Configure Dual Stack IPv6

Dual Stack Addressing Overview

If your SIP deployment requires IPv6 addressing, you can configure Cisco Unified Communications Manager to support dual stack IPv4 and IPv6 addressing. By default, Cisco Unified Communications Manager is enabled for IPv4 addressing. At the system level, you cannot configure Cisco Unified Communications Manager to support IPv6 only because the system must still interact with devices that support IPv4 only. However, if you require IPv6 addressing, you can configure dual stack trunks and devices.

Dual Stack IPv6 at the System Level

When Cisco Unified Communications Manager is configured for dual stack addressing the system can set up calls for the following scenarios:

- All devices in the call support IPv4 only
- All devices in the call support IPv6 only
- All devices in the call run in dual-stack mode—In this scenario, the system determines the IP address type by the configuration for the **IP Addressing Mode Preference for Signaling** setting for signaling events and the **IP Addressing Mode Preference for Media** enterprise parameter for media events.
- One device supports IPv4 only and the other supports IPv6 only—In this scenario, Cisco Unified Communications Manager inserts an MTP into the call path to translate the signaling between the two addressing types.

Cisco Unified Communications Manager supports IPv6 addresses for SIP environments only. For H.323 deployments, the system inserts an MTP into the call path so that the IPv4 and IPv6 devices can communicate.

Dual Stack IPv6 for Devices

At the device level you can configure many devices and media resources such as phones, gateways, conference bridges can be configured to use IPv4 addressing only, IPv6 addressing only, or dual stack. You can configure the preferred addressing method both for signaling and for media events.

For SIP devices, you can also configure the Alternate Network Address Types (ANAT) feature allowing a registered SIP device to have both an IPv4 and IPv6 address at the same time. The device can communicate using either address type, thereby allowing the device to interoperate seamlessly in both IPv4 and IPv6 networks. You can enable ANAT for SIP devices by enabling ANAT in the SIP Profile that is assigned to the device.

Dual Stack IPv6 Prerequisites

Before you configure Cisco Unified Communications Manager with dual stack IPv6 support, you must configure the following network servers and devices to support IPv6. For details, refer to your device user documentation:

- Provision a DHCP and DNS server with IPv6 support. The Cisco Network Registrar server supports IPv6 for DHCP and DNS.
- Configure the IOS for network devices such as gateways, routers, and MTPs with IPv6 support.
- Configure your TFTP server to run IPv6.

Dual Stack IPv6 Configuration Task Flow

Complete the following tasks to configure the system for dual stack IPv6.

Procedure

	Command or Action	Purpose
Step 1	Configure IPv6 in Operating System, on page 3	Configure the operating system with support for IPv6 addresses.
Step 2	Configure Server for IPv6, on page 3	Configure the servers in your cluster with IPv6 addresses.
Step 3	Enable IPv6, on page 4	Configure enterprise parameters that enable the system for IPv6.
Step 4	Perform any of the following: • Configure IP Addressing Preference for Cluster, on page 5 • Configure IP Addressing Preferences for Devices, on page 5	You can configure an enterprise parameter to assign a clusterwide IP Addressing preference. If you want to assign different preferences for different groups of endpoints, configure the addressing preference within a Common Device Configuration. Configure cluster settings for which IP addressing method is preferred.
Step 5	Restart Services, on page 6	Restart the following network services: • Cisco CallManager • Cisco CTIManager

	Command or Action	Purpose
		• Cisco IP Voice Media Streaming App • Cisco Certificate Authority Proxy Function

What to do next

To configure dual stack trunks, refer to the chapters for configuring SIP trunks.

To configure dual stack for SIP devices, refer to the sections for the SIP devices that you want to configure.

Configure IPv6 in Operating System

Use this procedure to set up Ethernet IPv6 in Cisco Unified OS Administration.

Procedure

Step 1 From Cisco Unified OS Administration, choose **Settings** > **IPv6** > **Ethernet**.

Step 2 Check the **Enable IPv6** check box.

Step 3 From the **Address Source** drop-down list box, configure how the system acquires the IPv6 address:

- **Router Advertisement**—The system uses stateless autoconfiguration to acquire an IPv6 address.
- **DHCP**—The system acquires an IPv6 address from a DHCP server.
- **Manual Entry**—Choose this option if you want to enter the IPv6 address manually.

Step 4 If you have configured Manual Entry as the means of acquiring an IPv6 address, complete the following fields:

- Enter an **IPv6 Address**. For example, `fd62:6:96:21e:bff:fecc:2e3a`.
- Enter an **IPv6 Mask**. for example, `64`.

Step 5 Check the **Update with Reboot** check box to ensure that the system reboots after you save.

Step 6 Click **Save**.

Configure Server for IPv6

Configure the servers in your cluster with IPv6 addresses.

Procedure

Step 1 From Cisco Unified CM Administration, choose **System** > **Server**.

Step 2 In the **IPv6 Address (for dual IPv4/IPv6)** field, enter one of the following values:

- If you have DNS configured, and your DNS server supports IPv6, enter the server hostname.
- Otherwise, enter the non-link local IPv6 address.

Step 3 Click **Save**.

Step 4 Repeat these steps for each cluster node.

Enable IPv6

If you want to set up IPv6 support in your system, you must enable the system to support IPv6 devices.

Procedure

Step 1 From Cisco Unified CM Administration, choose **System** > **Enterprise Parameters**.

Step 2 Set the value of the **Enable IPv6** enterprise parameter to **True**.

Step 3 Click **Save**.

What to do next

Configure IP addressing preferences for the devices in your cluster. You can apply settings via a clusterwide enterprise parameter or you can use a Common Device Configuration to apply settings to a group of devices that uses that configuration:

- Configure IP Addressing Preference for Cluster, on page 5
- Configure IP Addressing Preferences for Devices, on page 5

Configure IP Addressing Preference

You can configure the IP Addressing preference for individual trunks or SIP devices by configuring a Common Device Configuration that includes the IP address preferences and then applying that configuration to a trunk or device.

Procedure

	Command or Action	Purpose
Step 1	Configure IP Addressing Preference for Cluster, on page 5	Configure the IP Address preference at the system level using clusterwide enterprise parameters. The setting applies to all SIP devices and trunks in the cluster unless an overriding Common Device Configuration is applied to a trunk or device.
Step 2	Configure IP Addressing Preferences for Devices, on page 5	Configure a Common Device Configuration with IP addressing preferences. You can apply the configuration to dual stack devices such SIP trunks, SIP phones, conference bridges, and transcoders.

	Command or Action	Purpose
		Note The IP addressing preference settings in the Common Device Configuration override the clusterwide enterprise parameter settings for the devices that use the Common Device Configuration.

Configure IP Addressing Preference for Cluster

Use this procedure to use enterprise parameters to configure clusterwide IP addressing preferences for dual stack IPv6. The system applies these settings to all SIP trunks and devices unless an overriding Common Device Configuration is applied to a specific trunk or device.

Note The IP address preferences in a Common Device Configuration override the clusterwide enterprise parameter settings for the devices that use that Common Device Configuration.

Procedure

Step 1 From Cisco Unified CM Administration, choose **System** > **Enterprise Parameters**.

Step 2 Set the value of the **IP Addressing Mode Preference for Media** enterprise parameter to **IPv4** or **IPv6**

Step 3 Set the value of the **IP Addressing Mode Preference for Signaling** enterprise parameter to **IPv4** or **IPv6**.

Step 4 Click **Save**.

Configure IP Addressing Preferences for Devices

You can configure IP addressing preferences for individual devices by configuring a Common Device Configuration with the preference settings. You can apply the Common Device Configuration to SIP and SCCP devices that support IPv6 addressing such as trunks, phones, conferences bridges, and transcoders.

Note The IP address preferences in a Common Device Configuration override the clusterwide enterprise parameter settings for the devices that use that Common Device Configuration.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Device** > **Device Settings** > **Common Device Configuration**.

Step 2 Click **Add New**.

Step 3 For SIP trunks, SIP Phones or SCCP phones, choose a value for the **IP Addressing Mode** drop-down list:

- **IPv4 Only**—The device uses only an IPv4 address for media and signaling.
- **IPv6 Only**—The device uses only an IPv6 address for media and signaling.
- **IPv4 and IPv6 (Default)**—The device is a dual-stack device and uses whichever IP address type is available. If both IP address types are configured on the device, for signaling the device uses the **IP Addressing Mode Preference for Signaling** setting and for media the device uses the **IP Addressing Mode Preference for Media** enterprise parameter setting.

Step 4 If you configure IPv6 in your previous step, then configure an IP addressing preference for the **IP Addressing Mode for Signaling** drop-down list:

- **IPv4**—The dual stack device prefers IPv4 address for signaling.
- **IPv6**—The dual stack device prefers IPv6 address for signaling.
- **Use System Default**—The device uses the setting for the **IP Addressing Mode Preference for Signaling** enterprise parameter.

Step 5 Configure the remaining fields in the **Common Device Configuration** window. For more information on the fields and their configuration options, see the system Online Help.

Step 6 Click **Save**.

What to do next

If your IPv6 configuration is complete, Restart Services, on page 6.

Restart Services

After configuring your system for IPv6, restart essential services.

Procedure

Step 1 Log into Cisco Unified Serviceability and choose **Tools** > **Control Center - Feature Services**.

Step 2 Check the check box corresponding to each of the following services:

- Cisco CallManager
- Cisco CTIManager
- Cisco Certificate Authority Proxy Function
- Cisco IP Voice Media Streaming App

Step 3 Click **Restart**.

Step 4 Click **OK**.