UC Software

Contents

Getting Started

This provisioning guide provides an overview of UC software, network requirements, and Poly provisioning methods.

Specifically, this guide provides guidance on:

- The configuration and resource files included in the UC software download.
- Poly phone network requirements and supported network configurations.
- Supported Poly provisioning methods, including guidance on setting up a central provisioning server.

For information on available UC software features and parameters you can configure, see the administrator or deployment guide for your Poly phone model on the [Voice - Poly Documentation Library](#):

- For VVX business media and business IP phones, see [Polycom UC Software for VoIP Phones](#).
- For Polycom Trio systems and accessories, see [Polycom Trio Conference Phones](#).
- When registering Poly phones with a Microsoft server, see [Polycom UC Software for Skype for Business](#).

UC Software Configuration and Resource Files

Topics:

- [Master Configuration File](#)
- [Resource Files](#)
- [Using Correct Parameter XML Schema, Value Ranges, and Special Characters](#)
- [Reserved Configuration File Names](#)

Poly UC software includes a number of resource and configuration files that contain parameters you can use to configure features and settings to phones. You can download a UC Software release in ZIP file format from Poly [Voice Support](#).

UC software includes:

- A master configuration file
- sip.ld files
- Several resource files to set, for example, phone language
- Numerous templates files containing parameters that provision phones and configure features and phone settings
- An XML schema file that provides examples of parameter types and permitted value types

To work with configuration files and parameters, you'll need to install an XML editor.

Master Configuration File

The master configuration file provides flexibility managing large deployments and when you want to customize features and settings for your phones.

You can use the master configuration file to configure features and apply settings for all the phones in your deployment, including phone groups you define, specific phone models, or a single phone.

The default name for the master configuration file is `00000000000.cfg`. You can use the default name or rename the master configuration file. The file name must contain at least five characters and end with `.cfg`.

You can also specify the location of the master configuration file you want the phones to use, for example, `http://usr:pwd@server/dir/example1.cfg`.

You can also upload and download the certificate and files to a user-specified location by using the following attributes in the master configuration file:

- `CERTIFICATE_DIRECTORY`
- `FLK_DIRECTORY`

The master configuration file applies settings from the configuration files listed in the `CONFIG_FILES` XML attribute in the following ways:

- You must enter configuration file names as a comma-separated list.

- Phones read the files you enter from left to right.
- Duplicate settings are applied from the configuration file in the order you list them.

The following table describes the XML field attributes in the master configuration file and the `APPLICATION` directories.

Master Configuration File XML Field Attributes

Attribute	Description
APP_FILE_PATH	The path name of the UC software application executable. The default value is `sip.ld`. Note that the phone automatically searches for the `sip.ld` and `<part number>.sip.ld` files. This field can have a maximum length of 255 characters.
	If you want the phone to search for a `sip.ld` file in a location other than the default or use a different file name, or both, modify the default. For example, you can specify a URL with its own protocol, user name, and password: `http://usr:pwd@server/dir/sip.ld`.
DECT_FILE_PATH	The path for the application executable for the Polycom VVX D60 Wireless Handset. The default value is `3111-17823-001.dect.ld`. When the software for a VVX business media phone with a paired VVX D60 Base Station is updated, the phone also searches for the `dect.ld` for any updates to the base station software.
	If you want the phone to search for the `3111-17823-001.dect.ld` in a location other than the default or use a different file name, or both, modify the default. For example, you can specify a URL with its own protocol, user name, and password: `http://usr:pwd@server/dir/3111-17823-001.dect.ld`.
CONFIG_FILES	Enter the names of your configuration files in this attribute as a comma-separated list. Each file name has a maximum length of 255 characters and the entire list of file names has a maximum length of 2047 characters, including commas and white space. If you want to use a configuration file in a different location or use a different file name, or both, you can specify a URL with its own protocol, user name, and password, for example `ftp://usr:pwd@server/dir/phone2034.cfg`. The files names you enter to the CONFIG_FILES field write are read from left to right. Duplicate settings are applied from the configuration file in the order you list them.
MISC_FILES	A comma-separated list of files. Use this to list volatile files that you want phones to download, for example, background images and ringtone.wav files. The phone downloads files you list here when booted, which can decrease access time.
LOG_FILE_DIRECTORY	An alternative directory for log files. You can also specify a URL. This field is blank by default.
CONTACTS_DIRECTORY	An alternative directory for user directory files. You can also specify a URL. This field is blank by default.

Attribute	Description
OVERRIDES_DIRECTORY	An alternative directory for configuration overrides files. You can also specify a URL. This field is blank by default.
LICENSE_DIRECTORY	An alternative directory for license files. You can also specify a URL. This field is blank by default.
USER_PROFILES_DIRECTORY	An alternative directory for the `<user>.cfg` files.
CALL_LISTS_DIRECTORY	An alternative directory for user call lists. You can also specify a URL. This field is blank by default.
COREFILE_DIRECTORY	An alternative directory for device core files to use to debug problems. This field is blank by default.
CAMERA_PRESETS_DIRECTORY	Specify a sub-directory to store the camera preset thumbnail images on the provisioning server. By default, this field is blank and thumbnail images are stored in the root directory of the provisioning server. However, if you set the attribute `CAMERA_PRESETS_DIRECTORY="presets"`, the images are stored to an existing sub-directory called Presets.
CERTIFICATE_DIRECTORY	This directory is used to upload the certificate file with extensions such as .csr and .pem (private key), for example, <mac>.csr and <mac>-privatekey.pem that is generated by the VVX business media phone by using CSR generation process. This directory is also used to download the certificate file with extensions such as .crt, .key, and .pac from a user specified location.
FLK_DIRECTORY	This directory is used to upload or download the CSV file, for example, <MAC>-<sign-in address>.csv to the user specified location in Skype for Business Flexible Line Key assignment.

Note: The directories labeled `APPLICATION_SPIPXXX` indicate phone models that are not compatible with the latest UC software version. If you are using any of the phone models listed in these directories, open the directory for the phone model you are deploying, and use the available fields to provision and configure your phones.

Resource Files

UC software contains resource configuration files you can use to apply optional settings to the phones.

In addition, you can allow phone-specific resource override files to be uploaded to the central server. Resource override files are uploaded when users enable or change settings and contain per-phone user settings that override settings you make from the provisioning server. Resource and override files include:

- Language dictionaries for the phone menu and Web Configuration Utility
- Configuration override files that store settings users apply from the phone menu or Web Configuration Utility

- .wav ringtone files
- Log files
- A template contact directory `000000000000-directory~.xml`
- A licensing directory

Using Correct Parameter XML Schema, Value Ranges, and Special Characters

UC software includes an XML schema file `polycomConfig.xsd` that provides information about parameter type, permitted values, default values, and valid enumerated type values. You can view this template file with an XML editor.

Configuration parameters support the following value types:

- Boolean
- Enumerated
- Integer
- String

The following rules apply to UC software parameter values:

- Boolean values are not case sensitive.
- UC software interprets `Null` as empty.
- The values `0,` `false,` and `off` are supported and interchangeable.
- The values `1,` `true,` and `on` are supported and interchangeable. This administrator guide documents only `0` and `1`.

The following rules apply when you set a parameter with a numeric value outside of its valid range:

- If the value is greater than the allowable range, the maximum allowable value is used.
- If the value is less than the allowable range, the minimum allowable value is used.
- If you insert invalid parameter values into the configuration file, the value is ignored and the default value is used. Examples of invalid parameter values include enumerated values that do not match values defined in the UC software, numeric parameters set to non-numeric values, string parameters whose value is too long or short, and null strings in numeric fields. Invalid values are logged in the phone's log files.

You must use XML code for special characters in a configuration file:

- & as `&`
- " as `"`
- ' as `'`
- < as `<`
- > as `>`
- random numbers as `&0x12;`

Reserved Configuration File Names

You can use or rename the UC Software configuration files or create your own. When you create and name configuration files to support your deployment, the following file names are reserved and cannot be used:

- `<MACaddress>-phone.cfg`
- `<MACaddress>-web.cfg`
- `<MACaddress>-app.log`
- `<MACaddress>-boot.log`
- `<MACaddress>-license.cfg`

Network Requirements and Supported Configurations

Topics:

- [Network Requirements](#)
- [Supported Network Configurations](#)

This section provides UC software network requirements and supported network configurations when using centralized provisioning.

Network Requirements

Centralized provisioning requires that your phones can securely communicate with the provisioning server and that network time settings are synchronized. This section shows you how to set up secure network communications and synchronize time settings.

Note: When you provision the Poly Trio solution via Wi-Fi connection to the network, the Poly Trio solution looks for files on the provisioning server using the LAN MAC address, not the Wi-Fi MAC address.

Recommended Security Settings

Poly recommends using the following security settings.

- 802.1X
- VLAN
- File transfers using HTTPS
- SIP signaling over Transport Layer Security (TLS)
- Permissions for configuration and override files

Configure File Upload Permissions

When you modify settings from the phone menu or Web Configuration Utility, by default the phone attempts to upload files to the central server. These files contain per-phone settings that override settings from the provisioning server. You must configure server permissions to allow these files to upload.

You can permit the phone to upload override files to the provisioning server by giving the phone write access to the provisioning server. You should set all other files that the phone needs to read, such as the application executable and standard configuration files, to be read-only. You can set permissions for other configuration files as needed for your deployment.

The default override file names are as follows:

- **Phone Menu:** `<MAC Address>-phone.cfg`
- **Web Configuration Utility:** `<MAC Address>-web.cfg`

Write access enables:

- User settings to survive restarts, reboots, and software upgrades that you apply to phones from the provisioning server.
- Override files you can use to save user custom preferences and to apply specific configurations to a single phone or phone group.
- Log files you can use to troubleshoot issues.

Ensure that the file permissions you create provide the minimum required access and that the administrator account has no other rights on the server.

Note: If you reformat the phone's file system, the per-phone override files and settings are deleted from the phone.

Procedure

1. Configure the server account with read, write, and delete permissions, as needed.
2. Create a separate directory on the server for each file type and configure the permissions for each directory.

   You can set different access permissions for each directory, for example:

   - Log files
   - Override files
   - Contact directory
   - License directory

3. Edit the attributes of the master configuration file that correspond to the directories you created.
4. To allow a phone's override files to upload to the server, configure the override files with enable, read, and write access.

Dynamic Host Configuration Protocol (DHCP)

Poly recommends using DHCP where possible to eliminate repetitive manual data entry.

After establishing network connectivity, the phone needs to acquire several IPv6 or IPv4 network settings. These settings are typically obtained automatically from a Dynamic Host Configuration Protocol (DHCPv6 or DHCPv4) server.

Synchronized Time Settings

It is important to use a Simple Network Time Protocol (SNTP) server in your network environment.

If SNTP settings are not available through DHCP, you may need to edit the SNTP GMT offset or SNTP server address, especially for the default daylight savings parameters outside of North America. Depending on your local security policy, you might need to disable the local web (HTTP) server or change its signaling port.

Domain Name System

You need to set up Domain Name System (DNS).

Poly supports the following DNS records types:

- DNS A record
- Service (SRV) record for redundancy

- Name Authority Pointer (NAPTR)

User Accounts

Each phone user must have an account on your SIP call server.

Supported Network Configurations

You need the following items to operate Poly phones as Session Initiation Protocol (SIP) endpoints for large-scale deployments:

- A working IP network
- Routers configured for Voice over Internet Protocol (VoIP)
- VoIP gateways configured for SIP
- An active, configured call server to receive and send SIP messages and to register and authenticate voice endpoints.

   For information on IP PBX and softswitch vendors, see Polycom Desktop Phone Compatibility. If you are using the Poly Trio system, see Polycom Trio and SoundStation IP Platform Compatibility.

   Minimum server requirements:

   ◦ A call server address that registers voice endpoints with the SIP server.
   ◦ User name and password the phone uses to respond to any SIP authentication challenges from the SIP server.

In addition to these requirements, your deployment network should work within the Poly-supported network settings, discovery methods such as DHCP, and supported Ethernet settings.

Ethernet Line Rates

The phones automatically negotiate the Ethernet line rate and no special configuration is required.

Typical network equipment supports one of the three following Ethernet line rates:

- 10 Mbps
- 100 Mbps
- 1000 Mbps

While you can change the line rates and duplex configuration, Poly recommends keeping the default settings.

Supported Denial of Service Filters

The phone supports two filters to prevent Denial of Service (DoS):

- Storm Filtering: This filter is enabled by default.
- Virtual local area network (VLAN) filtering: VLAN filtering cannot be disabled.

These filters prevent Ethernet packet overflow caused by bad or excessive data. Support for Storm and VLAN filtering varies by device.

Supported 802.1x Configurations

Poly phones support the following Extensible Authentication Protocol (EAP) methods.

- EAP-TLS (requires Device and CA certificates)
- EAP-PEAPv0/MSCHAPv2 (requires CA certificates)
- EAP-PEAPv0/GTC (requires CA certificates)
- EAP-TTLS/MSCHAPv2 (requires CA certificates)
- EAP-TTLS/GTC (requires CA certificates)
- EAP-FAST (optional Protected Access Credential (PAC) file, if not using in-band provisioning)
- EAP-MD5

For more information about EAP methods, see RFC 3748: Extensible Authentication Protocol.

Ethernet Network Connection Methods

You can connect the phone to a network using Ethernet with the following methods:

- Virtual Local Area Networks (VLANs)
- ILink Layer Discovery Protocol and Supported Type Length Values
- ILink Layer Discovery Protocol and Supported Type Length Values

VLAN Priority

If the phone receives a Virtual Local Area Network (VLAN) setting from more than one of the following methods, the priority is as follows:

1. LLDP–Link Layer Discovery Protocol (LLDP) is a vendor-neutral Layer 2 protocol that allows a network device to advertise its identity and capabilities on the local network.

2. CDP–Cisco Discovery Protocol (CDP) is a proprietary Data Link Layer network protocol. CDP Compatible follows the same set of rules.

3. DVD (VLAN via DHCP)–Dynamic Host Configuration Protocol (DHCP) is an automatic configuration protocol used in IP networks. Note that use of DHCP for assigning VLANs is not standardized and is recommended only if the switch equipment does not support LLDP or CDP Compatible methods.

4. Static–The VLAN ID is manually set by entering it in the phone's menu.

Virtual Local Area Network (VLAN) ID Assignment Using DHCP

If you want to assign a Virtual Local Area Network (VLAN) using LLDP, CDP, or Static methods, you can assign a VLAN ID to the phones by distributing the VLAN ID via DHCP.

When using this method to assign the phone's VLAN ID, the phone first boots on the Native VLAN/Data VLAN and then obtains its intended VLAN ID from the DHCP offer before it continues booting on the newly obtained VLAN.

Note: If a VLAN tag is assigned by CDP or LLDP, the DHCP VLAN tags are ignored.

Valid DVD String DHCP Options

The DVD string in the DHCP option must meet the following conditions to be valid:

- Must start with "VLAN-A=" (case-sensitive)

- Must contain at least one valid ID
- VLAN IDs range from 0 to 4095
- Each VLAN ID must be separated by a "+" character
- The string must be terminated by a semi colon ";"
- All characters after the semi colon ";" are ignored
- There must be no white space before the semi colon ";"
- VLAN IDs may be decimal, hex, or octal

The following DVD strings cause the phone to use VLAN 10:

- VLAN-A=10;
- VLAN-A=0x0a;
- VLAN-A=012;

Assign a VLAN ID Using DHCP

When the VLAN Discovery in the DHCP menu is set to **Fixed**, the phone examines DHCP options 128,144, 157, and 191 in that order for a valid Digital Versatile Disk DHCP VLAN Discovery string.

When set to **Custom**, a value set in the VLAN ID Option is examined for a valid DVD string.

If DHCP option 128 is configured for SIP outbound proxy, do not configure VLAN Discovery option 128 to **Fixed**.

Procedure

» In the DHCP menu of the Main setup menu, set **VLAN Discovery** to **Fixed** or **Custom**.

Establishing a VLAN ID

After you install software on the phones and change the Virtual Local Area Networks (VLANs), note the following phone behavior:

- The phone doesn't reboot and starts the DHCP sequence on the new VLAN to get the new IP address.
- If the phone has a valid VLAN ID, the phone restarts and triggers the DHCP sequence.
- If the phone has an invalid VLAN ID, the phone doesn't restart and triggers the DHCP sequence.

Link Layer Discovery Protocol and Supported Type Length Values

A Link Layer Discovery Protocol (LLDP) frame must contain all mandatory Type Length Values (TLVs).

Poly phones running UC Software support LLDP frames with both mandatory and optional TLVs.

The phones cannot automatically determine their physical location or provision to a statically configured location. As a result, the phones do not transmit location identification TLV in the LLDP frame. However, the location information from the switch is decoded and displayed on the phone's menu.

The LLDP feature supports VLAN discovery and LLDP power management, but not power negotiation. Note that LLDP has a higher priority than Cisco Discovery Protocol (CDP) and DHCP VLAN discovery.

Supported TLVs

Poly phones support the following mandatory and optional TLVs:

Mandatory:

- Chassis ID–Must be first TLV.
- Port ID–Must be second TLV.
- Time-to-live–Must be third TLV, set to 120 seconds.
- End-of-LLDPDU–Must be last TLV.
- LLDP-MED Capabilities.
- LLDP-MED Network Policy–VLAN, L2 QoS, L3 QoS.
- LLDP-MED Extended Power-Via-MDI TLV–Power Type, Power Source, Power Priority, Power Value.

Optional:

- Port Description
- System Name–Administrator assigned name.
- System Description–Includes device type, phone number, hardware version, and software version.
- System Capabilities–Set as 'Telephone' capability.
- MAC / PHY configuration status–Detects duplex mismatch.
- Management Address–Used for network discovery.
- LLDP-MED Location Identification–Location data formats: Co-ordinate, Civic Address, ECS ELIN.
- LLDP-MED Inventory Management –Hardware Revision, Firmware Revision, Software Revision, Serial Number, Manufacturer's Name, Model Name, Asset ID.

The basic TLV format is as follows:

- TLV Type (7 bits) [0-6]
- TLV Length (9 bits) [7-15]
- TLV Information (0-511 bytes)

The following table lists the supported TLVs.

Name	Description	Type	Length	Type Length	Org. Unique Code (3 bytes)	Sub Type
Chassis-Id	IP address of phone (4 bytes). Note that 0.0.0.0 is not sent until the phone has a valid IP address.	1	6	0x0206	-	5
Port-Id	The MAC address of the phone (6 bytes).	2	7	0x0407	-	3
TTL	The TTL value is 120/0 sec.	3	2	0x0602	-	-
Port description	Port description 1.	4	1	0x0801	-	-
System name	Refer to System and Model Names.	5	min len > 0, max len <= 255	-	-	-

Name	Description	Type	Length	Type Length	Org. Unique Code (3 bytes)	Sub Type
System description	Manufacturer's name - "Polycom"; Hardware version; Application version; BootROM version.	6	min len > 0, max len <= 255	-	-	-
Capabilities	System Capabilities: Telephone and Bridge if the phone has PC port support and it is not disabled. Enabled Capabilities: Telephone and Bridge if phone has PC port support, it is not disabled and PC port is connected to PC.	7	4	0x0e04	-	-
Management Address	Address String Len - 5, IPV4 subtype, IP address, Interface subtype - "Unknown", Interface number - "0", ODI string Len - "0".	8	12	0x100c	-	-
IEEE 802.3 MAC/PHY config/status	Auto-Negotiation Supported - "1", enabled/disabled, Refer to PMD Advertise and Operational MAU	127	9	0xfe09	0x00120f	1
LLDP-MED capabilities	Capabilities - 0x33 (LLDP-Med capabilities, Network policy, Extended Power Via MDI-PD, Inventory) Class Type III. Note: After support for configuring location Identification information is locally available. Capabilities - 0x37 (LLDP-Med capabilities, Network policy, Location Identification, Extended Power Via MDI-PD, Inventory) Class Type III.	127	7	0xfe07	0x0012bb	1

Name	Description	Type	Length	Type Length	Org. Unique Code (3 bytes)	Sub Type
LLDP-MED network policy	ApplicationType: Voice (1), Policy: (Unknown(=1)/ Defined(=0) Unknown, if phone is in booting stage or if switch doesn't support network policy TLV. Defined, if phone is operational stage and Network policy TLV is received from the switch.), Tagged/Untagged, VlanId, L2 priority, and DSCP.	127	8	0xfe08	0x0012bb	2
LLDP-MED network policy	ApplicationType: Voice Signaling (2), Policy: (Unknown(=1)/Defined(=0) Unknown, if phone is in booting stage or if switch doesn't support network policy TLV. Defined, if phone is operational stage and Network policy TLV is received from the switch.), Tagged/Untagged, VlanId, L2 priority and DSCP. Note: Voice signaling TLV is sent only if it contains configuration parameters that are different from voice parameters.	127	8	0xfe08	0x0012bb	2

Name	Description	Type	Length	Type Length	Org. Unique Code (3 bytes)	Sub Type
LLDP-MED network policy	ApplicationType: Video Conferencing (6), Policy: (Unknown(=1)/Defined(=0). Unknown, if phone is in booting stage or if switch doesn't support network policy TLV. Defined, if phone is operational stage and Network policy TLV is received from the switch.), Tagged/Untagged, VlanId, L2 priority and DSCP. Note that video conferencing TLV is sent only from phones with built-in video-capability.	127	8		0xfe08	0x0012bb	2
LLDP-MED location identification	ELIN data format: 10 digit emergency number configured on the switch. Civic Address: physical address data such as city, street number, and building information.	127	min len > 0, max len <= 511	-		0x0012bb	3
Extended power via MDI	PowerType -PD device PowerSource-PSE&local Power Priority -Unknown PowerValue	127	7		0xfe07	0x0012bb	4
Extended power via MDI	PowerType -PD device PowerSource-PSE&local Power Priority -Unknown, PD Requested Power Value depends on power configuration. If PSE power and USB charging are both disabled then it is 13W. Otherwise, it is 25.5W. This TLV is sent only by the Poly Trio 8800 and 8500 system. The Poly Trio Visual+ relies on a hardware handshake only for power negotiations.	127	12		0xfe07	0x00120F	4

Name	Description	Type	Length	Type Length	Org. Unique Code (3 bytes)	Sub Type
LLDP-MED inventory hardware revision	Hardware part number and revision.	127	min len > 0, max len <= 32	-	0x0012bb	5
LLDP-MED inventory firmware revision	BootROM revision.	127	min len > 0, max len <= 32	-	0x0012bb	6
LLDP-MED inventory software revision	Application (SIP) revision.	127	min len > 0, max len <= 32	-	0x0012bb	7
LLDP-MED inventory serial number	MAC Address (ASCII string).	127	min len > 0, max len <= 32	-	0x0012bb	8
LLDP-MED inventory manufacturer name	Poly	127	11	0xfe0b	0x0012bb	9
LLDP-MED inventory model name		127	min len > 0, max len <= 32	-	0x0012bb	10
LLDP-MED inventory asset ID	Empty (Zero length string).	127	4	0xfe08	0x0012bb	11
End of LLDP DU		0	0	0x0000	-	-

DHCPv6 or DHCPv4 Parameters

Poly recommends using DHCP where possible to eliminate repetitive manual data entry.

After establishing network connectivity, the phone needs to acquire several IPv6 or IPv4 network settings. These settings are typically obtained automatically from a Dynamic Host Configuration Protocol (DHCPv6 or DHCPv4) server.

You have the option to configure IPv4 or IPV6 network settings manually from the phone screen or using `device.set` capability. When making the DHCP request, the phone includes information in Option 60 that can assist the DHCP server in delivering the appropriate settings to the device.

For more information on DHCP options, see RFC2131 and RFC 2132.

For more information on Using DHCP Vendor Identifying Options with Poly phones, see Technical Bulletin 54041 at Polycom Engineering Advisories and Technical Notifications.

IPv4 Network Parameters

The following table lists the ways a phone can obtain an IPv4 address in an IPv4 network.

Parameter	DHCPv4 Option	DHCPv4	DHCPv4 INFORM	Configuration File (application only)	Device Settings
IPv4 address	No	Yes	No	No	Yes
Subnet mask	1	Yes	No	No	Yes
IPv4 Gateway	3	Yes	No	No	Yes
Boot server address		Yes	Yes	No	Yes
SIP server address	151 You can change this value by changing the device setting.	Yes	No	Yes	Yes
SNTP server address	Look at option 42, then option 4.	Yes	No	Yes	Yes
SNTP GMT offset	2	Yes	No	Yes	Yes
Syslog		Yes	No	No	Yes
DNS server IP address	6	Yes	No	Yes	Yes
DNS INFORM server IP address	6	-	-	-	-
DNS domain	15	Yes	No	Yes	Yes
VLAN ID		Warning: Link Layer Discovery Protocol (LLDP) overrides Cisco Discovery Protocol (CDP). CDP overrides Local FLASH which overrides DHCP VLAN Discovery.			

IPv6 Network Parameters

The following table lists the ways a phone can obtain an IPv6 address in an IPv6 network.

IPv6 Network Parameters

Parameter	SLAAC1	DHCPv6 Option	DHCPv6	DHCPv6 INFORM	Configuration File (application only)	Device Settings
IPv6 Global Address	Yes	No	Yes	No	No	Yes
IPv6 ULA Address	Yes	No	Yes	No	No	Yes
IPv6 Gateway	Yes	No	No	No	No	Yes
Boot server IPv6 Address	No	Custom2	Yes	No	No	Yes
SIP server IPv6 Address	No	22/21	Yes	No	Yes	No
SNTP server IPv6 address	No	31	Yes	No	Yes	Yes
SNTP GMT offset	No	Custom2	Yes	No	Yes	Yes
Syslog IPv6 Address	No	Custom2	Yes	No	Yes	Yes
DNS server IPv6 address	No	23	Yes	No	Yes	Yes
IPv6 DNS domain	No	23	Yes	No	Yes	Yes
VLAN ID		Warning: Link Layer Discovery Protocol (LLDP) overrides Cisco Discovery Protocol (CDP). CDP overrides Local FLASH which overrides DHCP VLAN Discovery.				

Example Configuration: Vendor-Specific Information Options in DHCPv6

You can obtain the CDP Compatibility value from a connected Ethernet switch if the switch supports CDP.

In DHCPv6, there are no standard options defined for Boot Server IPv6 address, Syslog Server IPv6 Address, SNTP GMT Offset, and VLAN List. Polycom has defined subcodes as part of the DHCPv6 Vendor-Specific Information Option.

You can use the `tcpIpApp.sntp.address.overrideDHCP`parameter values for the SNTP server address and SNTP GMT offset to override the DHCP value.

The following is an example configuration on a Linux DHCPv6 server for Polycom subcode definitions:

```
# Define PLCM options option space plcm code width 2 length width 2 hash
size 4;
option vsio.plcm code 13885 = encapsulate plcm; option plcm.boot-server
code 1 = string;
option plcm.time-offset code 2 = signed integer 32; option plcm.syslog-
server code 3 = string;
option plcm.vlan-list code 4 = string; option plcm.boot-server
"2620:0:1aa0:8071:d485:f47d:5de5:be04";
option plcm.time-offset 19850; option plcm.syslog-server
"2620:0:1aa0:8071:d485:f47d:5de5:be04";
option plcm.vlan-list "VLAN-A=513;";
```

Example: DHCP Option 60 Packet Decode

The following is a sample decode of a packet (DHCP Option 60) from the Poly Trio 8800 system.

- Sub-option 2 (part), length, "Real PresencePolycom Trio-Polycom Trio_8800" `02 1a 52 65 61 6c 50 72 65 73 65 6e 63 65 54 72 69 6f 2d 54 72 69 6f 5f 38 38 30 30`

- Sub-option 3 (part number), length, "3111-65290-001,5" `03 10 33 31 31 31 2d 36 35 32 39 30 2d 30 30 31 2c 35`

- Sub-option 4 (Application version), length, "SIP/5.4.1.16972/04-Jan-16 16:05" `05 1d 53 49 50 2f 35 2e 34 2e 31 2e 31 36 39 37 32 2f 30 34 2d 4a 61 6e 2d 31 36 20 31 36 3a 30 35`

The following is a sample decode of a packet (DHCP Option 60) from a VVX 500/501:

`3c 7a`

- Option 60, length of Option data (part of the DHCP specification) `00 00 36 3d`

- Polycom signature (always 4 octets) `75`

- Length of Polycom data `01 07 50 6f 6c 79 63 6f 6d`

- sub-option 1 (company), length, "Polycom" `02 0b 56 56 58 2d 56 56 58 5f 34 31 30`

- sub-option 2 (part), length, "VVX-VVX_500/501" `03 10 33 31 31 31 2d 34 36 31 36 32 2d 30 30 31 2c 37`

- sub-option 3 (part number), length, "3111-44500-001,7" `04 1e 53 49 50 2f 35 2e 32 2e 30 2e 58 58 58 58 2f 30 36 2d 41 75 67 2d 31 34 20 32 30 3a 35 35`

- sub-option 4 (Application version), length, "SIP/5.2.0.XXXX/06-Aug-14 20:55" `05 1d 55 50 2f 35 2e 34 2e 30 2e 58 58 58 58 2f 30 36 2d 41 75 67 2d 31 34 20 32 31 3a 30 34`

- sub-option 5 (Updater version), length, "UP/5.4.0.XXXX/06-Aug-14 21:04" `06 0c 64 73 6c 66 6f 72 75 6d 2e 6f 72 67`

- sub-option 6 "dslforum.org"

Vendor Specific DHCP Options

DHCP Option 60 controls how the phone identifies itself to a DHCP server for Polycom-specific options that must be returned.

If Option 60 format is set to RFC 3925, all returned values of Option 43 are ignored. If the format is set to an ASCII string, the Option 43 would have a hexadecimal string value encapsulating sub-options that override options received outside DHCP Option 43.

If you do not have control of your DHCP server or do not have the ability to set the DHCP options, enable the phone to automatically discover the provisioning server address. You can do this by connecting to a secondary DHCP server that responds to DHCP INFORM queries with a requested provisioning server value. For more information, see RFC 3361 and RFC 3925.

The following table lists supported DHCP Option 43 individual sub-options and combination sub-options:

Option	Results
Option 1- subnet mask	The phone parses the value from Option 43.
Option 2 - Time offset	The phone parses the value.
Option 3 - Router	The phone parses the value.
Option 4 - TIME/ITP server address (RFC 868)	The phone parses the value.
Option 6 - Domain Name Server	The phone parses the value.
Option 7 - Domain Log server	The phone parses the value.
Option 15 - Domain Name	The phone parses the value.
Option 42 - Network Time Protocol server/ SNTP server address (RFC 1769)	The phone parses the value.
Option 66 - Provisioning Server Address	The phone parses the value.
Option 128 - 255	Available option range for configuring a custom boot server address when option 66 is not used.
Sub-options configured in Option 43	
Options 1, 2, 3, 4, 5, 6, 7, 15, 42, and 66	The phone parses the value.
Option 128 - 255	Available option range for configuring a custom boot server address when option 66 is not used.

Parse Vendor ID Information

Polycom follows RFC 3925 which specifies use of a unique Internet Assigned Numbers Authority (IANA) private enterprise number. The private enterprise number assigned to Polycom is 13885 (0x0000363D) and is represented as an array of binary data.

Procedure

1. Check for the Polycom signature at the start of the option: `4 octet: 00 00 36 3d`
2. Obtain the length of the entire list of sub-options: `1 octet`
3. Read the field code and length of the first sub-option, `1+1 octets`
4. If this is a field you want to parse, save the data.
5. Skip to the start of the next sub-option.
6. Repeat steps 3 to 5 until you have all the data or you encounter the End-of-Suboptions code (0xFF).