



November 2023, Revision A

Configuring ASE Devices for Use with VoIP Phones

The following article describes how to configure Adtran Switch Engine (ASE) devices for use with voice over IP (VoIP) phones. Topics include creating, configuring, and enabling a voice virtual local area network (VLAN), configuring the phone-specific OUI, defining the LLDP-MED Media VLAN policy, and configuring the switchport. Detailed steps are provided for command line interface (CLI) configuration and web-based graphical user interface (GUI) configuration.

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Hardware and Software Requirements and Limitations

The voice configuration that is outlined in this guide has been tested and verified on NetVanta 1560 devices running 4.4-45 or later and NetVanta 1570 and NetVanta 1760 devices running 20.12-3 or later.

Configuring Voice Using the CLI

The steps for configuring the ASE device for use with VoIP phones are divided into two sections:

- [Configuring the Voice VLAN and Associated LLDP-MED Policies](#)
- [Configure the Switchport](#)

Configuring the Voice VLAN and Associated LLDP-MED Policies

This section outlines how to define VLANs for voice and data, enable the voice VLAN, configure a phone-specific OUI, and configure LLDP-MED policies for voice traffic.

Step 1: Define the VLANs for Voice and Data Traffic

Begin the configuration by defining separate VLANs for voice and data. By default, only VLAN 1 is defined in the ASE device. Use the **vlan** *<id>* command to enter configuration mode for the VLAN you want to define:

```
(config) #vlan <id>
```

<id> Specifies the VLAN ID. Valid range is **1** to **4094**.

Next, use the **name** command to enter a name for the VLAN:

```
(config-vlan) #name <text>
```

<text> Identifies the VLAN interface using up to 200 alphanumeric characters.

Repeat this step for each VLAN you want to define (for example, VLAN 1 may be named *Data* and VLAN 2 may be named *Voice*).

Step 2: Enable the Voice VLAN and Specify the Voice VLAN ID

Use the **voice vlan** command to enable the voice VLAN:

```
(config)#voice vlan
```

Next, specify the VLAN that is to be used for voice (this will be the ID of the VLAN you defined for voice in Step 1):

```
(config)#voice vlan vid <id>
```

vid <id> Specifies the VLAN ID to use for voice. Valid range is **1 to 4094**.

Step 3: Configure the OUI, if Needed

The Organizationally Unique Identifier (OUI) is the first three octets of a phone model's media access control (MAC) address. Once the OUI for a phone manufacturer has been added to the ASE device, traffic received on the voice VLAN interface from an IP phone with the listed OUI is forwarded on the voice VLAN. The OUIs for some phone vendors are included in the default configuration. [Table 1](#) below lists the OUI's that are built-in to the default configuration of the ASE devices as of 4.4-47 and 20.12-4:

Table 1: OUIs Included in the Default Configuration

OUI	Manufacturer
00-04-F2	Polycom
00-15-65	Yealink
24-9A-D8	Yealink
64-16-7F	Polycom
80-5E-0C	Yealink
80-5E-C0	Yealink

If your phone vendor is not included in the default configuration, the OUI needs to be entered into the unit prior to connecting the phones. Use the **voice vlan oui** command to add the OUI of a specific phone model and optionally add a description:

```
(config)#voice vlan oui <oui value> description <text>
```

oui <oui value> Specifies the OUI of the phone vendor expressed in octets (for example 48-25-67)

description <text> Optional. Identifies the OUI using up to 32 alphanumeric characters.

Step 4: Create LLDP-MED VLAN Policies to Prioritize Voice Traffic

Link Layer Discovery Protocol (LLDP) is a Layer 2 neighbor discovery protocol that facilitates the advertisement of device information between directly connected peers. LLDP for Media Endpoint Devices (LLDP-MED) is an extension to LLDP that works between endpoint devices such as IP phones and network switches. Use the **lldp med media-vlan-policy** command to create LLDP-MED policies for the voice VLAN.

NOTE: The ASE device does not apply I2-priority and DSCP values to incoming packets received from the phone. Instead, the ASE device communicates the I2-priority and DSCP values to the phone so these values can be applied as part of the phone configuration. Implementation of these priority values into the phone configuration is dependent on the administration of the phones.

Create an LLDP-MED Policy to Define the Priority of Tagged Voice Traffic

```
(config)#lldp med media-vlan policy <number> voice tagged <id> l2-priority <priority> dscp <value>
```

<number> Specifies the policy number. Valid range is **0** to **31**.

<id> Specifies the VLAN ID of the voice VLAN (defined in Step 1). Valid range is **1** to **4094**.

l2-priority <priority> Specifies the L2 Priority assigned to this policy. Valid range is **0** to **7**.

dscp <value> Specifies the differentiated services code point (DSCP) value. Valid range is **0** to **63**.

Create a Second LLDP-MED Policy to Define the Priority of Tagged Voice Signaling Traffic

```
(config)#lldp med media-vlan policy <number> voice-signaling tagged <id> l2-priority <priority> dscp <value>
```

Configure the Switchport

This section describes how to configure the Gigabit Ethernet interface for VLAN switching mode characteristics and apply the LLDP-MED policy lists that were created in Step 4 in the previous section. The commands in the following steps are issued from interface configuration mode of the Gigabit Ethernet interface to which the IP phone will be connected on the ASE device.

Step 1: Enable Automatic Detection and Assignment of the Voice VLAN to the Port

Use the **switchport voice vlan mode auto** command to enable automatic detection and assignment of the Voice VLAN to the port:

```
(config-if)#switchport voice vlan mode auto
```

Step 2: Specify Which Discovery Protocols are used on the Voice VLAN

Configure the ASE device to use both LLDP and MAC OUI address to detect telephony devices:

```
(config-if)#switchport voice vlan discovery-protocol both
```

Step 3: Configure the Switchport Interface for Access Mode and Set the Data VLAN ID

Access mode allows connected phones to be placed into the Voice VLAN and any other connected devices, such as a computer that is plugged into the phone, to be placed into a specified VLAN.

```
(config-if)#switchport access vlan <id>
```

<id> Specifies the VLAN ID for this port for non-voice devices (this will be the ID of a VLAN that has been configured for data). Valid range is **1** to **4094**.

Step 4: Disable the Transmission of Location Information in the LLDP Packet (Required for Polycom Phones)

NOTE: Some IP phones do not support certain LLDP MED attributes. Depending on the vendor of the IP phones on your network, specific LLDP MED attributes may need to be disabled in the ASE device. For example, Polycom phones do not support the transmission of location information in the LLDP packet. Therefore, Polycom phones will not work properly on the network unless the transmission of location information in the LLDP MED packet is turned off in the ASE device.

This step is only required for networks with Polycom phones and is optional for networks with other phone manufacturers. Polycom phones will not register if location information is requested on the LLDP packet. Use the **no lldp med transmit-tlv location** command to disable the transmission of location information in the LLDP packet.

```
(config-if) #no lldp med transmit-tlv location
```

Step 5: Apply the LLDP-MED Policies that Define the Priority of Traffic on the Voice VLAN

Use the **lldp med media-vlan policy-list** command to apply the LLDP-MED policies that were created in [Step 4: Create LLDP-MED VLAN Policies to Prioritize Voice Traffic](#) on page 3 to this switchport interface:

```
(config-if) #lldp med media-vlan policy-list <range-list>
```

<range-list> Specifies the LLDP-MED policy number(s) to be applied to this switchport interface. Policy numbers can be expressed individually (for example **1**), as a comma separated list (for example **1, 2, 4**), or as a range (for example **1-4**).

NOTE: This command does not add CoS/QoS prioritization to frames/packets entering the switch or prioritize packets within the switch itself. This configuration enables the ASE device to communicate the I2-priority and DSCP values to the phone so these values can be applied as part of the phone configuration. Implementation of these priority values into the phone configuration is dependent the administration of the phones. Refer to the configuration guide [Configuring QoS in ASE](#), available online in the Adtran Support Community at <https://www.supportcommunity.adtran.com> for information on configuring QoS within the switch.

Step 6: Optional. Configure the Switchport Interface as a Spanning Tree Edge Port

Configuring the switchport as an edge port optimizes spanning tree convergence time:

```
(config-if) #spanning-tree edge
```

Step 7: Optional. Provide a Description for the Switchport

A descriptive label will help identify what is connected to the switchport:

```
(config-if) #description <text>
```

<text> Identifies the switchport interface using up to 200 alphanumeric characters.

Step 8: Save the Configuration

After changes are complete, issue the **write** command from enable mode to save the running-configuration to the startup-configuration:

```
#write
```

Command Summary

The following tables summarize the commands used to configure the ASE device for use with VoIP phones.

Table 2: Voice VLAN and LLDP-MED Policy Configuration Commands

	Prompt	Command	Description
Step 1	Define the VLANs for Voice and Data Traffic		
	(config) #	vlan <id>	Enter configuration mode for the VLAN you want to define. Valid <id> range is 0-4094.
	(config-vlan) #	#name <text>	Enter a description to define the VLAN. Enter up to 200 alphanumeric characters for the <text>.
Step 2	Enable the voice VLAN and specify the voice VLAN ID		
	(config) #	voice vlan	Enable the voice VLAN
	(config) #	voice vlan vid <id>	Specify the VLAN ID to be used for voice (this will be the ID of the VLAN you defined for voice in Step 1). Valid <id> range is 1 to 4094 .
Step 3	(config) #	voice vlan oui <oui value> description <text>	Configure the OUI of your phone vendor if it is not included in the default configuration as outlined in Table 1 on page 2 . The <oui value> is expressed in octets (for example 48-25-67). Optionally, specify a <text> description using up to 32 alphanumeric characters.
Step 4	Create LLDP-MED VLAN policies to prioritize voice traffic		
	(config) #	lldp med media-vlan policy <number> voice tagged <id> 12-priority <priority> dscp <value>	Create an LLDP-MED policy to define the Priority of Tagged Voice Traffic. Valid <number> range is 0 to 31 . The <id> is the interface ID you defined for voice in Step 1. Valid <id> range is 1 to 4094 . Valid 12-priority <priority> range is 0 to 7 . Valid dscp <value> range is 0 to 63 .
	(config) #	lldp med media-vlan policy <number> voice-signaling tagged <id> 12-priority <priority> dscp <value>	Create a second LLDP-MED policy to define the Priority of Tagged Voice Signaling Traffic. Valid range is 1 to 4094 .

Table 3: Switchport Configuration Commands

	Prompt	Command	Description
Step 1	(config-if) #	switchport voice vlan mode auto	Enable automatic detection and assignment of the voice VLAN to the port.
Step 2	(config-if) #	switchport voice vlan discovery-protocol both	Configure the ASE device to use both LLDP and MAC OUI address to detect telephony devices.
Step 3	(config-if) #	switchport access vlan <id>	Configure the switchport interface for access mode and set the data VLAN ID. Valid <id> range is 1 to 4094 .
Step 4	(config-if) #	no lldp med transmit-tlv location	If your network has Polycom phones, disable the transmission of location information in the LLDP packet. This step is optional for networks using phone manufacturers other than Polycom.
Step 5	(config-if) #	lldp med media-vlan policy-list <range-list>	Apply the LLDP-MED policies that define the priority of traffic on the voice VLAN. The <range-list> specifies the policy numbers (The policy numbers should match the policies that were created in Step 4 on page 3). Policy numbers can be expressed individually (for example 1), as a comma separated list (for example 1, 2, 4), or as a range (for example 1-4).
Step 6 (Optional)	(config-if) #	spanning-tree edge	Configure the switchport interface as a Spanning Tree Edge port.
Step 7 (Optional)	(config-if) #	description <text>	Specify a description for the switchport interface to help identify what is connected to the switchport. Enter up to 200 alphanumeric characters for the <text>.
Step 8	#	write	Save the running-configuration to the startup-configuration.

CLI Configuration Example

The following example scenario is designed to enhance understanding of how to configure the ASE device for use with VoIP phones.

NOTE: *The configuration parameters entered in this example are a sample configuration only. The application should be configured in a manner consistent with the needs of your particular network. CLI prompts have been removed from the configuration example to provide a method of copying and pasting configurations directly from this configuration guide into the CLI. These configurations should not be copied without first making the necessary adjustments to ensure they will function properly in your network.*

In this example, the ASE device is configured for a voice application with the following parameters:

- A Polycom VVX450 phone with OUI 48-25-67 is connected to switchport interface 4
- The VLAN ID for voice traffic is 60 and the VLAN ID for data traffic is 62
- Tagged voice traffic is to be assigned a I2-priority value of 7 and a DSCP value of 46
- Tagged voice signaling traffic is to be assigned a I2-priority value of 6 and a DSCP value of 38
- Automatically detect VoIP sets and assign the voice VLAN to the port
- Detect telephony devices on the port via LLDP or the MAC OUI address
- Set the switchport interface for access mode and assign non-voice devices to the data VLAN (62)
- The transmission of location information in the LLDP packet must be turned off since a Polycom phone is being used

The following configuration applies to the example:

```
!  
vlan 60  
name Voice  
!  
vlan 62  
name Data  
!  
voice vlan  
voice vlan vid 60  
!  
oui 48-25-67 description Polycom VVX450  
!  
lldp med media-vlan-policy 0 voice tagged 60 I2-priority 7 dscp 46  
lldp med media-vlan-policy 1 voice-signaling tagged 60 I2-priority 6 dscp 38  
!  
interface GigabitEthernet 1/4  
switchport voice vlan mode auto  
switchport voice vlan discovery-protocol both  
switchport access vlan 62  
no lldp med transmit-tlv location  
lldp med media-vlan policy-list 0,1  
spanning-tree edge  
description VOIP & WIRED DATA  
!
```

Configuring Voice Using the GUI

Configuring Voice via the GUI follows a different flow from the CLI configuration steps. Some of the Voice VLAN and switchport settings are configured on the same page in the GUI versus the CLI where the Voice VLAN is configured separately from the switchport interface. Access the GUI by entering the IP address of the ASE device into any web browser hosted on the same network. Enter the username and password and the initial GUI menu will appear.

NOTE: Select the circular question mark icon located at the top right-hand corner of a page to view detailed descriptions and valid ranges for the configuration options available on the current page.

The GUI configuration is different in the NetVanta 1560 versus the NetVanta 1570/1760. Be sure to reference the GUI configuration that corresponds with your model.

- [NetVanta 1560 GUI Configuration on page 8](#)
- [NetVanta 1570/1760 GUI Configuration on page 13](#)

NetVanta 1560 GUI Configuration

Step 1: Define the VLANs for Voice and Data Traffic

Navigate to **Configuration > VLANs > Configuration**. Enter the voice and data VLAN IDs separated by commas in the field to the right of **Allowed Access VLANs**. You can continue to **Step 2** before saving.

NOTE: The ability to assign a name to a VLAN is not available in the 1560 GUI. If you would like to assign a name to the VLAN, it must be done via the CLI as outlined in [Step 1: Define the VLANs for Voice and Data Traffic on page 1](#).

Global VLAN Configuration									
Allowed Access VLANs		1,60,62,2073							
Ethertype for Custom S-ports		88A8							
Port VLAN Configuration									
Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs Auto	Allowed VLANs	Forbidden VLANs
*	<>	1	<>	<input checked="" type="checkbox"/>	<>	<>	<input checked="" type="checkbox"/>	1	
1	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
2	Access	2073	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	2073	
3	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
4	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
5	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
6	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
7	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	

Step 2: Set the Switchport for Access Mode and Assign the Data VLAN

Access mode allows connected phones to be placed into the Voice VLAN and any other connected devices, such as a computer that is plugged into the phone, to be placed into a specified data VLAN.

Continuing from the same page in the GUI as **Step 1** on [page 8](#), scroll down under **Port VLAN Configuration** and locate the **Port** number to which the VoIP phone is connected. Select **Access** for the **Mode** and enter the VLAN ID for non-voice devices (this will be the ID of a VLAN that has been defined for data) in the field for **Port VLAN**. When selections are complete, scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Global VLAN Configuration

Allowed Access VLANs	1,60,62,2073
Ethertype for Custom S-ports	88A8

Port VLAN Configuration

Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs Auto	Allowed VLANs	Forbidden VLANs
*	<>	1	<>	<input checked="" type="checkbox"/>	<>	<>	<input checked="" type="checkbox"/>	1	
1	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
2	Access	2073	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	2073	
3	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
4	Access	62	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	62	
5	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	
6	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag All	<input checked="" type="checkbox"/>	1	

Step 3: Create the LLDP-MED VLAN Policies and Assign them to the Switchport

Navigate to **Configuration > LLDP > LLDP-MED**. Scroll down on the page until you reach the **Policies** section. Select **Add New Policy**. For this policy, select **Voice** for the **Application Type**, enter the ID of the voice VLAN under **VLAN ID**, and enter the **L2 Priority** value and **DSCP** value to be associated with voice traffic.

Select **Add New Policy** again to create another policy to define L2 Priority and DSCP values for **Voice Signaling** traffic. Scroll to the bottom of the page and select **Apply** on the left-hand side of the screen to save the policies.

NOTE: Policy numbers created in the GUI are automatically generated in chronological order starting with zero. In this example there were no other existing policies, therefore Policy 0 and 1 were created. Depending on existing policies in your unit, your LLDP-MED policy numbers may differ from this example.

NOTE: This step does not add CoS/QoS prioritization to frames/packets entering the switch or prioritize packets within the switch itself. This configuration enables the ASE device to communicate the I2-priority and DSCP values to the phone so these values can be applied as part of the phone configuration. Implementation of these priority values into the phone configuration is dependent the administration of the phones. Refer to the configuration guide [Configuring QoS in ASE](https://www.supportcommunity.adtran.com), available online in the Adtran Support Community at <https://www.supportcommunity.adtran.com>, for information on configuring QoS within the switch.

Policies

Delete	Policy ID	Application Type	Tag	VLAN ID	L2 Priority	DSCP
Delete	0	Voice	Tagged	60	7	46
Delete	1	Voice Signaling	Tagged	60	6	38

Add New Policy

Apply Reset

Next, under **Policy Interface Configuration**, apply the previously created LLDP-MED policies to the switchport interface. Scroll down to the **Interface** to which the IP phone will be connected and select the

boxes in the columns for the two LLDP-MED policy numbers that were just created. Scroll to the bottom of the page and select **Apply**.

Interface	0	1
GigabitEthernet 1/1	<input type="checkbox"/>	<input type="checkbox"/>
GigabitEthernet 1/2	<input type="checkbox"/>	<input type="checkbox"/>
GigabitEthernet 1/3	<input type="checkbox"/>	<input type="checkbox"/>
GigabitEthernet 1/4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
GigabitEthernet 1/5	<input type="checkbox"/>	<input type="checkbox"/>

Step 4: Disable the Transmission of Location Information in the LLDP Packet (Required for Polycom Phones)

NOTE: Some IP phones do not support certain LLDP MED attributes. Depending on the vendor of the IP phones on your network, specific LLDP MED attributes may need to be disabled in the ASE device. For example, Polycom phones do not support the transmission of location information in the LLDP packet. Therefore, Polycom phones will not work properly on the network unless the transmission of location information in the LLDP MED packet is turned off in the ASE device.

This step is only required for networks with Polycom phones and is optional for networks with other phone manufacturers. Polycom phones will not register if location information is requested on the LLDP packet. From the **LLDP-MED Configuration** menu, locate the **LLDP-MED Interface Configuration** table. Next, scroll down to the port number to which the VoIP phone is connected and click on the checkmark in the box under the **Location** column to de-select the transmission of location TLVs. Scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Interface	Transmit TLVs				Device Type
	Capabilities	Policies	Location	PoE	
*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<>
GigabitEthernet 1/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
GigabitEthernet 1/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
GigabitEthernet 1/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
GigabitEthernet 1/4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
GigabitEthernet 1/5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
GigabitEthernet 1/6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity

Step 5: Enable the Voice VLAN and Configure Switchport Mode and Discovery Protocol

Navigate to **Configuration > Voice VLAN > Configuration**. Under **Voice VLAN Configuration**, select **Enabled** beside **Mode** to enable the Voice VLAN. Enter the **ID** of the voice VLAN defined in **Step 1** on [page 8](#) for the **VLAN ID**. Scroll down to the table under **Port Configuration** and locate the **Port** number to which the IP phone will be connected. In the **Mode** column to the right of the port number, select **Auto** to enable automatic detection and assignment of the voice VLAN to the port. Further to the right, select **Both** in the **Discovery Protocol** column to configure the ASE device to use both LLDP and the MAC OUI address to detect telephony devices. When selections are complete, scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Voice VLAN Configuration

Mode	Enabled
VLAN ID	60
Aging Time	86400 seconds
Traffic Class	7 (High)

Port Configuration

Port	Mode	Security	Discovery Protocol
*	<>	<>	<>
1	Disabled	Disabled	OUI
2	Disabled	Disabled	OUI
3	Disabled	Disabled	OUI
4	Auto	Disabled	Both
5	Disabled	Disabled	OUI

Step 6: Configure the OUI of the Phone Vendor

The OUI for some phone vendors are included in the default configuration of the ASE device. [Table 1 on page 2](#) lists the OUI's that are built-in to the default configuration of the ASE devices as of 4.4-7 and 20.12-4. If your phone vendor is not included in the default configuration, the OUI needs to be entered into the unit prior to connecting the phones. Navigate to **Configuration > Voice VLAN > OUI**. Select **Add New Entry** and enter the OUI of the phone vendor under **Telephony OUI** and optionally enter a description of the OUI address under **Description**. Select **Apply**.

Voice VLAN OUI Table

Delete	Telephony OUI	Description
<input type="checkbox"/>	00-01-e3	Siemens AG phones
<input type="checkbox"/>	00-03-6b	Cisco phones
<input type="checkbox"/>	00-04-f2	VVX 400 410
<input type="checkbox"/>	00-0f-e2	H3C phones
<input type="checkbox"/>	00-60-b9	Philips and NEC AG phones
<input type="checkbox"/>	00-d0-1e	Pingtel phones
<input type="checkbox"/>	00-e0-75	Polycom phones
<input type="checkbox"/>	00-e0-bb	3Com phones
<input type="checkbox"/>	42-25-67	Polycom VVX

Add New Entry

Apply Reset

Step 7: Optional. Configure the Switchport Interface as a Spanning Tree Edge Port

Configuring the switchport as an edge port optimizes Spanning Tree convergence time. Navigate to **Configuration > Spanning Tree > CIST Ports**. Scroll down to the Port number to which the VoIP phone is

connected. Select **Edge** in the column underneath **Admin Edge**. When selections are complete, scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

STP CIST Port Configuration										
CIST Aggregated Port Configuration										
Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point	
-	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forced True	
CIST Normal Port Configuration										
Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point	
*	<input checked="" type="checkbox"/>	<>	<>	<>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<>	
1	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto	
2	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto	
3	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto	
4	<input checked="" type="checkbox"/>	Auto	128	Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto	
5	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto	
6	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto	

Step 8: Optional. Specify a Description for the Switchport Interface

A descriptive label will help identify what is connected to the switchport. Navigate to **Configuration > Ports**. Scroll down to the **Port** number to which the VoIP phone is connected and enter a description into the field in the **Description** column. Scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Port Configuration												
Port	Description	Link	Speed		Adv Duplex		Adv speed					
			Current	Configured	Fdx	Hdx	10M	100M	1G	2.5G	5G	10G
*		● Down	<>	Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2		● 1Gfdx	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	VoIP and Wired Data	● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Step 9: Save the Configuration

After changes are complete, save the running-configuration to the startup-configuration. Navigate to **Maintenance > Configuration > Save Startup-config**. Select **Save Configuration**.

NOTE: Do not reset or power off the switch while the configuration is saving

Save Running Configuration to startup-config

Please note: The generation of the configuration file may be time consuming, depending on the amount of non-default configuration.

Upon completion, the system will display a message indicating that the save was successful.

Save Running Configuration to startup-config

startup-config saved successfully.

NetVanta 1570/1760 GUI Configuration

Step 1: Define the VLANs for Voice and Data Traffic

Navigate to VLAN Management > VLAN Configuration. Enter the voice and data VLAN IDs in the field to the right of Allowed Access VLAN. After all VLAN IDs have been entered, scroll to the bottom of the page and select Apply on the left-hand side of the screen.

VLAN Configuration Home > VLAN Management > VLAN Configuration

Global VLAN Configuration

Allowed Access VLANs (e.g. 1,2,10-13,15)

Ethertype for Custom S-ports

Step 2: Set the Switchport for Access Mode and Assign the Data VLAN

Access mode allows connected phones to be placed into the Voice VLAN and any other connected devices, such as a computer that is plugged into the phone, to be placed into a specified data VLAN.

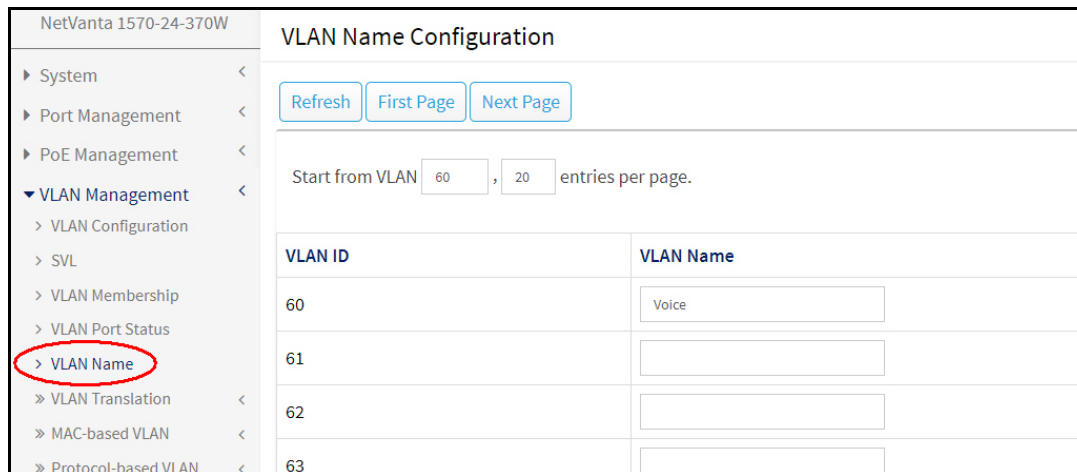
Continuing on the same page in the GUI as Step 1 on [page 13](#), scroll down under Port VLAN Configuration and locate the Port number to which the VoIP phone is connected. Select Access for the Mode and enter the VLAN ID for non-voice devices (this will be the ID of a VLAN that has been defined for data) in the field for Port VLAN. When all information has been entered and selections are complete, scroll to the bottom of the page and select Apply on the left-hand side of the screen.

Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs Auto	Allowed VLANs	Forbidden VLANs
*	<>		<>	<input type="checkbox"/>	<>	<>	<input type="checkbox"/>		
1	Access	2073	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	<input checked="" type="checkbox"/>	2073	
2	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	<input checked="" type="checkbox"/>	1	
3	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	<input checked="" type="checkbox"/>	1	
4	Access	62	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	<input checked="" type="checkbox"/>	62	

Step 3. Add a Name for the VLANs

To add a Name for the VLANs, navigate to **VLAN Management > VLAN Name**. Scroll through the VLAN ID list until you reach the VLAN IDs you defined in **Step 1**. Specify a name to the right of the corresponding

VLAN ID in the column under **VLAN NAME**. When all names have been entered, scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.



Step 4: Create the LLDP-MED VLAN Policies and Assign them to the Switchport

Navigate to **System > LLDP > LLDP-MED Configuration**. Scroll down on the page until you reach the **Policies** section. Select **Add New Policy**. For this policy, select **Voice** for the **Application Type**, enter the ID of the voice VLAN under **VLAN ID**, and enter the **L2 Priority** value and **DSCP** value to be associated with voice traffic.

Select **Add New Policy** again to create another policy to define L2 Priority and DSCP values for **Voice Signaling** traffic.

Continue to the next section titled **Policy Port Configuration**. This section is where the previously created LLDP-MED policies are applied to specific switchport interfaces. Scroll down to the **Port** number to which the IP phone will be connected and select the boxes in the columns for the two LLDP-MED policy numbers that were just created.

NOTE: Policy numbers created in the GUI are automatically generated in chronological order starting with zero. In this example there were no other existing policies, therefore Policy 0 and 1 were created and a checkmark was placed in the columns for those two policies. Depending on existing policies in your unit, your LLDP-MED policy numbers may differ from this example.

NOTE: This step does not add CoS/QoS prioritization to frames/packets entering the switch or prioritize packets within the switch itself. This configuration enables the ASE device to communicate the I2-priority and DSCP values to the phone so these values can be applied as part of the phone configuration. Implementation of these priority values into the phone configuration is dependent the administration of the phones. Refer to the configuration guide [Configuring QoS in ASE](https://www.supportcommunity.adtran.com), available online in the Adtran Support Community at <https://www.supportcommunity.adtran.com> for information on configuring QoS within the switch.

Delete	Policy ID	Application Type	Tag	VLAN ID	L2 Priority	DSCP
<input type="checkbox"/>	0	Voice	Tagged	60	7	46
<input type="checkbox"/>	1	Voice Signalling	Tagged	60	6	38

[Add New Policy](#)

Port	Policy ID	0	1
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

When selections are complete, scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Step 5: Disable the Transmission of Location Information in the LLDP Packet (Required for Polycom Phones)

NOTE: Some IP phones do not support certain LLDP MED attributes. Depending on the vendor of the IP phones on your network, specific LLDP MED attributes may need to be disabled in the ASE device. For example, Polycom phones do not support the transmission of location information in the LLDP packet. Therefore, Polycom phones will not work properly on the network unless the transmission of location information in the LLDP MED packet is turned off in the ASE device.

This step is only required for networks with Polycom phones and is optional for networks with other phone manufacturers. Polycom phones will not register if location information is requested on the LLDP packet. From the **LLDP-MED Configuration** menu, scroll down to the **Transmit TLVs** section. Next, scroll down to the port number to which the VoIP phone is connected and click on the checkmark in the box under the **Location** column to de-select the transmission of location TLVs. Scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Port	Capabilities	Policies	Location	PoE	Device Type
*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<>
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Connectivity

Step 6: Enable the Voice VLAN and Configure Switchport Mode and Discovery Protocol

Navigate to **VLAN Management > Voice VLAN > Configuration**. Under **Voice VLAN Configuration**, toggle the button to the right of **Mode** to **on** to enable the voice VLAN. Enter the **ID** of the voice VLAN created in **Step 1** on [page 13](#) for the **VLAN ID**. Scroll down to the switchport number to which the IP phone will be connected. In the **Mode** column to the right of the switchport number, select **Auto** to enable automatic detection and assignment of the voice VLAN to the port. Further to the right, select **Both** in the **Discovery Protocol** column to configure the ASE device to use both LLDP and the MAC OUI address to detect telephony devices. When selections are complete, scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

NetVanta 1570-24-370W

Voice VLAN Configuration

Voice VLAN Configuration

Mode on

VLAN ID 60

Aging Time 86400 seconds

Traffic 7 (High)

Port Configuration

Port	Mode	Security	Discovery Protocol
*	<>	<>	<>
1	Disabled	Disabled	OUI
2	Disabled	Disabled	OUI
3	Disabled	Disabled	OUI
4	Auto	Disabled	Both

Step 7: Configure the OUI of the Phone Vendor

The OUI for some phone vendors are included in the default configuration of the ASE device. [Table 1 on page 2](#) lists the OUI's that are built-in to the default configuration of the ASE devices as of 4.4-7 and 20.12-4. If your phone vendor is not included in the default configuration, the OUI needs to be entered into the unit prior to connecting the phones. Navigate to **VLAN Management > Voice VLAN > OUI**. Select **Add New Entry** and enter the OUI of the phone vendor under **Telephony OUI** and optionally enter a description of the OUI address under **Description**. Select **Apply**.

NetVanta 1570-24-370W

Voice VLAN OUI Table

Delete	Telephony OUI	Description
<input type="button" value="Delete"/>	48-25-67	Polycom VVX450

Step 8: Optional. Configure the Switchport Interface as a Spanning Tree Edge Port

Configuring the switchport as an edge port optimizes Spanning Tree convergence time. Navigate to **Spanning Tree > MSTI Configuration**. Scroll down to MSTI Mapping. Select **Edit** in the column under **MSTI Port** on the row for the **CIST Instance**.

Instance	VLANs Mapped	MSTI Priority	MSTI Port
CIST	Unmapped VLANs are mapped to the CIST	32768	Edit

Scroll down to CIST Normal Port Configuration and locate the **Port** number to which the VoIP phone is connected. In the **Admin-Edge** column to the right of the **Port** number, select **Edge** to enable Spanning Tree edge for that port.

Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point
1	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
2	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
3	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
4	<input checked="" type="checkbox"/>	Auto	128	Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto

Step 9: Optional. Specify a Description for the Switchport Interface

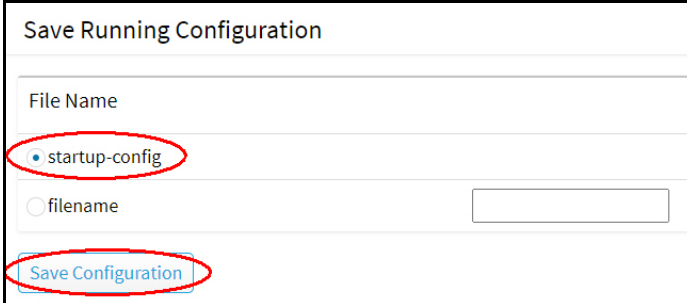
A descriptive label will help identify what is connected to the switchport. Navigate to **Port Management > Port Configuration**. Scroll down to the **Port** number to which the VoIP phone is connected and enter a description into the field in the **Description** column. Scroll to the bottom of the page and select **Apply** on the left-hand side of the screen.

Port	Description	Link	Speed		Cable type	Adv Duplex		Adv speed			
			Current	Configured		Fdx	Hdx	10M	100M	1G	2.5G
1		Down	Down	Auto		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2		Down	Down	Auto		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3		Down	Down	Auto		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	VoIP and Wired D	Down	Down	Auto		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Step 10: Save the Configuration

After changes are complete, save the running-configuration to the startup-configuration. Navigate to **Maintenance > Configuration > Save Startup-config**. Select the radio button next to startup-config and then select **Save Configuration**.

NOTE: Do not reset or power off the switch while the configuration is saving.



Save Running Configuration

File Name

startup-config

filename

[Save Configuration](#)

Upon completion, the system will display a message that says “save running config to startup-config successfully. Saving Flash memory is Done. Select **OK**.”

