Cisco Prime Network Registrar IPAM 8.3 Quick Start Guide

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Overview

Welcome to the Cisco Prime Network Registrar IP Address Management (IPAM) 8.3 system. The Cisco Prime Network Registrar IPAM is a software solution that helps organizations plan and maintain their IP address space.

Note: CPNR IPAM 8.3 and later versions will not support Solaris. Refer to earlier versions of IPAM documents if you want to use IPAM with Solaris support.

This Quick Start Guide is designed to help you begin using the IPAM system as rapidly and in as few steps as possible. It does not cover every feature; you may refer to the Install Guide and User Guide for more information on the overall functioning of IPAM.

This guide includes two sections as described below:

- The first section "**Quick Start**" is designed to step you through getting a live or test deployment up and running quickly. Use this section if you want to create a live working version of IPAM with real network information and working DHCP and/or DNS servers.
- The second section "**Sample Implementation**" provides a tutorial and example implementation that can be used and created within IPAM for your reference. We'll walk through creating topology and address space for a fictional company.

Through the course of this guide, you will perform the following:

- Log in to the system
- Create IP Address and network infrastructure
- Maintain IP Address space inventory
- Create and deploy a DHCP server and DHCP services
- Create and deploy a DNS server and DNS services

This document assumes you have already installed the IPAM product. Further, the following assumptions are made:

- IPAM is installed with all options and in a single-server environment.
- You possess a valid software license key. If you have not yet purchased IPAM, contact Cisco Sales for a demonstration/evaluation license key.
- You have a moderate understanding of IP network subnetting, DHCP and DNS services.

In this Quick Start Guide, we will walk you through the steps required to quickly get your IPAM system up and running with a minimal configuration.

Note: For information on installing IPAM, see the Guide to Install Cisco Prime Network Registrar IP Address Management (IPAM) 8.3.

Quick Start

In this section, we will walk you through the steps required to quickly get your IPAM system up and running with a minimal configuration.

If you would rather learn about the system, by modeling a sample network within IPAM, refer to our "**Sample Implementation**" section of this guide.

Logging into the IPAM Web Interface

You need to log into the IPAM user interface to perform all functions. All administration of IPAM is accomplished via a Web browser.

To login into IPAM, follow these steps:

1. Open your Web browser.
2. In the Address bar, type the following URL:
   http://xxx.xxx.xxx.xxx:8080/incontrol
   where xxx.xxx.xxx.xxx is the IP address of the IPAM 8.3 Executive. One example might be:
   http://172.16.32.50:8080/incontrol or
   http://nc.company.com:8080/incontrol

Note: Windows Internet Explorer users trying to access the IPAM web interface – If you are unable to see the login screen (but the title bar reads "Cisco Prime Network IPAM"), then you will need to add the URL you're using as a trusted site. Follow these steps to do so:

- In IE, go to Tools > Internet Options > Security.
- Click the Trusted Sites icon.
- Click the Sites… button.
- Add the IPAM Executive's DNS name or IP address in one of the following formats:
  - http://executivename.company.com

- http://10.20.30.40

(replacing the above value with your actual value)

- Click OK, then click OK again.
- Refresh the page. It should now present the login page properly.

3. You'll see the IPAM login screen. If this is the first time you're using IPAM, the default user name is incadmin with password incadmin.
4. Enter your login name and password, and click "Log In".
5. If you have not yet entered your license key within the system, the license key entry screen will appear.
6. Enter your license key provided by Cisco, and click the "Submit" button. You will return to the login page, where you may now enter your login and password information.
7. After a successful login, you will be presented with the Container View page for the top-level InControl container. From there you can navigate to Home page using the "Home" icon.

Creating Network Topology

The next step is to define your network topology within the IPAM system. For this section of the guide, we will model a simple hierarchy, but you may substitute this simple hierarchy for something more complex for your deployment. We will define the following:

- Simple Container Structure
- IP Address space (subnets) that can be managed
- DHCP Server
- DNS Server

Container Maintenance

The next step is to create our container structure that helps to organize our network within IPAM. Containers are organizational units by which IPAM administrators can create a hierarchy of their company's network structure.

You will need to plan your container structure and implement it within the system. In this section we'll create a single hierarchy of containers to represent a geographic view of a small network. You may model this hierarchy of containers any way you would like.

Adding Containers

1. From the **Management** menu, choose **Container Maintenance.**
2. Click the **"Add Child Container"** link.
3. In the Name field, type **Americas**.
4. Click Submit to create the container.

5. Click the **Refresh** link on the left-hand side of the screen. You should now see **Americas** underneath the InControl container.
6. Repeat this step as many times as you like to set up your container structure. Note that the instructions below will just reference the "**Americas**" container.

Perquisite

Follow the IPAM Installation guide and install IPAM remote agent (by choosing option 3 during installation) in the server where CPNR DHCP/DNS/CDNS server is running. Once done with the installation of remote agent, add the agent details in IPAM webui using Tools -> Agents menu.

Please note that this agent has to be used as 'Agent' while configuring CPNR DHCP/DNS/CDNS server in IPAM.

Define a CPNR DHCP Server

The next step is to define a DHCP server that will be used to serve DHCP addresses to your clients.

To define a DHCP server within the system, perform the following steps:

1. Click on the **Management** Menu Tab.
2. Click on the **Servers/Services** sub menu item under the **DHCP** section of the menu.
3. Click on the **Add Network Service** link to add a new DHCP server.
4. The Add DHCP server screen will appear.
5. Enter the name of this DHCP Server. Typically, this will be the fully qualified domain name of the system where the service is running.
6. Enter the IP Address of the system were the DHCP server was installed.
7. Select "**CNR DHCP (8.3)**" for the Product Name of this DHCP server.

8. Choose the DHCP Version as **"Both DHCPv4/v6"** and the value of the Agent as the **name of the IPAM Remote Agent** (installed in the server where DHCP is running) and leave the defaults the way they are for **"Default Scope Utilization"** and **"Include during global synchronization".**
9. Click on the **"Management"** tab.
10. Select the option **"Collect via CNR SDK"**.
11. Provide **Username, Password, Confirm Password** (username and password of CPNR) and **Port** (default is 1234).
12. Click on the **"Configuration"** tab.
13. For the **"Option Set"** pull down, select **"Cisco DHCP 8.3 Server Template Policy Set"**.
14. For the **"DHCPv4 Option Set"** pull down, select **"Cisco DHCP Option Set"**.
15. For the **"DHCPv6 Option Set"** pull down, select **"Cisco DHCPv6 Option Set"**.
16. Click **"Submit"** to create the DHCP Server. The DHCP server will appear in the network service list.

Define a CPNR DNS Server

The next step is to define your DNS server that will be used to serve DNS information to your clients.

To define a DNS server within the system, perform the following steps:

1. Click on the **Management** Menu Tab.
2. Click on the **Servers/Services** sub menu item under the **DNS** section of the menu.
3. Click on the **Add Network Service** link to add a new DNS service.
4. Select **"CNR DNS Authoritative 8.3"** as a DNS Template for Cisco Prime Network Registrar DNS Server and click **Submit**. The Add DNS server screen displays.
5. Enter the name of this DNS Server. Typically, this will be the fully qualified domain name of the system where the service is running.
6. Enter the **IPv4 Address** of the system were the DNS server was installed.
7. Ensure that the product selected is **"CNR Authoritative DNS 8.3".**
8. Choose the value of the Agent as the IPAM remote agent (running on the machine where CPNR DNS Server is running) and provide the values for **UserID, Password, Confirm password** (CPNR User ID and Password), **Port** (default port number is 1234) and **Nrcmd Directory.**
   Default **nrcmd directory** for:
   CPNR in Windows: C:\Program Files (x86)\Network Registrar\Local\bin
   CPNR in Linux: /opt/nwreg2/local/usrbin

9. Click **"Submit"** to create the DNS Server. The DNS server will appear in the network service list.
10. Now we need to create a DNS Domain that can be associated to this DNS server. Click on the **Management** tab. Click on the **Domains** sub menu item under the DNS section. The DNS Domains screen displays.
11. Click on the **"Add DNS Domain"** link. The **"Create DNS Domain"** screen displays.
12. Enter the name of your DNS domain. For example, use **"CPNR.com"**. Click **"Submit"** to create the domain.
13. Now we will create a **Reverse in-addr.arpa** domain for PTR records. Note that the system can automatically generate **in-addr.arpa** domains when you are adding address space to the system, but for this example we will perform this option manually.
14. Click on the **"Add DNS Domain"** link. The **"Create DNS Domain"** screen displays.
15. Enter **"10.in-addr.arpa"** for the name of the domain.
16. Click the checkbox **"Reverse"** that indicates that this is a reverse domain. Click **"Submit"** to create the domain.
17. Now we need to create the Zones for the DNS Domains.
18. Click on the **Management** tab and select **Servers/Services** under the DNS section. Click on the **"Zones"** link next to the DNS server that you created above, to add DNS zones to this DNS server.
19. The DNS zone screen will appear. Click on the **"Add DNS Zone"** link to add a new zone. The Add Zone screen displays.
20. Select Zone type of **"master".**
21. Click **Search** and select the **"CPNR.com"** domain.
22. Click **Submit** to create the zone.
23. Now we will perform that same operation for the reverse domain.
24. Click on the **"Add DNS Zone"** link to add a new zone. The Add Zone screen displays.
25. Select Zone type of **"master".**
26. Click **Search** and select the **"10.in-addr.arpa"** domain.
27. Click **Submit** to create the zone.

Defining Address Space

The next step is to define IP Address space to the system. The first step in this process is to define your aggregate root block. The aggregate root block is typically the entire address block that you have received from your Internet Registry, or ISP. In

addition, a root block can be the RFC1918 space that you are using within your network.

To define a root block within the system, perform the following steps:

1. Click on the **Management** Menu Tab and select **Container View**.
2. Click on the **InControl** container on the left hand side of the screen.
3. Click **Add Root Block** to add aggregate root space to system.
4. The "Add Root Block" option displays.
5. Enter the Address space such as "**10.0.0.0**".
6. Select block type "**Any**".
7. Select the IP Address Version as **IPv4.**
8. Select the block size, such as **"/8".**
9. Select the "**Internet Registry**" such as "**Generic Root Block**" or "**RFC1918 Root Block**".
10. Click **Submit**, the block is added to the system.
11. Now let's deploy some of this space to a portion of our network topology. Click on a child container such as "**Americas**".
12. Click on "**Add Child Block**" on the container screen. The "Add Child Block" screen will appear.
13. Select a Block Type of "**Any**".
14. Select the IP Address Version as **IPv4**.
15. Select a Block Size to allocate within this container, for example **"/24**".
16. Click "**Submit**" to allocate this space and assign it as in-use.
17. Click on the Block link for the block that you just created.
18. The **Subnet Detail** screen for the subnet you just created will be displayed. You may now begin to allocate individual IP Addresses within the system. For our

example, we will create a router, and then an address pool that will serve DHCP ranges.

19. Select the IP Address **10.0.0.1** link from the screen. The add IP Address screen will appear.
20. Select Address Type of **Static**.
21. Select Device Type of **Router**.
22. The hostname should automatically be created for you, due to the Naming Policy that can be customized.
23. Select the Domain **Search** button, and select "**cpnr.com**" as the domain. Note that you can create a default domain for all the addresses within a subnet, by modifying the Subnet Policies.
24. If you click on the "**Resource Records**" tab, you will notice that the A and PTR records are automatically created for you.
25. Click **Submit** to create the IP Address.
26. Once you are returned to the subnet detail display, click on the **Add IP Address Pool** to create an address pool that will be configured on the DHCP server.
27. The Add IP Address Pool screen will be displayed.
28. Choose the "**Address Options**" as '**Manual**', enter the size as **20**, specify the start address as "**10.0.0.2**" and the end address as "**10.0.0.20"**.
29. For address type, select "**Dynamic DHCP**".
30. For the Primary DHCP Server, select your CPNR DHCP server that you have defined.
31. Click **Submit** to create the address pool.
32. You have now completed defining static and dynamic DHCP entries for your network.

Deploying Configuration to your Network Services

The next step is to deploy the DHCP and DNS configuration changes to your network services.

1. Click on the **Management** Menu Tab.
2. Click on the **Configuration/Deployment** menu item under the **DNS** section.
3. Select the **Search** button and select the DNS server that you have defined.
4. For task type, select "**Update Configuration**". This will deploy the configuration file and zone file(s) to the DNS server.
5. Select the **Submit** button to deploy the configuration to the DNS server.
6. Now, let's deploy the DHCP configuration to the DHCP server as well. Click on the **Configuration/Deployment** menu item under the **DHCP** section.
7. For task type, select "**DHCP Configuration – All Files**".
8. Select the **Search** button and select the DHCP server that you have defined.
9. Select the **Submit** button to deploy the configuration to the DHCP server.
10. By clicking on the Tasks menu item, you can view the status of the deployment tasks to see if any errors occurred.
11. Once the deployment is complete, the services should now be up and running with the configuration that you provided.

Sample Implementation

Logging into the IPAM Web Interface

You need to log into the IPAM user interface to perform all functions. All administration of IPAM is accomplished via a Web browser.

To login into IPAM, follow these steps:

1. Open your Web browser.
2. In the Address bar, type the following URL:
   http://xxx.xxx.xxx.xxx:8080/incontrol
   where xxx.xxx.xxx.xxx is the IP address of the IPAM Executive. One example might be:
   http://172.16.32.50:8080/incontrol or
   http://nc.company.com:8080/incontrol

Note: Windows Internet Explorer users trying to access the IPAM web interface – If you are unable to see the login screen (but the title bar reads "Cisco Prime Network Registrar IPAM"), then you will need to add the URL you're using as a trusted site. Follow these steps to do so:

- In IE, go to Tools > Internet Options > Security.
- Click the Trusted Sites icon.
- Click the Sites… button.
- Add the IPAM Executive's DNS name or IP address in one of the following formats:
  - http://executivename.company.com
  - http://10.20.30.40

(replacing the above value with your actual value)

- Click OK, and then click OK again.
- Refresh the page. It should now present the login page properly.

3. You'll see the IPAM login screen. If this is the first time you're using IPAM, the default user name is **incadmin** with password **incadmin**.
4. Enter your login name and password, and click "**Log In**".
5. If you have not yet entered your license key within the system, the license key entry screen will appear.
6. Enter your license key provided by Cisco, and click the "**Submit**" button. You will return to the login page, where you may now enter your login and password information.
7. After a successful login, you will be presented with the InControl Container View Page. From there you can navigate to Home page using the "Home" icon.

Creating Network Topology

This section will step you through creating a simple network topology that will be the foundation of your IP Address Management system.

Block Types

1. Once you have logged in, click on the **Tools** menu item and select **Block Types**.
2. The first step is to create block types. **Block types** allow you to differentiate your IP address space by function or device role. For example, you may want to distinguish between blocks assigned to DHCP clients and blocks assigned to network infrastructure devices (switches and routers). In this case we'll use Block Types to differentiate between address space that we will use for Internal Topology, Data, and Voice over IP space.
3. Choose **Block Types** from the **Tools** menu.
4. Click the **Add Block Type** link.
5. In the Block Type Name field, type **Internal Topology**. This will represent the internal networks that are used for routers and connecting the network to the Internet.
6. In the Parent Block Type field, choose **Any**.
7. Leave the checkboxes unchecked, and click **Submit.** This adds the block type and takes you back to the Block Type List screen.
8. Now add the second block type of **Data**. Click the **Add Block Type** link.
9. In the Block Type Name field, type **Data**. This will represent the address space that can be used by desktops, laptops, and other devices for standard data traffic such as web and email.
10. In the Parent Block Type field, choose **Any**.
11. Leave the checkboxes unchecked, and click **Submit.** This adds the block type and takes you back to the Block Type List screen.
12. Now add the third block type of **VoIP**. Click the **Add Block Type** link.

13. In the Block Type Name field, type **VoIP**. This will represent the address space that can be used by Voice over IP Telephones.
14. In the Parent Block Type field, choose **Any**.
15. Leave the checkboxes unchecked, and click **Submit.** This adds the block type and takes you back to the Block Type List screen.
16. You should now have a total of 4 block types defined within your system.

Container Maintenance

The next step is to create our container structure that helps to organize our network within IPAM. Containers are organizational units by which IPAM administrators can create a hierarchy of their company's network structure.

In this section we'll create a small hierarchy of containers to represent a geographic view of the sample network, this will consist of three second-level containers; "**Headquarters**", "**Operations**", and "**Add Block Type**". It will then contain third-level containers to represent the "**US Sales** and **Marketing**" and "**Europe Sales**" levels.

It's imperative to pay special attention to the currently selected container on the left-hand side of the screen to ensure child blocks are created with the correct parent. There are two steps in this section: editing the InControl container to allow Root blocks to be created, and creating containers to hold address blocks.

Editing the default InControl container

1. From the **Management** menu, select **Container Maintenance**.
2. Click the **Edit Container** link.

3. In the Rules section, click **the Allow Root Block Creation** Tab.
4. Enable root blocks to be created for all Block types by clicking on the checkbox next to each block type.
5. Click **Submit** to save your changes.

Adding New Containers

1. From the **Management** menu, select **Container Maintenance.**
2. Click the **Add Child Container** link.
3. In the Name field, type **Headquarters**.
4. Click Submit to create the container.
5. Click the **Refresh** link on the left-hand side of the screen. You should now see **Headquarters** underneath the InControl container.
6. Click on the InControl container on the left-hand side of the screen to ensure it is selected as the current container.
7. Click the **Add Child Container** link.
8. In the Name field, type **Operations**.
9. Click **Submit.**
10. Click the **Refresh** link on the left-hand side of the screen. You should now see both **Headquarters** and **Operations** underneath the InControl container.
11. Click on the **InControl** container on the left-hand side of the screen to ensure it is selected as the current container.
12. Click the **Add Child Container** link.
13. In the Name field, type **Sales and Marketing**.
14. Click **Submit.**
15. Click the **Refresh** link on the left-hand side of the screen. You should now see **Headquarters, Operations**, and **Sales and Marketing** underneath the InControl container.
16. Click on the **Sales and Marketing** container on the left-hand side of the screen to ensure it is selected as the current container.
17. Click the **Add Child Container** link.

18. In the Name field, type **US Sales and Marketing**.
19. Click **Submit.**
20. Click the **Refresh** link on the left-hand side of the screen. If you expand the entire tree, you will see the **US Sales and Marketing** container under the **Sales and Marketing** container.
21. Click on the **Sales and Marketing** container on the left-hand side of the screen to ensure it is selected as the current container.
22. Click the **Add Child Container** link.
23. In the Name field, type **Europe Sales**.
24. Click **Submit.**
25. Click the **Refresh** link on the left-hand side of the screen. If you expand the entire tree, you will see the **US Sales and Marketing,** and **Europe Sales** container under the **Sales and Marketing** container.

Allocate IP Address Block Space

In this section we'll assign address blocks to the containers created in the previous section. We will assign all RFC1918 space for the purposes of this sample, although in reality, this company would deploy routable IP Address space.

Create Root Block

1. Select **Container View** from the **Management** Menu**.**
2. Click **Add Root Block** to add aggregate root space to system.
3. The "Add Root Block" screen displays.
4. Enter the Address space "**10.0.0.0**".
5. Select block type "**Any**".
6. Select **"IPv4".**
7. Select the block size, "**/8 – 16777214 Hosts**".
8. Click **Submit**, the block is added to the system.

Allocate Space to Headquarters

1. Now let's deploy some of this space to a portion of our network topology. Click on the child container "**Headquarters**".
2. Click on "**Add Child Block**" on the container screen. The "Add Child Block" screen will appear.
3. Select a Block Type of "**Internal Topology**".
4. Select "**IPv4**" to allocate IPv4 space.
5. Select a Block Type of "**Internal Topology**".
6. Select the Block Size of "**/24**" to allocate to this container.
7. Click "**Submit**" to allocate this space and assign it as in-use.
8. Click on the child container "**Headquarters**" within the tree on the left hand side of the screen.
9. Click on "**Add Child Block**" on the container screen.

10. Select a Block Type of "**Data**".
11. Select the Block Size of "**/25**" to allocate to this container.
12. Click "**Submit**" to allocate this space and assign it as in-use. You have now allocated space for both the CoreNet and HQNet segments of your network.

Allocate space to Operations

1. Click on the child container "**Operations**" within the tree on the left hand side of the screen.
2. Click on "**Add Child Block**" on the container screen.
3. Select a Block Type of "**Data**".
4. Select the Block Size of "**/23**" to allocate to this container.
5. Click "**Submit**" to allocate this space and assign it as in-use.
6. Click on the child container "**Operations**" within the tree on the left hand side of the screen.
7. Click on "**Add Child Block**" on the container screen.
8. Select a Block Type of "**VoIP**".
9. Select the Block Size of "**/24**" to allocate to this container.
10. Click on "**Submit**" to allocate this space. You have now allocated space for both the OpsNet1 and the OpsNet2 segments of your network.

Allocate space to Sales and Marketing

1. Click on the child container "**US Sales and Marketing**" within the tree on the left hand side of the screen.
2. Click on "**Add Child Block**" on the container screen.
3. Select a Block Type of "**Data**".
4. Select the Block Size of "**/24**" to allocate to this container.
5. Click "**Submit**" to allocate this space and assign it as in-use.
6. Click on the child container "**US Sales and Marketing**" within the tree on the left hand side of the screen.
7. Click on "**Add Child Block**" on the container screen.
8. Select a Block Type of "**VoIP**".

9. Select the Block Size of "**/24**" to allocate to this container.
10. Click "**Submit**" to allocate this space and assign it as in-use.
11. You have now allocated space for both the USSales1 and the USSales2 segments of your network.
12. Click on the child container "**Europe Sales**" within the tree on the left hand side of the screen.
13. Click on "**Add Child Block**" on the container screen.
14. Select a Block Type of "**Data**".
15. Select the Block Size of "**/25**" to allocate to this container.
16. Click "**Submit**" to allocate this space and assign it as in-use.
17. You have now completed adding all the space to our sample network. If you would like to see a summary, click on the "**InControl**" container within the tree on the left hand side of the screen. Uncheck the "**Show only blocks assigned to this container**" to see all the address blocks.

Define a CPNR DHCP Server

The next step is to define a DHCP server that will be used to serve DHCP addresses to our clients.

To define a DHCP server within the system, perform the following steps:

1. Click on the **Management** Menu Tab, and select **Servers/Services** under the **DHCP** section.
2. Click on the **Add Network Service** link to add a new DHCP service.
3. The Add DHCP server screen will appear.
4. Enter the name of "**dhcp-hq.sampleco.com**" which is the fully qualified domain name for this DHCP Server.
5. Enter the IP Address of "**10.0.0.2**" which is on the CoreNet segment.
6. Select "**CNR DHCP 8.3**" for the Product Name of this DHCP server.
7. Choose the DHCP Version **as "Both DHCPv4/v6"** and the value of the Agent as the name of the **IPAM Remote Agent** (installed in the server where DHCP is running) and leave the defaults the way they are for **"Default Scope Utilization"** and **"Include during global synchronization"**.
8. Click on the **"Management"** tab.
9. Select the option **"Collect via CNR SDK"**.
10. Provide **UserID, Password, Confirm Password** (username and password of CPNR) and **Port** (default is 1234).
11. Click on the **"Configuration"** tab.
12. For the **"Option Set"** pull down, select **"Cisco DHCP 8.3 Server Template Policy Set"**.
13. For the **"DHCPv4 Option Set"** pull down, select **"Cisco DHCP Option Set"**.
14. For the **"DHCPv6 Option Set"** pull down, select **"Cisco DHCPv6 Option Set"**.
15. Click "Submit" to create the DHCP Server. The DHCP server will appear in the network service list.

Define a CPNR DNS Server

The next step is to define your DNS server that will be used to serve DNS information to your clients.

To define a DNS server within the system, perform the following steps:

1. Click on the **Management** Menu Tab, and select **Servers/Services** under the **DNS** section.
2. Click on the **Add Network Service** link to add a new DNS service.
3. Select **"CNR DNS Authoritative 8.3"** as a DNS Template for Cisco Prime Network Registrar DNS Server and click **Submit**. The Add DNS server screen displays.
4. Enter "**dns1-hq.sampleco.com"** which is the fully qualified name of this DNS Server.
5. Enter the IP Address of "**10.0.0.3**" which is on the CoreNet segment.
6. Ensure that the product is selected as **"CNR Authoritative DNS 8.3".**
7. Choose the value of the Agent as the **IPAM Remote Agent** (running on the machine where CPNR DNS Server is running) and provide the values for **UserID, Password, Confirm password** (CPNR UserID and Password), **Port** (default port number is 1234) and **Nrcmd Directory.**
   Default **nrcmd directory** for:
   CPNR in Windows: C:\Program Files (x86)\Network Registrar\Local\bin
   CPNR in Linux: /opt/nwreg2/local/usrbin
8. Click **"Submit"** to create the DNS Server. The DNS server will appear in the network service list.
9. Now we need to create a DNS Domain that can be associated to this DNS server. Click on the **Management** tab. Click on the **Domains** sub menu item under the DNS section. The DNS Domains screen displays.
10. Click on the **"Add DNS Domain"** link. The **"Create DNS Domain"** screen displays.
11. Enter the name of your DNS domain. For our example, we will use "**sampleco.com**". Click "**Submit**" to create the domain.
12. Now we will create a **Reverse in-addr.arpa** domain for PTR records. Note that the system can automatically generate **in-addr.arpa** domains when you are adding address space to the system, but for this example we will perform this option manually.
13. Click on the **"Add DNS Domain"** link. The **"Create DNS Domain"** screen displays.
14. Enter **"10.in-addr.arpa"** for the name of the domain.
15. Click the checkbox **"Reverse"** that indicates that this is a reverse domain. Click **"Submit"** to create the domain.
16. Now we need to create the Zones for the DNS Domains.

17. Click on the **Management** tab and select **Servers/Services** under the DNS section. Click on the **"Zones"** link next to the DNS server that you created above, to add DNS zones to this DNS server.
18. The DNS zone screen will appear. Click on the **"Add DNS Zone"** link to add a new zone. The Add Zone screen displays.
19. Select Zone type of **"master".**
20. Click **Search** and select the "**sampleco.com**" domain.
21. Click **Submit** to create the zone.
22. Now we will perform that same operation for the reverse domain.
23. Click on the **"Add DNS Zone"** link to add a new zone. The Add Zone screen displays.
24. Select Zone type of **"master".**
25. Click **Search** and select the **"10.in-addr.arpa"** domain.
26. Click **Submit** to create the zone.

Defining Address Space for Network Services

The next step is to define IP Address space that is used by DHCP servers for hosts within your network. For this example, we will show you how to define some static devices and a dynamic DHCP pool on the HQNet Segment. This process can be repeated for all other segments of the network as needed.

1. Click on the **Management** menu item and select **Container View**.
2. Click on **Headquarters** container within the tree.
3. Click on the **10.0.1.0** block link for your HQNet Segment.
4. The **Subnet Detail** screen for the subnet will be displayed. First we will create a static address representing the router for this subnet.
5. Select the IP Address **10.0.1.1** link from the screen. The add IP Address screen will appear.
6. Select Address Type of **Static**.
7. Select Device Type of **Router**.
8. The hostname should automatically be created for you, due to the Naming Policy that can be customized.
9. Select the Domain **Search** button, and select "**sampleco.com**" as the domain. Note that you can create a default domain for all the addresses within a subnet, by modifying the Subnet Policies.
10. Select Create Default DNS "**Resource Records**" tab, you will notice that the A and PTR records are automatically created for you.
11. Click **Submit** to create the IP Address.
12. Once you are returned to the subnet detail display, click on the **Add IP Address Pool** link to create an address pool that will be configured on the DHCP server.
13. The Add IP Address Pool screen will be displayed.
14. Select the "Address Options" as 'Manual' and enter the starting address as "10.0.1.3" and the ending address as "10.0.1.126".

15. For address type, select "**Dynamic DHCP**".
16. For the Primary DHCP Server, select your CPNR DHCP server that you have defined.
17. Click **Submit** to create the address pool.
18. You have now completed defining static and dynamic DHCP entries for your network.

Deploying Configuration to your Network Services

The next step is to deploy the DHCP and DNS configuration changes to your network services.

1. Click on the **Management** Menu Tab, and select the **Configuration/Deployment** menu item under the DNS section.
2. For task type, select "**Update Configuration**". This will deploy the configuration file and zone file(s) to the DNS server.
3. Select the **Search** button and select the DNS server that you have defined.
4. Select the **Submit** button to deploy the configuration to the DNS server.
5. Now, let's deploy the DHCP configuration to the DHCP server as well.
6. Click on the **Management** Menu Tab, and select the **Configuration/Deployment** menu item under the DHCP section.
7. For task type, select "**DHCP Configuration – All Files**".
8. Select the **Search** button and select the DHCP server that you have defined.
9. Select the **Submit** button to deploy the configuration to the DHCP server.
10. By clicking on the Tasks menu item, you can view the status of the deployment tasks to see if any errors occurred.
11. Once the deployment is complete, the services should now be up and running with the configuration that you provided.