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Enterprise

HPE Network Optimizer SDN Application - 1.3.41 Installation Guide

Abstract

This guide describes the steps on how to install the HPE Network Optimizer Software Defined Networking Application on the HPE VAN SDN (Virtual Application Network Software-Defined Networking) Controller. The intended audience for this guide is a network operator or an administrator, who is experienced in using the HPE VAN SDN Controller.

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NOTE: The HPE Network Optimizer SDN Application includes both proprietary software that is closed source in addition to the open source software listed in the *HPE VAN SDN Controller Open Source and Third-Party Software License Agreements*. In response to queries to Hewlett Packard Enterprise for source code on the HPE Network Optimizer SDN Application, Hewlett Packard Enterprise distributes the source code for open source software only. Hewlett Packard Enterprise does not distribute source code for closed source software.

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1 Overview

This guide provides you with information about installing the HPE Network Optimizer SDN Application on the HPE VAN SDN Controller. Ensure the following before installing the HPE Network Optimizer:

- You have administrator authority.
- The HPE VAN SDN Controller version 2.5.20 is installed and configured.
- You are familiar with OpenFlow and have OpenFlow configured and enabled on the network switches to be used by the HPE Network Optimizer.

The HPE Network Optimizer provides a visible and flexible solution to monitor the Skype for Business Calls and avoid falling into the best effort category. As a network administrator, you can troubleshoot problems and optimize the quality of Skype for Business Calls by leveraging the history record data.

For more information, see the *HPE Network Optimizer SDN Application - Administrator Guide*.

2 Prerequisites

This chapter provides the prerequisites for installing the HPE Network Optimizer.

Ensure the following before installing the HPE Network Optimizer:

- Your environment and planned topology meets the requirements listed in the HPE VAN SDN Controller and Applications Support Matrix.
- Your system has Internet access and meets the hardware requirements. For more information, see the HPE VAN SDN Controller and Applications Support Matrix.
- HPE VAN SDN Controller is at **version 2.5.20**.

For information on how to install HPE VAN SDN Controller, see the *HPE VAN SDN Controller - Installation Guide*.

- HPE VAN SDN Controller is configured and ready for use.
- You have the authority to install applications on HPE VAN SDN Controller.
- By default, hybrid mode is enabled on HPE VAN SDN Controller. If you have disabled hybrid mode, you must enable hybrid mode on HPE VAN SDN Controller so that it supports switches in hybrid mode. When hybrid mode is enabled, HPE VAN SDN Controller delegates normal packet forwarding to the controlled switches, but overrides these switches for non-standard packet-forwarding decisions required by the HPE Network Optimizer for specific packet types.

For information on how to enable hybrid mode, user management and configuration, see the *HPE VAN SDN Controller - Administrator Guide*.

Downloading the HPE Network Optimizer

You can download the HPE Network Optimizer software from one of the following locations:

- Hewlett Packard Enterprise SDN App Store
- HPE Networking Support Portal www.hpe.com/networking/support

Downloading from Hewlett Packard Enterprise SDN App Store

To download the application from Hewlett Packard Enterprise SDN App Store:

1. Launch the Hewlett Packard Enterprise SDN App Store from HPE VAN SDN Controller GUI using the option **General**→**Applications**→**Launch Hewlett Packard Enterprise SDN App Store**. This directs you to the Hewlett Packard Enterprise SDN App Store website.

NOTE: Click **Log in to view applications...** to view the list of purchased applications from the Hewlett Packard Enterprise SDN App Store.

Or use a supported browser to open the Hewlett Packard Enterprise SDN App Store at <http://www.hpe.com/info/sdnapps>.

2. Log in to the Hewlett Packard Enterprise SDN App Store with your Hewlett Packard Enterprise Web ID.
3. Enter **HPE Network Optimizer** in the search box and click search.
4. Select **HPE Network Optimizer** from the search result and click **Buy Now** to add to cart.
5. Go to the cart, and click **Check Out**.
6. Click **Download** to download the zip file from the Hewlett Packard Enterprise SDN App Store.

To install the downloaded software package, see “[Installing HPE Network Optimizer](#)” (page 7).

Downloading from support portal

To download the HPE Network Optimizer software from the support portal:

1. Go to the HPE Networking support portal <http://www.hpe.com/networking/support>.
2. Enter the HPE Network Optimizer product number **J9985AAE** in the **Auto Search** field, as shown in [Figure 1](#).

Figure 1 HPN Networking support portal

The screenshot shows the HPN Networking support portal. At the top, there is a navigation bar with 'Hewlett Packard Enterprise' and links for 'Solutions', 'Services', 'Products', 'About Us', and 'Support'. Below this is a 'My Networking' section with a search bar and links for 'Find a Partner', 'How to Buy', 'Feedback', 'Contact', and 'Sign in'. The main content area is titled 'My Support' and includes a 'Product support center' tab. Underneath, there is a 'Networking support search tool' section with a search input field containing 'Network Optimizer' and a 'Show selected items' button. The search results show a single item: 'HP Net Optimizer - Lync 100 Client E-LTU (J9985AAE)' with a checked checkbox.

3. Select the check box next to the HPE Network Optimizer product, and then click **Display selected**.
4. In the right pane on the product display screen, click **Software downloads**, as shown in [Figure 2](#).

Figure 2 Software downloads pane

The screenshot shows the software downloads pane for the HP Net Optimizer - Lync 100 Client E-LTU (J9985AAE). The page is titled 'Support information for HP Net Optimizer - Lync 100 Client E-LTU (J9985AAE)'. There are three tabs: 'Product information/Warranty support', 'CarePack/Contract support', and 'Conversion information'. The 'Product information/Warranty support' tab is active. Below the tabs, there is a section titled 'Warranty support and product information'. This section contains a table with product details and a list of links for further support.

Product name:	HP Net Optimizer - Lync 100 Client E-LTU	Support center (For manuals, FAQs, etc.)
Product number:	J9985AAE	Software downloads
Product series:	HP Network Optimizer SDN Application Series	Web case logging (support by E-mail)
Product type:	Network Management/Security Software	Register license
		Support forums
		Contact support

5. On the **My Networking Download software screen**, click on **Select** icon to download the HPE Network Optimizer software package.

NOTE: For more information, see the HPE Network Optimizer SDN Application — Release Notes included with the software package.

3 Installing HPE Network Optimizer

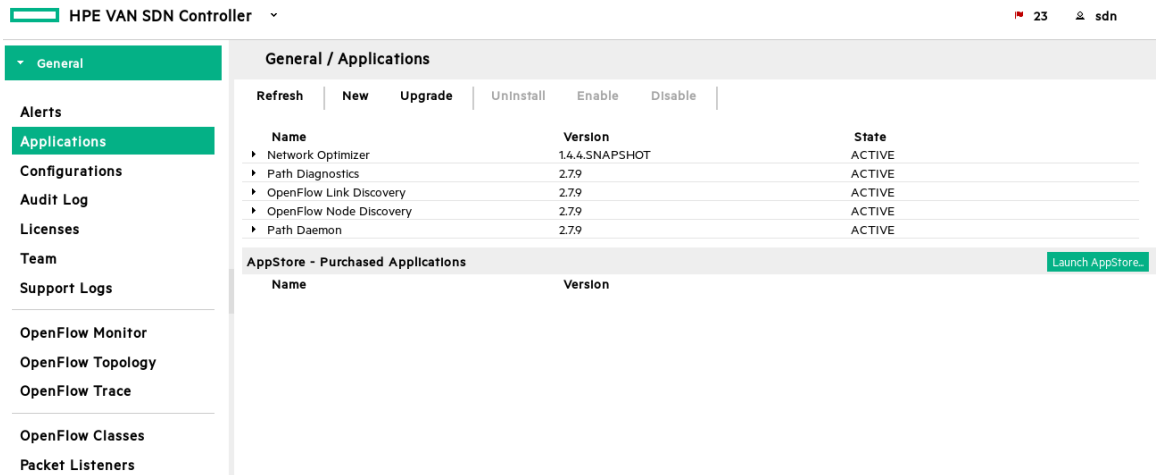
This chapter describes how to install and deploy HPE Network Optimizer on the HPE VAN SDN Controller. Follow the steps in “Prerequisites” (page 5) before starting the installation.

NOTE: In HA mode setup, install HPE Network Optimizer using the Team IP.

To install HPE Network Optimizer:

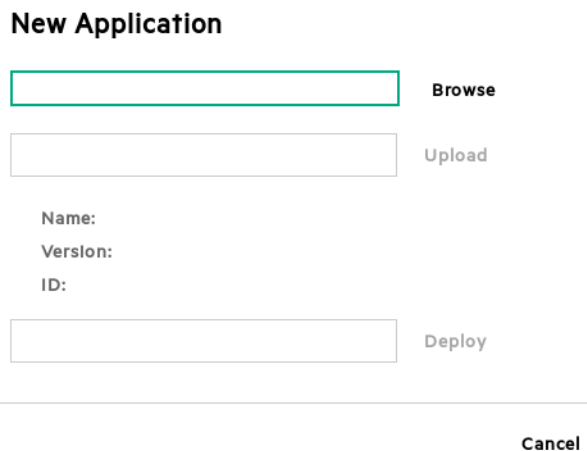
1. Log in to the HPE VAN SDN Controller platform as a user with administrator privileges.
2. In the navigation tree, click **General**→**Applications**.

Figure 3 HPE VAN SDN Controller GUI



3. Click **New** to open the **New Application** window, shown as Figure 4.

Figure 4 New Application window



4. Click **Browse**, and then choose the target zip file, containing the latest version of HPE Network Optimizer.
5. Click **Upload**.

6. Click **Deploy** to deploy HPE Network Optimizer.

On successful install, you can see the HPE Network Optimizer entry in the applications list.

To ensure that the installation is successful, check the following:

- Verify the version of the HPE Network Optimizer in the applications list is the same as the target version.
- Verify the state of the HPE Network Optimizer application is **ACTIVE** in the applications list.

NOTE: You can preserve the HPE Network Optimizer configuration made in the version 1.3 release before upgrading the application to version 1.3.41 using the `netoptConfig.sh` script. The same script can also be used to restore the backed up configuration into the newly upgraded HPE Network Optimizer application version 1.3.41. The script is available as part of list of artifacts posted on the web for the HPE Network Optimizer version 1.3.41 release.

Use the `./netoptConfig.sh --h` option to get the help information and also the details of other available options.

4 Post installation

After you install HPE Network Optimizer, you must complete the post installation steps shown in [Table 1](#).

Table 1 Post installation steps

Step	Description	For additional information
1	Install the SDN API.	Installing the SDN API
2	Configure your switches.	“Configuring your switches” (page 11)
3	Register your license on the My Networking portal and obtain a license key for the application.	“Installing the license for HPE Network Optimizer” (page 11)
4	Activate the license for HPE Network Optimizer on the HPE VAN SDN Controller.	“Activating a license” (page 12)
5	If you require control traffic to be prioritized, add Skype for Business Front End Servers.	<i>HPE Network Optimizer SDN Application - Administrator Guide</i>
6	Add servers, running Skype for Business, SDN Manager.	<i>HPE Network Optimizer SDN Application - Administrator Guide</i>
7	(Optional) If your environment requires additional security, create a CA signed certificate for the application to prevent spoofing of HPE Network Optimizer or the HPE VAN SDN Controller or both.	“Creating a CA Signed Certificate for HPE Network Optimizer” (page 12)

Installing the SDN API

The SDN API contains two components:

- **Skype for Business, Dialog Listener.** Dialog Listener sends SDN Messages to Skype for Business, SDN Manager. Dialog Listener is installed on a front-end server running Lync Server 2013 or Lync Server 2010.
- **Skype for Business, SDN Manager.** SDN Manager gathers information received from Dialog Listener and forwards it to HPE VAN SDN Controller. HPE VAN SDN Controller supports multiple SDN Managers. Install SDN Manager on a separate server not running FE. For information on how to install SDN Manager, see the Microsoft documentation.

Version 2.1.1

-
- ❗ **IMPORTANT:** For requirements, read the installation instructions provided in the [SDN API Release Notes.pdf](#), which is included in SDN API download. Then, follow the installation steps in this section for the custom settings required by HPE Network Optimizer.
-

To install Dialog Listener and SDN Manager:

1. Download SDN API from <https://www.microsoft.com/en-us/download/details.aspx?id=48270>
2. Install SDN Manager by double-clicking `LyncSDNManager.exe`.
3. Follow the prompts for installing SDN Manager. When you are prompted for **Submit**, provide the IP address or DNS name of the server running the HPE VAN SDN Controller.
`https://VAN_CONTROLLER_HOSTNAME:8443/sdn/lyncqos/v1.0/session`
4. After you install SDN Manager, verify that the SDN Manager service is started.
5. Install Dialog Listener on the front-end servers by double-clicking `LyncSDNAPI.exe`.

6. Follow the prompts for installing Dialog Listener. When you are prompted for the Primary SDN Manager URL, provide the URL of the server running SDN Manager in the following format:

```
http://sdnmanager_uri:9333/LDL
```

NOTE: If you have multiple SDN Managers, you can provide a secondary URL.

7. Change the `sendallcallqoe` parameter to `true` in the `SDNManager.exe` file, which is located in `C:\Program Files\Microsoft Lync Server\Microsoft Lync SDN Manager`.
8. Change the `hidepii` parameter to `false` in the `SDNManager.exe` file.
9. Restart the Dialog Listener service.

Version 2.2

- ❗ **IMPORTANT:** For requirements, read the installation instructions provided in the `SDN Interface 2.2 Release Notes.pdf`, which is included in SDN Interface 2.2 download. Then, follow the installation steps in this section for the custom settings required by HPE Network Optimizer.
-

To install Dialog Listener and SDN Manager:

1. Download SDN Interface 2.2 from <http://www.microsoft.com/en-us/download/details.aspx?id=44274>
2. Install the SDN Manager by double clicking `SkypeForBusinessSDNManager.msi`.
3. Install Dialog Listener on the Front End Server by double clicking `SkypeForBusinessDialogListener.msi`.
4. Follow the detailed instructions for installation from <http://www.microsoft.com/en-us/download/details.aspx?id=44274>
5. Configure the Controller URL which is recognized as subscriber by executing the command from the command prompt. Go to Skype for Business, SDN Manager folder location in the system, and type the following command:

```
SDNManager.exe p s < identifier name > submituri= 'https://< controller_ip >:8443/sdn/lyncqos/v1.0/session'
```

NOTE: **Identifier name** is the name to address submituri. You can provide any name.

```
SDNManager.exe p s optimizer outputschema='C'
```

6. Default output schema will be **D**, but in this release the HPE Network Optimizer supports only **C**. So you need to change the same. Go to Skype for Business, SDN Manager folder location in the system, and type the following command:

```
SDNManager.exe p s identifier name outputschema='C'
```

NOTE: **Identifier name** is the name to address submituri. You can provide any name, steps 5 and 6 should have the same **identifier name**.

```
SDNManager.exe p s optimizer outputschema='C'
```

NOTE: Ensure to **disable** the HPE Network Optimizer application to avoid data corruption, every time when SDN Controller is **restarted**.

Configuring your switches

Verify the following when you add a switch to your network:

- At least one HPE VAN SDN Controller instance is running.
- OpenFlow is enabled on the switch.

Table 2 Enabling OpenFlow

Switch operating system	See latest version of document on the Hewlett Packard Enterprise Support Center website (http://www.hpe.com/support/manuals)
Comware	See the <i>OpenFlow Configuration Guide</i> for your switch model.
ProVision	<i>HPE Switch Software OpenFlow Administrator's Guide</i>

- ❗ **IMPORTANT:** The hybrid mode setting on the HPE VAN SDN Controller overrides the OpenFlow setting on the switch. Do not enable hybrid mode on the OpenFlow switch. For Comware switches, the OpenFlow setting on the switch is hybrid mode and for ProVision switches, the OpenFlow setting is passive mode.

Installing the license for HPE Network Optimizer

To install the license for HPE Network Optimizer:

1. Register the application license and obtain a license key.
2. Activate the license for the application on the HPE VAN SDN Controller.

NOTE: Install the **SDN Evaluation Licenses** for evaluating the HPE Network Optimizer. For information on evaluation licenses, see *HPE VAN SDN Controller - Administrator Guide*.

Registering a license and obtaining a license key

- ❗ **IMPORTANT:** The HPE VAN SDN Controller base license (J9863AAE) must be registered in the **My Networking** portal. For information on registering licenses for HPE VAN SDN Controller, see the *HPE VAN SDN Controller - Administrator Guide*.

The following information is required to register the license:

- Order number or registration ID.
- Email address listed in your sales order confirmation.
- Install ID of the HPE VAN SDN Controller.

To register the application license and obtain a license key:

1. Log on to the **My Networking** portal at <http://www.hpe.com/networking/mynetworking>.
2. Select **My Licenses**.
3. Enter your order number or registration ID in the field provided, and then click **Next**.
4. In the **Email** field, enter either the **Ship to** or **Sold to** e-mail address listed in your sales order confirmation, and then click **Next**.
5. Select the license type for your application, enter the quantity to be registered to your Install ID, and then click **Next**.
6. In the Install ID field, enter your Install ID number.
7. (Optional) Enter a friendly name and customer notes for this license.
8. Click **Next**.

The end user software license agreement screen appears.

9. To continue after reading the license agreement, select **I accept all of the above terms**, and then click **Finish**.

10. Review your license registration details, and record the license key listed.
11. (Optional) To download the license key file, click Save as, and then save it to your local hard drive.
12. (Optional) To e-mail the registration details:
 - a. Enter one or more e-mail addresses, separated by a comma or semi-colon in the field provided.
 - b. (Optional) Enter Comments about this license.
 - c. Click **Send email**.
13. (Optional) If you want to register additional licenses for this order:
 - a. Click **Register more for this order** to return to the license selection screen.
 - b. Repeat steps 5 through 13 to register all other licenses.

Activating a license

To activate a license on the HPE VAN SDN Controller:

1. Copy the license key into the **Add** field in the License GUI.
2. To activate the license, click on the **Add** button.

Creating a CA Signed Certificate for HPE Network Optimizer

(Optional) If your environment requires additional security, create a CA signed certificate for the application to prevent spoofing of HPE Network Optimizer or HPE VAN SDN Controller or both. The HPE VAN SDN Controller must use a CA signed certificate that is signed by a CA trusted by the server, running Skype for Business, SDN Manager. The steps provided in this section are an example of creating a CA signed certificate with your domain controller as the CA.

NOTE: If you have already generated a certificate on the HPE VAN SDN Controller, you can use that same certificate with HPE Network Optimizer, as long as the certificate is valid.

If you do not have a certificate on the HPE VAN SDN Controller, generate a certificate. To generate a certificate:

1. Login to the system running the HPE VAN SDN Controller as the SDN user:

```
sudo - sdn
```
2. Stop the controller:

```
sudo service sdnc stop
```
3. Take a backup of `/opt/sdn/admin/keystore` and `/opt/sdn/admin/truststore` to a safe location.

4. Create a keystore using the following command:

```
keytool -genkey -alias serverKey -keyalg rsa
-keysize 2048 -keystore keystore
```

You must specify a fully qualified domain for your server for the first and last name. Some CAs (such as VeriSign) expect the fully qualified domain name.

```
root@sdn-controller:/opt/sdn/admin# keytool -genkey -alias serverkey -keyalg rsa -keysize 2048 -keystore
keystore
Enter keystore password:
Re-enter new password:
What is your first and last name?
  [Unknown]: example_dns_name.mycompany.myserver.com
What is the name of your organizational unit?
  [Unknown]: net
What is the name of your organization?
  [Unknown]: acm
What is the name of your City or Locality?
  [Unknown]: New York
What is the name of your State or Province?
What is the two-letter country code for this unit?
  [Unknown]: US
Is CN=sdn-example_dns_name.mycompany.myserver.com, OU=net, O=acm, L=New York, ST=NY, C=US correct?
[no]: yes

Enter key password for <serverkey>
(RETURN if same as keystore password):
```

NOTE: The keystore password is *skyline*.

5. Generate a CSR (Certificate Signing Request) for signing:

```
keytool -keystore keystore -certreq -alias serverKey -keyalg rsa -file sdn-server.csr
```

6. Send the `sdn-server.csr` to a CA for signing.

The CA will authenticate you and return a signed certificate and its CA certificate chain. The signed certificate from the CA is named `signed.cer` and the CA's certificate is `root.cer`. If `root.cer` is from your own internal CA, then you must import `root.cer` into your web browser as an authority.

- Edit the file `sdn-server.csr` and copy the text in the file.
- Open a web browser:
`http://10.10.10.212/certsrv`
- Click **Request a Certificate**.
- Click **Advanced Certificate Request**.
- Click **Submit a certificate request by using a base-64-encoded CMC**.
- Paste the certificate in the **Saved Request** field.
- Under the Certificate Template heading select the **Web Server** option.
- Click **Submit**.
- Select **DER encoded** and click **Download Certificate**.
- Rename the certificate file `certnew.cer` to `sdn-server.cer`.

7. Copy both files `sdn-server.cer` and `root.cer` to the HPE VAN SDN Controller, 10.10.10.216 under `/home/administrator` by using an FTP client, such as FileZilla or WinSCP.

8. Import the signed root certificate into your keystores using the following commands:

NOTE: The steps for importing a signed root certificate differ according to the product you are using to generate a certificate. Check the steps for your certificate authority.

```
keytool -importcert -trustcacerts -keystore
keystore -file root.cer -alias CARoot
```

```
keytool -importcert -trustcacerts -keystore truststore
-file root.cer -alias CARoot
```

9. Replace your self-signed certificate in your `serverKey` entry with the signed certificate from your CA (`signed.cer`).

```
keytool -importcert -keystore keystore -file signed.cer -alias serverKey
```

10. If you are operating a team of controllers in your environment, turn off self-signing for inter-controller communication:

Under `/opt/sdn/virgo/repository/usr`, change the `selfsigned` value to *false* for the following component:

```
com.hp.sdn.misc.ServiceRestComponent.properties
```

11. If you set up a different password than the default (*skyline*) password for your keystore, you must edit `/opt/sdn/virgo/configuration/tomcat-server.xml` and change the `keystorePass` value in the `<Connector port="8443"...` tag to the new keystore password.

12. Start the controller:

```
sudo service sdnc start
```

13. If you are using a different keystore and truststore password than the default (*skyline*) password, see the *HPE VAN SDN Controller - Administrator Guide*.

5 Uninstalling HPE Network Optimizer

To uninstall HPE Network Optimizer:

1. Log in to the HPE VAN SDN Controller platform as a user with administrator privileges.
2. In the navigation tree, click **General**→**Applications**.
3. Select **HPE Network Optimizer** from the applications list.
4. Click **Uninstall** to open the **Uninstall Application** window.
5. Verify the detailed information, and click **Uninstall**.
6. Ensure that the application does not appear in the applications list.

NOTE: It is mandatory to uninstall the HPE Network Optimizer application using the web UI launched with Team IP. Application needs to be in **Active** state to uninstall the HPE Network Optimizer application.

6 Migrating a license

ⓘ IMPORTANT:

- You cannot migrate any data, configuration information and event logs from HPE Network Optimizer.
- You must obtain the Install ID and license uninstall keys for the HPE VAN SDN Controller and the license uninstall keys for each of the applications before you start the migration.
For migration requirements for HPE VAN SDN Controller, see the *HPE VAN SDN Controller - Installation Guide*.

Table 3 Migrating a License

Step	Description	For more information
1	Deactivate the license for HPE Network Optimizer and copy its uninstall key to a text file outside the directory path of HPE VAN SDN Controller.	<i>HPE VAN SDN Controller - Administrator Guide</i>
2	Uninstall HPE Network Optimizer	“Uninstalling HPE Network Optimizer” (page 15)
3	Copy the Install ID of the HPE VAN SDN Controller by right-clicking the install ID (HPE VAN SDN Controller → Licenses) and paste it into a text file outside the directory path of HPE VAN SDN Controller.	<i>HPE VAN SDN Controller - Administrator Guide</i>
4	Deactivate the licenses for the HPE VAN SDN Controller and copy the uninstall keys to a text file outside the directory path of HPE VAN SDN Controller.	<i>HPE VAN SDN Controller - Administrator Guide</i>
5	Uninstall the HPE VAN SDN Controller.	<i>HPE VAN SDN Controller - Installation Guide</i>
6	Install the HPE VAN SDN Controller on the target computer.	<i>HPE VAN SDN Controller - Installation Guide</i>
7	Install the license for the HPE VAN SDN Controller.	<i>HPE VAN SDN Controller - Administrator Guide</i>
8	Install HPE Network Optimizer on the target computer.	<ul style="list-style-type: none"> “Prerequisites” (page 5) “Installing HPE Network Optimizer” (page 7)
9	Install the license for HPE Network Optimizer.	<i>HPE VAN SDN Controller - Administrator Guide</i>
10	Configure HPE Network Optimizer on the target computer.	<i>HPE Network Optimizer SDN Application - Administrator Guide</i>

7 Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
www.hpe.com/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
 - To download product updates, go to either of the following:
 - Hewlett Packard Enterprise Support Center **Get connected with updates** page:
www.hpe.com/support/e-updates
 - Software Depot website:
www.hpe.com/support/softwaredepot
 - To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:
www.hpe.com/support/AccessToSupportMaterials
-
- ① **IMPORTANT:** Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.
-

Websites

Website	Link
SDN websites	
Hewlett Packard Enterprise Information Library for SDN	<u>www.hpe.com/info/sdn/infolib</u>

Website	Link
Hewlett Packard Enterprise Software-Defined Networking website	www.hpe.com/info/sdn
Hewlett Packard Enterprise SDN community discussion forum	www.hpe.com/networking/sdnforum
Hewlett Packard Enterprise SDN App Store	www.hpe.com/networking/sdnappstore
Hewlett Packard Enterprise SDN Dev Center website	http://sdndevcenter.hp.com
Hewlett Packard Enterprise Open Source download website	www.hpe.com/software/opensource
Networking websites	
Hewlett Packard Enterprise Information Library for Networking	www.hpe.com/networking/resourcefinder
Hewlett Packard Enterprise Networking website	www.hpe.com/info/networking
Hewlett Packard Enterprise My Networking website	www.hpe.com/networking/support
Hewlett Packard Enterprise My Networking Portal	www.hpe.com/networking/mynetworking
Hewlett Packard Enterprise Networking Warranty	www.hpe.com/networking/warranty
General websites	
Hewlett Packard Enterprise Information Library	www.hpe.com/info/enterprise/docs
Hewlett Packard Enterprise Support Center	www.hpe.com/support/hpesc
Hewlett Packard Enterprise Support Services Central	ssc.hpe.com/portal/site/ssc/
Contact Hewlett Packard Enterprise Worldwide	www.hpe.com/assistance
Subscription Service/Support Alerts	www.hpe.com/support/e-updates
Software Depot	www.hpe.com/support/softwaredepot
Customer Self Repair (not applicable to all devices)	www.hpe.com/support/selfrepair
Insight Remote Support (not applicable to all devices)	www.hpe.com/info/insightremotesupport/docs

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

For more information and device support details, go to the following website:

www.hpe.com/info/insightremotesupport/docs

Documentation feedback

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