

安装路由PON 24.1.2 -单VM实验

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简介

本文档介绍在本地实验室中安装Cisco Routed PON Manager软件的步骤。

先决条件

要求

- Linux服务器环境知识
- Linux文本编辑器的知识
- Linux工具- openssh-server、net-tools、 ntpd

使用的组件

- Linux虚拟机(VM)
 - 2 个 vCPU
 - 8GB RAM
 - 20 GB空间 (最小)
- Ubuntu 20.04.06液晶

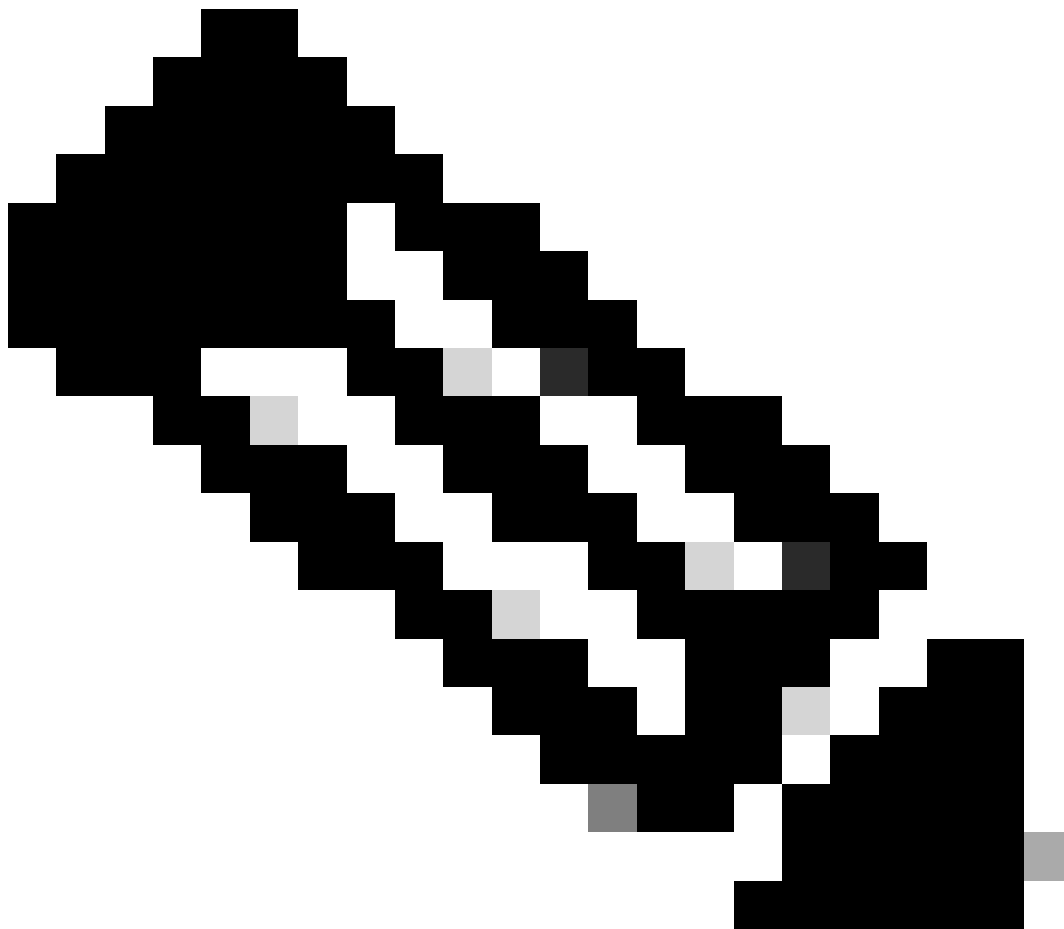
本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始 (默认) 配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

配置

虚拟机

工具

本文档首先假定已配置VM进行访问，已安装Ubuntu操作系统(OS)并已配置网络连接，已安装“要求”中列出的工具，并且已下载路由PON zip文件。为简单起见，我们提供了Ubuntu apt命令来下载和安装推荐的工具。



注意：[此处提供](#)一个[路由PON 24.1.2的](#)下载链接。

```
sudo apt install net-tools
sudo apt install openssh-server
sudo apt install ntpd
```

拆包

1)创建安装目录，将路由PON 24.1.2 zip文件解压缩到。

```
<#root>
```

```
rpon@rpon-mgr:~$
```

```
mkdir Routed_PON_24_1_2
```

2)将Cisco_Routed_PON_24_1_2_Release.zip解压缩到分配的目录中。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2$
```

```
unzip Cisco_Routed_PON_24_1_2_Release.zip
```

```
Archive: Cisco_Routed_PON_24_1_2_Release.zip
```

```
inflating: PON_MANAGER_SIGNED_CCO/
```

```
R4.0.0-Cisco-UB2004-sign.tar.gz
```

```
inflating: PON_MANAGER_SIGNED_CCO/
```

```
README
```

```
inflating: PON_MANAGER_SIGNED_CCO/
```

```
verify.tar.gz
```

3)将目录(cd)更改为新创建的PON_MANAGER_SIGNED_CCO文件夹并列出(ls)文件。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CCO$
```

```
ls -la
```

```
total 29120
```

```
drwxrwxr-x 2 rpon rpon 4096 Jun 13 09:26 .
```

```
drwxrwxr-x 3 rpon rpon 4096 Jun 13 09:26 ..
```

```
-rw-rw-r-- 1 rpon rpon 29792662 Mar 15 05:21
```

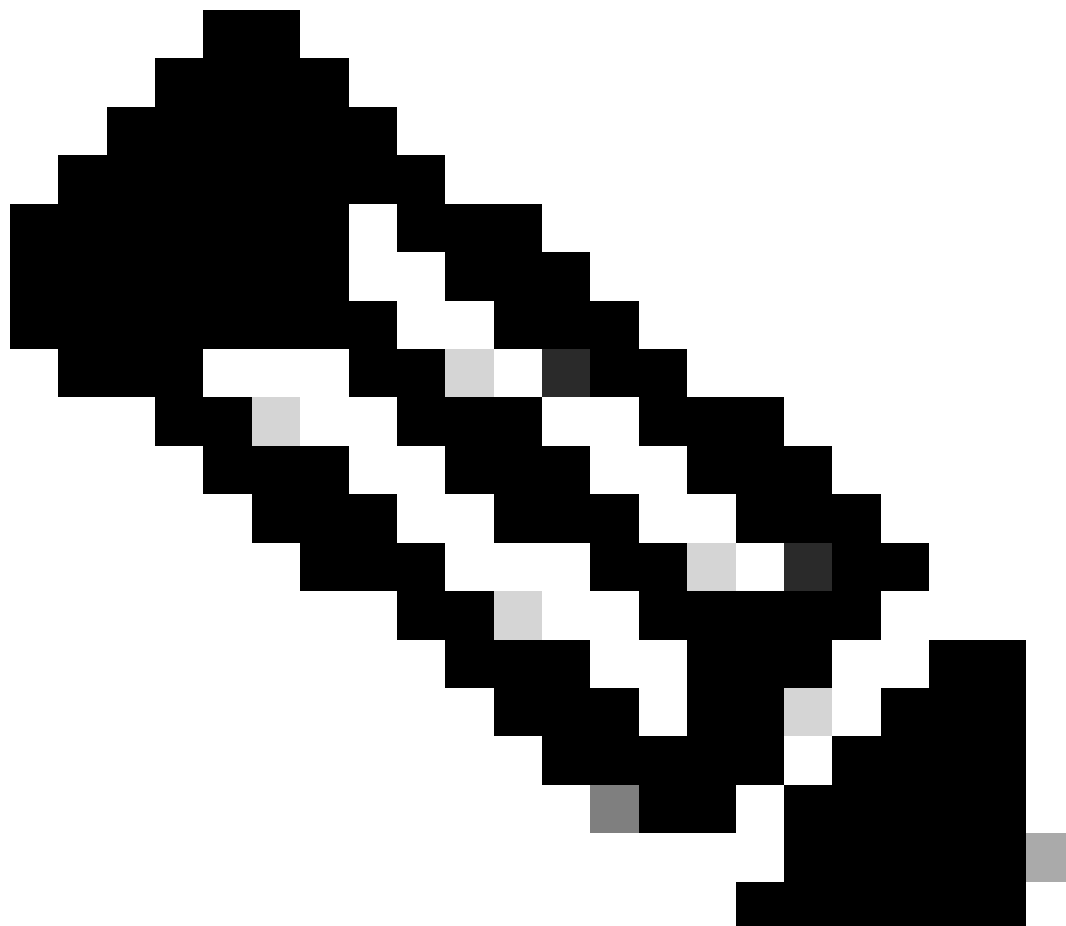
```
R4.0.0-Cisco-UB2004-sign.tar.gz
```

```
-rw-rw-r-- 1 rpon rpon 1966    Mar 15 05:21
```

```
README
```

```
-rw-rw-r-- 1 rpon rpon 11502   Mar 15 05:21
```

```
verify.tar.gz
```



注意：列出的自述文件说明了文件验证过程。此安装演练过程中不执行此步骤。

4)使用tar -xvf R4.0.0-Cisco-UB2004-sign.tar.gz解压缩R4.0.0-Cisco-UB2004-sign.tar.gz文件。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CC0$
```

```
tar -xvf R4.0.0-Cisco-UB2004-sign.tar.gz
```

```
R4.0.0-Cisco-UB2004-sign/  
R4.0.0-Cisco-UB2004-sign/  
R4.0.0-Cisco-UB2004.tar.gz.signature
```

```
R4.0.0-Cisco-UB2004-sign/  
R4.0.0-Cisco-UB2004.tar.gz
```

5) CD转到R4.0.0-Cisco-UB2004-sign目录并列文件。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CC0$
```

```
cd R4.0.0-Cisco-UB2004-sign/
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign$
```

```
ls -la
```

```
total 29112  
drwxr-xr-x 2 rpon rpon 4096    Mar 15 04:51 .  
drwxrwxr-x 3 rpon rpon 4096    Jun 13 09:26 ..  
-rw-r--r-- 1 rpon rpon 29796139 Mar 15 04:51
```

```
R4.0.0-Cisco-UB2004.tar.gz
```

```
-rw-r--r-- 1 rpon rpon 3546    Mar 15 04:51
```

```
R4.0.0-Cisco-UB2004.tar.gz.signature
```

6) Untar R4.0.0-Cisco-UB2004-tar.gz via tar -xvf R4.0.0-Cisco-UB2004.tar.gz。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign$
```

```
tar -xvf R4.0.0-Cisco-UB2004.tar.gz
```

```
---- snipped for brevity ----
```

7)现在已为此目录创建一个名为R4.0.0-Cisco-UB2004 CD的新目录。

注意：这是要安装、卸载、检查状态和其他PON控制器JSON文件的Shell脚本的位置。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$
```

```
ls -la
```

```
total 116
```

```
drwxr-xr-x 7 rpon rpon 4096 Mar 14 11:11 .  
drwxr-xr-x 3 rpon rpon 4096 Jun 13 09:26 ..  
-rw-r--r-- 1 rpon rpon 8196 Mar 14 11:10
```

```
.DS_Store
```

```
-rwxr-xr-x 1 rpon rpon 13650 Mar 14 11:10
```

```
get-support-info.sh
```

```
drwxr-xr-x 3 rpon rpon 4096 Mar 14 11:10
```

```
grafana_dashboards

-rwxr-xr-x 1 rpon rpon 25392 Mar 14 11:10
install.sh

-rw-r--r-- 1 rpon rpon 1493 Mar 14 11:11
PonCntlInit.json

drwxr-xr-x 2 rpon rpon 4096 Mar 14 11:10
R4.0.0-Firmware

drwxr-xr-x 5 rpon rpon 4096 Mar 14 11:14
R4.0.0-Netconf-UB2004

drwxr-xr-x 6 rpon rpon 4096 Mar 14 11:14
R4.0.0-PonManager-UB2004

-rw-r--r-- 1 rpon rpon 7949 Mar 14 11:11
README.txt

-rwxr-xr-x 1 rpon rpon 2349 Mar 14 11:10
status.sh

drwxr-xr-x 2 rpon rpon 4096 Mar 14 11:10
tools

-rwxr-xr-x 1 rpon rpon 2245 Mar 14 11:10
uninstall.sh

-rwxr-xr-x 1 rpon rpon 8605 Mar 14 11:11
upgrade.sh
```

安装

查看README.txt文件，了解安装步骤。此安装使用选项2进行新安装。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_Mgr_24_1_2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$
cat README.txt
```

--- snipped for brevity ---

Option 2: New Installation

=====

Step 1 : Verify System Requirements:

a) Verify system is running ubuntu version 20.04

```
user@system:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description: Ubuntu 20.04.3 LTS
Release: 20.04
Codename: bionic
```

b) Verify the ethernet interfaces are configured on the ubuntu system

- 1) Look for your Ethernet Interfaces: "ifconfig" or "ip a". <<< make note of interfaces listed >>>
- 2) There are multiple ways to configure interfaces on Ubuntu 18.04 and 20.04
- 3) The simplest way is via Netplan
- 4) Netplan is located in the /etc/netplan directory
- 5) There will be a file similar in name to "01-network-manager-all.yaml"
- 6) Edit this file with your favorite editor such as "nano" or "vi"

c) user@system:~\$ sudo nano /etc/netplan/<net-plan-name>.yaml

Sample Netplan text <<< Make sure indentation is consistent >>>

network:

version: 2

renderer: NetworkManager

ethernets:

eno1: <<< MCMS IP Interface >>>

dhcp4: no <<< No DHCP >>>

dhcp6: no <<< No DHCP >>>

addresses: [172.16.41.5/24] <<< Static IPv4 >>>

gateway4: 172.16.41.1 <<< IPv4 default Gateway >>>

nameservers: <<< DNS Addresses >>>

vlan: <<< Configured VLANs >>>

vlan4090: <<< "l2EthInterfaceName" VLAN named vlan4090 assigned to PON Controller Interface >>>

id: 4090 <<< VLAN number >>>

link: eno2 <<< PON Controller Interface >>>

d) After finished editing, Save and exit, then enter "netplan apply" to enable new configuration.

e) Verify ubuntu system has connectivity to Internet

Step 2 : Installation

a) Run the installation script "install.sh":

```
user@system:<install_directory>/R4.0.0-UB2004$ sudo ./install.sh -e <l2EthInterfaceName>
```

This script will do the following:

- Install MongoDB
- Install MCMS PON Manager
- Install MCMS Netconf Server
- Install PON Controller and UMT Relay (using the Ethernet interface specified)

Required:

-e <l2EthInterfaceName> interface name of L2 port

Optional:

-d <databaseIpAddress> IP address of MongoDB database
-n <databaseName> MongoDB database name for PON Manager
-m Install only PonManager/MongoDB/NETCONF
-c Install only PonController

defaults:

-d <databaseIpAddress> = 127.0.0.1
-n <databaseName> = tibit_pon_controller

Informational: How to verify all processes are running

=====

a) Verify MongoDB is running

```
user@system:~$ sudo systemctl status mongod.service
```

```
• mongod.service - MongoDB Database Server
Loaded: loaded (/lib/systemd/system/mongod.service; enabled; vendor preset: enabled)
Active: active (running) since Fri 2019-08-30 11:56:38 PDT; 3 days ago
Main PID: 15035 (mongod)
CGroup: /system.slice/mongod.service
└─15035 /usr/bin/mongod --config /etc/mongod.conf
```

b) Verify MCMS PON Manager Apache Web Server is running

```
user@system:~$ sudo systemctl status apache2.service
```

```
• apache2.service - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
Drop-In: /lib/systemd/system/apache2.service.d
└─apache2-systemd.conf
Active: active (running) since Fri 2019-08-16 15:19:09 PDT; 1 weeks 2 days ago
Process: 2981 ExecReload=/usr/sbin/apachectl graceful (code=exited, status=0/SUCCESS)
Main PID: 8471 (apache2)
```

---- Removed additional information regarding PON Controller as this is installed in the XR Router so the

Netplan

使用linux文本文件编辑器(nano、vi)，使用安装文件夹README.txt中提供的模板编辑/etc/netplan/目录中的YAML文件。填充特定于网络和虚拟机的IP信息。

<#root>

```
rpon@rpon-mgr:~/PON-mgr-24.1.2/PON_MANAGER_SIGNED_CCO/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$
```

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

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

ethernets:
ens192:

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

dhcp4: no
dhcp6: no
addresses:

[IPv4 address and subnet]

gateway4:

[V4Gateway]

nameservers:
addresses:

[DNS Server(s)]

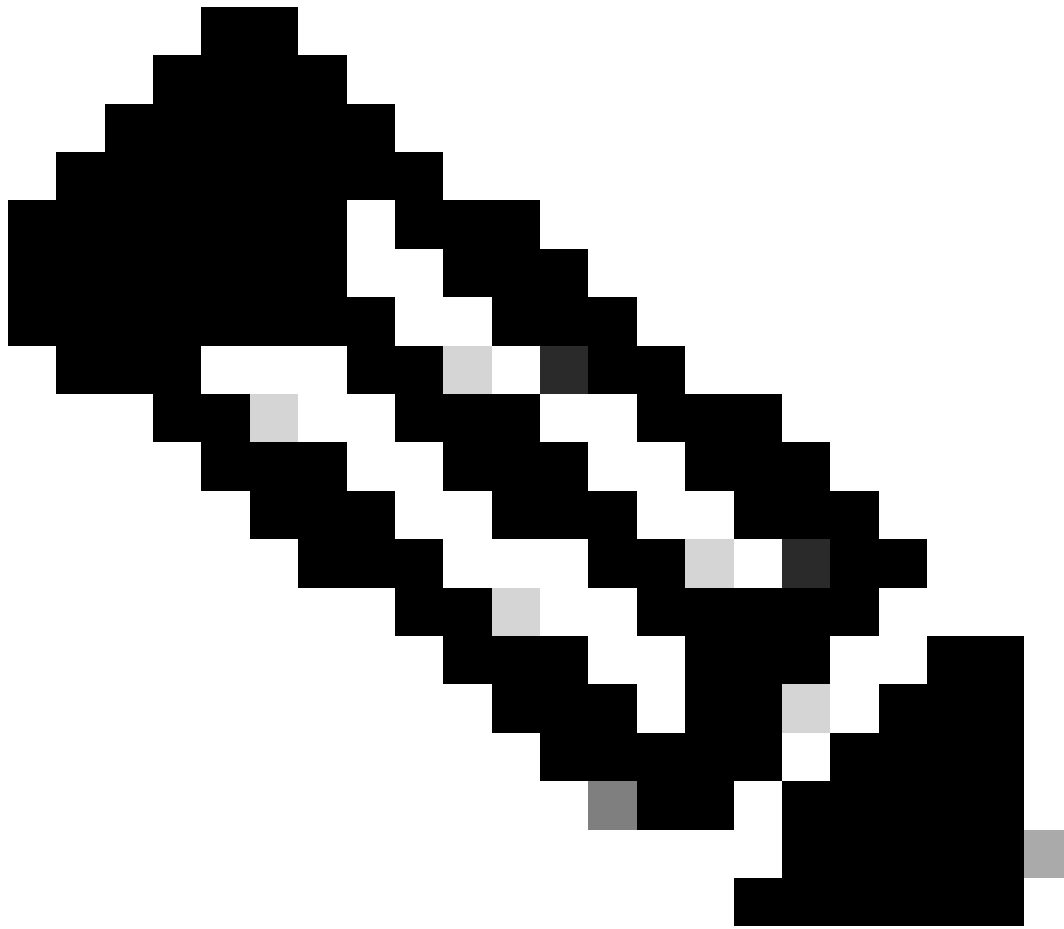
vlan:

vlan.4090:

id: 4090

link:

[VM network adapter name]



注意：完成后，使用nano进行编辑；按Control + O保存文件，然后按Control X退出nano。
在VIM中，使用：wq！保存并退出。

注意：sudo netplan的用法—debug apply在测试应用程序之前的netplan时非常有用。

通过cat查看文件以验证netplan配置是否正确。此输出只是实验示例，请使用特定于网络的IP地址。完成并从文本编辑器中退出之后，请运行sudo netplan apply。

实验示例：

```
<#root>
```

```
rpon@rpon-mgr:~/PON-mgr-24.1.2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$
```

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

```
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: NetworkManager
  ethernets:
```

```
ens192:
  dhcp4: no
  dhcp6: no
  addresses: [10.122.140.232/28]
  gateway4: 10.122.140.225
  nameservers:
    addresses: [172.18.108.43,172.18.108.34]
vlans:
  vlan4090:
    id: 4090
    link: ens192

rpon@rpon-mgr:~/PON-mgr-24.1.1.2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$
sudo netplan apply
```

程序包安装

使用所选参数执行安装。对于此安装，使用-e、-d和-m。根据README.txt，-e告知安装程序要使用的VM上的以太网接口，-d设置应用于mongo.conf文件以供MongoDB使用的IP，-m安装PON Manager、MongoDB和NETCONF。

示例：

```
sudo ./install.sh -e ens192 -d [IPAddr] -m
```

注意：如果是新VM，在添加和更新依赖项时，安装时间最多可以相差5分钟。安装完成后，将生成一条日志消息。

```
<#root>
```

```
rpon@rpon-mgr:~/PON_MANAGER_SIGNED_CCO/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$
```

```
sudo ./install.sh -e ens192 -d 10.122.140.232 -m
```

```
--- Installation snipped for brevity ---
```

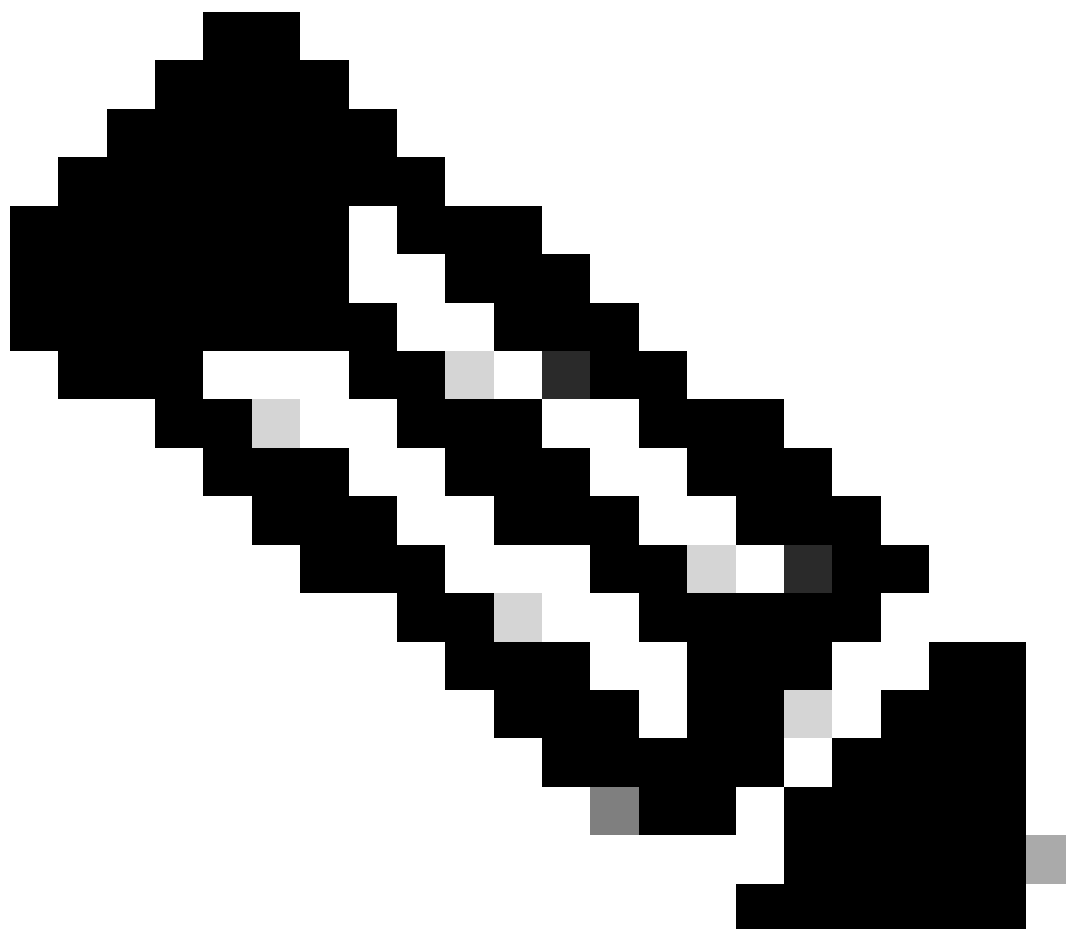
```
Installation complete!
```

```
MCMS Component Versions:
```

```
PON Manager: R4.0.0
```

```
PON NETCONF: R4.0.0
```

PON Controller: Not Installed



注意：PON控制器托管在XR路由器上，因此无需在VM上安装。

确认

服务状态检查

对已安装的服务执行状态检查，以验证它们是否通过位于同一安装目录中的status.sh脚本启动并正在运行。



注意：如果按照-m所示执行了完全安装，请验证列出的服务是否为up且处于运行状态。

-
- mongod.service
 - apache2.service
 - tibit-netopeer2-server.service
 - tibit-netconf.service

示例：

```
<#root>
```

```
rpon@rpon-mgr:~/PON-mgr-24.1.1.2/PON_MANAGER_SIGNED_CC0/R4.0.0-Cisco-UB2004-sign/R4.0.0-Cisco-UB2004$  
sudo ./status.sh
```

```
MCMS Component Versions:  
PON Manager: R4.0.0
```


PON NETCONF: R4.0.0
PON Controller: Not Installed

•
mongod.service

- MongoDB Database Server
Loaded: loaded (/lib/systemd/system/mongod.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2024-06-12 19:45:37 EDT; 2min 49s ago

Main PID: 54731 (mongod)
Memory: 74.7M
CGroup: /system.slice/mongod.service
└─54731 /usr/bin/mongod --config /etc/mongod.conf

• **apache2.service** - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)

Active: active (running) since Wed 2024-06-12 19:46:44 EDT; 1min 42s ago

Main PID: 62165 (apache2)
Tasks: 123 (limit: 9419)
Memory: 18.6M
CGroup: /system.slice/apache2.service
├─62165 /usr/sbin/apache2 -k start
├─62167 /usr/sbin/apache2 -k start
├─62168 /usr/sbin/apache2 -k start
└─62169 /usr/sbin/apache2 -k start

•
tibit-netopeer2-server.service

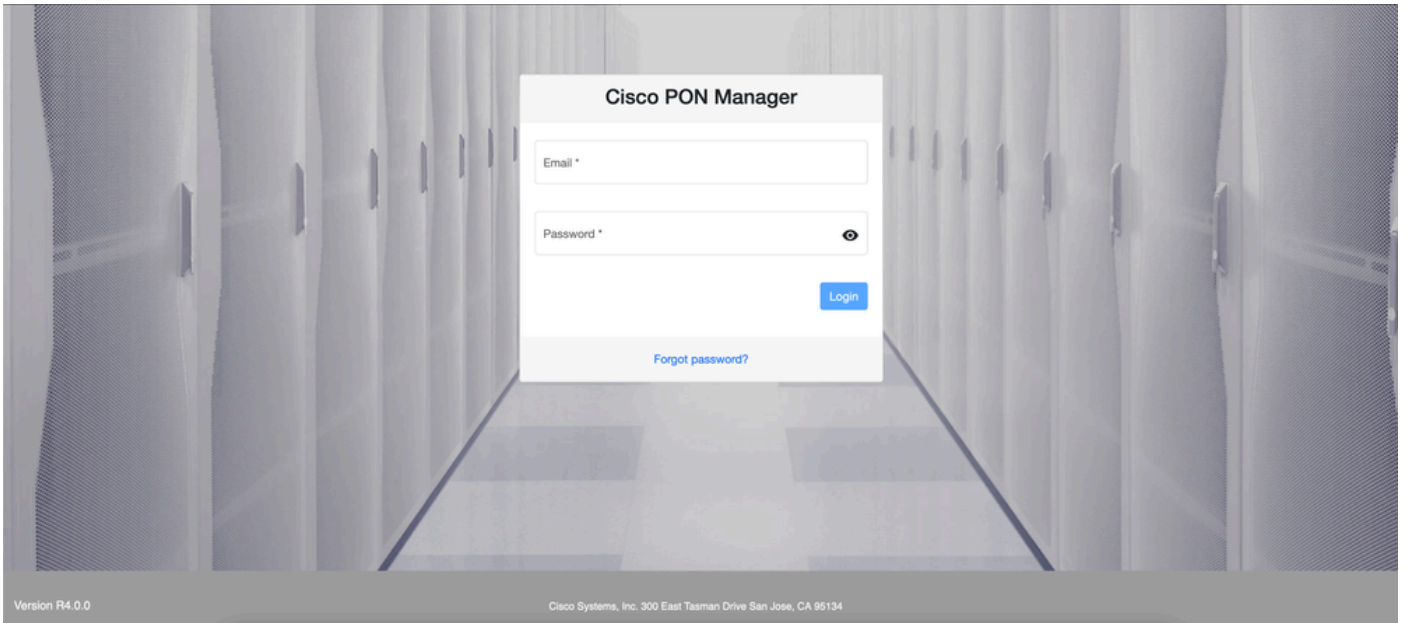
- Tibit Communications, Inc. Netopeer2 Server
Loaded: loaded (/lib/systemd/system/tibit-netopeer2-server.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2024-06-12 19:47:04 EDT; 1min 21s ago
Process: 63029 ExecStart=/opt/tibit/netconf/bin/start_netopeer2_server.sh (code=exited, status=0/SUCCESS)
Main PID: 63035 (netopeer2-serve)
Tasks: 7 (limit: 9419)
Memory: 5.4M
CGroup: /system.slice/tibit-netopeer2-server.service
└─63035 /opt/tibit/netconf/bin/netopeer2-server -v 1 -t 55

•
tibit-netconf.service

- Tibit Communications, Inc. NetCONF Server
Loaded: loaded (/lib/systemd/system/tibit-netconf.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2024-06-12 19:47:04 EDT; 1min 21s ago

Process: 63023 ExecStartPre=/opt/tibit/netconf/bin/shm_clean.sh (code=exited, status=0/SUCCESS)
Process: 63027 ExecStartPre=/opt/tibit/netconf/bin/sysrepcfg --copy-from startup -d running (code=exited, status=0/SUCCESS)
Main PID: 63028 (tibit-netconf)
Tasks: 17 (limit: 9419)
Memory: 49.4M
CGroup: /system.slice/tibit-netconf.service
├─63028 /opt/tibit/netconf/bin/tibit-netconf
└─63037 /opt/tibit/netconf/bin/tibit-netconf

11. 打开Internet浏览器并输入虚拟机的IP。



PON Manager登录屏幕

参考文档

- [思科支持和下载页面](#)
- [思科路由PON解决方案页面](#)
- [思科路由PON安装指南](#)
- [思科路由PON部署指南](#)
- [思科路由PON、思科IOS® XR版本24.1.1和24.1.2的发行版本注释](#)

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