Managing Bare Metal Agent

This chapter contains the following sections:

Default Root and Shelladmin Passwords

During installation, Bare Metal Agent uses default passwords for the following accounts:

- Root user for the CentOS operating system of the Bare Metal Agent VM. The default password is pxeboot.

- Shelladmin user for the Bare Metal Agent Shell menu. The default password is changeme.

You are not prompted to enter these passwords during installation. However, the first time you log in to Bare Metal Agent after installation is completed, you are prompted to reset the default root and Shelladmin passwords.

The new root and Shelladmin password must meet the password requirements. It cannot be a dictionary word or be all lowercase.

Changing the Default Bare Metal Agent Account

The first Bare Metal Agent account that you create is designated as the default account. This account is used by default in legacy workflows. To use a different account in the legacy workflows, you must designate that Bare Metal Agent account as the default.

Step 1 Choose **Administration** > **Physical Accounts**.

Step 2 On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3 Click the row for the Bare Metal Agent account that you want designate as the default.

Step 4 Click **Set Default BMA**.

Starting and Stopping Bare Metal Agent Services

Step 1 Choose **Administration** > **Physical Accounts**.

Step 2 On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3 Click the row for the Bare Metal Agent account whose services you want to start or stop.

Step 4 Click one of the following:

- **Start Services**
- **Stop Services**

Step 5 Click **Service Status** and check the status displayed in the **Enabled Services** column to ensure that services have started or stopped as desired.

If services do not start, check the status displayed in the **Enabled Services** column. If this status indicates that services are not enabled, verify the configuration of your DHCP server and try again.

Checking the Status of a Bare Metal Agent

Step 1 Choose **Administration** > **Physical Accounts**.

Step 2 On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3 Click the row for the Bare Metal Agent account whose status you want to check.

Step 4 To see if services for the Bare Metal Agent account are Active or Inactive, check the **Status** column.

Step 5 To check the status of the services, click **Service Status**.

Step 6 To view the SSH-based test connection status, check the **Reachable** column.

Viewing the DHCP Configuration for a Bare Metal Agent Account

Step 1   Choose **Administration** > **Physical Accounts**.

Step 2   On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3   Click the row for the Bare Metal Agent account for which you want to view the DHCP configuration.

Step 4   Click **View DHCP Configuration**.

You might need to click the Down arrow at the end of the button bar to access the **View DHCP Configuration** option.

The **View DHCP Server Configuration** window displays the contents of the DHCP server configuration file for the account.

Using External DHCP Server and Bare Metal Agent

The following figure shows the sample topology for OS deployment over PXE from Cisco UCS Director using an external DHCP server, Bare Metal Agent, and bare metal servers in different subnets.
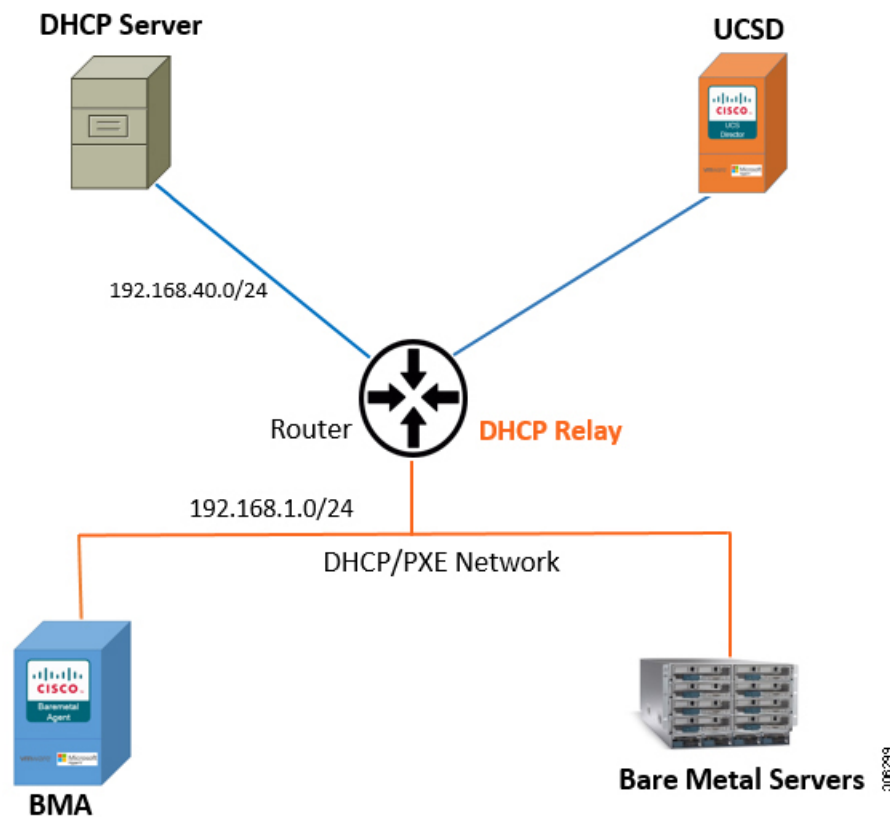
The following figure shows the sample topology for OS deployment over PXE from Cisco UCS Director using an external DHCP server, Bare Metal Agent, and bare metal servers in the same subnet.
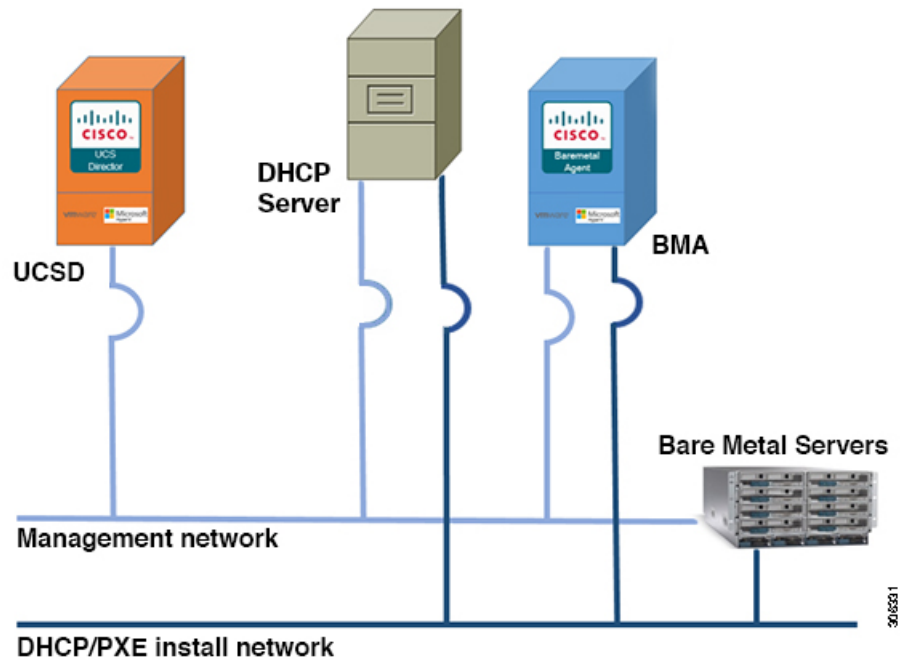
Configuring the DHCP Server on Linux OS

Step 1   Disable the DHCP services on the BMA. Perform the following:

a) Log on to the Bare Metal Agent VM using SSH client as 'shelladmin' user. See, Shelladmin Script for Bare Metal Agent, on page 9.

b) Choose the **Disable DHCP Service** option to stop the DHCP service.

> **Note**   In future, if you want to use the DHCP service on the same BMA, you can choose the **Enable DHCP Service** option to start the DHCP service.

Step 2   Perform the following in the router:

a) Enable routing between the BMA or the Bare Metal server subnet and the DHCP server subnet.

b) Enable the DHCP functionality on the router.

c) Configure DHCP relay agent such that the DHCP relay address points to the DHCP server IP address.

Step 3   Perform the following on the Linux server to configure the DHCP server:

a) Copy the network details of the BMA or the Bare Metal server subnet to `/etc/dhcpd.conf` file.

b) Configure the DHCP configuration file having the 'next-server' IP with the BMA PXE interface IP address.

> **Note**   DHCP relay configuration is only needed when the DHCP server and the target bare metal servers on the different subnet.

c) Configure the PXE binary.

```
if substring (option vendor-class-identifier, 15,5) = "00000" {
filename "/ipxelinux.0";
}else{
```

```
        filename "ipxe.efi";
    }
```

The following is a sample of the DHCP configuration file on the Linux OS which is catering DHCP services to two subnets. You can customize the DHCP configuration based on your requirements.

```
#
# DHCP Server Configuration file.
#   see /usr/share/doc/dhcp*/dhcpd.conf.sample
#
ddns-update-style interim;
ignore client-updates;
subnet 192.168.4.0  netmask 255.255.255.0 {
        option routers                  192.168.4.1;
#       option subnet-mask              255.255.255.0;
#       option nis-domain               "domain.org";
#       option domain-name              "domain.org";
#       option domain-name-servers      192.168.55.1;
        option time-offset              -18000; # Eastern Standard Time
        range dynamic-bootp 192.168.4.100 192.168.4.200;
        default-lease-time 21600;
        max-lease-time 43200;
        allow booting;
        allow bootp;
        next-server 192.168.4.20; # IP of the BMA server
        if substring (option vendor-class-identifier, 15, 5) = "00000" {
                filename "/ipxelinux.0";
        }else{
                filename "/ipxe.efi";
        }
}




subnet 192.168.1.0  netmask 255.255.255.0 {
        option routers                  192.168.1.1;
#       option subnet-mask              255.255.255.0;
#       option nis-domain               "domain.org";
#       option domain-name              "domain.org";
#       option domain-name-servers      192.168.55.1;
        option time-offset              -18000; # Eastern Standard Time
        range dynamic-bootp 192.168.1.100 192.168.1.220;
        default-lease-time 21600;
        max-lease-time 43200;
        allow booting;
        allow bootp;
        next-server 192.168.1.60; # IP of my PXE server
        if substring (option vendor-class-identifier, 15, 5) = "00000" {
                filename "/ipxelinux.0";
        }else{
                filename "/ipxe.efi";
        }
}
```

Configuring the DHCP Server on Windows OS

Step 1   Disable the DHCP services on the BMA. Perform the following:

a) Log on to the Bare Metal Agent VM using SSH client as 'shelladmin' user. See, Shelladmin Script for Bare Metal Agent, on page 9.

b) Choose the **Disable DHCP Service** option to stop the DHCP service.

> **Note**   In future, if you want to use the DHCP service on the same BMA, you can choose the **Enable DHCP Service** option to start the DHCP service.

Step 2   Perform the following in the router:

a) Enable routing between the BMA or the Bare Metal server subnet and the DHCP server subnet.

b) Enable the DHCP functionality on the router.

c) Configure DHCP relay agent such that the DHCP relay address points to the DHCP server IP address.

> **Note**   DHCP relay configuration is only needed when the DHCP server and the target bare metal servers on the different subnet.

Step 3   Perform the following on the Windows server to configure the DHCP server:

a) Configure the firewall rules on the Windows server to allow the DHCP requests.

b) Configure the DHCP scope options with the network details of the BMA or the Bare Metal server subnet.

c) Choose the **066-Boot Server Host Name** option and specify the BMA PXE interface IP address in the **Data entry**
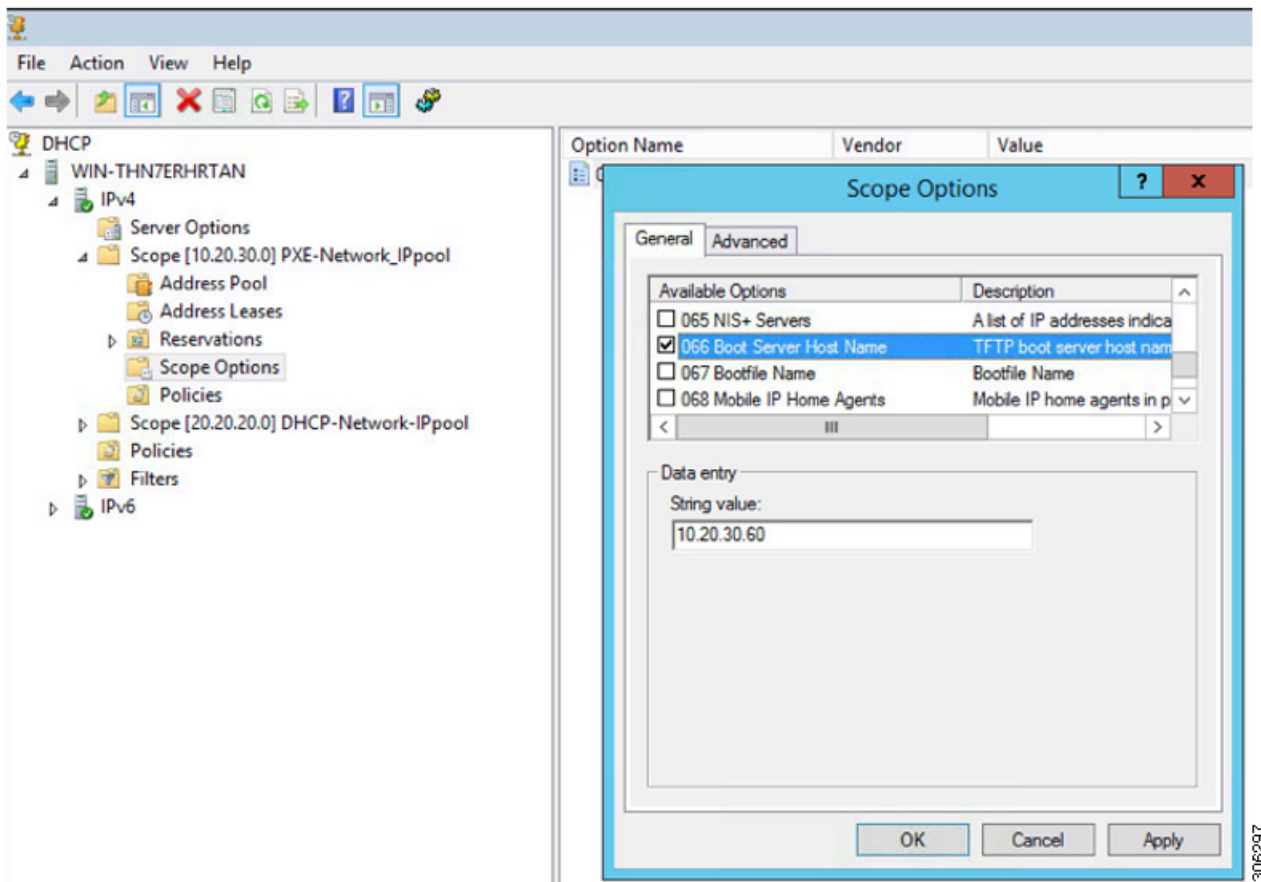
d) Choose the **067-Bootfile Name** option and enter `ipxelinux.0` in the **Data entry**
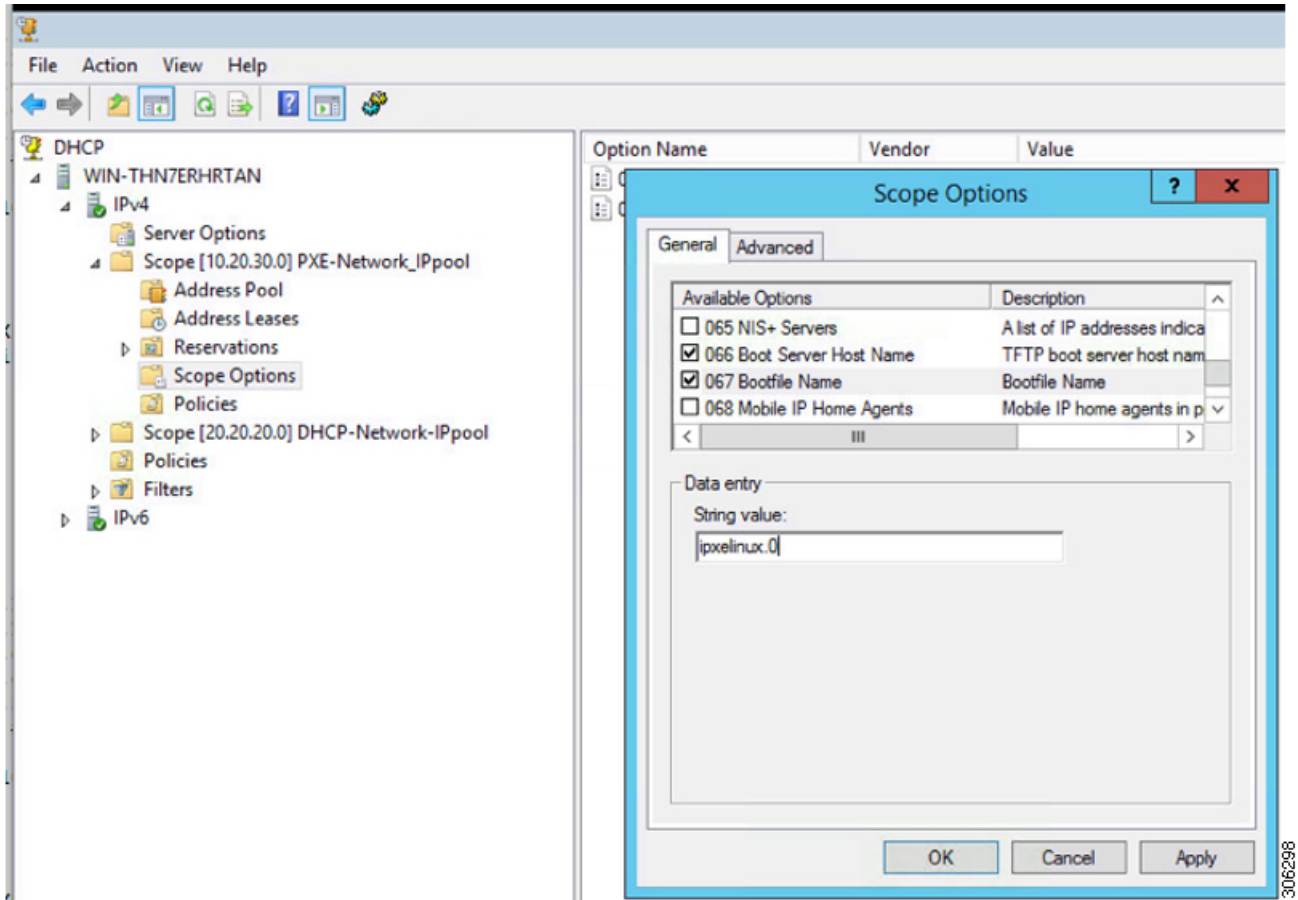
Viewing the DHCP Logs for a Bare Metal Agent Account

Step 1   Choose **Administration** > **Physical Accounts**.

Step 2   On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3   Click the row for the Bare Metal Agent account for which you want to view the DHCP logs.

Step 4   Click the down arrow at the end of the button bar and choose **View DHCP Logs**.

The **View Bare Metal Agent DHCP Log** window displays the contents of the DHCP server logs for the account.

Viewing the Logs for a Bare Metal Agent Account

Step 1   Choose **Administration** > **Physical Accounts**.

Step 2   On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3   Click the row for the Bare Metal Agent account for which you want to view the logs.

Step 4   Click the down arrow at the end of the button bar and choose **View BMA Logs**.

The **View Bare Metal Agent Log** window displays the logs for the account.

Viewing Operating System Images

You can view a list of the operating system (OS) images that have been created and are available for a Bare Metal Agent account.

Step 1   Choose **Administration** > **Physical Accounts**.

Step 2   On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3   Click the row for the Bare Metal Agent account for which you want to view OS images.

Step 4   Click **View Details**.

Step 5   Click **BMA OS List**.

Viewing PXE Service Requests

You can view information about PXE requests made through a workflow that have an associated service request. You cannot view details of PXE requests that are not made through a workflow, as those requests are not associated with a service request.

The information provided about each PXE request includes the following:

- Service request ID

- Request type

- User who initiated the request

- Name of the catalog or workflow that was used to create the request

- Any comments provided by the user who initiated the request

- Time of the request

- Status of the request

- Rollback type, if applicable

Step 1   Choose **Administration** > **Physical Accounts**.

Step 2   On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3   Click the row for the Bare Metal Agent account for which you want to view PXE service requests.

Step 4   Click **View Details**.

Step 5   Click **PXE Service Requests**.

Viewing the Network Interface Details for a Bare Metal Agent Account

Step 1   Choose **Administration** > **Physical Accounts**.

Step 2   On the **Physical Accounts** page, click **Bare Metal Agents**.

Step 3   Click the row for the Bare Metal Agent account for which you want to view the network interface details.

Step 4   Click the down arrow at the end of the button bar and choose **View Details**.

Step 5   Click **Network Interface Summary**. The network interface details are displayed.

Shelladmin Script for Bare Metal Agent

Step 1   Log on to the Bare Metal Agent VM using SSH client as 'shelladmin' user.

Example:

The following list of services appears:

```
BMA | Version:6.8.0.0 | UpTime:  03:34:47 up 10 days,  2:38

0)  Quit
1)  Display Services Status
2)  Stop Services
3)  Start Services
4)  Display Samba Service
5)  Stop Samba Service
6)  Start Samba Service
7)  Change Samba Password
8)  Disable DHCP Service
9)  Enable DHCP Service
10) Time Sync
11) Ping Hostname/IP Address
12) Show Version
13) Configure Network Interface
14) Display Network Details
15) Add DNS Server
16) Tail Network Services Logs
17) Tail DHCP Logs
```

```
18) Change DHCP Configuration
19) Run IsoExtractor Script
20) Apply Patch
21) Apply Signed Patch
22) Shutdown Appliance
23) Reboot Appliance
24) Change Root Password
25) Change ShellAdmin Password
26) Login as Root
27) Show UCSD appliance host name
28) BMA Migration
29) Migration Status
```

Step 2   Choose the required option and press **Enter**.

> **Note**   The default password for the shelladmin user is changeme.

Bare Metal Agent Migration Using Shelladmin Script

Step 1   From the Bare Metal Agent Shell menu, choose the **BMA Migration** option and press **Enter**.

The following information displays:

```
***********************************************************************************
****************************    BMA migration     ******************************
***********************************************************************************

Current BMA Version : 6.8.0.0
Stopping BMA services , before Starting migration ..........
Enter existing Baremetal Agent Appliance Address   :
```

Step 2   Enter the existing address of the BMA appliance and press **Enter**.

The following information is displayed:

```
Enter root password   of xxxxxx        :
```

Step 3   Enter the root password and press **Enter**.

The following information is displayed:

```
Existing Baremetal Agent Appliance Address   : xxx.xx.xxx.xxx
Required disk space : 10745 MB
Available free disk space : 87622 MB
Stop BMA service for 10.29.160.107
Copying ipconfig files of Legacy BMA
Warning: Permanently added 'xxx.xx.xxx.xxx' (ECDSA) to the list of known hosts.
Copying the version information from existing appliance...
Copying dhcpd.conf file from the existing BMA...
Copying provisioned image files from the existing BMA. This may take some time depending on the number
 of images provisioned and the network speed
Copying image templates from the existing BMA...
Copying osImagesRepository from the existing BMA...
Copying pxelinux configuration files from the existing BMA...
Copying megasr driver and its softlinks from existing BMA...
```

```
Copied megasr softlinks from existing BMA
Copying image softlinks from existing BMA...
Copied image softlinks from existing BMA
Copying windows  Win2k12R2x64 image...
Copying windows  Win2k12x64 image...
Copying windows  Win2k8R2x64 image...
Copying windows  Win2k16x64 image...
Copying windows  Win2k19x64 image...
Copying as-repository folder...
Migrating Boot folder for Windows PXE.
Migrating web folder...
Completed BMA Migration.
Starting BMA services , after migration .........
Completed the Baremetal Agent Migration process successfully.
Generated migration log file at /var/log/bmaMigrationLogs.txt
Migrated BMA successfully
Press return to continue:
```

Note

Step 4   Press **Enter** to return to complete the process.

Viewing the Bare Metal Agent Migration Status

From the Bare Metal Agent Shell menu, choose the **Migration Status** option and press **Enter**.

The following information displays:

```
Migration Status : Completed
Successfully completed the BMA migration.
Press return to continue:
```

Note   The BMA migration status can be one of the following:

- Completed

  Note   When the migration status is displayed as **Completed**, log in to Cisco UCS Director, Release 6.8 and choose **Administration > Physical Accounts** and click **Bare Metal Agent**. On the **Add Bare Metal Agent Appliance** screen, delete the BMA account (specific to version 6.7.4.x) and add the BMA account (migrated BMA, version 6.8.0.0) to Cisco UCS Director, Release 6.8.

- In Progress

- Failed

- Not Triggered

Setting Up UEFI as Network Boot Manager

The following are the list of operating system supported for UEFI booting:

- Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, and Windows Server 2019

- ESXi 6.5, ESXi 6.7, and ESXi 7.0

- Centos 7.x and Centos 8.x

- RHEL 7.x and RHEL 8.x

- SLES 12 and above

For more information, see Cisco UCS Director Compatibility Matrix, Release 6.7.

> **Note** RHEL 7.3 and Centos 7.3 installation are not supported for UEFI booting. OS kernels which are not compiled with EFI stub are also not supported.

Step 1 Create a catalog from the Bare Metal Agent 6.5.

> **Note** For Non-Windows operating system, provision the OS image from the Cisco UCS Director UI or run **isoExtractor.sh** available in /opt/infra folder. See, Configuring Cisco UCS Director Bare Metal Agent. However, for Windows operating system, ensure that ipxe-uefi.cfg and autounattend-uefi.xml files are available in the catalog.

Step 2 Choose **iPXE-UEFI** as the network boot manager. See, Provisioning OS Images through Orchestration Workflow Tasks.

> **Note** iPXE-UEFI supports TFTP protocol by default. However, you can modify the ipxe-uefi.cfg with the following details to support the HTTP protocol. HTTP protocol with UEFI does not work on all servers.

```
#!ipxe
initrd  http://$PXE_NATIVE_WEBSERVER/$PXE_OS/isolinux/initrd.img
kernel  http://$PXE_NATIVE_WEBSERVER/$PXE_OS/isolinux/vmlinuz initrd=initrd.img ks=$PXE_KS_URL
 net.ifnames=0 biosdevname=0
initrd  http://$PXE_NATIVE_WEBSERVER/$PXE_OS/isolinux/initrd.img
boot
```