

Install Cisco Optical Network Planner

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Cisco Optical Network Planner

Cisco Optical Network Planner (Cisco ONP) provides a way to model and test Optical Transport Network (OTN) and Dense Wavelength Division Multiplexing (DWDM) optical networks in a graphical environment. The primary use of Cisco ONP is to design and validate networks of NCS 1000, NCS 2000, and NCS 4000 series. Use the Cisco ONP tool, to create multiple instances of a network, modify different parameters in each instance and compare the instances.

Hardware and software requirements

The hardware and software requirements for installing Cisco ONP are:

Hardware Requirements

You need to have Ubuntu server with version 22.04

Recommended Server Configuration for Cisco ONP and LNI:

- 8 CPU, 48 GB RAM, and 500GB server free space after installation, for 3 concurrent Parallel ONP analysis

- 8 CPU, 64 GB RAM, and 500GB server free space after installation, for 6 concurrent Parallel ONP analysis
- 8 CPU, 96 GB RAM, and 500GB server free space after installation, for 10 concurrent Parallel ONP analysis

Software Requirements

- Supported browser: Google Chrome and Microsoft Edge
- Recommended version of the Google Chrome browser:
  - For Windows: Version 128.0.6613.113
  - For Mac: Version 128.0.6613.113

  Recommended version of the Microsoft Edge browser:
  - For Windows: Version 128.0.2739.63
  - For Mac: Version 128.0.2739.63
  -

Note Minimum 100Mbps internet speed is recommended for better Cisco ONP user experience.

Install Cisco ONP

Table 1: Feature History

Feature Name	Release Information	Feature Description
Migrate R5.0 Data to R5.1	Cisco ONP Release 5.1	Migrate your Cisco ONP data such as network designs, user profiles, optical sources, and so on, from Release 5.0 while upgrading to R5.1. Answering the required user prompt, you can opt for data migration during installation. After installing R5.1, all your existing R5.0 data such as user profiles and networks will be available in the new release too.

Table 2: Feature History

Feature Name	Release Information	Feature Description
Installation Packages	Cisco ONP Release 5.0	Cisco ONP provides the option to install the ONP package or ONP and LNI packages. This installation approach allows you to install the full or lightweight setup of Cisco ONP.

The Cisco ONP application is delivered as a bundled tar, signature file, and pubkey files package. The tar file (CONP-xx.xx.xx.xx.tar.gz) contains the following files:

- ONP component
- LNI component
- A shell script (ONPLniInstaller.sh) to install both ONP and LNI components.

Use this procedure to install Cisco ONP by using the tar archive and the installation script:

Note This procedure is also applicable for upgrading Cisco ONP 5.2 to Cisco ONP 24.3.1. If you are upgrading from software version prior to R5.2 to R24.3.1, you must upgrade to R5.2 and then to R24.3.1 to retain data from software version prior to R5.2.

Procedure

Step 1 Log in to the Ubuntu server as root or a user with sudo privileges, where Cisco ONP is to be installed.

Step 2 Create the *24.3.1_Build* folder under *ONP_Builds* to keep all the required files for the installation.

Example:

```
user@host:~/Desktop$ mkdir ONP_Builds/24.3.1_Build
```

Note
The example path here `/home/ user/Desktop/ONP_Builds/24.3.1_Build` is referenced as $ONP_HOME in this document.

The $ONP_HOME directory can be any other directory in your server. You can create a directory of your choice and copy the ONP build tar file, signature file, and pubkey file to that directory.

Step 3 Copy or download the Cisco ONP build tar, signature file, and public key file to the created ONP_Builds directory.

Step 4 Go to the $ONP_HOME directory.

Step 5 Assign full permission to the build tar.

Example:

```
cd /home/user/Desktop/ONP_Builds
sudo chmod 777 CONP-xx-xx.xx.xx.tar.gz
```

Step 6 Untar the Cisco ONP build.

```
tar -xvf CONP-xx-xx-xx.xx.tar.gz
```

Step 7 Set read, write, and execute permissions for the Install script, LNI, and ONP folders using the following commands.

```
sudo chmod -R 777 ONP
sudo chmod -R 777 LNI
sudo chmod 777 ONPLniInstaller.sh
```

Step 8 Check whether curl is installed in the server by entering the following command:

```
root:~/$ONP_HOME# curl
```

If you see the following output, curl is installed. Otherwise, install curl.

```
curl: try 'curl --help' or 'curl --manual' for more information
```

To install curl, run the following command:

```
root:~/$ONP_HOME# sudo apt install curl
```

Step 9 Start Cisco ONP installation. Type the command sudo ./<*install file*> <*tar file*> <*public key*>," and press Enter.

Example:

```
sudo ./ONPLniInstaller.sh CONP-xx.xx.xx.xx.tar.gz CONP-xx.xx.xx.xx_pem.pubkey
```

Step 10 Enter **y** or **n** to change the default IP address.

```
Would you like to change the IP (y/n)
```

If you enter **n**, the installation proceeds with the same IP address as mentioned above and if you enter **y**, you must provide the IP address and the installation proceeds with the IP address that is provided by you.

```
ONP Host IP: 10.76.82.14
```

```
LNI Host IP: 10.76.82.14
```

Step 11 Enter **y** or **n** to install the ONP or ONP and LNI packages.

```
Would you like to install complete ONP+LNI package ? (y/n) [default: n] If no, then only ONP will
be installed:
```

By default, the value that is considered for installation is *n*.

Install complete ONP and LNI packages for Live Network Import (LNI) feature. Otherwise proceed with only ONP installation. Enter **n** for ONP package installation. Enter **y** for ONP and LNI packages installation.

Step 12 Enter your ONP database credentials:

Note
Make sure to use **ONLY alphabets or numbers**.

If you are installing Cisco ONP for the first time, you must set the username and password for the database.

```
Would you like to set database username and password (y/n).
```

The above option appears only when you already have the R5.2 image installed and upgrade to R24.3.1. Otherwise you are prompted to enter ONP database username.

If you enter **y**, then prompt appears and asks you to enter username and password. If you enter **n**, you can proceed with the next step.

```
Enter your ONP database username, only alphanumeric characters are valid [user]:
```

```
Enter your ONP database password, only alpha numeric characters are valid (len >= 8 and <= 64
characters) [password]:
```

```
Repeat your ONP database password.
```

Step 13 If you chose to install ONP package alone, go to Step 19, on page 5. Else continue with below steps which are required for ONP and LNI packages installation.

Step 14 Enter your LNI database credentials:

```
Please enter your Username LNI database: (Maximum 12 chars)
```

```
Please enter Password for LNI database (Min chars, Maximum 64 chars):
```

```
Please repeat Password for LNI database (Min chars, Maximum 64 chars):
```

Step 15 Enter **y** or **n** to reserve disk space for log storage.

```
Application will reserve 10 GB for logs. Do you want to change this value? (y/n):
```

If you enter **n**, Cisco ONP allocates the default disk space. If you enter **y**, you must allocate the disk space.

Step 16 Enter the disk space for the log storage:

```
Please enter maximum available disk space in GB for log storage (from 5 to 50):
```

Step 17 Enter **y** or **n** to provide encryption key for device credentials.

```
Do you want to provide encryption key for device credentials (y/n):
```

If you enter **n**, Cisco ONP uses the default encryption key. If you want to provide encryption key for the LNI device, enter **y** and enter the encryption key.

Step 18 If you entered **n**, skip this step. Otherwise, enter the encryption key for device credentials:

```
Please enter encryption key for device credentials (Min 8 chars, Max 64 chars):
```

Step 19 Wait for the installation to complete.

Note
The Cisco ONP services start automatically, after you successfully install the build.

The install logs are located in the following path:

```
/var/log/cnp/install.log
```

Run the following command to see the list of services running:

```
root:~/$ONP_HOME# sudo docker ps
```

You can confirm the successful installation based on whether the following services are up and running for more than five minutes:

For only ONP installation:

- cnp_cnp
- cnp_ode.1
- cnp_ode.2
- cnp_ode.3
- cnp_pce.1
- cnp_pce.2
- cnp_cnp_frontend
- cnp_gene
- cnp_postgres

For ONP and LNI installation, you can see the following services along with the services that are mentioned earlier for ONP only:

- lni_modelaggregatorservice
- lni_circuitservice
- lni_inventoryservice
- lni_topologyservice

- lni_collectorservice
- lni_lniBroker
- lni_devicemanager
- lni_apigw
- lni_ncs1kinventoryadapterservice
- lni_ncs4kinventoryadapterservice
- lni_ncs2kinventoryadapterservice
- lni_netconfadapterservice
- lni_tl1adapterservice
- lni_kafka
- lni_netconfPluginService
- cnp_postgres
- lni_postgres
- lni_servicediscovery
- lni_tl1PluginService
- lni_zookeeper

Step 20 After you confirm that all the mentioned services in the previous step are up, you can access the Cisco ONP using the Google Chrome browser pointing to Ubuntu server hostname or IP address.

Upgrade Cisco ONP from Release 5.2 to 24.3.1

Use this procedure to upgrade Cisco ONP software from Release 5.2 to 24.3.1:

Procedure

Step 1 Install Cisco ONP 24.3.1 image using the steps 1 to 19 of the procedure Install Cisco ONP, on page 2.

Step 2 In the displayed table, find out the container ID that is corresponding to the image "cnp_postgress image - dockerhub.cisco.com/cnp-rpt-dev-docker/postgres:14.9"

Step 3 Use this command to enter inside the container.

```
#docker exec -it <cnp_postgress container ID> bash
```

a) Use the command in the container to log into the database:

```
psql -U <db_username> CnpDB
```

b) After you log in the database you will see the following:

```
psql (14.9)
 Type "help" for help
 CnpDB=#
```

c) Enter the command **Analyze;**.

This command takes a few minutes based on your database size.

d) Enter **Exit** to come out of the database.

Step 4 Enter **Exit** to come out of the container.

Log into Cisco ONP

After installing Cisco ONP, use this procedure to log into the Cisco ONP user interface.

Procedure

Step 1 Open the Google Chrome browser.

Note
Clear the browser cache if you have used earlier versions of Cisco ONP.

Step 2 In the browser's address bar, enter *https://hostname* or *https://ipaddress*, where *hostname* or *IP address* belongs to the Ubuntu server used for Cisco ONP installation, for example: *https://cisco-onp-server.cisco.com* or *https://10.76.82.14*.

The Cisco ONP user interface displays the Login window.

Step 3 Enter **admin** and **cisco123** as the default username and password.

Step 4 Click **Login** to log into Cisco ONP.

Note
Cisco ONP prompts you to change the administrator password, when you log in for the first time after installation. Cisco recommends that you create a new user with valid email ID and administrative privileges. Do not use the default administrator username because the administrator password cannot be recovered, if forgotten.

Step 5 To change the administrator password, perform the following actions in the prompt:

a) Enter **Old Password**.

b) Enter **New Password**.

As you enter the password, the Cisco ONP prompt displays the strength of the password in different colors.

c) Enter **Repeat New Password** to confirm the new password.

d) Click **Update**.

Wait till Password updated successfully message appear.

Update the Default Self-Signed Certificates

Use this procedure to update the default self-signed certificates for Cisco ONP, after the installation:

Procedure

Step 1 Log into the server where Cisco ONP is hosted.

Step 2 Go to the path `/opt/cnp/nginx/conf/ssl` using “cd” command.

Example:

```
cd /opt/cnp/nginx/conf/ssl
```

Step 3 Delete existing self-signed certificates.

Step 4 Copy Certificate Authority (CA) signed certificates and paste the certificates and key.

Note
You need to have this required CA signed certificates.

Step 5 Restart Cisco ONP. See Restart Cisco ONP, on page 8.

Restart Cisco ONP

Use this procedure to restart the Cisco ONP server:

Procedure

Step 1 Go to $ONP_HOME.

Step 2 Execute the following command:

```
sudo docker stack rm cnp
```

Step 3 Go to $ONP_HOME/ONP:

```
cd /home/user/Desktop/ONP_Builds/ONP
sudo docker stack deploy -c images/conf/docker-compose.yml --resolve-image=never cnp
```

Restart LNI

Use this procedure to restart the LNI services, if you have installed Cisco ONP and LNI.

Procedure

Go to $ONP_HOME/LNI to restart LNI services.

```
cd /home/user/Desktop/ONP_Builds/LNI
sudo bash ciscoLniInstaller.sh -o stop -t update -m offlinemode
sudo bash ciscoLniInstaller.sh -o start -t update -m offlinemode
```

Uninstall Cisco ONP

Warning: When you uninstall Cisco ONP, you will lose all created networks and users. You must again set the admin password.

Note We suggest that you perform a database backup before uninstallation. For more information, see Backup Cisco ONP Database.

Use these commands to uninstall Cisco ONP:

Note You must run the following commands **one-by-one**:

```
sudo docker stack rm cnp
sudo docker swarm leave --force
sudo docker network rm lni_network-lni
sudo apt -y purge docker-ce
sudo apt -y purge docker-ce-cli
sudo rm -rf /var/lib/postgresdb_cnp
sudo rm -rf /opt/cnp
sudo rm -rf /var/log/cnp
sudo rm -rf /var/log/nginx
sudo docker image prune -a -f
sudo rm -rf /var/lib/postgresdb_lni/
sudo rm -rf /var/lib/postgres_lni_db/
sudo rm -rf /var/lib/elasticsearch_data/*
sudo rm -rf ONP
sudo rm -rf LNI
sudo rm -rf ONPLniInstaller.sh
```

Install Cisco ONP on Laptop through Oracle VirtualBox

Use this procedure to install Cisco ONP on a Windows laptop or Apple MacBook.

Before you begin

Ensure that your Windows laptop or Apple MacBook has at least 16 GB of RAM.

Procedure

Step 1 Download and install the latest version of Oracle VirtualBox on your Windows or Mac laptop. See https://www.virtualbox.org/wiki/Downloads and https://www.youtube.com/watch?v=x5MhydijWmc.

We recommend downloading "macOS /Intel hosts" for the Apple MacBook.

Step 2 Download the Ubuntu 22.04 Desktop AMD64 image from the link: https://releases.ubuntu.com/focal/ and install it on the VirtualBox.

Note
Ensure that you allocate at least 30 GB of storage space on the VirtualBox, 8 GB of RAM and four virtual CPUs, and mount a directory with full access for file sharing. See How to setup shared folders in VirtualBox 6.

Step 3 Install VirtualBox Guest Additions to share the clipboard operations and to share the folder access between the Host and Guest operating systems. See Installing and Maintaining Guest Additions.

Step 4 Download the Cisco ONP tar build, public key, and signature files from https://www.cisco.com/c/en/us/support/optical-networking/optical-network-planner/series.html#%7Etab-downloads to the Host Windows laptop or MacBook, and copy it into the shared folder mounted as in Step 3.

Step 5 Log in to the VirtualBox and access the Cisco ONP tar build, public key, and signature files through the shared folder.

Step 6 Open the terminal in the VirtualBox, navigate to the shared folder and, install Cisco ONP. See Step 5, on page 3 .

Step 7 To log into Cisco ONP see Log into Cisco ONP.

Note
Try launching Cisco ONP through https://localhost if you are not able to launch it through ipaddress/hostname.

Install Cisco ONP on Laptop through Windows Shell (WSL)

Use this procedure to install WSL Ubuntu on your Windows PC or laptop.

Before you begin

Ensure that your Windows laptop has at least 16 GB of RAM. Use the procedure given below to install WSL Ubuntu on your Windows PC or laptop.

Procedure

Step 1 Click Windows **Start** and search for **Terminal**.

Step 2 Right-click **Terminal** and select **Run as administrator**.

Step 3 Click **Yes** on the installation dialog box.

Step 4 Type **wsl --install** in the terminal window after the prompt and press Enter.

After step 4, the download and installation of Ubuntu starts. After the download and installation of Ubuntu completes successfully, follow the next step for restarting the PC or laptop.

Step 5 Restart the PC or laptop by typing the command **shutdown /r /t 0** which applies all the new changes as required.

After the PC or laptop restarts, the Ubuntu terminal opens automatically, and there is a prompt for username and password.

Note
In case the Ubuntu terminal does not start automatically then search for it and launch it manually.

Installing CONP in Ubuntu

Before you begin

Download the tar file along with the signature key and public file in a Windows PC or laptop and then copy the files.

To copy files from Windows to an Ubuntu environment before installing Cisco ONP, follow these steps.

Procedure

Step 1 Open the file explorer, select, and open **Ubuntu** followed by **Home** and **Username**.
Step 2 Right-click the **Username** folder and select **Properties**.
Step 3 Uncheck **Read-only** permission and click **Apply**.
Step 4 Drag and drop the downloaded Cisco ONP files to the **Ubuntu/Home/Username** folder.
Step 5 Create the directory using **mkdir CNPBuild**
Step 6 Move the copied build files from **Username** to the **CNPBuild** directory.
Step 7 Open the terminal, navigate to the shared folder and, install Cisco ONP. See Step 5, on page 3.
Step 8 To log into Cisco ONP, see Log into Cisco ONP, on page 7

Note

- Try launching Cisco ONP through https://localhost, if it is not possible to launch it through ipaddress/hostname.
- If the containers are not enabled even after Cisco ONP is installed, try re-installing Cisco ONP once again.
- If this issue still persists, then re-install WSL Ubuntu and try installing Cisco ONP also once again.

Uninstall WSL Ubuntu

To uninstall WSL Ubuntu follow the steps given below.

Procedure

Step 1 Click on the Windows **Start** button and search for **Ubuntu**.
Step 2 Right click on **Ubuntu** and select and click **Uninstall**.
Step 3 Open **Windows PowerShell** and type the command **wsl -l**.

Step 4 Unregister Ubuntu by typing the command **wsl --unregister Ubuntu** .

Docker Commands

The following table lists the docker commands, that you can use for performing a specific task:

Task	Docker Command
Check installed docker version.	docker -v docker --version
List available docker images.	docker images
List all running containers.	docker ps
List all running and exited containers.	docker ps -a
Remove a particular container.	docker rm <container ID/ container name>
Remove a particular docker image.	docker rmi <Image name / Image ID>
Fetch the logs of a container.	docker logs -f <container ID>
Fetch the resource utilization by a container.	docker stats <container ID>

Monitor Cisco ONP Health

To check the status or health of Cisco ONP, use the following command, which lists all running containers:

```
$sudo docker ps
```

Cisco ONP Logs

Cisco ONP provides the following logs:

Table 3: Logs

Logs	Description	

Container Logs	The command *sudo docker ps* provides the list of running containers and their IDs. Copy the container ID of that container whose log you require.
	You can obtain the log or activities of the container by using the following command:
	`sudo docker logs (container name/ID) > filename.log/txt`
		Example:
		`sudo docker logs cnp > file.log`
		`sudo docker logs 274a5fc1152b > file.log`

Logs	Description	
Application Logs	You can find Cisco ONP application logs in the following locations: • `/var/log/cnp` • `/var/log/nginx`	—
Install Logs	You can find Cisco ONP install logs in the following location: `/var/log/cnp`	—