HP Network Protector SDN Application - 1.3.53 Installation Guide

Abstract

This guide provides information about the HP Network Protector SDN Application V1.3.53 installation, upgrade, and uninstallation procedures. This guide is intended for the person who installs and administers this software.

Warranty

For the software end user license agreement and warranty information for HP Networking products, see http://www.hp.com/networking/support.

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1 Installing the HP Network Protector SDN Application

The HP Network Protector SDN Application V1.3 runs on the HP VAN SDN (Virtual Application Network Software-Defined Networking) Controller software and utilizes the HP Reputation Digital Vaccine (RepDV) service to prevent clients from making connections to suspicious or malicious hosts.

1.1 Prerequisites

Ensure that your system meets the requirements described in the *HP VAN SDN Controller and Applications Support Matrix*. Before installing the application, install, configure, and verify the installation of the HP VAN SDN Controller as described in the *HP VAN SDN Controller Installation Guide*. Ensure that the controller and its Cassandra database are running correctly as described in the *HP VAN SDN Controller Administrator Guide*.

All the guides are available in the SDN information library at http://www.hp.com/go/sdn/infolib.

1.2 Compatibility matrix

All versions of the application are not compatible with all versions of the HP VAN SDN Controller. The following table describes compatibility matrix between the controller and the application versions.

ⓘ **IMPORTANT:** Before you install the application, ensure that the controller supports the version of the application you are installing.

Table 1 Compatibility matrix

HP VAN SDN Controller Versions	HP Network Protector SDN Application Versions
V2.2	V1.0
V2.3	V1.1
V2.4	V.1.1.15
V2.5	V1.3
V2.5.20	V1.3.53

1.3 Installing optional software applications

You can install the following optional software applications either before or after installing the HP Network Protector:

- HP ArcSight Logger

  You can use ArcSight Logger to receive and store events. For installation instructions, see the *Administrator's Guide for ArcSight Logger 5.3 SP1*.

- HP Intelligent Management Center (IMC) User Access Management (UAM) Module

  You can use the HP IMC UAM Module to log in configuration changes and fault events. For more information, see the appropriate IMC documentation on the HP Support Center website.

1.4 Configuring ProVision switches

ProVision switches such as HP 3500, HP 6600, HP 6200, HP 5400 and HP 8200 with V1 modules installed do not support Service Insertion. These switches use OpenFlow protocol to communicate and direct all DNS traffic towards HP Network Protector. The default setting for ProVision switches have a low packet inspection rates. You can change the default values to improve performance. Set the limit to 1000 PPS to improve the packet interception rate.

> **IMPORTANT:** Increasing software-pps rate directly impacts the performance of HP Network Protector as well as the performance of the CPU on the switch. If the value is set too low, poor performance on the network can be seen because DNS traffic is dropped which could result in long web page loads or incomplete web pages. If the value is set too high, the switch CPU could become overloaded and processing of switch protocols such as spanning-tree is impacted.

Syntax to modify default rate limits:

```
openflow instance { instance-name } limit { hardware-rate
kbps | software-rate pps }
```

Where *instance-name* is the name of the software and hardware instance.

Parameter name	Default value	Range
hardware-rate	0 kbps	0 — 10,000,000 kbps
software-rate	100 pps	1 — 10,000 pps

Example 1 Example to set the parameter limits to 1000 kbps

```
HP-3800-48G-4SFPP(config)# openflow instance instance-name disable
HP-3800-48G-4SFPP(config)# openflow instance instance-name limit
hardware-rate 1000
HP-3800-48G-4SFPP(config)# openflow instance instance-name limit
software-rate 1000
HP-3800-48G-4SFPP(config)# openflow instance instance-name enable
```

1.5 Downloading the HP Network Protector

To download the HP Network Protector zip package:

1. Go to the HP Networking support site at http://www.hp.com/networking/support.
2. Enter the HP Network Protector base product number **JL004AAE** in the **Auto Search field**, as shown in .

Figure 1 HPN Networking support site
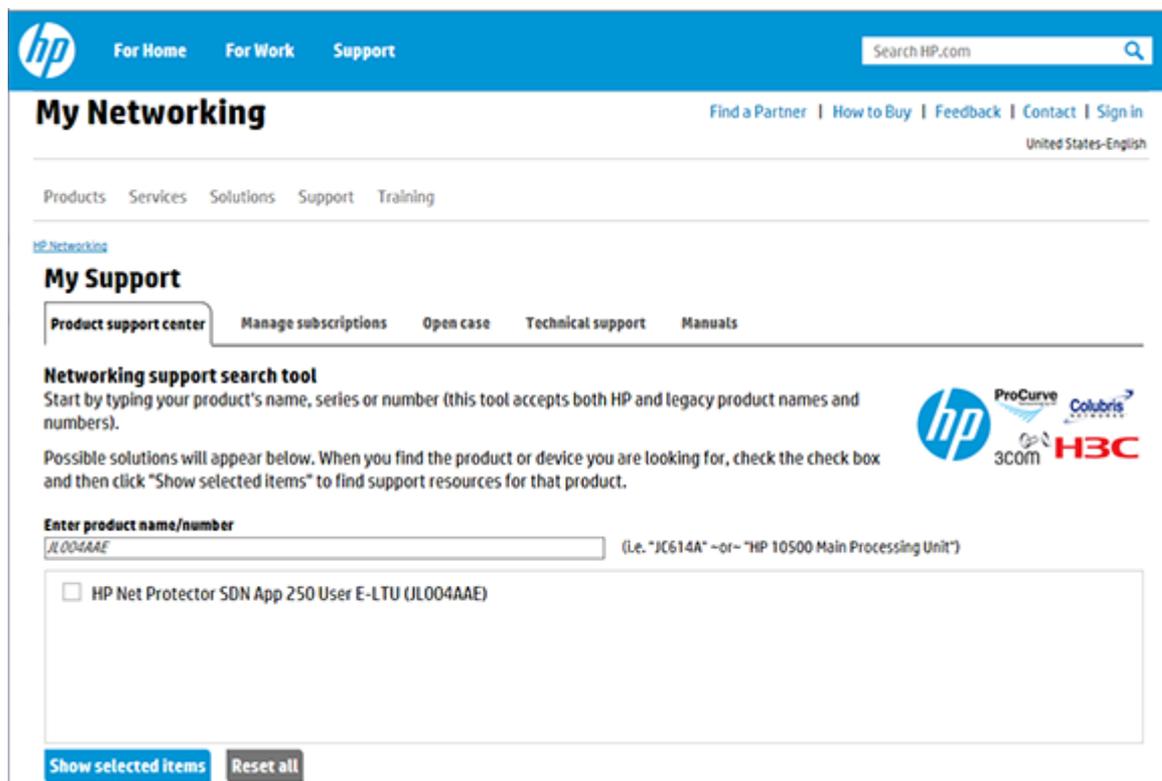
3. Select the check box next to the HP Network Protector product, and then click **Display selected**.
4. In the right pane on the product display screen, click **Software downloads**.

   The **My Networking Download software screen** appears.
5. On the **My Networking Download software screen**, select and download the `1.3.X.YYY_hp-net-protector-x64.zip` on your Ubuntu machine. By default, Ubuntu places the downloaded files in the `Downloads` directory unless you specify a different directory.

   The `1.3.X.YYY_hp-net-protector-x64.zip` file contains application zip file `com.hp.sdn.app.networkprotector_v1.3.X.YYY.zip` and the dbMigration script.
6. Extract the downloaded `1.3.X.YYY_hp-net-protector-x64.zip` file and save the application zip file `com.hp.sdn.app.networkprotector_v1.3.X.YYY.zip` and the npConfig script at a convenient location on your machine.

1.6 Installing the HP Network Protector

1.6.1 Prerequisites

Before installing the application, ensure that the following prerequisites are met.

- You have installed the operating system Ubuntu version 12.04 LTS 64-bit Server.
- Sync the controller with the NTP to avoid data corruption in the application.
- Ensure that the Cassandra process is running properly. For more information, see the *HP VAN SDN Controller Administrator Guide* in the SDN information library at http://www.hp.com/go/sdn/infolib
- Clear the browser cache and cookies to ensure there is no conflict between the older and newer Network Protector UI scripts.

- Add each team member IP address to the `/etc/hosts` file on each controller to resolve the DNS server reachability issues.
- Configure non proxy hosts in each controller in the teamed mode for communication between the controllers. To configure the non proxy hosts complete the following steps:
  1. Edit the `/etc/init/sdnc.conf` file as
     ```
     env JAVA_OPTS="-Xms512m -Xmx4096m -XX:MaxPermSize=512m
     -Dhttp.nonProxyHosts=15.255.121.172|15.255.126.13|15.255.127.5|15.255.123.6|localhost|127.0.0.1"
     ```
  2. Provide the `http.nonProxyHosts` value for the IP of each controller in the team and the team's north-bound IP.

1.6.2 Procedure

1. To log into the standalone controller, open a browser window and enter the following web address:

   `https://localhost:8443/sdn/ui`

   Where `localhost` is the hostname of the system on which you are installing the application.

   Or

2. To log into the controller in HA (team) mode, open a browser window and enter the following web address:

   `https://team IP:8443/sdn/ui`

   Where `team IP` is the IP address assigned to the team.

3. Enter user name and password credentials and click **Login**.

   For example:
   ```
   Default user name: sdn
   Default password:skyline
   ```
   The main HP VAN SDN Controller page appears.

4. Navigate to **General**→**Applications**.
5. Select **New**→**Browse**. Navigate to the location where the application zip file `com.hp.sdn.app.networkprotector_v1.3.X.YYY.zip` is saved on your machine and click **Open**.
6. Select **Upload** to upload the application.
7. Select **Deploy** to deploy the application.

   The application along with the utility application `np-service` is installed. The utility application delivers the sentunneld and npwebserver services.

   To verify that the installation completed successfully, see "Verifying installation" (page 9).

NOTE: After installing the application or whenever the controller restarts, wait for a few minutes till the application stabilizes before logging into the application console.

1.7 Upgrading the HP Network Protector from V1.1 to V1.3

You cannot upgrade the HP Network Protector from V1.1 to V1.3 directly. You must first uninstall V1.1 before you install V1.3. When you uninstall HP Network Protector V1.1, all the configuration setting such as policies, blacklists, whitelists, greylists, VLAN groups, and other settings are lost including the saved statistics and reports. The data will not be available when you install V1.3.

ⓘ **IMPORTANT:** You cannot use the npConfig script to capture the HP Network Protector V1.1 data before you uninstall the application. This script is available only from V1.3.

1.8 Upgrading the HP Network Protector from V1.3 to V1.3.53

You can upgrade the HP Network Protector from V1.3 to V1.3.53 in the standalone mode. To upgrade to application version V1.3.53, you must first upgrade the controller from version 2.5 to version 2.5.20.

Upgrade from HP Network Protector V1.3 to V1.3.53 in HA mode is not supported.

1. To log into the standalone controller, open a browser window and enter the following web address:

   `https://localhost:8443/sdn/ui`

   Where *`localhost`* is the hostname of the system on which you are installing the application.

2. Enter user name and password credentials and click **Login**.

   For example:
   ```
   Default user name: sdn
   Default password:skyline
   ```
   The main HP VAN SDN Controller page appears.

3. Navigate to **General→Applications**.
4. Select **Network Protector** and click **Disable**.
5. Upgrade the controller from version 2.5 to version 2.5.20 and Log into the controller.

   For more information about upgrading the controller from version 2.5 to version 2.5.20, see *HP VAN SDN Controller Installation Guide*.

6. Navigate to **General→Applications**.
7. Select **Upgrade→Browse**. Navigate to the location where the application zip file `com.hp.sdn.app.networkprotector_v1.3.X.YYY.zip` is saved on your machine and click **Open**.
8. Select **Upload** to upload the application.
9. Select **Deploy** to deploy the application.

   The application along with the utility application `np-service` is installed. The utility application delivers the sentunneld and npwebserver services.

   To verify that the installation completed successfully, see "Verifying installation" (page 9).

2 Verifying installation

1. To verify the installation of the application from the HP VAN SDN Controller UI, select **General→Applications**. If the application is properly installed, the status of the application is **ACTIVE**.

2. To verify that the utility application `np-service` is installed correctly:

    Using the Ubuntu terminal, enter the following command:

    ```
    dpkg -l np-service
    ```

    If the `np-service` is installed correctly, the output of the command includes the name, version, and description of the np-service.

3. To verify the status of the packet daemon service:

    Using the Ubuntu terminal, enter the following command:

    ```
    # service sentunneld status
    ```

    If the `sentunneld` service status is either started or running, the output of the command displays the start/running status of the service along with the process ID.

    NOTE: Packet daemon is an additional utility that is installed after you install the HP Network Protector. It is required for the proper functioning of the application. The application uses the `sentunneld` service to verify the functioning of the packet daemon utility.

4. To verify the status of the default redirect web server :

    Using the Ubuntu terminal, enter the following command:

    ```
    # service npwebserver status
    ```

    If the `npwebserver` status is either started or running, output of the command displays the start/running status of the npwebserver service along with the process ID.

    NOTE: Default redirect web server is an additional utility that is installed after you install the HP Network Protector. The default redirect web server service *npwebserver* starts automatically after installation. The web server displays a default page for the browsers accessing malicious websites. For more information about the default web server, see the *HP Network Protector SDN Application Administrator Guide*.

    The logs related to the installation of np-service utility application is available at:

    `/opt/sdn/virgo/serviceability/logs/netprotect-service.install.log`

    The logs related to the running of the service npwebserver is available at:

    `/opt/networkprotector/webserver/logs/redirectserver.log`

    The logs related to the general working of application is available at:

    `/opt/sdn/virgo/serviceability/logs/network-protector.log`

5. To verify the status of the cluster health status of the controller, log into the application and view the **Cluster Health** displayed as three boxes representing each controller.

    Table 2 Cluster health status

Color	Description
Green	The controller is active
Yellow	The controller is initializing
Red	The controller is inactive or unreachable

3 Uninstalling the HP Network Protector

(!) **IMPORTANT:** Before uninstalling the application, ensure that the HP VAN SDN Controller and its Cassandra database are running properly. For more information, see the *HP VAN SDN Controller Administrator Guide* in the SDN information library at http://www.hp.com/go/sdn/infolib. Also, ensure to deactivate the HP Network Protector license before uninstalling the application. You receive an uninstallation key when you deactivate the license. Note down the uninstallation key number for your records. For more information about deactivating licenses, see the *HP Network Protector SDN Application Administrator Guide* in the SDN information library at http://www.hp.com/go/sdn/infolib.

To uninstall the application:

1. To log into the controller in standalone mode, open a browser window and enter the following web address:

   `https://localhost:8443/sdn/ui`

   Where localhost is the hostname of the machine on which you have installed the application.

   Or

2. To log into the controller in HA (team) mode, open a browser window and enter the following web address:

   `https://`*`team IP`*`:8443/sdn/ui`

   Where *`team IP`* is the IP address assigned to the team.

3. Enter HP VAN SDN Controller user name and password and click **Login**.

   The main HP VAN SDN Controller page appears.

4. Select **General→Applications**.
5. Select **Network Protector** from the list and ensure that the application is in **ACTIVE** state.
6. Select **Uninstall** to uninstall the application.
7. After you uninstall the application in the HA (team) mode, from the Ubuntu terminal run `npDbCleanup` script on one of the controllers to drop the HP Network Protector tables from all the three controllers.

   The `npDbCleanup` script is available at `/opt/sdn/cassandra/bin`.

   Example 2 Running npDbCleanup script

   ```
   root@sentst52:/opt/sdn/cassandra/bin# ./npDbCleanup
   Removing Network Protector data from Cassandra DB
   root@sentst52:/opt/sdn/cassandra/bin#
   ```

NOTE: If you uninstall the HP Network Protector in the **DISABLE** state, then the data in the Cassandra database and the users created on the application are not deleted. For more information about deleting the data after install the application, see "You can view data from the previous installation" (page 12)
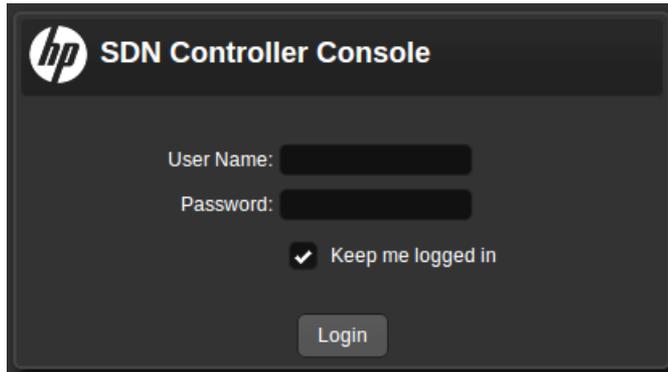
A Troubleshooting

A.1 The SDN Controller service (SDNC) fails to start

A.1.1 Problem description

The following SDN Controller Console login window does not appear after you attempt to start the controller from a supported web browser:

Figure 2 SDN Controller Console

A.1.2 Solution

The controller service may not be running.

Run the following command:

```
sudo service sdnc status
```

The above command should return the following output:

```
sudo sdnc start/running, process nnnn
```
where *nnnn* shows a process number.

If the above output does not appear, examine the following three log files for information on what may have caused the failure:

- `/var/log/sdn/virgo/stdout.log`
- `/var/log/sdn/virgo/stderr.log`
- `/var/log/sdn/virgo/logs/log.log`

A.2 Cannot uninstall the HP VAN SDN Controller

A.2.1 Problem description

When uninstalling the HP VAN SDN Controller from the Ubuntu terminal using the command `dpkg -P hp-sdn-ctl`, the uninstallation process fails and the following error appears on the screen:

```
root@z620:~# dpkg —P hp-sdn-ctl
dpkg: dependency problems prevent removal of hp-sdn-ctl:
np-service depends on hp-sdn-ctl (>= 2.3.1).
dpkg: error processing hp-sdn-ctl (--purge):
dependency problems — not removing
Errors were encountered while processing:
hp-sdn-ctl
```

A.2.2 Solution

You are unable to uninstall the HP VAN SDN Controller because the application or np-service is still running. If the application is not uninstalled, uninstall the application first and then uninstall the controller.

1. Log in to the HP VAN SDN Controller.
2. Navigate to **General→Applications**.
3. Select **Network Protector** from the list of applications and click **Uninstall**.
4. Uninstall the HP VAN SDN Controller from the Ubuntu terminal.

If np-service is running, then from the Ubuntu terminal enter the following command to remove the service:

```
dpkg -r np-service
```

After the np-service is removed, uninstall the controller from the Ubuntu terminal.

A.3 You can view data from the previous installation

A.3.1 Problem description

When you uninstall the application from the HP VAN SDN Controller in the **DISABLE** state and install it again, you can still view data from the previous installation. You can view the data from the previous installation because data in the Cassandra database is not deleted.

A.3.2 Solution

Before you uninstall the application, ensure that the application is in the **ACTIVE** state. If you uninstalled the application in the **DISABLE** state and installed the application again, then compete the following steps to delete the data in the Cassandra database.

1. Ensure that you have root access on the Ubuntu system (sudo).
2. From the Ubuntu terminal, enter the following command:

   ```
   sudo /opt/sdn/cassandra/bin/npDbCleanup
   ```

   For HA mode, run the `npDbCleanup` script on any one of the controllers.

   NOTE: Depending on the size of the data, time taken to delete the data might vary. For large data, this might take longer.

3. For HA mode, disable and enable the application from all the three controllers.

A.4 sentunneld and npwebserver fail to start after installation

A.4.1 Problem description

After installing the application, the following services are not started:

* sentunneld
* npwebserver

A.4.2 Solution

View the status of the services by running the following commands from the Ubuntu terminal:

```
service sentunneld status
service npwebserver status
```

Start the services by running the following commands from the Ubuntu terminal:

```
service sentunneld start
service npwebserver start
```

The logs related to the running of the service npwebserver is available at:

```
/opt/networkprotector/webserver/logs/redirectserver.log
```

A.5 Cassandra database is not running

A.5.1 Problem description

After you install the application and access the application user interface through a browser, the following error appears:

```
Error: HP Network Protector Service Unavailable
```

This error occurs because the controller is installed and running, but the Cassandra database service is not running.

A.5.2 Solution

Ensure the Cassandra database service is running properly.

1. To ensure the database is up, enter the following command on the Ubuntu terminal:
   ```
   ps -ef | grep cassandra | grep -v grep | wc -l
   ```

   If the Cassandra database service is running, then the output on the screen is 1 otherwise the output is 0.

2. If the Cassandra database service is not running, enter the following command to start the service:
   ```
   /opt/sdn/cassandra/bin/caServer.sh start
   ```

3. To confirm that the service is fully up and running, enter the following status command on the Ubuntu terminal:
   ```
   /opt/sdn/cassandra/bin/caServer.sh status
   ```

   The following message appears if the service is fully up and running:
   ```
   Checking status of Cassandra daemon......
   Cassandra is running
   ```
   Open the browser and access the application user interface.

A.6 The controller ceases to operate when running Network Protector

A.6.1 Problem description

In a controller installation supporting the Network Protector application, if the Cassandra service fails, Network Protector and the controller cease to operate.

A.6.2 Solution

Restart the Cassandra service:

1. Verify that the SDNC service is started (`sudo service sdnc status`). You should see the following output:
   ```
   sdnc start/running, process nnnn
   ```

2. Use the following command to determine whether Cassandra is running:
   ```
   ps -ef | grep -i Cassandra
   ```

   - If Cassandra is not running, you will see output similar to the following:
     ```
     sdn     16941 16487 0 15:01 pts/0    00:00:00 grep --color=auto cassandra
     ```

     In this case, go to step 3.
   - If Cassandra is running, output similar to the following example appears, which indicates that Cassandra is not causing the controller to halt.
     ```
     sdn  22162    1 6 15:09 ?       00:00:05 /usr/lib/jvm/java-7-openjdk-amd64/bin/java -ea
     -javaagent:/opt/sdn/cassandra/lib/jamm-0.2.5.jar -XX:+UseThreadPriorities
     ```

```
-XX:ThreadPriorityPolicy=42 -Xms1024M -Xmx1024M -Xmn256M -XX:+HeapDumpOnOutOfMemoryError
-Xss256k -XX:+UseParNewGC -XX:+UseConcMarkSweepGC -XX:+CMSParallelRemarkEnabled
-XX:SurvivorRatio=8 -XX:MaxTenuringThreshold=1 -XX:CMSInitiatingOccupancyFraction=75
-XX:+UseCMSInitiatingOccupancyOnly -XX:+UseTLAB -XX:+UseCondCardMark
-Djava.net.preferIPv4Stack=true -Dcom.sun.management.jmxremote.port=7199
-Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false
-Dlog4j.configuration=log4j-server.properties -Dlog4j.defaultInitOverride=true

 .  .  .

org.apache.cassandra.service.CassandraDaemonsdn    22431 18086 0 15:11 pts/0   00:00:00 grep
 --color=auto Cassandra
```

3. If Cassandra is not running, disable Network Protector on the controller.
4. If there is no Cassandra process running, then determine whether the Cassandra `.pid` file is present in `/opt/sdn/cassandra/data/cassandra.pid`.
   - If the `.pid` file is present, delete it (`rm -rf /opt/sdn/cassandra/data/cassandra.pid`) and go to step 5.
   - If the `.pid` is not present, go to step 5.
5. Change to the Cassandra bin directory:
   ```
   cd /opt/sdn/cassandra/bin
   ```

6. Use this command to restart the Cassandra server:
   ```
   ./caServer.sh start
   ```

7. Use this command to verify that Cassandra has started:
   ```
   ./caServer.sh status
   ```

   You should then see output similar to the following:
   ```
   Checking status of Cassandra daemon......Cassandra is running
   ```

8. Restart the Network Protector application from the controller.

4 Support and other resources

To learn how to contact HP, obtain software updates, submit feedback on documentation, and locate links to HP SDN websites and other related HP products, see the following topics.

4.1 Gather information before contacting an authorized support representative

If you need to contact an authorized HP support representative, be sure to have the following information available:

- If you have a Care Pack or other support contract, either your Service Agreement Identifier (SAID) or other proof of purchase of support for the controller and any HP SDN applications
- The HP VAN SDN Controller version and installed licenses
- The HP SDN application product names, versions, and installed licenses
- If you use a virtual machine for the operating system, the hypervisor virtualization platform and version
- Messages generated by the controller and applications
- Other HP or third-party software in use

4.2 How to contact HP

- See the Contact HP Worldwide website to obtain contact information for any country:

  http://www.hp.com/go/assistance

- See the contact information provided on the HP Support Center website:

  http://www.hp.com/go/hpsc

- In the United States, call +1 800 334 5144 to contact HP by telephone. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, conversations might be recorded or monitored.

4.3 Get connected to the HP SDN online user forum

The HP SDN community forum interactive online forum enables you to share your experiences and pose and answer questions related to using the HP VAN SDN Controller and SDN applications.

To join the discussion, see:

http://www.hp.com/networking/sdnforum

4.4 Software technical support and software updates

HP provides 90 days of limited technical support with the purchase of a base license for the HP VAN SDN Controller.

Some HP SDN applications have a trial period, during which limited technical support is provided for 90 days. Other HP SDN applications do not have a trial period and you must purchase a base license for the application to receive 90 days of limited support. Support for the controller and each HP SDN application is purchased separately, but you must have a base license for the controller to receive support for your licensed HP SDN application.

- For information about licenses for the controller, see the *HP VAN SDN Controller Administrator Guide.*
- For information about licenses for HP SDN applications, see the information about licensing in the administrator guide for the application.

4.4.1 Care Packs

To supplement the technical support provided with the purchase of a license, HP offers a wide variety of Care Packs that provide full technical support at 9x5 or 24x7 availability with annual or multi-year options. To purchase a Care Pack for an HP SDN application, you must have a license for that application and a license for the controller.

For a list of Care Packs available for the controller and HP SDN applications, see:

http://www.hp.com/go/cpc

Enter the SDN license product number to see a list of Care Packs offered.

Once registered, you receive a service contract in the mail containing the customer service phone number and your Service Agreement Identifier (SAID). You need the SAID when you phone for technical support.

To obtain full technical support prior to receiving the service contract in the mail, please call Technical Support with the proof of purchase of the Care Pack.

4.4.2 Obtaining software updates

The software for the HP VAN SDN Controller and HP SDN applications can be downloaded for free from the HP Networking support lookup tool:

http://www.hp.com/networking/support

This website also provides links for manuals, electronic case submission, and other support functions.

4.4.3 Warranty

For the software end user license agreement and warranty information for HP Networking products, see http://www.hp.com/networking/support.

4.5 Related information

Documentation

- HP SDN information library
  http://www.hp.com/go/sdn/infolib

Product websites

- HP Software-Defined Networking website:
  - Primary website:
    http://www.hp.com/go/sdn

  - Development center:
    http://sdndevcenter.hp.com

  - User community forum:
    http://www.hp.com/networking/sdnforum

- HP Open Source Download Site:
  http://www.hp.com/software/opensource

- HP Networking services website:
  http://www.hp.com/networking/services

5 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (**docsfeedback@hp.com**). Include the document title and part number, version number, or the URL when submitting your feedback.