

安裝路由PON 24.1.2 -單一VM實驗室

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簡介

本文檔介紹本地實驗室中Cisco Routed PON Manager軟體安裝的逐步解說。

必要條件

需求

- 瞭解Linux伺服器環境
- Linux文本編輯器的知識
- Linux工具- openssh-server、net-tools、 ntpd

採用元件

- Linux虛擬機器器(VM)
 - 2個vCPU
 - 8GB RAM
 - 20GB空間 (最小)
- Ubuntu 20.04.06倫敦夏令時間

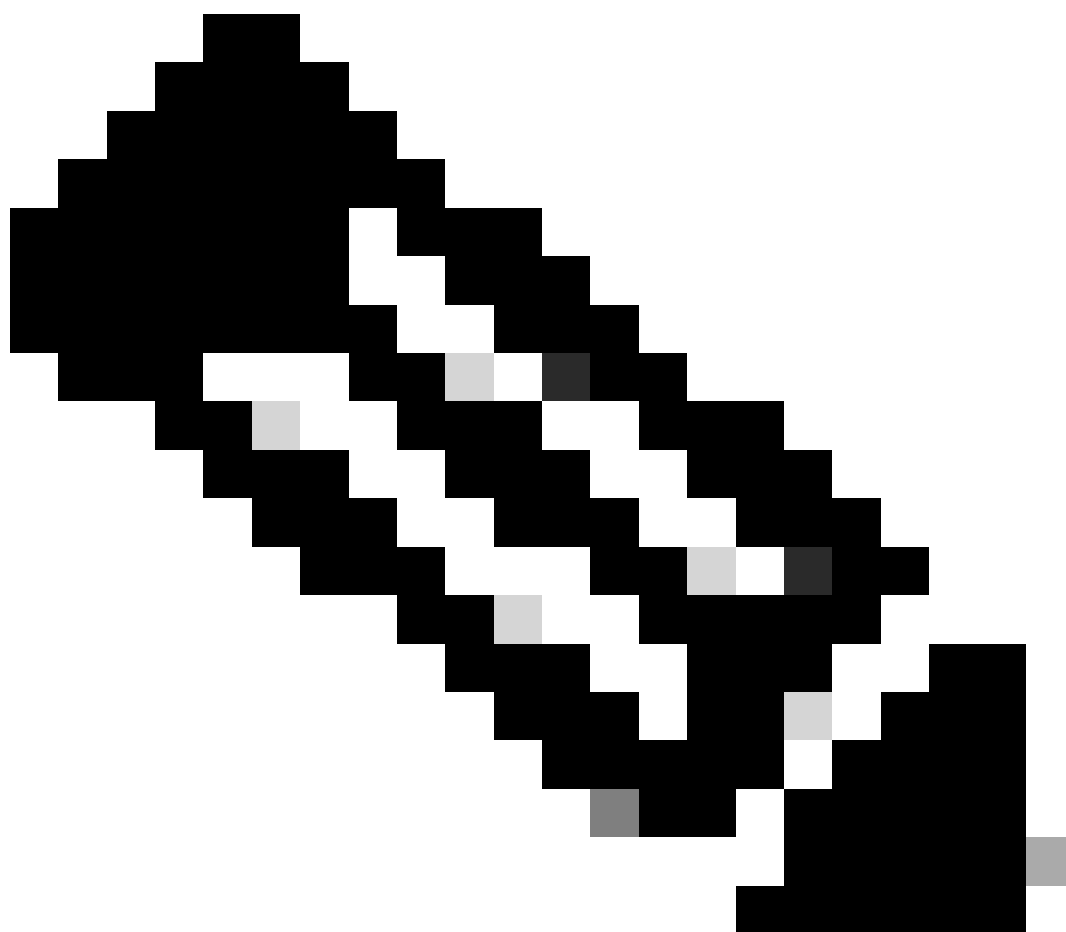
本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除 (預設) 的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

組態

虛擬機器器

工具

本文檔首先假設VM已配置為可訪問，Ubuntu作業系統(OS)已安裝和配置網路連線，已安裝「要求」中列出的工具，並已下載路由PON zip檔案。為簡單起見，我們提供了Ubuntu apt命令來下載和安裝建議的工具。



註：[此處提供到路由PON 24.1.2的](#)下載連結。

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

解壓縮

1)建立安裝目錄，將Routed PON 24.1.2 zip檔案解壓縮到。

<#root>

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

```
mkdir Routed_PON_24_1_2
```

2)將Cisco_Routed_PON_24_1_2_Release.zip解壓縮到指定的目錄中。

<#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)將目錄(cd)變更為新建立的PON_MANAGER_SIGNED_CCO資料夾，並列出(ls)檔案。

<#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
```

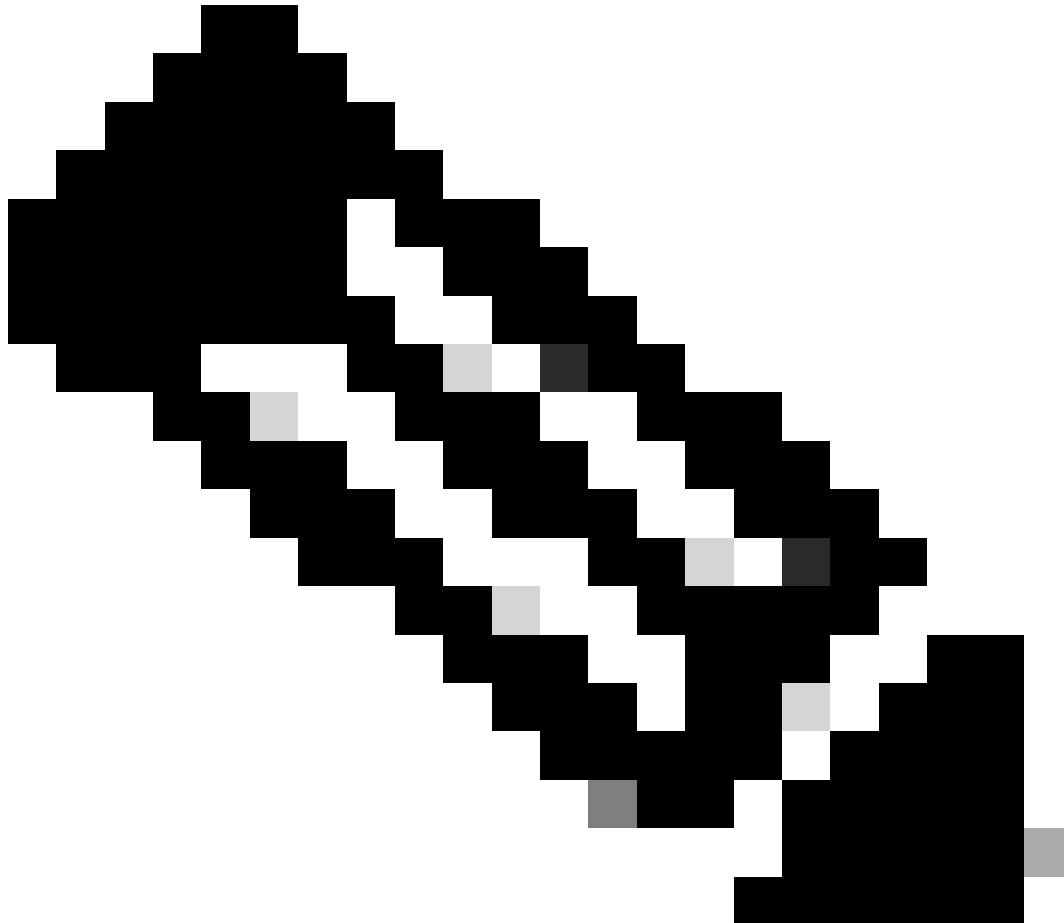
```
R4.0.0-Cisco-UB2004-sign.tar.gz
```

```
-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
```



註：列出的README檔案說明了檔案驗證過程。此安裝逐步解說期間不會執行此步驟。

4)使用tar -xvf R4.0.0-Cisco-UB2004-sign.tar.gz解除R4.0.0-Cisco-UB2004-sign.tar.gz檔案的tar。

```
<#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轉到R4.0.0-Cisco-UB2004-sign目錄並列出檔案。

```
<#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(透過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)現在已為此目錄建立一個名為R4.0.0-Cisco-UB2004 CD的新目錄。

注意：這是要安裝、解除安裝、檢查狀態和其他PON控制器JSON檔案的Shell指令碼的位置。

```
<#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
```

安裝

有關安裝步驟，請檢視README.txt檔案。此安裝使用選項2進行新安裝。

```
<#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 >>>
```

```
  vlans: <<< 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文字檔編輯器(nano、vi)，使用安裝資料夾的README.txt所提供的範本，編輯 /etc/netplan/目錄中的YAML檔案。填充特定於網路和虛擬機器的IP資訊。

```
<#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：完成之後，使用nano進行編輯；按Control + O儲存檔案，然後按Control X退出nano。在VIM中，使用:wq! 儲存並退出。

注意：sudo netplan --debug apply的使用在應用之前測試netplan時很有用。

透過cat檢視檔案以驗證netplan配置是否正確。此輸出嚴格來說是一個實驗示例，請使用特定於網路的IP地址。完成並從文本編輯器中退出後，運行sudo netplan apply。

實驗室範例：

```
<#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
```

套件安裝

使用選擇的引數執行安裝。對於此安裝，使用-e、-d和-m。根據README.txt，-e告知安裝程式要使用VM上的哪個乙太網路介面，-d設定要套用至mongoDB所用之mongo.conf檔案的IP，-m安裝PON Manager、MongoDB和NETCONF。

範例：

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



注意：如果這是新的VM，則在增加和更新依賴項時，安裝時間最長可能為5分鐘。一旦安裝完成，就會生成日誌消息。

```
<#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 ---
```

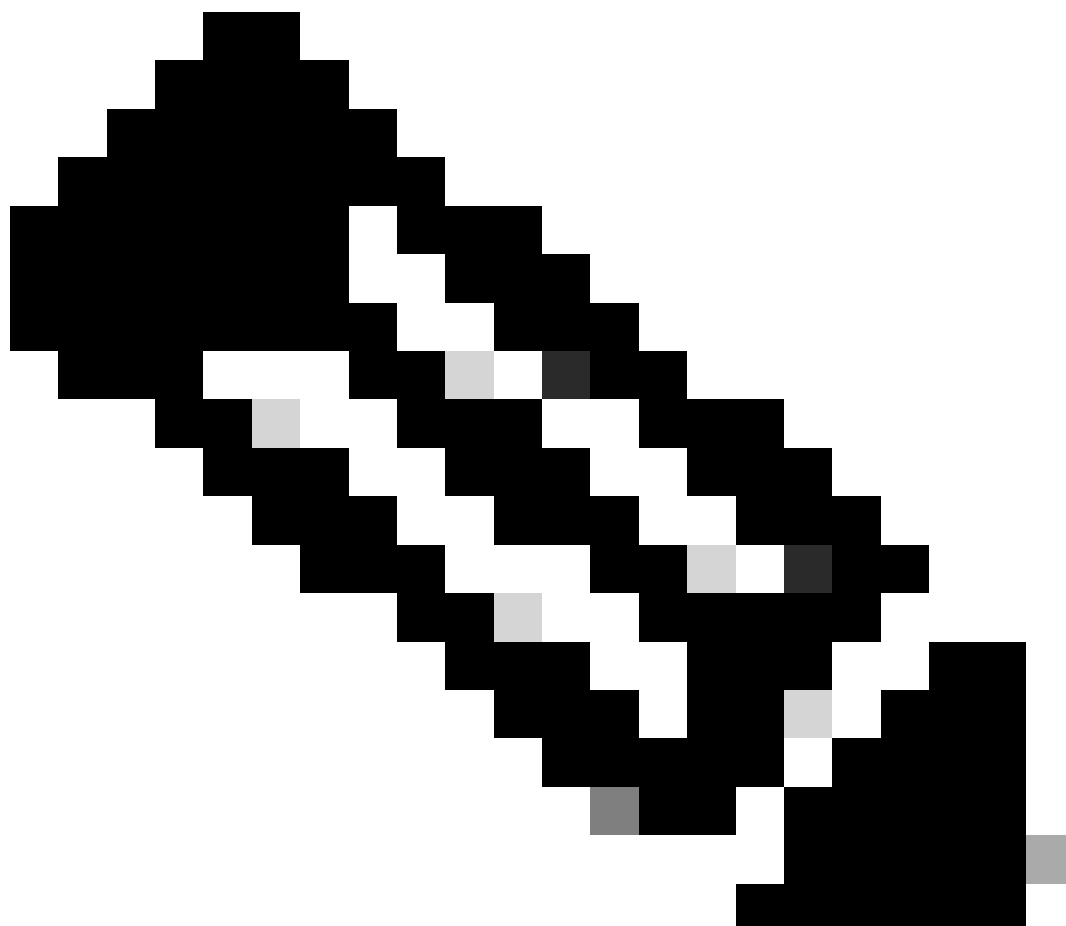
```
Installation complete!
```

```
MCMS Component Versions:
```

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

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

PON Controller: Not Installed



注意：PON控制器託管在XR路由器上，因此不需要在VM上安裝。

驗證

服務狀態檢查

對已安裝的服務執行狀態檢查，以驗證它們是否透過位於同一安裝目錄中的status.sh指令碼啟動並正在運行。



注意：如果按照-m指示執行了完全安裝，請驗證列出的服務是否為up且處於運行狀態。

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

範例：

```
<#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

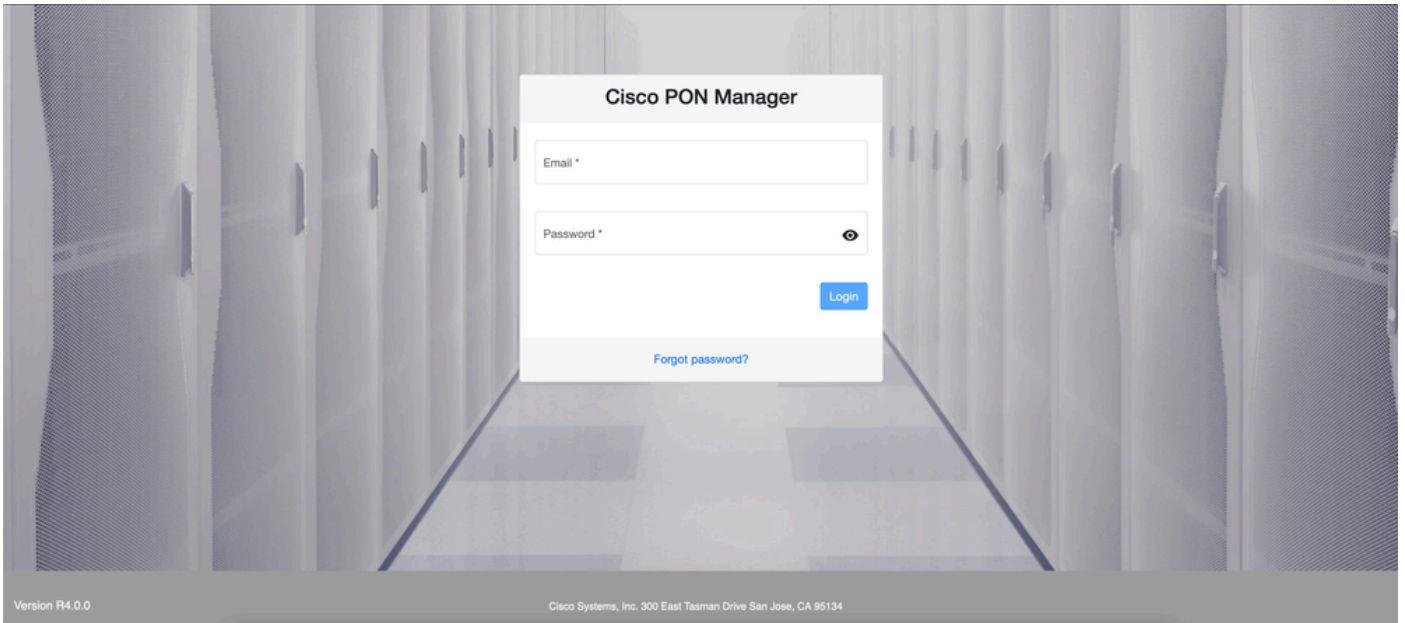
- Tibit Communications, Inc. Netopeer2 Server
Loaded: loaded (/lib/systemd/system/tibit-netopeer2-server.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2024-06-12 19:47:04 EDT; 1min 21s ago
Process: 63029 ExecStart=/opt/tibit/netconf/bin/start_netopeer2_server.sh (code=exited, 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. 打開Internet瀏覽器並輸入虛擬機器的IP。



PON Manager登入螢幕

參考文檔

- [思科支援和下載頁面](#)
- [Cisco路由PON解決方案頁面](#)
- [Cisco路由PON安裝指南](#)
- [Cisco路由PON部署指南](#)
- [Cisco路由PON、Cisco IOS® XR 24.1.1和24.1.2版發行版本註釋](#)

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。