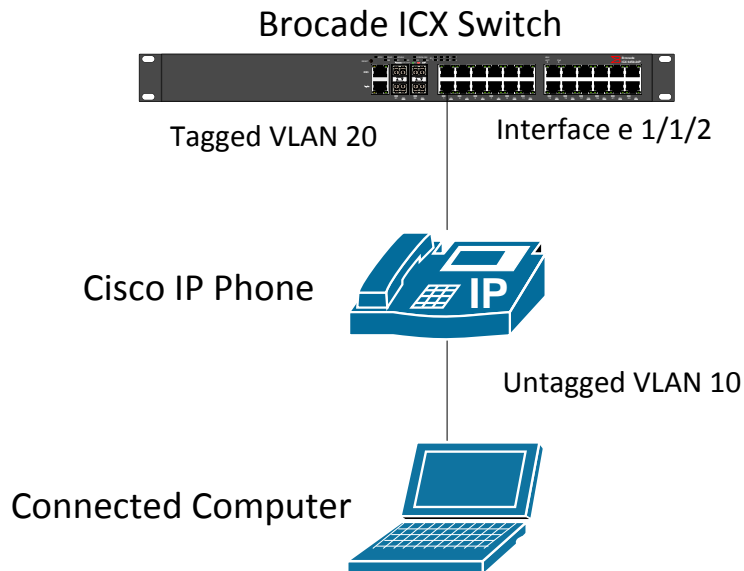


Cisco IP Phone to Brocade ICX Configuration

Below is a diagram for the documented configuration. A Cisco IP Phone connected to a Brocade ICX switch with a PC behind the phone. For this example, we will use VLAN 10 as the Data VLAN and VLAN 20 for the Voice VLAN. Basic switch configuration is assumed complete.

Figure 1:



Understanding the Cisco IP Phone Boot Process

Here is the Cisco IP Phone boot process, start to finish:

- The Cisco IP Phone connects to an Ethernet switchport. If the IP phone and switch support PoE, the IP phone receives power through either Cisco-proprietary PoE or 802.3af PoE.

On Phone: Mute, Headset, Speaker Buttons Are Illuminated

- As the Cisco IP Phone powers on, the Cisco switch delivers voice VLAN information to the IP phone using CDP as a delivery mechanism. The Cisco IP Phone now knows what VLAN it should use.

Phone displays: "Configuring VLAN"

- The Cisco IP Phone sends a DHCP request asking for an IP address on its voice VLAN.

Phone displays: "Configuring IP"(DNS is optional)

- The DHCP server responds with an IP address offer. When the Cisco IP Phone accepts the offer, it receives all the DHCP options that go along with the DHCP request. DHCP options include items such as default gateway, DNS server information, domain name information, and so on. In the case of Cisco IP Phones, a unique DHCP option is included, known as Option 150. This option directs the IP phone to a TFTP server.
- After the Cisco IP Phone has the IP address of the TFTP server, it contacts the TFTP server and downloads its configuration file.
- The Cisco IP Phone attempts to contact the first call processing server (the primary server) listed in its configuration file to register. If this fails, the IP phone moves to the next server in the configuration file. This process continues until the IP phone registers successfully or the list of call processing agents is exhausted.

-----Switch Configuration Steps-----

1. Login to the switch and enter enable mode.

2. Enter Global Configuration mode:

```
config t
```

3. Create the Data VLAN

```
vlan 10 name Data by port
tagged e 1/1/2
exit
```

4. Create the Voice VLAN

```
vlan 20 name Voice by port
tagged e 1/1/2
exit
```

5. Enable CDP, FDP, and LLDP:

```
cdp run
fdp run
lldp run
```

Note: These settings are for the Cisco phone to communicate information with the switch such as PoE negotiation.

6. Now we must configure the port that connects to the IP Phone and the PC. Below is a description of the commands used:

- a. port-name – Adds a description to the interface.
- b. dual-mode – allows the port to accept tagged or untagged packets on the specified VLAN. If no VLAN is specified, the default-VLAN is assumed.
- c. voice-vlan – Used to propagate to a Cisco IP Phone via CDP to tell the phone what it's voice VLAN is.
- d. inline power – turns on inline power for the interface.
- e. trust dscp – Tells the switch to trust Layer 3 DSCP markings from the IP Phone used for QoS.
 - i. *Note: Layer 2 CoS is on by default.*

7. Configure the port where the phone is connected:

```
interface e 1/1/2
port-name IP Phone-PC
dual-mode 10
voice-vlan 20
inline power
trust dscp
```

8. Write the configuration to memory with the write mem command.

9. Verify that IP Phones are receiving power from the switch:

```
show inline power
```

```
Edge-Switch#sh inline power
Power Capacity:      Total is 68000 mWatts. Current Free is 53000 mWatts.
Power Allocations:  Requests Honored 6 times

Port    Admin State  Oper State  ---Power(mWatts)---  PD Type  PD Class  Pri  Fault/Error
         State      State      Consumed  Allocated
-----
1/1/1   on          on          4507        15000    802.3af  Class 3   3   n/a
1/1/2   on          off         0           0        n/a      n/a       3   n/a
1/1/3   off         off         0           0        n/a      n/a       3   n/a
1/1/4   off         off         0           0        n/a      n/a       3   n/a
-----
Total           4507        15000
```

10. Verify that IP Phones are showing up on the switch:

```
show fdp neighbor
```

11. Below is a configuration snippet for the above configuration:

```
ver 07.4.00fT311
!
stack unit 1
  module 1 icx6450-24p-poe-port-management-module
  module 2 icx6450-sfp-plus-4port-40g-module
!
vlan 10 name Data by port
  tagged ethe 1/1/2 to 1/1/24
  spanning-tree 802-1w
!
vlan 20 name Voice by port
  tagged ethe 1/1/2 to 1/1/24
  spanning-tree 802-1w
!
vlan 499 name DEFAULT-VLAN by port
!
aaa authentication web-server default local
aaa authentication enable default enable
aaa authentication login default local
aaa authentication login privilege-mode
default-vlan-id 290
enable super-user-password brocade
hostname ICX6450-24P
ip address 10.10.10.2 255.255.255.0
no ip dhcp-client enable
ip default-gateway 10.10.10.1
no telnet server
username admin password brocade
cdp run
fdp run
!
interface ethernet 1/1/2
  loop-detection
  dual-mode 10
  spanning-tree 802-1w admin-edge-port
  inline power
  voice-vlan 20
  trust dscp
!
interface ethernet 1/1/3
  loop-detection
  dual-mode 10
  spanning-tree 802-1w admin-edge-port
  inline power
  voice-vlan 20
```

```
trust dscp
```

```
!
```

```
-----Removed to conserve space-----
```

```
!
```

```
interface ethernet 1/1/24
```

```
  loop-detection
```

```
  dual-mode 10
```

```
  spanning-tree 802-1w admin-edge-port
```

```
  inline power
```

```
  voice-vlan 20
```

```
  trust dscp
```

```
!
```

```
lldp run
```

```
!
```

```
!
```

```
!
```

```
!
```

```
end
```