	
	  ◆ **Run ZENworks Control Center:** (GUI installation only) Automatically opens ZENworks Control Center in your default web browser after rebooting (Windows only), or immediately if you select to reboot manually.
	
	    For the Oracle database, the administrator names are case sensitive. The default ZENworks administrator account that was automatically created during installation uses an initial capital letter. In order to log in to ZENworks Control Center, you must enter `Administrator`.
	
	  ◆ **Place a shortcut to ZENworks Control Center on the Desktop:** Places the shortcut on your desktop.
	
	  ◆ **Place a shortcut to ZENworks Control Center in the Start Menu:** Places the shortcut in your Start menu.
	
	  ◆ **View Readme file:** For GUI installations, opens the ZENworks 2017 Readme in your default browser after rebooting, or immediately if you select to reboot manually.
	
	  ◆ **View Installation log:** Displays the installation log in your default XML viewer (GUI installation) after rebooting, or immediately if you select to reboot manually.

ZENworks System Status Utility	Allows you to launch a ZENworks services heartbeat check prior to closing the installation program. Results are posted in the installation log.

Rebooting (or not)	Upon a successful installation, you can select between rebooting immediately or later:
	
	  ◆ **Yes, Restart the System:** If you select this option, log in to the server when prompted. The first time you log in to the server, it takes a few minutes because the database is being populated with inventory data.
	
	  ◆ **No, I Will Restart the System Myself:** If you select this option, the database is immediately populated with inventory data.
	
	The process of populating the database can cause high CPU utilization during a reboot or immediately after the installation program closes if you select not to reboot. This database updating process can slow down the starting of the services and access to ZENworks Control Center.
	
	The Patch Management downloads might also cause high CPU utilization, usually shortly after rebooting.

Installation completion	The actions you selected previously are performed after all of the files have been installed for ZENworks 2017 (if selected).

10 Completing Post-Installation Tasks

After successfully installing the ZENworks Primary Server software, you might need to perform some of the following post-installation tasks. Not all tasks are required for all installations. However, we recommend that you review each section to ensure that you complete any tasks required for your installation.

- "Licensing Products" on page 57
- "Enabling Access to a Primary Server Behind a NAT Firewall" on page 58
- "Adding Imaging Applications as Firewall Exceptions" on page 58
- "Supporting ZENworks 11.x Device Upgrades" on page 59
- "Backing Up ZENworks Components" on page 59
- "Customizing ZENworks Control Center" on page 59
- "Supporting a Primary Server on VMware ESX" on page 59

Licensing Products

During the installation of your first ZENworks Primary Server and the creation of your Management Zone, the ZENworks installation program installs the following products and sets their license state as listed in the table.

Product	License State
Asset Inventory for Unix/Linux	Evaluation
Asset Inventory for Windows/Macintosh	Deactivated
Asset Management	Evaluation
Configuration Management	Evaluation
Endpoint Security Management	Deactivated
Full Disk Encryption	Deactivated
Patch Management	Activated

You activate a product by supplying a valid product license. If you do not have a valid license, you can evaluate the product for 60 days.

To change the license state of a product:

1 Log in to ZENworks Control Center.

2 Click **Configuration**.

3 In the **Licenses** panel, click a suite if you have a suite license key.

   or

   Click a product to provide a product license key or to turn on the product evaluation.

For more information about activating and deactivating products, see the *ZENworks Product Licensing Reference*.

Enabling Access to a Primary Server Behind a NAT Firewall

If the Primary Server is behind a NAT firewall, the devices on the Internet or public network cannot communicate with it. To resolve the issue, you must configure additional IP addresses or DNS names for the Primary Server through ZENworks Control Center.

For more information, see "Configuring Additional Access to a ZENworks Server" in the *ZENworks Primary Server and Satellite Reference*.

Adding Imaging Applications as Firewall Exceptions

The ZENworks installation program cannot add exceptions to a Windows server firewall. Therefore, you must manually complete this task under the following conditions:

- The Primary Server will be an Imaging Server.
- The Primary Server will be the parent Primary Server of an Imaging Satellite Server.

Refer to the appropriate section for the Primary Server's operating system:

- "Adding Imaging Applications as Firewall Exceptions on Windows Server 2012 and 2016" on page 58

Adding Imaging Applications as Firewall Exceptions on Windows Server 2012 and 2016

1 Open Control Panel, and then open Windows Firewall.

2 In the left pane, click the **Allow an app or feature through Windows Firewall** option.

3 In the Allowed apps window, click **Allow another app**.

4 In the Add an app window, click **Browse** and select the `novell-pbserv.exe` application.

   All Imaging applications, are located in the `%zenworks_home%\novell\zenworks\bin\preboot` directory.

5 After selecting the application, click **Add**.

6 Repeat Step 4 and Step 5, add the following Imaging applications to the Allowed apps and features list, and then click **OK**:

   - `novell-proxydhcp.exe`
   - `novell-tftp.exe`
   - `novell-zmgprebootpolicy.exe`

Supporting ZENworks 11.x Device Upgrades

If you have ZENworks 11.x managed devices or Satellite Servers in your network and want to register the devices to a new ZENworks 2017 Management Zone so that they can be automatically upgraded to ZENworks 2017, you must import the ZENworks 2017 System Update into the zone from the ZENworks 2017 installation media.

Backing Up ZENworks Components

We recommend that you implement the following backup best practices:

* Take reliable backups of the ZENworks database and Audit database on a regular basis. For instructions, see the *ZENworks Database Management Reference*.
* Procure and note the credentials of the databases:
    * For the embedded Sybase ZENworks database, use the following command:

      ```
      zman dgc -U administrator_name -P administrator_password
      ```

    * For the embedded Sybase Audit database, use the following command:

      ```
      zman dgca -U admimistrator_name -P administrator_password
      ```

    * For an external database, contact the database administrator.
* Take a reliable backup of the Primary Server (this only needs to be done one time). For instructions, see "Backing Up a ZENworks Server"in the *ZENworks Disaster Recovery Reference*.
* Take a reliable backup of the Certificate Authority. For instructions, see "Backing Up the Certificate Authority"in the *ZENworks Disaster Recovery Reference*.

Customizing ZENworks Control Center

ZENworks Control Center provides a configuration file that you can use to customize how it functions. For example, you can change the default timeout from 30 minutes to another value.

For instructions, see "Customizing ZENworks Control Center" in the *ZENworks Control Center Reference*.

Supporting a Primary Server on VMware ESX

If you installed the Primary Server software on a virtual machine running on VMware ESX, complete the following tasks:

* "Adjusting the Reserved Memory Size" on page 59
* "Enabling Large Page Support" on page 60

Adjusting the Reserved Memory Size

For optimal performance, set the reserved memory size to the size of the guest operating system memory. For more information, see TID 7005382 in Novell Support Knowledgebase (http://support.novell.com/search/kb_index.jsp).

Enabling Large Page Support

For optimal performance of large dataset handling, you should enable Java large page support:

1 At the server's command prompt, run the following command to launch the Novell ZENworks Server Properties dialog box:

`zenserverw`

2 In the **Java** tab, add the following option to the Java Options box:

`-XX:+UseLargePages`

Ensure that you add the option on its own line.

3 Restart the Primary Server:

   3a Click **Start** > **Settings** > **Control Panel > Administrative Tools** > **Services**.

   3b Select **Novell ZENworks Server**, then click **Restart** in the left pane.

If the Primary Server fails to start, there is either a compatibility problem with the newly added option or the syntax is incorrect. To troubleshoot the service startup, run `zenserverw` and enable the logging options on the **Logging** tab:

- Set the log path. For example, `C:\`
- Set the Redirect `Stdout.log`. For example, `c:\stdout.log`
- Set the Redirect `Stderr.log`. For example, `c:\stderr.log`

III Linux Installation

The following section provides information and instructions to help you install the ZENworks Primary Server software on a Linux server:

11 Linux Installation Workflow

The tasks you must complete to install your first ZENworks Primary Server are different from the tasks required for additional Primary Servers. The following sections provide the workflows for both processes:

- "Installation Workflow for Your First Primary Server" on page 63
- "Installation Workflow for Additional Primary Servers" on page 65

Installation Workflow for Your First Primary Server

To install the first ZENworks Primary Server and create your ZENworks Management Zone, complete the tasks in the order listed below.

To add a Primary Server to an existing ZENworks Management Zone, see "Installation Workflow for Additional Primary Servers" on page 65.

Task	Details
☐ Review what the ZENworks installation program does when installing the first Primary Server and Management Zone.	When installing the first Primary Server, the installation program performs operations to install the Primary Server software, set up the ZENworks databases, and establish the Management Zone. For more information, see Chapter 12, "Understanding What the ZENworks Installation Does," on page 67.
☐ Burn the ZENworks ISO image to a DVD to create an installation DVD.	You cannot extract the ISO image and use it to install. The installation must be run from an installation DVD.
☐ Update the software on the Linux server where you will install the ZENworks Primary Server.	Ensure that the Linux server software is up to date and that any software, such as anti-virus software, that might interfere with the Primary Server installation is updated and configured correctly. For more information, see Chapter 13, "Updating Linux Server Software," on page 69.

Task	Details
☐ (Optional) Create an external certificate for your Primary Server.	ZENworks Primary Servers communicate with ZENworks managed devices using the HTTPS protocol. This secure communication requires that the ZENworks Management Zone have a defined Certificate Authority (CA) and that each Primary Server have its own server certificate issued by the zone's CA. ZENworks includes an internal ZENworks CA. If you use the internal ZENworks CA, it is created during installation of the first Primary Server, and each subsequent Primary Server you install is issued a certificate signed by the ZENworks CA. We recommend that you use the internal ZENworks CA unless your corporate security policies do not allow you to do so. The internal ZENworks CA lasts 10 years and simplifies use of various ZENworks features such as Remote Management. If you cannot use the internal ZENworks CA, you can use an external CA and provide external server certificates for each Primary Server you install. If you want to use external certificates, see Chapter 14, "Creating an External Certificate," on page 71.
☐ Install external database software to use for the ZENworks databases.	ZENworks requires two databases, one for general data and another for audit data. For these databases, you can use the embedded Sybase database software provided with ZENworks, or you can use supported external database software (see Chapter 2, "Database Requirements," on page 15). If you want to use an external database, see Chapter 15, "Installing an External ZENworks Database," on page 75.
☐ Install the ZENworks Primary Server software on a supported Linux server.	For instructions, see "Installing the Primary Server Software" on page 87.
☐ Verify that the Primary Server is running.	There are specific checks you can perform to ensure that installation of the software was successful and that the Primary Server is running. For instructions, see "Verifying the Installation" on page 90.
☐ Activate the ZENworks products for which you are licensed or that you want to evaluate.	All ZENworks products are installed. However, you need to provide the license keys the products that you have licensed. If desired, you can also activate unlicensed products for a 60-day evaluation period. For instructions, see "Licensing Products" on page 99.

Task	Details
☐ Back up the ZENworks Primary Server and other ZENworks components.	You should back up the Primary Server at least one time and schedule regular back ups of the ZENworks databases.
	For instructions, see "Backing Up ZENworks Components" on page 100.
☐ Review the post-installation tasks and complete any that apply to your Primary Server installation.	There are several post-installation tasks that you might need to perform for your Primary Server. Review the list of tasks and complete any that apply.
	For instructions, see Chapter 17, "Completing Post-Installation Tasks," on page 99.

Installation Workflow for Additional Primary Servers

To install a ZENworks Primary Server and add it to your existing ZENworks Management Zone, complete the tasks in the order listed below.

Task	Details
☐ Review what the ZENworks installation program does when adding a Primary Server to an existing Management Zone.	When installing an additional Primary Server in a Management Zone, the installation program performs operations to install the Primary Server software, add the Primary Server to the existing Management Zone, install ZENworks Control Center, start the ZENworks services.
	For more information, see Chapter 12, "Understanding What the ZENworks Installation Does," on page 67.
☐ Burn the ZENworks ISO image to a DVD to create an installation DVD.	You cannot extract the ISO image and use it to install. The installation must be run from an installation DVD.
☐ Update the software on the Linux server where you will install the ZENworks Primary Server.	Ensure that the Linux server software is up to date and that any software, such as anti-virus software, that might interfere with the Primary Server installation is updated and configured correctly.
	For more information, see Chapter 13, "Updating Linux Server Software," on page 69.
☐ (Optional) Create an external certificate for your Primary Server.	If your ZENworks Management Zone is using the internal ZENworks Certificate Authority (CA), the new Primary Server is automatically issued a server certificate during installation.
	If your zone is using an external CA, you must provide the new Primary Server with a valid certificate issued from the external CA.
	For instructions about creating a certificate from an external CA, see Chapter 14, "Creating an External Certificate," on page 71.

Task	Details
☐ Install the ZENworks Primary Server software on a supported Linux server.	Installation of an additional Primary Server is less complex than installation of the first Primary Server. The installation program only requires you to provide a target location for the software files, authentication information for the Management Zone (Primary Server address and Administrator login credentials), and files for the external certificate (if the zone is using an external CA). For instructions about running the installation program, see "Installing the Primary Server Software" on page 87.
☐ Verify that the Primary Server is running.	There are specific checks you can perform to ensure that installation of the software was successful and that the Primary Server is running. For instructions, see "Verifying the Installation" on page 90.
☐ Back up the ZENworks Primary Server.	You should back up the Primary Server at least one time. For instructions, see "Backing Up ZENworks Components" on page 100.
☐ Review the post-installation tasks and complete any that apply to your Primary Server installation.	There are several post-installation tasks that you might need to perform for your Primary Server. Review the list of tasks and complete any that apply. For instructions, see Chapter 17, "Completing Post-Installation Tasks," on page 99.

12 Understanding What the ZENworks Installation Does

The ZENworks installation program does the following during installation of your first Primary Server:

- Creates the Management Zone
- Creates a password that you supply for the default ZENworks Administrator account
- Establishes and populates the ZENworks database and Audit database

The ZENworks installation program does the following during installation of any Primary Server:

- Installs the ZENworks Agent so that the server can be managed
- Installs ZENworks Control Center, the web console used to manage your ZENworks System
- Installs the zman command line utility
- Installs and starts the ZENworks services

13 Updating Linux Server Software

Before installing ZENworks Primary Server software to a Linux server, ensure that you update the software on the server:

- "All Linux Platforms" on page 69
- "SLES 11 x86_64" on page 69

All Linux Platforms

- ZENworks installation on a Linux server requires that certain RPM packages are already installed on the server. For more information on the RPM packages required on the Linux devices, see Dependent Linux RPM Packages.

- Run Linux Update on the server to ensure that all available updates are installed. When finished, disable Linux Update to prevent failure of the Primary Server software installation due to parallel installation of updates.

- Update other software (for example, anti-virus) to prevent failure of the Primary Server software installation due to parallel installation of updates.

- If you are testing or reviewing ZENworks , we recommend that you deploy the product in a non-production environment.

SLES 11 x86_64

Before you install a Primary Server on a SLES 11 x86_64 device, ensure that pam-32bit libraries are installed on the device, because the CASA rpms are dependent on these libraries.

1 Log in to the Linux device as the root user.

2 Insert the Linux installation media.

3 Run Yast to open the YaST Control Center.

4 Click **Software** > **Software Management**.

5 In the **Search** option, specify CASA, then click **OK** to list all the CASA packages.

6 Select the pam-32 package, then click **Install** > **Apply**.

14 Creating an External Certificate

ZENworks Primary Servers communicate with ZENworks managed devices using the HTTPS protocol. This secure communication requires that the ZENworks Management Zone have a defined Certificate Authority (CA) and that each Primary Server have its own server certificate issued by the zone's CA.

ZENworks includes an internal ZENworks CA. If you use the internal ZENworks CA, it is created during installation of the first Primary Server. Each subsequent Primary Server you install is issued a certificate signed by the ZENworks CA.

We recommend that you use"Generating a Certificate Signing Request (CSR)" on page 71 the internal ZENworks CA unless your corporate security policies do not allow you to do so. The internal ZENworks CA lasts 10 years and simplifies use of various ZENworks features such as Remote Management.

If you cannot use the internal ZENworks CA, you can use an external CA and provide external server certificates for each Primary Server you install. See the following sections for detailed instructions on using external certificates:

- "Generating a Certificate Signing Request (CSR)" on page 71
- "Generating a Certificate by Using NetIQ ConsoleOne" on page 72
- "Generating a Certificate by Using NetIQ iManager" on page 72

Generating a Certificate Signing Request (CSR)

For each Linux server where you will install the ZENworks Primary Server software, you need to create an individual server certificate with the subject being the server's Fully Qualified Domain Name (FQDN).

1 Install OpenSSL.

2 To generate a private key that is needed to create a certificate signing request (CSR), enter the following command:

```
openssl genrsa -out zcm.pem 2048
```

3 To create a CSR that can be signed by the external Certificate Authority, enter the following command:

```
openssl req -new -key zcm.pem -out zcm.csr
```

When you are asked for "YOUR name," enter the full DNS name assigned to the server where you are installing the Primary Server software domain names include *www.company.com*, *payment.company.com* and *contact.company.com*.

4 To convert the private key from PEM format to DER format, enter the following command:

```
openssl pkcs8 -topk8 -nocrypt -in zcm.pem -inform PEM -out zcmkey.der -outform DER
```

The private key must be in the PKCS8 DER format. You can use the OpenSSL command line tool to convert your keys to the proper format. This tool can be obtained as part of the Cygwin toolkit, or as part of your Linux distribution.

5 Use the CSR and generate a certificate by using Novell ConsoleOne, Novell iManager or a true external CA such as Verisign.

- ◆ "Generating a Certificate by Using NetIQ ConsoleOne" on page 72
- ◆ "Generating a Certificate by Using NetIQ iManager" on page 72

Generating a Certificate by Using NetIQ ConsoleOne

1 Ensure that eDirectory is configured as the CA.

2 Issue the certificate for the Primary Server.

2a Launch ConsoleOne.

2b Log in to the eDirectory tree as an administrator with the appropriate rights.

For more information about the appropriate rights, see the Entry Rights Needed to Perform Tasks (https://www.netiq.com/documentation/crt33/crtadmin/data/a2zibyo.html) section in the *NetIQ Certificate Server 3.3* documentation.

2c From the **Tools** menu, click **Issue Certificate**.

2d Browse for and select the `zcm.csr` file, then click **Next**.

2e Complete the wizard by accepting the default values.

2f Specify the certificate basic constraints, then click **Next.**

2g Specify the validity period and the effective and expiration dates, then click **Next**.

2h Click **Finish**.

2i Choose to save the certificate in the DER-format, then specify a name for the certificate.

3 Export the Organizational CA's self-signed certificate.

3a Log in to eDirectory from ConsoleOne.

3b In the **Security** container, right-click the **CA**, then click **Properties**.

3c In the **Certificates** tab, select the self-signed certificate.

3d Click **Export**.

3e When prompted to export the private key, click **No**.

3f Export the certificate in DER format and choose the location where you want to save the certificate.

3g Click **Finish**.

You should now have the three files that you need to install ZENworks using an external CA.

Generating a Certificate by Using NetIQ iManager

1 Ensure that eDirectory is configured as the CA.

2 Issue the certificate for the Primary Server.

2a Launch iManager.

2b Log in to the eDirectory tree as an administrator with the appropriate rights.

For more information about the appropriate rights, see the Entry Rights Needed to Perform Tasks (https://www.netiq.com/documentation/crt33/crtadmin/data/a2zibyo.html) section in the *NetIQ Certificate Server 3.3* documentation.

2c From the **Roles and Tasks** menu, click **Novell Certificate Server** > **Issue Certificate**.

2d Click **Browse** to browse for and select the CSR file, `zcm.csr`.

2e Click **Next**.

2f Accept the default values for the key type, the key usage, and the extended key usage, then click **Next**.

2g Accept the default certificate basic constraints, then click **Next.**

2h Specify the validity period, the effective and expiration dates then click **Next**. Depending upon your needs, change the default validity period (10 years).

2i Review the parameters sheet. If it is correct, click **Finish**. If it is incorrect, click **Back** until you reach the point where you need to make changes.

When you click **Finish**, a dialog box is displayed explains that a certificate has been created. This exports the certificate into the binary DER-format.

2j Download and save the issued certificate

3 Export the Organizational CA's self-signed certificate.

3a Log in to eDirectory from iManager.

3b From the **Roles and Tasks** menu, click **Novell Certificate Server** > **Configure Certificate Authority**.

This displays the property pages for the Organizational CA, which include a General page, a CRL Configuration page, a Certificates page, and other eDirectory-related pages.

3c Click **Certificates**, then select **Self Signed Certificate**.

3d Click **Export**.

This starts Certificate Export wizard.

3e Deselect the **Export the Private Key** option, and choose the export format as **DER**.

3f Click **Next**, then save the exported certificate.

3g Click **Close**.

You should now have the three files that you need to install ZENworks using an external CA.

15 Installing an External ZENworks Database

ZENworks requires two databases, one for general data and another for audit data. For these databases, you can use the embedded Sybase database software provided with ZENworks, or you can use a supported external database software (see Database Requirements).

If you want to use the embedded database, skip the remainder of this section. You will install the embedded database during the installation of the ZENworks Primary Server software (see Installing the Primary Server Software).

- "Prerequisites for External Databases" on page 75
- "Performing the External ZENworks Database Installation" on page 78

Prerequisites for External Databases

Review the applicable sections:

- "Prerequisites for Remote OEM Sybase" on page 75
- "Prerequisites for Remote Sybase SQL Anywhere" on page 75
- "Prerequisites for Microsoft SQL Server" on page 76
- "Prerequisites for Oracle" on page 76

Prerequisites for Remote OEM Sybase

Before installing ZENworks to create the Management Zone, you must install the remote OEM Sybase database on your remote database server so that it can be properly configured during installation of the Primary Server that hosts the database.

NOTE: For this database, Novell Support provides problem determination, provision of compatibility information, installation assistance, usage support, ongoing maintenance, and basic troubleshooting. For additional support, including extended troubleshooting and error resolution, see the Sybase Support web site (http://www.sybase.com/support).

Prerequisites for Remote Sybase SQL Anywhere

Before installing and configuring the Sybase SQL Anywhere database for ZENworks , ensure that the following prerequisites are met:

- Install and set up the Sybase SQL Anywhere database so that it can be updated during ZENworks installation.
- During ZENworks installation, you must specify a database user. Ensure that the database user has read/write permissions to create and modify the tables on the database server.

NOTE: For this database, Novell Support provides problem determination, provision of compatibility information, installation assistance, usage support, ongoing maintenance, and basic troubleshooting. For additional support, including extended troubleshooting and error resolution, see the Sybase Support web site (http://www.sybase.com/support).

Prerequisites for Microsoft SQL Server

To use the Microsoft SQL Server database for ZENworks, ensure that the Microsoft SQL Server software is installed on the database server so that the ZENworks installation program can create the new Microsoft SQL database. For instructions on installing the Microsoft SQL Server software, refer to the Microsoft documentation.

For MS SQL, set the READ_COMMITTED_SNAPSHOT setting to ON so that it allows read access to information in the database while data is being written or modified.

To set the READ_COMMITTED_SNAPSHOT setting to ON, execute the following command at the database server prompt:

```
ALTER DATABASE database_name SET READ_COMMITTED_SNAPSHOT ON;
```

Prerequisites for Oracle

During the installation of the ZENworks database on Oracle, you can choose to create a new user schema or specify an existing one that resides on a server in your network.

- **Create a new user schema:** If you choose to create a new user schema, ensure that the following requirements are met:
  - You must be aware of the database administrator credentials.
  - A tablespace is needed for the Oracle access user. A tablespace is a storage location where the actual data underlying database objects can be kept. It provides a layer of abstraction between physical and logical data, and serves to allocate storage for all DBMS managed segments. (A database segment is a database object which occupies physical space such as table data and indexes.) Once created, a tablespace can be referred to by name when creating database segments.
  - The tablespace can be created by ZENworks or can be created by the Database Administrator.
  - The tablespace has sufficient space to create and store the ZENworks database schema. The tablespace requires a minimum of 10 GB to create ZENworks database schema.
- **Use an existing user schema:** You can install to an existing Oracle user schema that resides on a server in your network in the following scenarios:
  - The database administrator creates a user schema with the necessary rights and you receive the credentials for that user schema from the database administrator. In this case, the database administrator credentials are not required to install to an existing Oracle user schema.
  - You create a user schema in the Oracle database and choose to use it during ZENworks installation.

If you choose to use an existing user schema, ensure that the following requirements are met:

- ◆ Ensure that the tablespace has sufficient space to create and store the ZENworks database schema. The tablespace requires a minimum of 10 GB to create ZENworks database schema.
- ◆ Ensure that the quota for the user schema is set to Unlimited on the tablespace that you plan to configure during the installation.

- ◆ **Rights to create the database:** Ensure that the user schema has the following rights to create the database:

```
CREATE SESSION
CREATE TABLE
CREATE VIEW
CREATE PROCEDURE
CREATE SEQUENCE
CREATE TYPE
CREATE TRIGGER
ALTER ANY TABLE
DROP ANY TABLE
LOCK ANY TABLE
SELECT ANY TABLE
CREATE ANY TABLE
CREATE ANY TRIGGER
CREATE ANY INDEX
CREATE ANY DIMENSION
CREATE ANY EVALUATION CONTEXT
CREATE ANY INDEXTYPE
CREATE ANY LIBRARY
CREATE ANY MATERIALIZED VIEW
CREATE ANY OPERATOR
CREATE ANY PROCEDURE
CREATE ANY RULE
CREATE ANY RULE SET
CREATE ANY SYNONYM
CREATE ANY TYPE
CREATE ANY VIEW
DBMS_DDL
DBMS_REDEFINITION
DBMS_LOCK (Execute and Debug)
```

IMPORTANT: The above privileges are used to modify tables only in ZENworks and Audit schema and not in any other schema. The DBMS_DDL and DBMS_REDEFINITION packages are used to restructure some of the tables as partitioning tables during fresh installation of ZENworks.

You can give the DBMS_DDL and DBMS_REDEFINITION rights to the user at the time of installation or upgrade. After the installation or upgrade is successful, you can revoke the DBMS_DDL and DBMS_REDEFINITION rights and also those privileges with ANY option. If these privileges are revoked, then, for the next upgrade, these privileges will have to be invoked prior to performing

the upgrade. The installation privileges are also applicable for upgrade and these minimum privileges should be retained for day-to-day operations. No additional privileges are required for Upgrades or System Updates.

For more details, see the Oracle database documentation (http://docs.oracle.com/cd/ B28359_01/server.111/b28310/tables007.htm#i1006801).

For Oracle databases, performance can be affected by whether you configure your database to use shared server or dedicated server processes. Each ZENworks Primary Server is configured with a database connection pool whose size fluctuates with the ZENworks system load. This pool can grow at peak loads to a maximum of 100 concurrent database connections per Primary Server. If your Oracle database is configured to use dedicated server processes, it is possible that your database server resource usage can reach undesirable levels that affect performance when there are multiple Primary Servers in your zone. If you encounter this problem, consider changing your ZENworks database to use shared server processes.

- **Day-to-Day Operations for Databases:** Ensure that the ZENworks and Audit users have the minimum rights to function during database operations.

    CREATE TRIGGER

    CREATE SESSION

    CREATE SEQUENCE

    CREATE TYPE

    CREATE PROCEDURE

    CREATE VIEW

    CREATE TABLE

    DBMS_LOCK (Execute & Debug)

Prerequisites for Oracle RAC

- Oracle database and Real Application Clusters (RAC) version must be 11.2.0.4 or above.
- Tablespaces must be created by your database administrator manually (do not use ZENworks to create the tablespaces).
- Shut down ZENworks services on all Primary Servers and Reporting Server before upgrading ZENworks.

Performing the External ZENworks Database Installation

This section provides instructions for installing the ZENworks database by running the ZENworks installation program on the database server. This method is required if you are using a remote OEM Sybase database. For other databases, this method is useful if your ZENworks administrator and database administrator are not the same person.

You can also install your external ZENworks database when you install the ZENworks Primary Server software on the target Linux server. If you want to use this method, skip this section and go to Chapter 16, "Installing a ZENworks Primary Server on Linux," on page 87.

NOTE: Currently, OEM database install and upgrade is supported only in the GUI mode. Silent or Console modes are not supported.

Ensure that the server where you plan to install the external database fulfills the requirements in Chapter 2, "Database Requirements," on page 15 and "Prerequisites for External Databases" on page 75.

1 On the server where you want to install the external database, insert the *Novell ZENworks* installation DVD. If the DVD autoruns the database installation program, exit the program.

Run the following command on the external database server:

```
sh /media/cdrom/setup.sh -c
```

This provides additional options that you do not have when installing the Primary Server, especially if you want to make your OEM database a remote database. You can view the SQL files generating the ZENworks database, create access users, view creation commands (OEM Sybase only), and so on. Only GUI installation is available for installing ZENworks and audit database instances using the `-c` option.

or

If ZENworks has already been installed on a device, and if you want to use the device to configure another instance of the ZENworks database (on the same device or on another device) by using the external database installation program, run the following command:

```
mounted_DVD_drive/setup.sh -c --zcminstall
```

Using the `sh` command resolves rights issues.

2 On the Select ZENworks Database page, select one of the following:

- Select ZENworks Database
- Select Audit Database
- Select both ZENworks Database and Audit Database

NOTE: When the ZENworks Database and Audit Database option is selected, you need to create the ZENworks database first and then create the audit database.

The supported combinations of ZENworks and Audit database are shown below:

ZENworks Database	Audit Database
OEM Sybase SQL Anywhere	◆ OEM Sybase SQL Anywhere (Default) ◆ External Sybase SQL Anywhere
External Sybase SQL Anywhere	◆ External Sybase SQL Anywhere (Default) ◆ OEM Sybase SQL Anywhere
Microsoft SQL Server	Microsoft SQL Server
Oracle	Oracle

3 On the Select Database type page, select one of the following, then click Next:

- **OEM Sybase SQL Anywhere:** Installs the default Sybase database for ZENworks. It is configured as a service, the database user is created, and the required tables for the Primary Server are established.

 You must also select the Remote Sybase SQL Anywhere option during installation of the Primary Server.

- **External Sybase SQL Anywhere:** Sets up an existing Sybase database for writing ZENworks information to it.

- **Microsoft SQL Server:** Creates a ZENworks database on a Microsoft SQL Server.

◆ **Oracle:** Specifies a user schema that you can use to set up an external Oracle database schema for use with ZENworks.

IMPORTANT: The server hosting the database must have time synchronization with all of the Primary Servers in the Management Zone.

---

4 Refer to the following information for details on the installation data that you need to know (you can also click the **Help** button for similar information):

OEM Sybase SQL Anywhere Database Installation Information

Installation Information	Explanation
Sybase Database Installation	Specify the path where you want to install the OEM copy of the Sybase SQL Anywhere database software. On the target server, only the drives that are currently mapped on the server are available. The default path is `drive:\novell\zenworks`, which you can change. The installation program creates the `\novell\zenworks` directory for the installation of Sybase.
Sybase Server Configuration	Specify the port used by the Sybase SQL Anywhere database server. By default, port 2638 is used for the ZENworks database and port 2639 is used for the Audit database. Change the default port number if you have a conflict.
Sybase Access Configuration	Defaults are provided for some of the information, which you can change as necessary. ◆ **Database Name:** Specify a name for the database to be created. ◆ **Username:** Specify a name to create a new user who can access the database. ◆ **Password:** Specify the password to be used to the access the database. ◆ **Database Server Name:** Specify a name for the Sybase SQL Anywhere database server.
Database File Location	Specify the path where you want to create the ZENworks Sybase database file. By default, the installation program creates the `drive:\novell\zenworks` directory, which you can change. A `\database` directory is appended to the default directory. For example,. the default path is `drive:\novell\zenworks\database`.

Installation Information	Explanation
Review Database Information	Review the database configuration information.
	The Server Address field displays the IP address configured in the `hosts` file. This does not impact the database installation. The hosts file is located in the `/etc/` directory on a Linux device.
	The database driver information is automatically detected by the ZENworks database installer.
Review SQL Scripts	Review the SQL scripts to be executed during the database creation.
Review Database Creation Command	Review the commands used to create the database.
	NOTE: Ensure that the ports used for ZENworks database and Audit database are included in firewall exception list. Run the following command:
	`iptables -I INPUT -p tcp --dport PORT--syn -j ACCEPT`
	Where `PORT`: By default it is 2638 for ZENworks and 2639 for Audit or any alternate port number that is configured. This command has to be executed separately for ZENworks database port and Audit database port.
	`service iptables save`
	`service iptables restart`

Sybase SQL Anywhere Database Installation Information

Installation Information	Explanation
Sybase Server Configuration	◆ **Server name:** We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names.
	IMPORTANT: If you change your database server's IP address or DNS name at a later time, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync.
	◆ **Port:** Specify the port used by the Sybase SQL Anywhere database server. The default is port 2638. For the Audit database, the default is port 2639. Change the default port number if you have a conflict.

Installation Information	Explanation
Sybase Access Configuration	This server must have a Sybase SQL Anywhere database installed. Defaults are provided for some of this information, which can be changed as necessary. ◆ **Database Name:** Specify the name of the existing database ◆ **Username:** Specify the user who can modify the database. The user must have read/write permissions to modify the database. ◆ **Password:** Specify the password of an existing user with read/write permissions to the database. ◆ **Database Server Name:** Specify the name of your Sybase SQL Anywhere database server.
Review Database Information	Review the database configuration information. The database driver information is automatically detected by the ZENworks Database installer.
Review SQL Scripts	Review the SQL scripts to be executed during the creation of the database.
Review Database Creation Commands	Review the database commands used to create the database.

MS SQL Database Installation Information

Installation Information	Explanation
External Database Server Configuration	The database server must have an MS SQL database installed. Defaults are provided for some of this information, which can be changed as necessary:

<div>

    ◆ **Server Address:** We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names.

    IMPORTANT: If you change your database server's IP address or DNS name at a later time, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync.

    ◆ **Port:** Specify the port used by the MS SQL database server. The default is port 1433. Change the default port number if you have a conflict.

    ◆ **Named instance:** This is the name of the SQL server instance that is hosting the existing ZENworks database. You must specify the named instance if you want it to be something other than the default of `mssqlserver`.

    ◆ **Database Name:** Specify the name of the existing MS SQL database on which you want to host the ZENworks database. This option is available only for an existing database.

    ◆ **Username:** Specify the user who can modify the database. The user must have read/write permissions to modify the database.

    NOTE: Ensure that the special character ' is not part of the database name.

    For Windows authentication, provide a user name on the current device or in the domain.

    IMPORTANT

    The installer wizard continues without validating the credentials; therefore, ensure that the correct credentials are provided. Else, the installation might fail towards the end of the installation process.

    For SQL authentication, provide a user name that matches that of a valid SQL user.

    If both ZENworks database and audit database are created on the same machine then, ensure that ZENworks database users and audit database user are not the same.

</div>

Installation Information	Explanation
	◆ **Password:** Type the password of the user specified in the **Username** field. ◆ **Domain:** It is important to know whether you installed the SQL Server by using SQL authentication, Windows authentication, or mixed. Ensure that you select the option that coincides with your SQL Server options; otherwise, the authentication will fail. If you are using MS SQL with Windows Authentication, the host name (not FQDN) of Active Directory is used. If you are using Windows authentication, specify the Windows domain where the user you specified in the **Username** field exists. If you are not using a Windows domain, specify the server's short name.
External Database Configuration > Database Location (applicable only for the new database)	Specify the path of the existing MS SQL database file on the SQL server. By default, it is `c:\database`. **NOTE:** Ensure that the specified path exists on the device hosting the database before the installation starts.
Review Database Information	Review the database configuration information.
Review SQL Scripts	Review the SQL scripts to be executed during the creation of the database. You can only view the scripts.

Oracle Database Installation Information

Installation Information	Explanation
Oracle User Schema Options	During ZENworks installation, you can select to create a new user schema or specify an existing schema that resides on a server in your network. To use an existing user schema, the user schema must be created separately by using the ZENworks database installation method (setup.sh -c). ZENworks requires tablespaces to be created on the Oracle database. A tablespace can be created either by ZENworks or Database Administrator. For an existing user schema, specify the information for the tablespace that is already created by using ZENworks database installation method.

Installation Information	Explanation
Oracle Server information	The database server must have an Oracle database installed. Defaults are provided for some of this information, which can be changed as necessary. ◆ **Server Address:** We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names. **IMPORTANT:** If change your database server's IP address or DNS name at a later time, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync. ◆ **Port:** Specify the port used by the database server. The default is port 1521. Change the default port number if you have a conflict. ◆ **Service Name:** For a new user schema, specify the instance name (SID) on which the user schema is to be created. For an existing user schema, specify the instance name (SID) on which the user schema has been created.
Oracle Administrator (applicable only for the new user schema)	◆ **Username:** Specify the user who can modify the database. The user must have read/write permissions to modify the database. ◆ **Password:** Specify the password to be used to the access the database.

Installation Information	Explanation

Oracle Access User	◆ **Username:** For a new user schema, specify a name. For an existing user schema, specify the name of the user schema that already exists in the Oracle database.
	
	◆ **Password:** For a new user schema, specify a password to be used to access the database. For an existing user schema, specify the password used to access the user schema that already exists in the Oracle database.
	
	◆ **Tablespace:** For a new user schema, select one of the following tablespace options:
	
	    ◆ **Let ZENworks create the tablespace**: Select this if you want ZENworks to create the tablespace.
	
	    ◆ **Let DBA create the tablespace**: Select this if you want your database administrator to create the tablespace.
	
	    The following details are required to create a new tablespace:
	
	    IMPORTANT: If you are using Automatic Storage Management
	
	    (ASM) or some other Disk storage, select **Let DBA create the tablespace**.
	
	        ◆ **Tablespace name for Tables** (Ensure t name is unique and it should start with [a-z] | [A-Z].Oracle tablespace naming convention has to be followed.)
	
	        ◆ **Tablespace name for Indexes** (Ensure Tablespace name is unique and it should start with [a-z] | [A-Z].Oracle tablespace naming convention has to be followed.)
	
	        ◆ **DBF File location for Tables**
	
	        ◆ **DBF File location for Indexes** (The specified physical path of the DBF file should be an existing path. The file name must have the .dbf extension.)
	
	For an existing user schema, specify the following information:
	
	    ◆ **Tablespace name for Tables**: Specify the tablespace name for the tables that are associated with the existing database user specified in the **Username** field.
	
	    ◆ **Tablespace name for Indexes**: Specify the tablespace name for the indexes that are associated with the existing database user specified in the **Username** field.

Review Database Information	Review the database configuration information.
Review SQL Scripts	Review the SQL scripts to be executed during the creation of the database.

16 Installing a ZENworks Primary Server on Linux

Perform the tasks in the following sections to install the ZENworks software:

-
-
-
-

Installing the Primary Server Software

-
-

Using the Graphical User Interface (GUI) Installation Program to Install the Primary Server Software

1 Log in to the installation server as a Linux administrator.

2 Insert the Novell ZENworks installation DVD.

3 Mount the DVD, then run `sh /media/cdrom/setup.sh`.

Using the `sh` command resolves rights issues.

When installing ZENworks , Strawberry Perl is installed in the root directory to meet the Perl runtime requirement for the ppkg_to_xml tool that should run on both Windows and Linux. This tool is required to read the RPM package files to extract the package metadata and to create Linux bundles or Dependency bundles with these packages.

4 During installation, refer to the information in for details on the installation data that you need to know.

NOTE: Part of completing the installation process is for the database to be updated and for the Product Recognition Update (PRU) to be downloaded and installed, both of which cause high CPU utilization during their processes. This can cause the services to start up slowly, which can also affect how long it takes for ZENworks Control Center to open.

Using the Command Line Interface (CLI) Installation Program to Install the Primary Server Software

1 Log in to the installation server as a Linux administrator.

2 Insert the Novell ZENworks installation DVD.

This cannot be in /root or any directory under it.

3 Mount the DVD to a directory where all (including "others") have read and execute access. Either mount the DVD or copy the DVD's files.

If you copy the DVD's files, ensure that all (including "others") continue to have read and execute access to the destination directories.

4 To start the installation, run the following command:

```
sh /mount_location/setup.sh -e
```

IMPORTANT: When you use the -e option to execute a Linux CLI installation, the next, back, and quit keywords cannot be used as input, because the configuration framework interprets these keywords as commands.

---

5 During installation, refer to the information in "Installation Information" on page 91 for details on the installation data that you need to know.

Performing an Unattended Installation

You can use a response file to perform an unattended installation of ZENworks . You can either edit the default response file (provided at *DVD_drive*:\Disk1\InstData\silentinstall.properties), or perform an installation to create your own version of the response file that contains the basic installation information and edit that copy as needed.

For an embedded Sybase database, you must create a response file to perform an unattended installation; you cannot reuse the response file generated for a server that uses an external database.

Do the following to create the response file, and then use it to perform an unattended installation:

- "Creating Your Response File" on page 88
- "Performing the Installation" on page 90

Creating Your Response File

1 Run the ZENworks installation executable on a server by using one of the following methods:

- **Linux GUI:** sh /media/cdrom/setup.sh -s

  Using the sh command resolves rights issues.

- **Linux command line:** sh /media/cdrom/setup.sh -e -s

For more information on the installation arguments, see "Installation Executable Arguments" on page 105.

2 When prompted, provide a path for your custom response file.

When you use the -s argument by itself, the installation program prompts you for a path for the response file. The default file name is silentinstall.properties, which you can rename later (see Step 3f).

3 Add the Management Zone and external database passwords to your custom response file.

Because the external database password that you enter during creation of the custom response file is not saved in the response file, you must add the database and the Management Zone passwords in each copy of the response file in order for it to be correctly provided during an unattended installation.

Optionally, you can create an environment variable to pass the password into the unattended installation. Instructions for this are contained in the response file where the password information is stored.

While you are editing the response file, you can make any other changes necessary to customize it for your unattended installation. The response file contains instructions for its various sections.

To add the external database and Management Zone passwords into the response file:

3a Open the response file in a text editor.

Your custom response file is in the location that you specified in Step 2.

If you are editing the default response file, it is located at `DVD_drive:\Disk1\InstData\silentinstall.properties`.

3b Search for `ADMINISTRATOR_PASSWORD=`.

3c Replace `$lax.nl.env.ADMIN_PASSWORD$` with the actual password.

For example, if the password is `novell`, the entry will be

`ADMINISTRATOR_PASSWORD=novell`

3d (Conditional) If you are using an external database, search for the line `DATABASE_ADMIN_PASSWORD=`, and replace `$lax.nl.env.ADMIN_PASSWORD$` with the actual password.

3e (Conditional) If you are using an external database, search for the line `DATABASE_ACCESS_PASSWORD=`, and replace `$lax.nl.env.ADMIN_PASSWORD$` with the actual password.

3f If you want to add another Primary Server to the existing Management Zone, you must provide the following information in the response file:

`PRIMARY_SERVER_ADDRESS=$Primary_Server_IPaddress$`

`PRIMARY_SERVER_PORT=$Primary_Server_port$`

`PRIMARY_SERVER_CERT=-----BEGIN CERTIFICATE-----`
`MIID9DCCLotsOfEncryptedCharactersSja+bY05Y=-----END CERTIFICATE-----`

where

PRIMARY_SERVER_ADDRESS is the IP address or DNS name of the parent Primary Server if the secondary server is being installed to an existing Management Zone.

PRIMARY_SERVER_PORT is the SSL port used by the parent Primary Server if the secondary server is being installed to an existing Management Zone. The default port is 443.

PRIMARY_SERVER_CERT= is the certificate you specified on the parent Primary Server if the secondary server is being installed to an existing Management Zone. The certificate must be in the base64 encoded string format of an x509 certificate, and the certificate string must be specified in one line. This is just an example of the certificate information.

3g Save the file and exit the editor.

4 After you have completed modifications to your custom response file, copy it from the path that you specified in Step 2 to a location on each server where you will use it for the unattended installation.

5 To use the updated response file, continue with "Performing the Installation" on page 90.

Performing the Installation

1 On the installation server where you will perform an unattended installation, insert the *Novell ZENworks* installation DVD and mount it.

2 To start the unattended installation, run the following command:

 ◆ `sh /media/cdrom/setup.sh -s -f` *path_to_file*.

where *path_to_file* is either the full path to the response file that you created in "Creating Your Response File" on page 88, or a directory containing the `silentinstall.properties` file (it must use that file name).

Using the `sh` command resolves rights issues.

If you renamed the updated response file, include its new name with the path.

If a file name is not given, or if either the path or file does not exist, the `-f` parameter is ignored and the default installation (GUI or command line) is run instead of an unattended installation.

3 To create another Primary Server for the Management Zone by performing an unattended installation, return to Step 1; otherwise, continue with Step 4.

4 After the installation has completed, continue with "Verifying the Installation" on page 90.

Verifying the Installation

Perform the following steps if you want to verify a successful installation.

1 After the installation has completed and the server has been rebooted, do any of the following to verify that ZENworks is running:

 ◆ **Run ZENworks Control Center**

 If ZENworks Control Center did not automatically start, use the following URL to open it in a web browser:

 https://*DNS_name_or_IP_address_of_Primary_Server*/zenworks

 NOTE: If the Primary Server is not using the default HTTPS port, you must add the port to the URL: https://*DNS_name_or_IP_address_of_Primary_Server:port_number*/zenworks
 ---

 This can be done either on the server where you just installed ZENworks, or on a qualified workstation.

 ◆ **Check the Linux services by using the configuration command**

 On the server, run the following command:

 `/opt/novell/zenworks/bin/novell-zenworks-configure -c SystemStatus`

 This lists all ZENworks services and their statuses.

 To start the services, run the following command:

 `/opt/novell/zenworks/bin/novell-zenworks-configure -c Start`

 ◆ **Check the Linux services by using the specific services' commands**

 On the server, run the following commands:

 `/etc/init.d/novell-zenserver status`

 `/etc/init.d/novell-zenloader status`

 If the services are not running, run the following commands to start the ZENworks services:

```
/etc/init.d/novell-zenserver start

/etc/init.d/novell-zenloader start
```

Installation Information

Installation Information	Explanation

Installation path	Several fixed installation paths are used:
	
	`/opt/novell/zenworks/`
	
	`/etc/opt/novell/zenworks`
	
	`/var/opt/novell/zenworks`
	
	`/var/opt/novell/log/zenworks/`
	
	If you are concerned about disk space on the Linux server, the `/var/opt` directory is where the database and content repository reside.

Response file path (optional)	If you started the installation executable with the `-s` parameter, you are required to provide a path for the file. The default path is `/root`, which you can change to any path available on the current server. The Primary Server software is not installed when you run the program to create a response file. It only displays the installation pages necessary to identify and create the response file.
Prerequisites	If the required prerequisites are not installed, you are not allowed to continue with the installation. The requirements that are not fulfilled are displayed (GUI) or listed (command line). For more information, see "Prerequisites for Remote Sybase SQL Anywhere" on page 75. If the .NET prerequisite is not fulfilled, you can click the **ZENworks** link in the description to install the runtime version that is bundled with ZENworks. After .NET is installed, the installation of ZENworks proceeds. This wizard might take a few seconds to launch.

Installation Information	Explanation

Management Zone	**New Zone:** If you are installing to the first server in the zone, you need to know the name and password you want to use for the Management Zone. The password is used to log in to ZENworks Control Center.
	
	Zone Name: The zone name has a 20-character limit and should be a unique name. The zone name can contain only the following special characters: - (dash) _ (underscore) . (period). The zone name cannot contain special characters such as ~ . ` ! @ # % ^ & * + = ( ) { } [ ]
		\ : ; " ' < > , ? / $
		
		For Embedded Sybase, ensure that the zone name is unique in your environment.
		
		IMPORTANT: While installing ZENworks in a non-English language operating system, ensure that the Management Zone name does not use special characters from any other non-English language.For example, while installing ZENworks on a simplified Chinese operating system, ensure that the Zone name does not use "üöä" from the German Character Set.
		
		Zone Password: By default, the login user name is `Administrator`. After completing the installation, you can use ZENworks Control Center to add other administrator names that can be used to log in to the Management Zone. The zone administrator password must contain at least six characters and is limited to a maximum of 255 characters. The password can contain only one instance of the $ character.
		
		Port Number: During the installation of subsequent Primary Servers, the server by default uses the ports used by first Primary Server. If the ports are in use on the second Primary Server, you are asked to specify another port. Note which port you specify because you will need to use it in the URL for accessing ZENworks Control Center from that Primary Server.
		
		Existing Zone: If you are installing to an existing Management Zone, you need to know the following information:
		
		  ♦ The DNS name or IP address of an existing Primary Server in the zone. We recommend using the DNS name to provide ongoing synchronization with certificates that are signed with DNS names.
		
		  ♦ The SSL port used by the existing Primary Server in the Management Zone. If the Primary Server uses a different port than the default (443), specify that port.
		
		  ♦ A ZENworks administrator user name to log in to the zone. The default is `Administrator`. After completing the installation, you can use ZENworks Control Center to add other administrator names that can be used to log in to the Management Zone.
		
		  ♦ The password for the administrator you specified in the **Username** field.

Database Configuration Recommendation	You can enter the number of devices used in thousands. For example enter 1 for 1000 devices, 2 for 2000, and so on.The range of devices is between 1 to 100. Based on the number of devices, the database recommendation is displayed.

Installation Information	Explanation
Database options	ZENworks requires a database. The database options are displayed only when installing the first Primary Server to the zone. You have the following database options: ◆ **Embedded Sybase SQL Anywhere:** Automatically installs the embedded database on the local server. If you select the embedded database option, no further database installation pages are shown. ◆ **Remote Sybase SQL Anywhere:** This database must already exist on a server in your network. It can be on the current server. To select this option, you should already have followed the steps in "Prerequisites for Remote Sybase SQL Anywhere" on page 75. You also use this option for installing to an existing remote OEM Sybase database. ◆ **Microsoft SQL Server:** You can create a new SQL database or specify an existing database that resides on a server in your network. It can be on the current server. Creating a new SQL database at this time provides the same results as the steps in "Prerequisites for Microsoft SQL Server" on page 76. ◆ **Oracle:** Specifies a user schema that you can use to set up an external Oracle database schema for use with ZENworks. You can either create a new user schema or specify an existing one that resides on a server in your network. To select this option, you should already have followed the steps in "Prerequisites for Oracle" on page 76. **IMPORTANT:** The following points must be considered for external databases: ◆ The time on the server hosting the database must be synchronized with each of the Primary Servers in the Management Zone. The external database can also reside on the Primary Server machine. ◆ If you have specified the database hostname, it must be DNS resolvable.

Installation Information	Explanation

Database information	For the external database options (**Remote Sybase SQL Anywhere**, **Microsoft SQL Server**, and **Oracle**), you need to know the information listed below. Defaults are provided for some of this information, which can be changed as necessary.
	
	◆ **All Databases:** The database server must have a Sybase SQL Anywhere, Microsoft SQL, or Oracle database installed.
	
	   ◆ Server's name. We recommend that you identify the server by its DNS name rather than its IP address, to be in sync with certificates that are signed with DNS names.
	
	   IMPORTANT: If you later change your database server's IP address or DNS name, ensure that your corporate DNS server is updated with this change to keep DNS for the database server in sync.
	
	   ◆ Port used by the database server.
	
	   Port 2638 is the default for Sybase SQL Anywhere and port 1433 is the default for Microsoft SQL Server.
	
	   Change the default port number if you have a conflict.
	
	◆ **(Optional) SQL Server Only:** Named instance that is the name of the SQL server instance that is hosting the existing ZENworks database. You must specify the named instance if you want it to be something other than the default of mssqlserver.
	
	◆ **Oracle Only:** The name of the tablespace where you want the database to be created. The default is USERS.
	
	◆ **New Database:**
	
	   ◆ The database administrator (**Username** field) must have read/write permissions in order to successfully perform the required operations on the database.
	
	   ◆ The administrator's database password.
	
	◆ **SQL Server or New Database:**
	
	   ◆ If you are using Windows authentication, specify the Windows domain where the user you specified in the **Username** field exists. If you are not using a Windows domain, specify the server's short name.
	
	   ◆ Whether to use Windows or SQL Server authentication. For Windows authentication, provide the credentials for a user on the current device or in the domain. For SQL authentication, provide credentials that match those of a valid SQL user.
	
	It is important to know whether you installed the SQL Server by using SQL authentication, Windows authentication, or mixed. Be sure to select the option that coincides with your SQL Server options; otherwise, the authentication will fail.

Installation Information	Explanation
Database access	For the external database options (**Remote Sybase SQL Anywhere, Microsoft SQL Server**, and **Oracle**), you need to know the information listed below. Defaults are provided for some of this information, which can be changed as necessary. ◆ **All Databases:** This server must have a Sybase SQL Anywhere, Microsoft SQL, or Oracle database installed. - Database name. Replace **zenworks_MY_ZONE** with either the desired database name or an existing database name. - Database user name. This user must have read/write permissions to modify the database. If Windows authentication is also selected, the specified user must already exist when you create a new SQL database. The user is granted login access to SQL Server and read/write access to the ZENworks database that is created. For an existing database, specify a user with sufficient permissions to the database. - Database password. For a new database, this password is automatically generated if SQL authentication is selected. For an existing database, specify the password of an existing user with read/write permissions to the database. ◆ **Sybase Databases Only:** The name of your Sybase SQL Anywhere database server. ◆ **Oracle Databases Only:** The name of the tablespace where you want the database to be created. By default, it is USERS. ◆ **Microsoft SQL Databases Only:** - If you are using Windows authentication, specify the Windows domain where the user you specified in the **Username** field exists. If you are not using a Windows domain, specify the server's short name. - Whether to use Windows or SQL Server authentication. For Windows authentication, provide the credentials for a user on the current device or in the domain. For SQL authentication, provide credentials that match those of a valid SQL user. It is important to know whether you installed the SQL Server by using SQL authentication, Windows authentication, or mixed. Be sure to select the option that coincides with your SQL Server options; otherwise, the authentication will fail.
SSL configuration (shown only for the first server installed in the Management Zone)	In order to enable SSL communications, an SSL certificate must be added to the ZENworks server. Select whether to use an internal or external certificate authority (CA). For subsequent installations of Primary Servers to the Management Zone, the CA established by the first server's installation is used for the zone. **IMPORTANT:** After you install ZENworks , you can only change the internal certificate to an external certificate on Primary Servers. For more information, see "Reconfiguring the Certificate Authority before and after it Expires"in the *ZENworks Disaster Recovery Reference*. The **Restore Default** buttons restore the paths to those that were displayed when you first accessed this page.

Installation Information	Explanation
Signed SSL certificate and private key	To enter a trusted CA-signed certificate and private key, click **Choose** to browse for and select the certificate and key files, or specify paths to the signed certificate to be used for this server (**Signed SSL Certificate**) and the private key associated with the signed certificate (**Private Key**).
	For subsequent installations of Primary Servers to the zone, the CA established for the zone by the first server's installation is used. If the zone is using an internal CA, you must provide the IP address or DNS name of the Primary Server with CA role. Otherwise, the wizard will not proceed further.
	For information on creating external certificates to select when installing to a Linux server, see Section 15, "Installing an External ZENworks Database," on page 75.
	For information on creating external certificates for installing to a server using a silent installation, see "Creating Your Response File" on page 88.
Root certificate (optional)	To enter a trusted CA root certificate, click **Choose** to browse for and select it, or specify the path to the CA's public X.509 certificate (**CA Root Certificate**).
Pre-installation summary	**GUI Installation:** To make changes to any information entered up to this point, click **Previous**. After you click **Install**, the installation of the files begins. During installation, you can click **Cancel** to stop, which leaves the files on your server that were installed up to that point.
	Command Line Installation: If you want to make changes to any information entered up to this point, you can type `back` and press Enter as many times as necessary. As you progress forward through the commands again, press Enter to accept the decisions that you previously made.
Installation complete (roll back option)	If installation errors occurred, this page is displayed at this time; otherwise, it is displayed after the Post-Installation Actions page.
	Installation Recovery: For both the GUI and command line installations, if there are serious installation errors, you can roll back the installation to return your server to its previous state. This option is provided on a different installation page. Otherwise, you have two options:
	◆ If a previous installation was cut short and you install again, you might be given the option to reset the installation, depending on how far you got in the canceled installation. If you select to reset, this overwrites any configuration that might have occurred during the canceled installation.
	◆ To undo a successfully completed installation, follow the instructions in the ZENworks Uninstall Guide.
	If there were serious installation errors, select **Roll Back**, which returns your server to its previous state. Upon exiting the installation program, the server is not rebooted. However, to complete the installation, you must reboot the server.
	To determine whether to continue the installation or roll it back, review the log file that lists the errors to determine if any installation failures were significant enough for your action. If you select to continue, resolve the issues that are noted in the log after you have rebooted the server and completed the installation process.
	To access the log file in the GUI installation, click **View Log**. In the command line installation, the path to the log file is displayed.

Installation Information	Explanation
Post installation actions	Options are presented for selecting actions to perform after the installation has successfully completed: ◆ For the GUI installation, a page displays the options listed below. Some items are selected by default. Click any check box to select or deselect the option, then click **Next** to continue. ◆ For a command line installation, the options are listed with option numbers. Select or deselect an option by typing its number to toggle its selection status. After configuring the selections, press Enter without typing a number to continue. Select from the following possible actions: ◆ **Run ZENworks Control Center:** Opens ZENworks Control Center immediately if you select to reboot manually or you installed to a Linux server. For a Linux installation without a GUI, a GUI-enabled device must be used to run ZENworks Control Center. For the Oracle database, the administrator names are case sensitive. The default ZENworks administrator account that was automatically created during installation uses an initial capital letter. In order to log in to ZENworks Control Center, you must enter `Administrator`. ◆ **View Readme file:** For GUI installations, it opens the ZENworks Readme in your default browser. For a Linux command line installation, the URL to the Readme is listed. ◆ **View Installation log:** Displays the installation log in your default XML viewer (GUI installation) after rebooting, or immediately if you select to reboot manually. For a Linux command line installation, the information is simply listed.
ZENworks System Status Utility	Allows you to launch a ZENworks services heartbeat check prior to closing the installation program. Results are posted in the installation log.
Rebooting (or not)	Upon a successful installation, you can select between rebooting immediately or later: ◆ **Yes, Restart the System:** If you select this option, log in to the server when prompted. The first time you log in to the server, it takes a few minutes because the database is being populated with inventory data. ◆ **No, I Will Restart the System Myself:** If you select this option, the database is immediately populated with inventory data. **NOTE:** This option is displayed only for Windows devices. The process of populating the database can cause high CPU utilization during a reboot or immediately after the installation program closes if you select not to reboot. This database updating process can slow down the starting of the services and access to ZENworks Control Center. The Patch Management downloads might also cause high CPU utilization, usually shortly after rebooting.

Installation Information	Explanation
Installation completion	The actions you selected previously are performed after all of the files have been installed for ZENworks (if selected). **IMPORTANT:** If you installed to a Linux server using the command line, and if you plan to run any zman commands in the current session, you need to get the newly installed `/opt/novell/zenworks/bin` directory into your session's path. Log out of your session and log back in to reset the PATH variable.

17 Completing Post-Installation Tasks

After successfully installing the ZENworks Primary Server software, you might need to perform some of the following post-installation tasks. Not all tasks are required for all installations. However, we recommend that you review each section to ensure that you complete any tasks required for your installation.

- "Licensing Products" on page 99
- "Adding Imaging Applications as Firewall Exceptions" on page 100
- "Supporting ZENworks 11.x Device Upgrades" on page 100
- "Backing Up ZENworks Components" on page 100
- "Customizing ZENworks Control Center" on page 101
- "Tasks for VMware ESX" on page 101

Licensing Products

During the installation of your first ZENworks Primary Server and the creation of your Management Zone, the ZENworks installation program installs the following products and sets their license state as listed in the table.

Product	License State
Asset Inventory for Unix/Linux	Evaluation
Asset Inventory for Windows/Macintosh	Deactivated
Asset Management	Evaluation
Configuration Management	Evaluation
Endpoint Security Management	Deactivated
Full Disk Encryption	Deactivated
Patch Management	Activated

You activate a product by supplying a valid product license. If you do not have a valid license, you can evaluate the product for 60 days.

To change the license state of a product:

1 Log in to ZENworks Control Center.

2 Click **Configuration**.

3 In the **Licenses** panel, click a suite if you have a suite license key.

   or

   Click a product to provide a product license key or to turn on the product evaluation.

For more information, see the *ZENworks Product Licensing Reference*.

Adding Imaging Applications as Firewall Exceptions

The ZENworks installation program cannot add exceptions to a Linux server firewall. Therefore, you must manually complete this task under the following conditions:

* The Primary Server will be an Imaging Server.
* The Primary Server will be the parent Primary Server of an Imaging Satellite Server.

If you turn on the firewall on the Primary Server, you must configure the server to allow the following ZENworks Configuration Management Imaging applications through the firewall by adding them to the Firewall Exceptions list:

* `novell-pbserv.exe`
* `novell-proxydhcp.exe`
* `novell-tftp.exe`
* `novell-zmgprebootpolicy.exe`

NOTE

After installing the server on Linux device, `/opt/novell/zenworks/bin` is not added to the PATH variable; therefore, the commands in that directory cannot be used directly. Do any of the following on the Linux device to run the commands from `/opt/novell/zenworks/bin`:

* Log in to the device again.
* Specify the complete path to access the command.

For example: `/opt/novell/zenworks/bin/zac`

Supporting ZENworks 11.x Device Upgrades

If you have ZENworks 11.x managed devices or Satellite Servers in your network and want to register the devices to a new ZENworks Management Zone so that they can be automatically upgraded to ZENworks, you must import the ZENworks System Update into the zone from the ZENworks installation media.

Backing Up ZENworks Components

We recommend that you implement the following backup best practices:

* Take a reliable backup of the ZENworks database and Audit database on a regular basis. For more information on how to back up the ZENworks database, see the *ZENworks Database Management Reference*.
* Procure and note down the credentials of the database.
    * For an internal database, use the following commands:

      `zman dgc -U administrator_name -P administrator_password`
    * For the embedded Sybase audit database, use the following commands:

      `zman dgca -U admimistrator_name -P administrator_password`
    * For an external database, contact the database administrator.

- Take a reliable backup of the ZENworks Server (this only needs to be done one time). For instructions, see "Backing Up a ZENworks Server" in the *ZENworks Disaster Recovery Reference*.
- Take a reliable backup of the Certificate Authority. For instructions, see "Backing Up the Certificate Authority" in the *ZENworks Disaster Recovery Reference*.

Customizing ZENworks Control Center

ZENworks Control Center provides a configuration file that you can use to customize how it functions. For example, you can change the default timeout from 30 minutes to another value.

For instructions, see "Customizing ZENworks Control Center" in the *ZENworks Control Center Reference*.

Tasks for VMware ESX

- For optimal performance of the Primary Servers running on VMware ESX, set the reserved memory size to the size of the guest operating system memory. For more information, see TID 7005382 in Novell Support Knowledgebase (http://support.novell.com/search/kb_index.jsp).
- In addition, if the ZENworks guest operating system supports VMware ESX, enable additional Java commands to set large pages, as follows:

  `-XX:+UseLargePages`

  For more information on memory reservation and large memory pages, refer to the `Enterprise Java Applications on VMware Best Practices Guide`.
- Finally, you need to perform the following tasks:

1 Create a backup, then open `/etc/init.d/novell-zenserver`.

2 In the CATALINA_OPTS string, add the appropriate options, separated by spaces, before the `-XX:PermSize` option.

   CATALINA_OPTS is used to configure the Tomcat container options. For more information on Tomcat, see the Tomcat online documentation.

3 To start the ZENworks Server services, run the following command:

   `/etc/init.d/novell-zenserver start`

4 To stop the ZENworks Server services, run the following command:

   `/etc/init.d/novell-zenserver stop`

NOTE: If the ZENworks Server fails to start, there is a compatibility problem with the newly added option, or the syntax is incorrect. To troubleshoot the service startup, run the following command:

`/etc/init.d/novell-zenserver debug`

The following log file is displayed:

`/opt/novell/zenworks/share/tomcat/logs/catalina.out`

IV Appendixes

The following section provide information related to installing the ZENworks Primary Server software:

A Installation Executable Arguments

To install Novell ZENworks , the following arguments can be used with the `setup.exe` and `setup.sh` executable files that are located at the root of the installation DVD. You can run these files from a command line.

You should use the `sh` command with `setup.sh` in order to prevent rights issues.

Argument	Long Form	Explanation
-e	--console	(Linux only) Forces a command line installation.
-l	--database-location	Specifies a custom OEM (embedded) database directory.
-c	--create-db	Launches a database administration tool.
		It cannot be used at the same time as the -o argument.
-s	--silent	If this is not used with the -f argument, it causes the installation that you are performing to create a response file (with a `.properties` file name extension) that you can edit, rename, and use for an unattended installation to another server.
		If this is used with the -f argument, an unattended installation on the server is started, using the response file that you specify with the -f argument.
-f *[path to file]*	--property-file *[path to file]*	Used with the -s argument, performs an unattended (silent) installation using the response file that you specify.
		If you do not specify a response file, or if the path or file name is incorrect, the default non-silent GUI or command line installation is used instead.

Some examples:

- To perform a command line installation on a Linux server:

  sh *unzip_location*/Disk1/setup.sh -e

- To specify a database directory:

  unzip_location\disk1\setup.exe -l d:\databases\sybase

- To create a response file:

  unzip_location\disk1\setup.exe -s

- To perform an unattended installation:

  unzip_location\disk1\setup.exe -s -f c:\temp\myinstall_1.properties

  For more information, see .

B Dependent Linux RPM Packages

ZENworks installation on a Linux server requires that certain RPM packages are already installed on the server. Review the following sections for more information on the RPM packages required on the Linux devices:

Red Hat Enterprise Linux Server

You can use the Red Hat Enterprise Linux installation media to install the packages on the Red Hat Enterprise Linux server before starting the ZENworks installation on the server:

RHEL 6.*x* - 64 bit

acl

audit-libs

basesystem

bash

binutils

ca-certificates

chkconfig

ConsoleKit

ConsoleKit-libs

coreutils

coreutils-libs

cpio

cracklib

cracklib-dicts

cryptsetup-luks

cryptsetup-luks-libs

db4

dbus

dbus-glib

dbus-libs

device-mapper

RHEL 6.*x* - 64 bit

device-mapper-libs

dmidecode

eggdbus

ethtool

expat

filesystem

findutils

freetype

gamin

gawk

gdbm

glib2

glibc

glibc-common

glibc.i686

gmp

grep

gzip

hal

hal-info

hal-libs

hdparm

hwdata

info

initscripts

iproute

iptables

iputils

jpackage-utils

kbd

kbd-misc

keyutils-libs

krb5-libs

RHEL 6.*x* - 64 bit

less

libacl

libattr

libblkid

libcap

libcap-ng

libcom_err

libgcc

libgcrypt

libgpg-error

libidn

libjpeg

libnih

libselinux

libsepol

libstdc++

libudev

libusb

libutempter

libuuid

libX11

ibX11-common

libX11.i686

libXau

libXau.i686

libxcb

libxcb.i686

libXdmcp

libXext

libXext.i686

libXi

libXi.i686

libxml2

RHEL 6.*x* - 64 bit

libXtst

libXtst.i686

MAKEDEV

mingetty

module-init-tools

ncurses

ncurses-base

ncurses-libs

net-tools

nss-softokn-freebl

nss-softokn-freebl.i686

openssl

pam

pciutils-libs

pcre

perl

perl-libs

perl-Module-Pluggable

perl-Pod-Escapes

perl-Pod-Simple

perl-version

pm-utils

polkit

popt

procps

psmisc

redhat-release-server

sed

setup

shadow-utils

sysvinit-tools

tcp_wrappers-libs

tzdata

RHEL 6.*x* - 64 bit

udev

upstart

util-linux-ng

zlib

libgtk-x11-2.0.so.0

libpk-gtk-module.so

libcanberra-gtk-module.so

SUSE Linux Enterprise Server

You can use the SUSE Linux Enterprise Server installation media to install the packages on the SUSE Linux Enterprise Server before starting the ZENworks installation on the server:

SLES 11 SP3 - 64 Bit	SLES 12 - 64 Bit
xinetd	xinetd
bash	bash
libxml2	libxml2
glibc-32bit	glibc-32bit
libjpeg-32bit	libjpeg-32bit
zlib-32bit	zlib-32bit
libgcc43-32bit	libgcc43-32bit
libstdc++43-32bit	libstdc++43-32bit
perl	perl
coreutils	coreutils
fillup	fillup
gawk	gawk
glibc	glibc
grep	grep
insserv	insserv
pwdutils	pwdutils
sed	sed
sysvinit	sysvinit
diffutils	diffutils
logrotate	logrotate
perl-base	perl-base

SLES 11 SP3 - 64 Bit	SLES 12 - 64 Bit
tcpd	tcpd
libreadline5	libreadline5
libncurses5	libncurses5
zlib	zlib
libglib-2_0-0	libglib-2_0-0
libgmodule-2_0-0	libgmodule-2_0-0
libgthread-2_0-0	libgthread-2_0-0
gdbm	gdbm
libdb-4_5	libdb-4_5
coreutils-lang	coreutils-lang
info	info
libacl	libacl
libattr	libattr
libselinux1	libselinux1
pam	pam
filesystem	filesystem
aaa_base	aaa_base
libldap-2_4-2	libldap-2_4-2
libnscd	libnscd
libopenssl0_9_8	libopenssl0_9_8
libxcrypt	libxcrypt
openslp	openslp
pam-modules	pam-modules
libsepol1	libsepol1
findutils	findutils
mono-core	mono-core
bzip2	bzip2
cron	cron
popt	popt
terminfo-base	terminfo-base
glib2	glib2
pcre	pcre
libbz2-1	libbz2-1

SLES 11 SP3 - 64 Bit	SLES 12 - 64 Bit
libzio	libzio
audit-libs	audit-libs
cracklib	cracklib
cpio	cpio
login	login
mingetty	mingetty
ncurses-utils	ncurses-utils
net-tools	net-tools
psmisc	psmisc
sles-release	sles-release
udev	udev
cyrus-sasl	cyrus-sasl
permissions	permissions
glib2-branding-SLES	glib2-branding-SLES
glib2-lang	glib2-lang
libgcc43	libgcc43
libstdc++43	libstdc++43
cracklib-dict-full	cracklib-dict-full
cpio-lang	cpio-lang
sles-release-DVD	sles-release-DVD
libvolume_id1 (applicable only for SLES 11 SP2)	libvolume_id1 (applicable only for SLES 11 SP2)
licenses	licenses
libavahi-client3	libavahi-client3
libavahi-common3	libavahi-common3
libjpeg	libjpeg
xorg-x11-libX11	xorg-x11-libX11
xorg-x11-libXext	xorg-x11-libXext
xorg-x11-libXfixes	xorg-x11-libXfixes
xorg-x11-libs	xorg-x11-libs
dbus-1	dbus-1
xorg-x11-libXau	xorg-x11-libXau
xorg-x11-libxcb	xorg-x11-libxcb
fontconfig	fontconfig

SLES 11 SP3 - 64 Bit	SLES 12 - 64 Bit
freetype2	freetype2
libexpat1	libexpat1
xorg-x11-libICE	xorg-x11-libICE
xorg-x11-libSM	xorg-x11-libSM
xorg-x11-libXmu	xorg-x11-libXmu
xorg-x11-libXp	xorg-x11-libXp
xorg-x11-libXpm	xorg-x11-libXpm
xorg-x11-libXprintUtil	xorg-x11-libXprintUtil
xorg-x11-libXrender	xorg-x11-libXrender
xorg-x11-libXt	xorg-x11-libXt
xorg-x11-libXv	xorg-x11-libXv
xorg-x11-libfontenc	xorg-x11-libfontenc
xorg-x11-libxkbfile	xorg-x11-libxkbfile
libuuid1	libuuid1
libsqlite3-0	libsqlite3-0
libgobject-2_0-0	libgobject-2_0-0
rpm	rpm
util-linux	util-linux
libblkid1	libblkid1
util-linux-lang	util-linux-lang
update-alternatives	update-alternatives
postfix	postfix
netcfg	netcfg
openldap2-client	openldap2-client
lsb-release	lsb-release
	libXtst6-32bit-1.2.2-3.60.x86_64
	libpango-1_0-0-32bit
	libXi6-32bit

C — Oracle Enterprise with Partitioning

ZENworks support Oracle Partitioning, if the partitioning feature is enabled in the Oracle database. Oracle Partitioning is a separately licensed option available with the Oracle Enterprise edition only. For Oracle Standard edition, the partitioning option is not supported.

During the ZENworks installation with the Oracle database, select one of the following:

- **Yes, let ZENworks use partitioning with the Oracle database.**
- **No, do not use partitioning with Oracle database**.

IMPORTANT: It is recommended that you use Oracle Partitioning since it improves the application performance and manageability.

If you are using Oracle Enterprise with partitioning, you need to verify whether the Oracle partition feature is enabled with the required license.

Execute the following:

```
Select Value from v$option where parameter='Partitioning';
```

The query output value is displayed as `"TRUE"`. This indicates that the partition is enabled. ZENworks will automatically run the partition table scripts.

D Keywords Not to Be Used in Database Creation

When you create databases during installation, upgrade or database migration, the following keywords should not be used as-is in fields such as the zone name, user name, password, database name, schema names:

all	compress	false	level
alter	connect	fetch	like
and	constant	float	limited
any	create	for	lock
array	current	forall	long
as	currval	from	loop
asc	cursor	function	max
at	date	goto	min
audit	day	group	minus
authid	decimal	having	minute
avg	declare	heap	mlslabel
begin	default	hour	mod
between	delete	if	mode
binary_integer	desc	immediate	month
body	distinct	in	natural
boolean	do	index	naturaln
bulk	drop	indicator	new
by	else	insert	nextval
char	elsif	integer	nocopy
char_base	end	interface	not
check	exception	intersect	nowait
close	exclusive	label	null
cluster	execute	interval	nullif
coalesce	exists	into	number
collect	exit	is	number_base
comment	extends	isolation	ocirowid
commit	extract	java	of

on	range	sqlcode	update
opaque	raw	sqlerrm	use
open	real	start	user
operator	record	stddev	validate
option	ref	subtype	values
or	release	successful	varchar
order	return	sum	varchar2
organization	reverse	table	variance
others	rollback	then	view
out	row	time	when
package	rowid	timestamp	whenever
partition	rownum	timezone_abbr	where
pctfree	rowtype	timezone_hour	while
pls_integer	savepoint	timezone_minute	with
positive	second	timezone_region	work
positiven	select	to	write
pragma	separate	trigger	year
prior	set	true	zone
private	share	type	
procedure	smallint	ui	
public	space	union	
raise	sql	unique	

E Installation Troubleshooting

The following sections provide solutions to the problems you might encounter while installing or uninstalling Novell ZENworks :

- "Troubleshooting Installation" on page 119
- "Post Installation Troubleshooting" on page 125

Troubleshooting Installation

This section provides solutions to problems you might encounter when installing ZENworks .

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Installing from the root directory on a Linux device fails to create the self-signed certificates

Source: ZENworks ; Installation.

<table>
<tr><td>Action:</td><td>On the Linux device, download and copy the ZENworks installation ISO image to a temporary location to which all users have the Read and Execute permissions.</td></tr>
</table>

Configuring the ZENworks Server to an Oracle database fails

<table>
<tr><td>Source:</td><td>ZENworks ; Installation.</td></tr>
<tr><td>Explanation:</td><td>If the NLS_CHARACTERSET parameter is not set to AL32UTF8 and the NLS_NCHAR_CHARACTERSET parameter is not set to AL16UTF16, the database installation fails with the following error messages:</td></tr>
</table>

```
Failed to run the sql script: localization-updater.sql,
message:Failed to execute the SQL command: insert into
zLocalizedMessage(messageid,lang,messagestr)
values('POLICYHANDLERS.EPE.INVALID_VALUE_FORMAT','fr','La
stratégie {0} n''a
pas pu être appliquée du fait que la valeur de la variable "{1}"
n''est pas
dans un format valide.'),
message:ORA-00600: internal error code, arguments: [ktfbbsearch-
7], [8], [],
[], [], [], [], []
```

<table>
<tr><td>Action:</td><td>Set the NLS_CHARACTERSET parameter to AL32UTF8 and the NLS_NCHAR_CHARACTERSET parameter to AL16UTF16.</td></tr>
<tr><td></td><td>To ensure that the character set parameters are configured with the recommended values, run the following query at the database prompt:</td></tr>
</table>

```
select parameter, value from nls_database_parameters where
parameter like '%CHARACTERSET%';
```

Unable to establish a remote desktop session with a Windows device running the ZENworks Configuration Management installation program

<table>
<tr><td>Source:</td><td>ZENworks ; Installation.</td></tr>
<tr><td>Explanation:</td><td>If you try to use a Remote Desktop Connection to connect to a Windows server on which the ZENworks Configuration Management installation program is running, the session terminates with the following error message:</td></tr>
</table>

```
The RDP protocol component "DATA ENCRYPTION" detected an error in
the protocol stream and has disconnected the client.
```

<table>
<tr><td>Action:</td><td>See the Microsoft Help and Support web site (http://support.microsoft.com/kb/323497).</td></tr>
</table>

Installing a second server gives an error message

<table>
<tr><td>Source:</td><td>ZENworks ; Installation.</td></tr>
<tr><td>Explanation:</td><td>When you are installing the second server into a Management Zone, an error message might be displayed at the end of the installation that contains the following text:</td></tr>
</table>

```
... FatalInstallException Name is null
```

However, the installation otherwise seems to complete successfully.

This error is being displayed erroneously because the program thinks that the server needs to be reconfigured.

Action: Review the installation log file. If there are no errors there related to this error message, you can ignore it.

Installation on Linux fails

Source: ZENworks; Installation.

Possible Cause: If the directory path to which you have extracted the ZENworks installation ISO image contains spaces, the installation fails on Linux.

Action: Ensure that the directory path to which you want to extract the installation ISO image does not contain spaces.

Configure Action fails because of an error detected by HotSpot Virtual Machine

Source: ZENworks; Installation.

Explanation: If you are installing the first Primary Server on a Linux device, and if at the end of the process that configures the database you see an error has occurred and you are given the option of continuing or rolling back, you should check the log file at `/var/opt/novell/log/zenworks/ZENworks_Install_[date].log.xml`. If you see the error specified below, it is safe to continue with the install.

```
ConfigureAction failed!:

select tableName, internalName, defaultValue from Adf where inUse
=?#
An unexpected error has been detected by HotSpot Virtual Machine:
#SIGSEGV (0xb) at pc=0xb7f6e340, pid=11887, tid=2284317600
#
#Java VM: Java HotSpot(TM) Server VM (1.5.0_11-b03 mixed mode)

#Problematic frame:
#C [libpthread.so.0+0x7340] __pthread_mutex_lock+0x20
```

Action: Ignore the error message.

Unable to install NetIdentity from Novell Client 32 on a device that has ZENworks installed

Source: ZENworks; Installation.

Explanation: When you try to install the NetIdentity agent that ships with Novell Client32 on a device that has ZENworks installed, the installation fails with the following error message:

```
An incompatible version of Novell ZENworks Desktop Management
Agent has been detected
```

Possible Cause: The NetIdentity agent is not installed before installing ZENworks.

Action: Do the following:

 1 Uninstall ZENworks .

For more information, see ZENworks Uninstall Guide.

2 Install the NetIdentity agent from Novell Client32.

3 Install ZENworks .

For more information, see Chapter 9, "Installing a ZENworks Primary Server on Windows," on page 45.

ZENworks Configuration Management Installation fails if you choose to configure ZENworks Server with the external Sybase database

Source: ZENworks ; Installation.

Explanation: During the ZENworks installation, if you choose to configure the ZENworks Server with either the Remote OEM Sybase or Remote Sybase SQL Anywhere database, the installation fails and the following message is logged in the Installation logs:

```
Caused by:
com.mchange.v2.resourcepool.CannotAcquireResourceException: A
ResourcePool could not acquire a resource from its primary factory
or source.
```

Possible Cause: The specified external database server name is incorrect.

Action: Relaunch the ZENworks Configuration Management Installation Wizard and ensure that you specify the correct external database server details.

Unable to open the ZENworks Configuration Management Installation logs by using a web browser on a non-English Primary Server

Source: ZENworks ; Installation.

Explanation: On a non-English Primary Server that has ZENworks Configuration Management installed, you are unable to open the Installation logs by using a web browser. However, you can still open the Installation logs in a text editor.

The Installation logs are located at `/var/opt/novell/log/zenworks/` on Linux and *zenworks_installation_directory*`\novell\zenworks\logs` on Windows.

Action: Before opening the Installation logs (`.xml`) in a web browser, change the encoding for all the Installation LogViewer files:

1 Using a text editor, open one of the following LogViewer files located at `/var/opt/novell/log/zenworks/logviewer` on Linux and *zenworks_installation_directory*`\novell\zenworks\logs\logviewr` on Windows:

- ◆ `message.xsl`
- ◆ `sarissa.js`
- ◆ `zenworks_log.html`
- ◆ `zenworks_log.js`

- ◆ `zenworks_log.xsl`
- ◆ `zenworks_log_text.xsl`

2 Click **File** > **Save As**.

The Save As dialog box is displayed.

3 In the **Encoding** list, select **UTF-8**, then click **Save**.

Do not change the filename and file type.

4 Repeat Step 1 through Step 3 for the remaining LogViewer files.

Unable to install .NET 3.5 SP1 on Windows Server 2008

Source: ZENworks ; Installation.

Explanation: The installation of Microsoft .NET 3.5 SP1 on Windows Server 2008 fails with the following error message:

```
Microsoft .NET Framework 2.0SP1 (x64) (CBS): [2] Error:
Installation failed for component Microsoft .NET Framework 2.0SP1
(x64) (CBS). MSI returned error code 1058
```

Possible Cause: The device does not have the Windows Update Service enabled.

Action: Enable the Windows Update service on the device:

1 From the Windows desktop **Start** menu, click **Settings** > **Control Panel**.

2 Double-click **Administrative Tools** > **Services**.

3 Double-click **Windows Update Service**.

The Windows Update Service Properties dialog box is displayed.

4 In the **General** tab, select one of the following options from the **Startup type** list:
- ◆ **Manual**
- ◆ **Automatic**
- ◆ **Automatic (Delayed Start)**

5 Click **Start** to start the service.

6 Click **OK**.

Unable to install the ZENworks Agent on a McAfee fully protected device

Source: ZENworks ; Installation

Explanation: When you try to install ZENworks Agent on a McAfee fully protected device, the antivirus software prevents the creation of new executable files in Windows and program files.

Possible Cause: The device is protected by McAfee VirusScan and therefore does not allow the installation of any applications.

Action: Do the following on the device that has the McAfee software installed:

1 Click **Start** > **All Programs** > **McAfee** > **VirusScan Console**.

2 Double-click **Access Protection**.

3 In the Access Protection Properties dialog box, do the following:

    3a In the Categories panel, click **Common Maximum Protection**.

    3b In the **Block** column, deselect all the rules.

    3c Click **OK**.

4 Install the ZENworks Agent.

For more information, see "ZENworks Agent Deployment" in the *ZENworks Discovery, Deployment, and Retirement Reference*.

ZENworks-related files might be reported as malicious software during the ZENworks Agent installation

    Source: ZENworks ; Installation.

Explanation: During the ZENworks Agent installation, some ZENworks-related files might be reported as malicious software by anti-virus software. Consequently, the installation abruptly stops.

    Action: Do the following on the managed device where you want to install the ZENworks Agent:

    1 Manually add `System_drive:\windows\novell\zenworks` to the Exclusion list of the anti-virus software installed on the managed device.

    2 Install the ZENworks Agent.

Installation of ZENworks Agent on a Terminal Server hangs

    Source: ZENworks; Installation

Possible Cause: Installation of ZENworks Agent on a Terminal Server hangs because the default mode in the Terminal Server is Execute.

    Action: Change the mode in the Terminal Server to Install:

    1 From the Command Prompt:

        1a To change the mode, execute the following command:

```
change user /install
```

        1b Type **exit**, then press **ENTER**.

    2 Install the ZENworks Agent.

For more information, see "ZENworks Agent Deployment" in the *ZENworks Discovery, Deployment, and Retirement Reference*.

ZENworks installation on an RHEL device might fail

    Source: ZENworks; Installation

Explanation: ZENworks installation on an RHEL device might fail and prompt you to roll back. The following message is reported in the install log file:

```
RPM returned 1: warning: /opt/novell/zenworks/install/downloads/
rpm/novell-zenworks-jre-links-1.7.0_3-1.noarch.rpm: Header V3 DSA
signature: NOKEY, key ID 7e2e3b05

Failed dependencies: jre >= 1.7 is needed by novell-zenworks-jre-
links-1.7.0_3-1.noarch
```

Action: Perform the following tasks:

1 Roll back the ZENworks installation.

2 Manually install JRE by running the following command at the terminal:

```
rpm -ivh <BUILD_ROOT>/Common/rpm/jre-<VERSION>.rpm
```

3 Install ZENworks . For more information, see "Installing the Primary Server Software" on page 45.

On Windows XP, installing the ZENworks Agent with the Remote Management component through Remote Desktop Connection hangs

Source: ZENworks; Installation

Explanation: If you remotely connect to a managed device by using Remote Desktop Connection (RDP) and install ZENworks Agent, the installation hangs.

Action: To fix the issue, download the patch from the Microsoft Support web site (http://support.microsoft.com/kb/952132) and install it on the managed device prior to installing the ZENworks Agent.

ZENworks installation fails on a Linux server

Source: ZENworks; Installation.

Explanation: ZENworks installation on a Linux server requires that certain RPM packages are already installed on the server.

Action: Install the required RPM packages on the Linux server.

ZENworks installation does not proceed while using Microsoft SQL named instance

Source: ZENworks; Installation.

Explanation: While using named instance for Microsoft SQL, the install wizard will not proceed even after providing the correct information in the database panel. This occurs if Checksum offloading is enabled on the NIC card of the machine.

Action: Ensure that Checksum offloading is disabled on the NIC card. For more information, refer to the applicable manuals for SLES, RHEL, or VMware.

Post Installation Troubleshooting

This section provides solutions to problems you might encounter after installing ZENworks .

Unable to access ZENworks Control Center on a ZENworks Primary Server running on SLES

Source: ZENworks; Installation.

Explanation: During the installation of ZENworks Server on a SLES device, if you have specified the port as 8080, the installation is successful. However, you might not be able to access the ZENworks Control Center.

Action: Perform the following steps on the SLES device on which you have installed the ZENworks Server:

1 Start YaST.

2 Click **Firewall**.

3 In the Firewall Configuration Window, click **Allowed Services.**

4 Click **Advanced**.

5 In the Additional Allowed Ports dialog box, replace **http-alt** in the **TCP Ports** and **UDP Ports** options with 8080, then complete the Wizard.

Auto Launch ZENworks Control Center configuration does not work in SLES machine

Source: ZENworks; Installation.

Explanation: In the Post installation configuration, if the Auto launch ZCC option is selected, after installation, ZENworks Control Center does not launch automatically in SLES machines.

Action: Manually launch ZENworks Control Center.