

# Install Routed PON - Version 5.1 - Single VM Lab

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## Introduction

This document describes a walkthrough of the Cisco Routed PON Manager software installation in the local lab.

## Prerequisites

### Requirements

- Knowledge of the Linux Server Environment
- Knowledge of Linux Text Editors
- Linux Tools - openssh-server, net-tools, ntp, vsftp

### Components Used

- Linux Virtual Machine (VM)
  - 2 vCPUs
  - 8GB RAM
  - 20GB Space (Minimum)
- Ubuntu 20.04.06 LTS

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

# Configuration

## Virtual Machine

### Tools

This document begins with the assumption that the VM has been configured for access, the Ubuntu Operating System (OS) has been installed and configured with network connectivity, the tools listed in Requirements have been installed, and the Routed PON zip file has been downloaded. For ease, the Ubuntu **apt** commands have been provided to download and install the recommended tools.

```
sudo apt install net-tools
sudo apt install openssh-server
sudo apt install ntp
sudo apt install vsftpd
```

### Unpacking

1) Create an installation directory to unzip the **Routed PON Version 5.1** zip file to.

<#root>

```
rpon@rpon-virtual-machine:~$
```

```
mkdir PONMGR
```

2) Unzip **R5.1.1-Cisco-UB2004.zip** into the assigned directory.

<#root>

```
rpon@rpon-virtual-machine:~$
```

```
unzip R5.1.1-Cisco-UB2004.zip -d /home/rpon/PONMGR/
```

```
Archive: Cisco_Routed_PON_24_1_2_Release.zip
inflating: PON_MANAGER_SIGNED_CC0/R5.1.1-Cisco-UB2004
```

3) Change directory (cd) to the newly created **R5.1.1-Cisco-UB2004** folder and list (ls) the files.

<#root>

```
rpon@rpon-virtual-machine:~/PONMGR$ ls -la
total 161548
```

```
drwxrwxr-x 3 rpon rpon 4096 Jan 10 08:52 .
drwxr-xr-x 16 rpon rpon 4096 Jan 10 08:52 ..
drwxr-xr-x 7 rpon rpon 4096 Dec 10 17:34
```

#### **R5.1.1-Cisco-UB2004**

```
-rw-r--r-- 1 rpon rpon 165411803 Jan 10 08:51
```

#### **R5.1.1-Cisco-UB2004.zip**

```
rpon@rpon-virtual-machine:~/PONMGR$
```

```
cd R5.1.1-Cisco-UB2004/
```

```
rpon@rpon-virtual-machine:~/PONMGR/R5.1.1-Cisco-UB2004$
```

```
ls -la
```

```
total 844
drwxr-xr-x 7 rpon rpon 4096 Dec 10 17:34 .
drwxrwxr-x 3 rpon rpon 4096 Jan 10 08:52 ..
-rw-r--r-- 1 rpon rpon 447620 Jan 10 09:47
```

#### **install.log**

```
-rwxr-xr-x 1 rpon rpon 23081 Dec 10 17:09
```

#### **install.sh**

```
drwxrwxr-x 2 rpon rpon 4096 Dec 10 17:09
```

#### **R5.1.1-Firmware**

```
drwxrwxr-x 5 rpon rpon 4096 Dec 10 17:09
```

#### **R5.1.1-Netconf-ConfD-UB2004**

```
drwxrwxr-x 4 rpon rpon 4096 Dec 10 17:09
```

#### **R5.1.1-PonController-UB2004-amd64**

```
drwxrwxr-x 6 rpon rpon 4096 Dec 11 18:22
```

#### **R5.1.1-PonManager-UB2004**

```
-rw-r--r-- 1 rpon rpon 7931 Dec 10 17:09
```

#### **README.txt**

```
-rwxr-xr-x 1 rpon rpon 1537 Dec 10 17:09
```

#### **status.sh**

```
drwxr-xr-x 2 rpon rpon 4096 Dec 10 17:09
```

#### **tools**

-rw-r--r-- 1 rpon rpon 15747 Dec 10 17:36

**uninstall.log**

-rwxr-xr-x 1 rpon rpon 1394 Dec 10 17:09

**uninstall.sh**

-rw-r--r-- 1 rpon rpon 312410 Dec 10 17:20

**upgrade.log**

-rwxr-xr-x 1 rpon rpon 8260 Dec 10 17:09

**upgrade.sh**

## Installation

View the **README.txt** file for installation steps. This install is using **Option 2** for **New Installation**.



**Note:** This installation uses Netplan and NetworkManager to manage the network information on the VM which is the example presented below. This is not necessary to complete the installation as long as the VM has internet access.

---

## Netplan

Using a linux text file editor (nano, vi), edit the YAML file located in the **/etc/netplan/** directory using the template provided in the **README.txt** in the installation folder. Populate the IP information specific to the network and VM.

<#root>

```
rpon@rpon-virtual-machine:~/PONMGR/R5.1.1-Cisco-UB2004$
```

```
sudo nano /etc/netplan/01-network-manager-all.yaml
```

```
network:
  version: 2
  renderer: NetworkManager
```

```
network:
  ethernet:
    ens192:
```

<- This VM's network adapter is ens192. If the default is NOT ens192, change this value to the desired network adapter

```
  dhcp4: False
  dhcp6: False
  addresses:
```

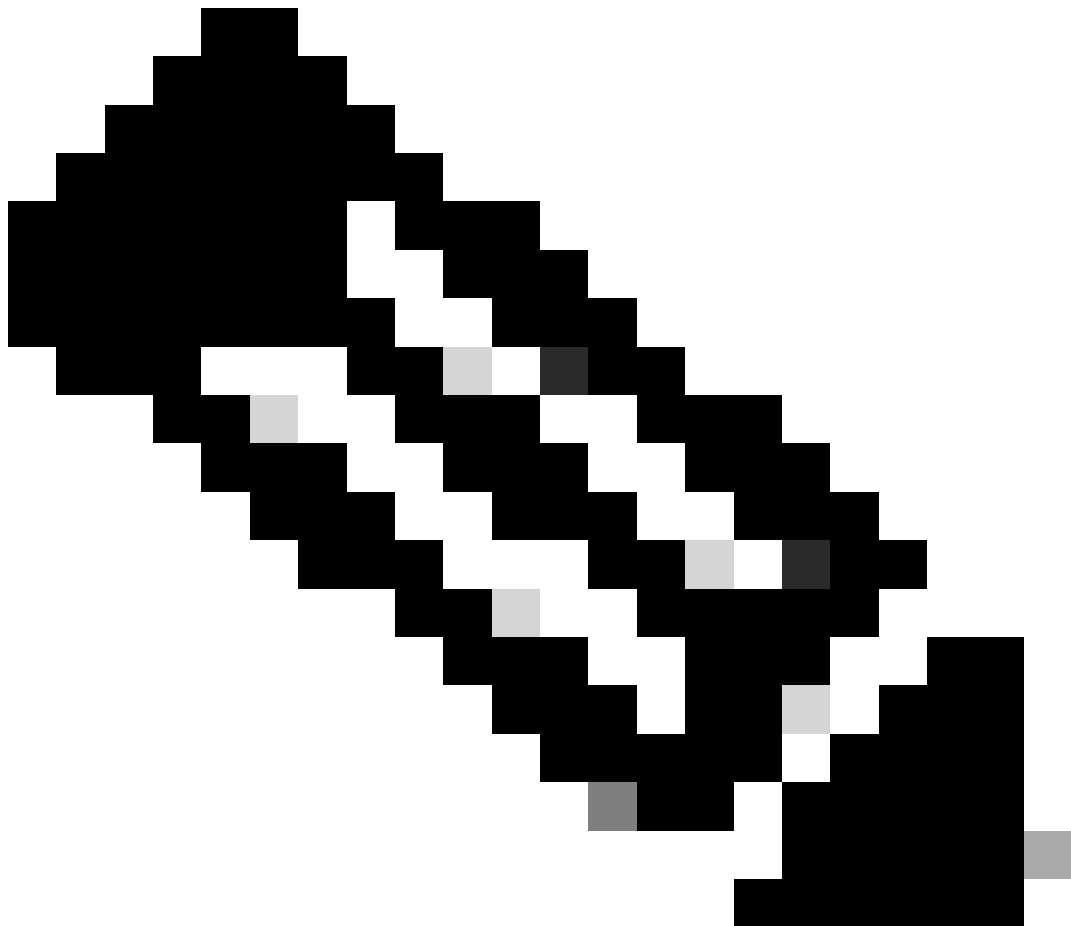
[IPv4 address and subnet]

```
  gateway4:
```

[V4Gateway]

```
  nameservers:
    addresses:
```

[DNS Server(s)]

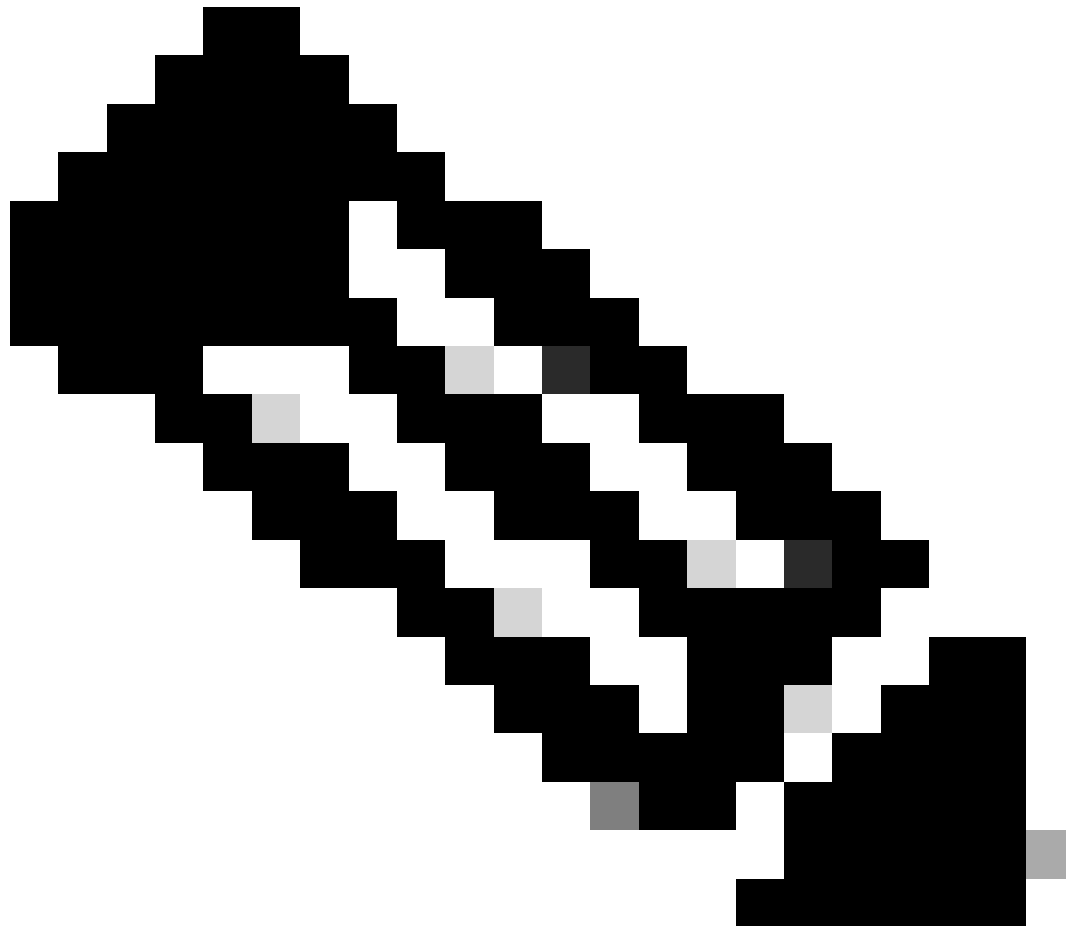


---

**Note:** Using nano to edit, once complete; press **Control + O** to save the file, then **Control X** to exit nano. In VIM, use **:wq!** to save and exit.

---

---



**Note:** Usage of **sudo netplan --debug apply** is useful when testing the netplan prior to application.

---

Verify the netplan configuration is correct by viewing the file via **cat**. This output is strictly a lab example, please utilize the IP addresses specific to the network. Once complete and exited from the text editor, run **sudo netplan apply**.

Lab Example:

<#root>

rpon@rpon-virtual-machine:~/PONMGR/R5.1.1-Cisco-UB2004\$

**cat /etc/netplan/01-network-manager-all.yaml**

```
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: NetworkManager
  ethernet:
    ens192:
      dhcp4: no
      dhcp6: no
      addresses:
        - 10.122.140.230/28
      gateway4: 10.122.140.225
      nameservers:
        addresses:
          - 172.18.108.43
          - 172.18.108.34

rpon@rpon-virtual-machine:~/PONMGR/R5.1.1-Cisco-UB2004$
sudo netplan -- debug apply
```

## Package Install

Perform the install using the chosen arguments. For this install, using **-m**. As per the **README.txt**, **-m** installs **PON Manager**, **MongoDB**, and **NETCONF**.



**Note:** If this is a new VM, install times can vary up to 5 minutes while the dependencies are added and updated. Once the install is complete, a log message is generated.

---

Example:

**sudo ./install.sh -m**

<#root>

rpon@rpon-virtual-machine:~/PONMGR/R5.1.1-Cisco-UB2004\$

**sudo ./install.sh -m**

--- Installation snipped for brevity ---

Installation complete!

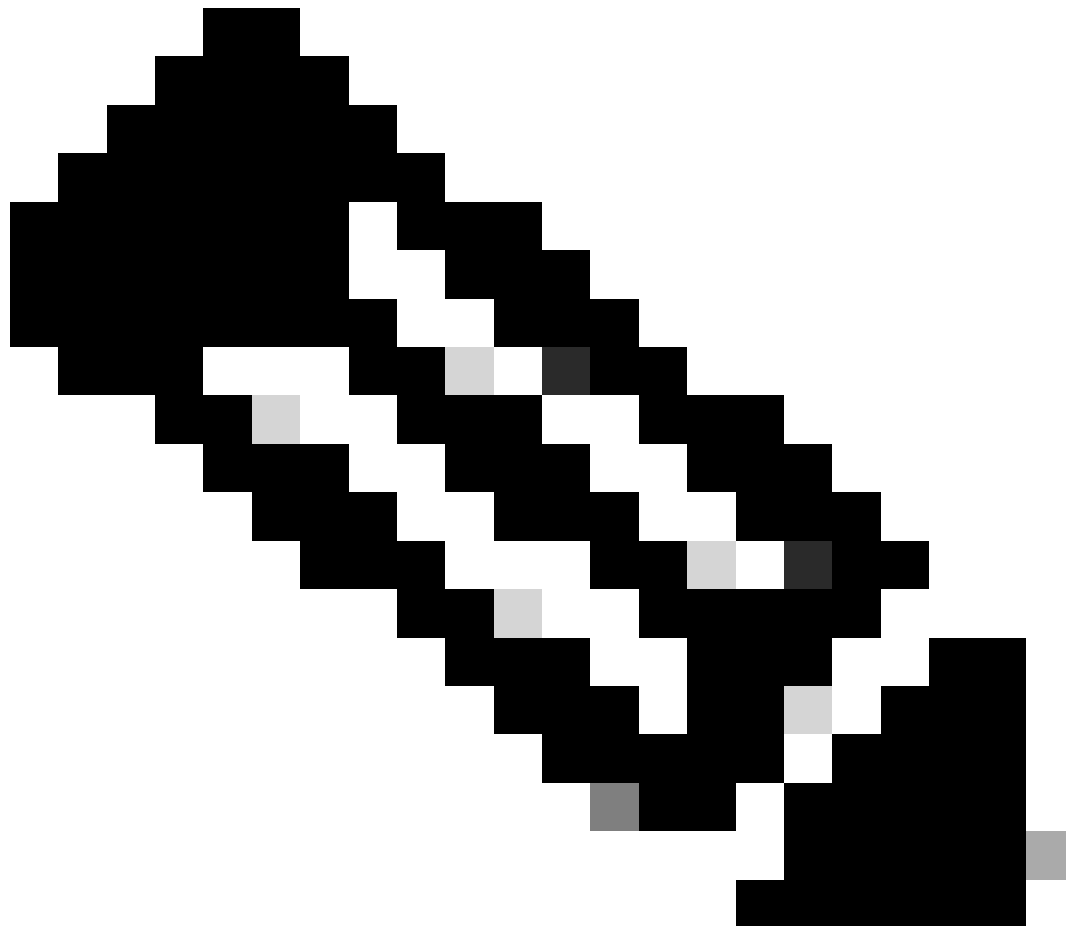
MCMS Component Versions:

**PON Manager: R5.1.1**

PON NETCONF: R5.1.1

PON Controller: Not Installed

---



**Note:** The PON Controller is hosted on the XR Router, therefore an installation on the VM is unnecessary.

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## MongoDB

An adjustment needs to be made to the **MongoDB** configuration file that is generated in order to bind the IP addresses on the system. This file is located at **/etc/mongod.conf** and requires sudo access to edit. Use the text editor of your choice to change the listed values.

"bindIP: 127.0.0.1" to "bindIpAll: true"

Example:

```
<#root>
```

```
# network interfaces
```

```
net:
```

```
port: 27017
```

```
bindIpAll: true
```

Restart the mongod.service via this command.

```
systemctl restart mongod
```

## Verification

### Service Status Check

Perform a status check on the installed services to verify they are up and running via the **status.sh** script, located in the same install directory.



**Note:** If a full installation was performed as indicated by -m, verify the listed services are up and in a running state.

- **mongod.service**
- **apache2.service**
- **cisco-confd.service**
- **cisco-netconf.service**

Example:

<#root>

```
rpon@rpon-virtual-machine:~/PONMGR/R5.1.1-Cisco-UB2004$ sudo ./status.sh
```

```
PON Component Versions:
PON Manager: R5.1.1
PON NETCONF: R5.1.1
PON Controller: Not Installed
```

•

#### **mongod.service**

- MongoDB Database Server

Loaded: loaded (/lib/systemd/system/mongod.service; enabled; vendor preset: enabled)

Active: active (running) since Fri 2025-01-10 09:45:00 EST; 3 days ago

Docs: <https://docs.mongodb.org/manual>

Main PID: 29588 (mongod)

Memory: 369.9M

CGroup: /system.slice/mongod.service

└─29588 /usr/bin/mongod --config /etc/mongod.conf

•

#### **apache2.service**

- The Apache HTTP Server

Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)

Drop-In: /etc/systemd/system/apache2.service.d

└─start\_ponmgr.conf

Active: active (running) since Fri 2025-01-10 09:47:08 EST; 3 days ago

Docs: <https://httpd.apache.org/docs/2.4/>

Main PID: 37804 (apache2)

Tasks: 137 (limit: 9371)

Memory: 123.8M

CGroup: /system.slice/apache2.service

└─37804 /usr/sbin/apache2 -k start

└─37805 /usr/sbin/apache2 -k start

└─37807 /usr/sbin/apache2 -k start

└─37808 /usr/sbin/apache2 -k start

•

#### **cisco-netconf.service**

- Cisco Systems, Inc. NetCONF Server

Loaded: loaded (/lib/systemd/system/cisco-netconf.service; enabled; vendor preset: enabled)

Active: active (running) since Fri 2025-01-10 09:47:40 EST; 3 days ago

Main PID: 38906 (cisco-netconf)

Tasks: 25 (limit: 9371)

Memory: 105.9M

CGroup: /system.slice/cisco-netconf.service

└─38906 /opt/cisco/netconf/bin/cisco-netconf -c /etc/cisco/netconf/NetconfInit.json

└─38929 /opt/cisco/netconf/bin/cisco-netconf -c /etc/cisco/netconf/NetconfInit.json

•

#### **cisco-confd.service**

- Cisco Systems, Inc. Conf-D Service

Loaded: loaded (/lib/systemd/system/cisco-confd.service; enabled; vendor preset: enabled)

Active: active (running) since Fri 2025-01-10 09:47:40 EST; 3 days ago

Main PID: 38884 (confd.smp)

Tasks: 19 (limit: 9371)

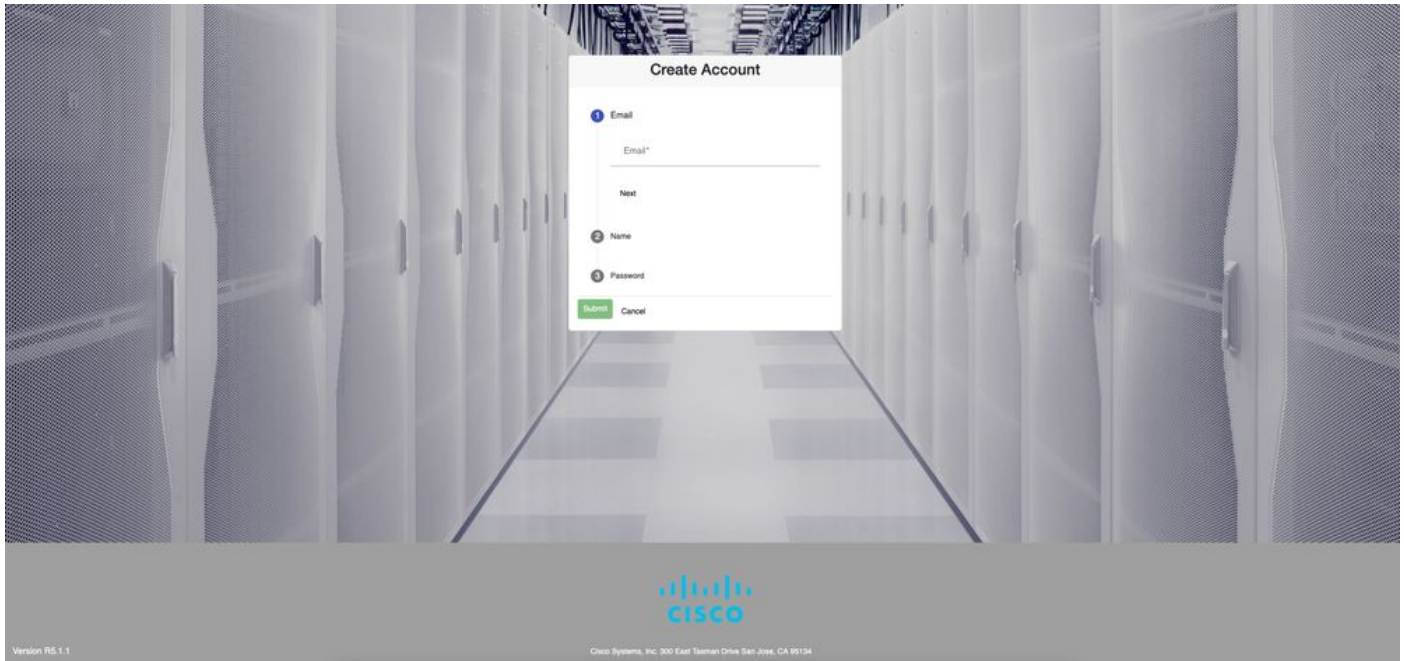
Memory: 38.6M

CGroup: /system.slice/cisco-confd.service

└─38884 /opt/cisco/confd/lib/confd/erts/bin/confd.smp -S 1 -K false -MHe true -- -root /opt/cisco/confd/lib/confd

└─38888 erl\_child\_setup 1024

Open a browser and navigate to the IP of your VM.



*Routed PON 5.1 Welcome*

## Reference Documentation

- [Cisco Support and Downloads Page](#)
- [Cisco Routed PON Solution Page](#)
- [Cisco Routed PON Installation Guide](#)
- [Release Notes for Cisco Routed PON, Cisco IOS® XR Release 24.1.1 and 24.1.2](#)