Cumulus Linux Conversion Guides

Cumulus Networks

May 24, 2016

Where did things move?

Cisco

```
vlan 100,200

interface ethernet 1/1
    switchport mode access
    switchport access vlan 100

interface ethernet 1/2
    switchport mode access
    switchport access vlan 200
```

Juniper

```
interfaces {
    ge-0/1/1 {
        unit 0 {
            family bridge {
                interface-mode access;
                vlan-id 100;
            }
        }
    }
    ge-0/1/2 {
        unit 0 {
            family bridge {
                interface-mode access;
                vlan-id 200;
            }
        }
    }
```

Cumulus Linux

/etc/network/interfaces:

```
auto bridge
iface bridge
  bridge-vlan-aware yes
  bridge-ports swp1 swp2
  bridge-vids 100 200

auto swp1
iface swp1
  bridge-access 100

auto swp2
iface swp2
  bridge-access 200
```

Defining a Switch Port

Cumulus Linux

```
cumulus@switch:~$ sudo vi /etc/network/interfaces
auto swp1
iface swp1

auto bridge
iface bridge
   bridge-ports swp1
```

Cisco

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# switchport
```

Adding an IP Address

Cumulus Linux

```
cumulus@switch:~$ sudo vi /etc/network/interfaces
auto swp1
iface swp1
  address [ipv4-address/subnet-mask]
  address [ipv6-address/subnet-mask]
```

Cisco

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# no switchport
switch(config-if)# ip address [ipv4-address/subnet-mask]
switch(config-if)# ipv6 address [ipv6-address/subnet-mask]
```

Setting Speed, Duplex, MTU, and Auto-negotiation for an Interface

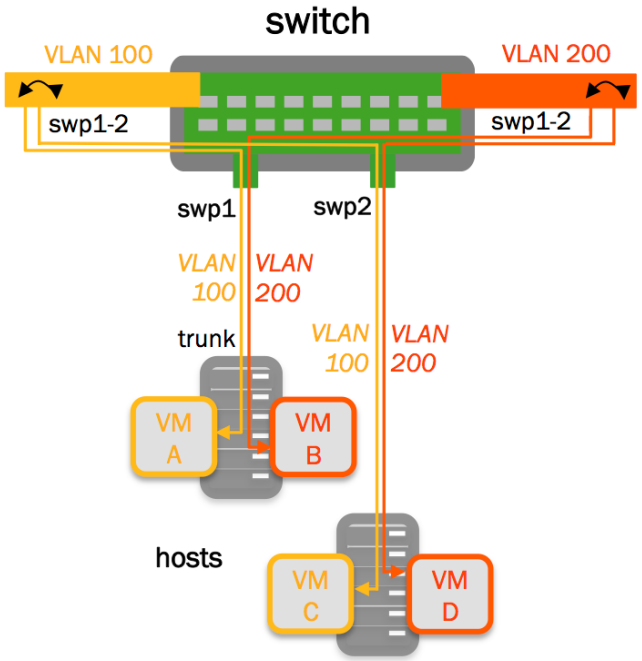
Cumulus Linux

```
cumulus@switch:~$ sudo vi /etc/network/interfaces
auto swp1
iface swp1
  link-speed [speed]
  link-duplex [full|half]
  mtu [1500 - 9216]
  link-autoneg [on|off]
```

Cisco

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# speed [speed]
switch(config-if)# duplex [full|half]
switch(config-if)# mtu [1500 - 9216]
switch(config-if)# [no] negotiate auto
```

Configuring Trunks



Cumulus Linux

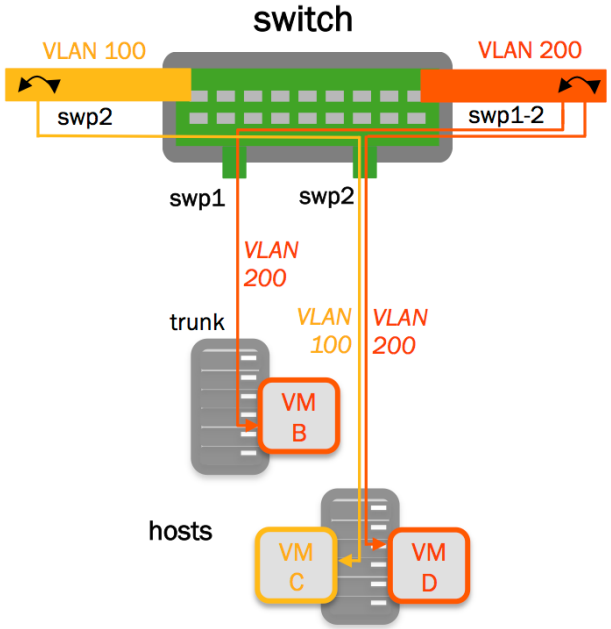
/etc/network/interfaces:

```
auto bridge
iface bridge
  bridge-vlan-aware yes
  bridge-ports glob swp1-2
  bridge-vids 100 200
```

Cisco

```
vlan 100,200

interface ethernet 1/1
  switchport mode trunk
interface ethernet 1/2
  switchport mode trunk
```

Pruning a Trunk



Cumulus Linux

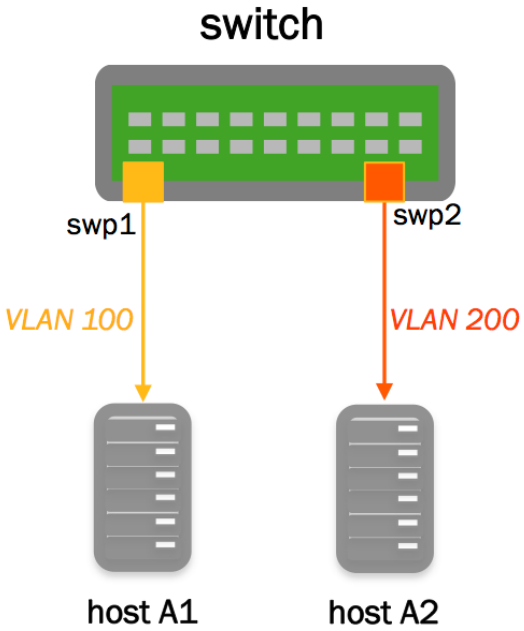
/etc/network/interfaces:

```
auto bridge
iface bridge
  bridge-vlan-aware yes
  bridge-ports glob swp1-2
  bridge-vids 100 200

auto swp1
iface swp1
  bridge-vids 200
```

Cisco

```
vlan 100,200

interface ethernet 1/1
   switchport mode trunk
   switchport trunk allowed vlan 200
interface ethernet 1/2
  switchport mode trunk
```

Configuring Access Ports



Cumulus Linux

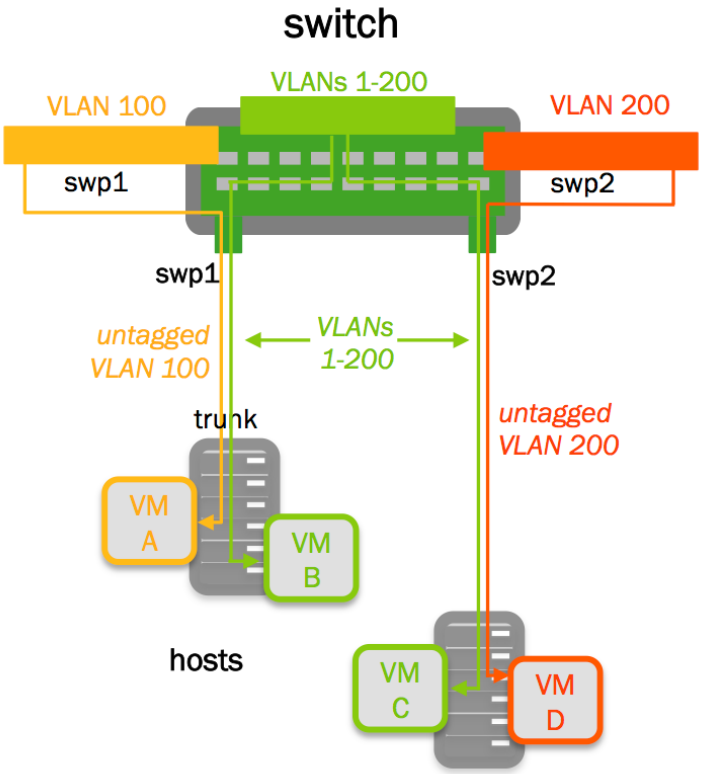
/etc/network/interfaces:

```
auto bridge
iface bridge
  bridge-vlan-aware yes
  bridge-ports glob swp1-2
  bridge-vids 100 200

auto swp1
iface swp1
  bridge-access 100

auto swp2
iface swp2
  bridge-access 200
```

Cisco

```
vlan 100,200

interface ethernet 1/1
  switchport mode access
  switchport access vlan 100

interface ethernet 1/2
  switchport mode access
  switchport access vlan 200
```

Changing the Native (Untagged) VLAN for a Single Trunk



Cumulus Linux

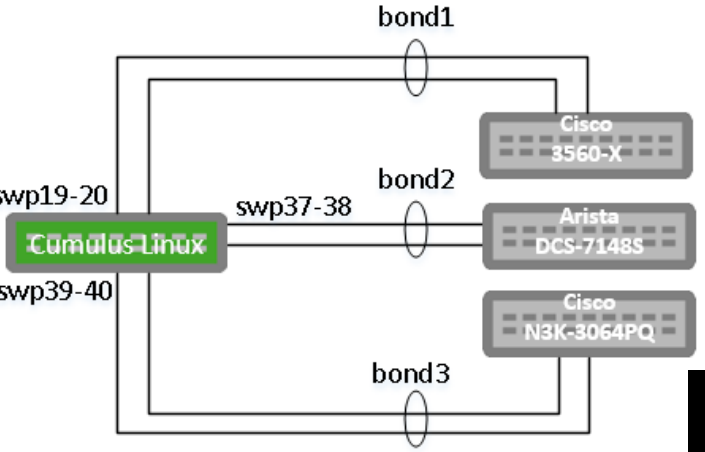
/etc/network/interfaces:

```
auto bridge
iface bridge
  bridge-vlan-aware yes
  bridge-ports glob swp1-2
  bridge-vids 1-200

auto swp1
iface swp1
  bridge-pvid 100

auto swp2
iface swp2
  bridge-pvid 200
```

Cisco

```
vlan 1-200

interface ethernet 1/1-2
  switchport mode trunk
  switchport trunk allowed vlan 1-200

interface ethernet 1/1
  switchport trunk native vlan 100

interface ethernet 1/2
  switchport trunk native vlan 200
```

EtherChannels/Bonds



Cumulus Linux

/etc/network/interfaces:

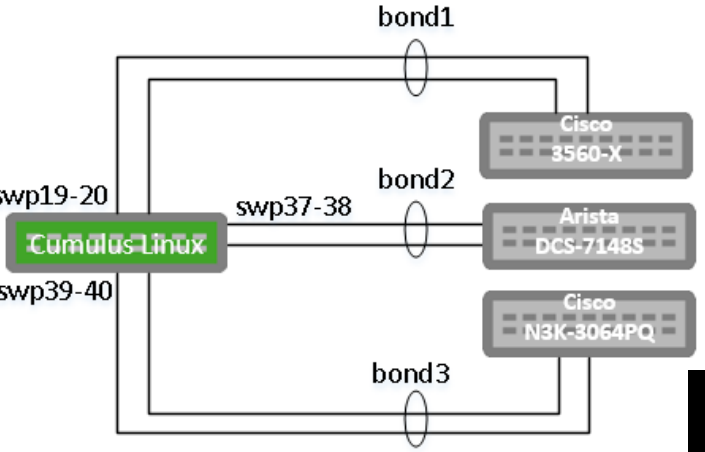
```
auto bond1
iface bond1
  bond-slaves glob swp19-20
  bond-miimon 100
  bond-min-links 1
  bond-mode 802.3ad
  bond-xmit-hash-policy layer3+4
  bond-lacp-rate 1

auto vlan10
iface vlan10
  bridge-ports bond1.10
  address 10.10.10.11/24
  bridge-stp on
```

Cisco

Cisco WS-C3560X-24 12.2(55)SE5

```
vlan 10
!
interface GigabitEthernet0/19
   switchport trunk encapsulation dot1q
   switchport mode trunk
   channel-group 1 mode active
 interface GigabitEthernet0/20
  switchport trunk encapsulation dot1q
  switchport mode trunk
  channel-group 1 mode active
 interface Port-channel1
  switchport trunk encapsulation dot1q
  switchport mode trunk
 interface Vlan10
  ip address 10.10.10.10 255.255.255.0
```

EtherChannels/Bonds



Cumulus Linux

/etc/network/interfaces:

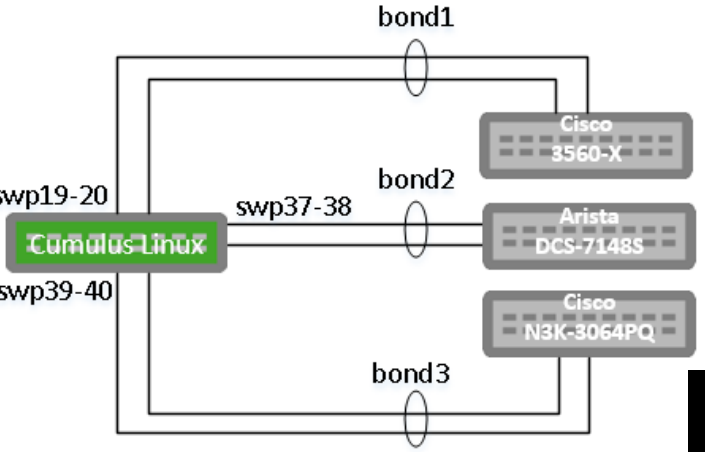
```
auto bond2
iface bond2
  bond-slaves glob swp37-38
  bond-miimon 100
  bond-min-links 1
  bond-mode 802.3ad
  bond-xmit-hash-policy layer3+4
  bond-lacp-rate 1

auto vlan12
iface vlan12
  bridge-ports bond2.12
  address 12.12.12.11/24
  bridge-stp on
```

Arista

Arista DCS-7148S-R 4.13.5F

```
interface Ethernet37
   switchport mode trunk
   channel-group 2 mode active
interface Ethernet38
  switchport mode trunk
  channel-group 2 mode active
 interface Port-Channel2
   switchport trunk allowed vlan 12
   switchport mode trunk
 interface Vlan12
  ip address 12.12.12.12/24
```

EtherChannels/Bonds



Cumulus Linux

/etc/network/interfaces:

```
auto bond3
iface bond3
  bond-slaves glob swp39-40
  bond-miimon 100
  bond-min-links 1
  bond-mode 802.3ad
  bond-xmit-hash-policy layer3+4
  bond-lacp-rate 1

auto vlan14
iface vlan14
  bridge-ports bond3.14
  address 14.14.14.11/24
  bridge-stp on
```

Cisco

Cisco Nexus3064 5.0(3)U2(2c)

```
feature interface-vlan
feature lacp
vlan 14

interface Ethernet1/39
  switchport mode trunk
  channel-group 3 mode active
interface Ethernet1/40
  switchport mode trunk
  channel-group 3 mode active
interface port-channel3
  switchport mode trunk

interface Vlan14
  no shutdown
  ip address 14.14.14.14/24
```

Spanning Tree Configuration

Immediately bring an interface configured as an access or trunk port to the forwarding state.

Cumulus Linux

```
auto swp1
iface swp1
  mstpctl-portadminedge yes
```

Cisco

```
interface Gigabit0/0
  spanning-tree portfast
```

Spanning Tree Configuration

Enabling/disabling the BPDU guard configuration.

Cumulus Linux

```
auto swp1
iface swp1
  mstpctl-bpduguard yes
```

Cisco

```
!
spanning-tree portfast bpduguard default
!
interface Gigabit0/0
  spanning-tree portfast
```

Spanning Tree Configuration

Enables BPDU filter on a switch port, which filters BPDUs in both directions.

Cumulus Linux

```
auto swp1
iface swp1
  mstpctl-portbpdufilter yes
```

Cisco

```
!
spanning-tree portfast bpdufilter default
!
interface Gigabit0/0
  spanning-tree portfast
```

Spanning Tree Configuration

Configure the port priority for an interface. The default for both operating systems is 128.

Cumulus Linux

```
auto swp1
iface swp1
  mstpctl-treeportprio 128
```

Cisco

```
interface Gigabit0/0
  spanning-tree port-priority 128
```

Spanning Tree Configuration

Configure the switch's priority for a bridge/VLAN. The default for both operating systems is 32768.

Cumulus Linux

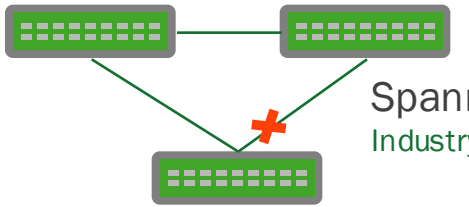
```
auto vlan1
iface vlan1
  mstpctl-treeprio 32768
  bridge-ports swp1
```

Cisco

```
spanning-tree vlan 1 priority 32768
```

More Spanning Tree Info (Conversion Guide)

https://support.cumulusnetworks.com/hc/en-us/articles/206908397



Spanning Tree

Industry-standard Loop Prevention for L2

Access Lists

(Example permit http port 80 traffic to 10.10.10.0/24 subnet)

iptables/netfilter (including Cumulus Linux)

```
iptables -A {FORWARD | INPUT | OUTPUT} -j {ACCEPT | DROP | POLICE | SPAN | ERSPAN} | -p <protocol>
-s <source> --sport [<ports>] -d destination> --dport [<ports>] [<options>]
```

```
iptables -A FORWARD -j ACCEPT -p tcp -s 10.10.10.0/24 -d 3.3.3.3/24 --dport 80
```

IOS Standard Syntax

```
access-list <number> {permit | deny} <protocol> <source> [<ports>] <destination> [<ports>] [<options>]
```

```
access-list 10 permit tcp 10.10.10.0/24 3.3.3.3/24 eq www
```

IOS Extended Syntax (including NX-OS)

```
ip access-list extended  {<number> | <name>}
  [<sequence>] {permit | deny} <protocol> <source> [<ports>]<destination> [<ports>] [<options>]
```

```
ip access-list extended allow_http
 10 permit tcp 10.10.10.0/24 3.3.3.3/24 eq www
```

Block ICMP Echo Requests on the Specified Switch Port

Cumulus Linux

```
iptables -A FORWARD -j DROP -i swp1 -p icmp --icmp-type echo-request
```

Cisco

```
ip access-list extended block_icmp
  deny icmp any any echo

interface g0/0
  ip access-group block_icmp in
```

Block SSH Traffic from the Specified Subnet (5.5.5.0/24)

Cumulus Linux

```
iptables -A INPUT -j DROP -p tcp -s 5.5.5.0/24 --dport 22
```

Cisco

```
ip access-list extended block_ssh
 deny tcp 5.5.5.0 0.0.0.255 192.50.50.0 0.0.0.255 eq 22
interface g0/0
 ip access-group block_ssh in
```

Allow NTP Traffic to Transit the Switch (UDP Port 123)

Cumulus Linux

```
iptables -A FORWARD -j ACCEPT -p udp -s 192.168.1.0/24 --dport 123
```

Cisco

```
ip access-list extended allow_ntp
 permit udp 192.168.1.0 0.0.0.255 any eq ntp
interface g0/0
 ip access-group allow_ntp in
```

Policing a Physical Interface

Cumulus Linux

```
-A FORWARD --in-interface swp1 -j POLICE --set-mode KB --set-rate 125000 --set-burst 2000
```

Output

```
cumulus@leaf1$ sudo cl-acltool -L ip | grep swp1
pkts bytes target prot opt in     out source   destination
 0     0    POLICE all   -- swp1   any anywhere anywhere POLICE mode:KB rate:125000 burst:2000
```

Cisco

```
policy-map sean
 class class-default
   police cir 1000000000 interface
TenGigabitEthernet1/13
   service-policy input sean
```

Policing DSCP Values

Cumulus Linux

```
-A FORWARD --in-interface swp2 -m dscp --dscp 10 -j POLICE --set-mode KB --set-rate 31250 --set-burst 2000
```

Output

```
cumulus@leaf1$ sudo cl-acltool -L ip | grep swp2
pkts bytes target prot opt in   out source   destination
 0     0   POLICE all   --  swp2 any anywhere anywhere     DSCP match 0x0a POLICE mode:KB rate:31250 burst:2000
```

Cisco

```
class-map match-all dscp10
   match dscp af11
!
policy-map sean2
  class dscp10
     police cir 250000000
!
interface TenGigabitEthernet1/14
  service-policy input sean2
```

Policing by Source Traffic

Cumulus Linux

```
-A FORWARD --in-interface swp3 -j POLICE --set-mode KB --set-rate 12500 --set-burst 2000 -s 3.3.3.0/24
```

Output

```
cumulus@leaf1$ sudo cl-acltool -L ip | grep swp3
pkts bytes target prot opt in out source destination
 0     0   POLICE  all  --  swp3 any 3.3.3.0/24 anywhere      POLICE mode:KB rate:12500 burst:2000
```

Cisco

```
access-list 100 permit ip 3.3.3.0 0.0.0.255 any
!
class-map match-all heller
  match access-group 100
!
policy-map heller
  class heller
    police cir 100000000
!
interface TenGigabitEthernet1/15
  service-policy input heller
```

Time Zone Configuration

Cumulus Linux

```
cumulus@switch:~$ sudo tzconfg
cumulus@switch:~$ sudo hwclock
```

Cisco

```
switch# configure terminal
switch(config)# clock timezone PST -8 0
switch(config)# exit
switch# show clock
switch# copy running-config startup-config
```

Cumulus Linux

```
cumulus@switch:~$ sudo vi /etc/ntp.conf
cumulus@switch:~$ ntpd -q
```

Cisco

Set NTP (e.g. to VDC 1)

```
switch# clock protocol ntp vdc 1
```

Show Management Interface Current Configuration

Cumulus Linux

```
cumulus@switch:~$ ifquery eth0
```

Cisco

```
switch# show interface mgmt 0
```

DHCP Relay

Cumulus Linux

```
cumulus@switch:~$ sudo vi /etc/default/isc-dhcp-relay
SERVERS="192.168.123.4"
INTERFACES="bridge swp4 swp5"

cumulus@switch:~$ sudo /etc/init.d/isc-dhcp-relay restart
```

Cisco

```
switch# configure terminal switch(config)# ip dhcp relay
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# ip dhcp relay address 192.168.123.4
```

Cumulus Linux	Cisco
Show command history	
`cumulus@switch:~$ history`	`switch# show cli history`
Send message to all logged on users	
`cumulus@switch:~$ echo message | sudo wall`	`switch# send message`
Send message to specific user	
`cumulus@switch:~$ sudo write user-id`	`switch# show users` `switch# send session line message`

CLI Basics

Cumulus Linux

Cisco

Show SPROM information

```
cumulus@switch:~$ decode-syseeprom
```

```
switch# show sprom
```

Show hardware states (temperature, fan, power)

```
cumulus@switch:~$ sudo smonctl
```

```
cumulus@switch:~$ sudo sensors
```

```
switch# show environment
```

Show memory allocation

```
cumulus@switch:~$ vmstat
```

```
switch# show processes memory
```

Show real-time memory usage

```
cumulus@switch:~$ vmstat 1
```

Alternative command

```
cumulus@switch:~$ free
```

CLI Basics

Cumulus Linux	Cisco
Show CPU processes and utilization	
`cumulus@switch:~$ ps aux`	`switch# show processes`
`cumulus@switch:~$ top`	`switch# show processes cpu`
Show hardware information	
`cumulus@switch:~$ dmidecode`	`switch# show inventory`
`cumulus@switch:~$ netshow system`	
Show high level port state	
`cumulus@switch:~$ netshow interface`	`switch# show ip int br`

CLI Basics

Cumulus Linux	Cisco
Show interface neighbors	
`cumulus@switch:~$ lldpctl` `cumulus@switch:~$ netshow lldp`	`switch# show lldp neigbhors`
Show interface connector information	
`cumulus@switch:~$ sudo ethtool -m swp1`	`switch# show interface ethernet 1/1 transceiver`
Reboot switch	
`cumulus@switch:~$ sudo reboot`	`switch# reload`

Show ARP Table

Cumulus Linux

```
root@leaf01:~# arp -n
Address                  HWtype  HWaddress           Flags Mask     Iface
10.2.0.254               ether   44:38:39:00:00:29   C              eth0
169.254.1.2              ether   44:38:39:00:00:30   C              peerlink.4094
169.254.0.1              ether   44:38:39:00:00:08   CM             swp49
169.254.0.1              ether   44:38:39:00:00:14   CM             swp50
```

Cisco

```
switch# show ip arp
IP ARP Table for context default
Total number of entries: 1
Address         Age          MAC Address     Interface
90.10.10.2      00:03:11     000d.ece7.df7c  Vlan900
```

Configure SNMP (Net-SNMP)

Cumulus Linux

```
cumulus@switch:~$ sudo vi /etc/snmp/snmpd.conf
cumulus@switch:~$ sudo vi /etc/snmp/snmptrapd.conf
```

Cisco

```
switch# configure terminal
switch(config)# snmp-server host ip-address traps version 2c public
```

Detailed Info

https://docs.cumulusnetworks.com/display/DOCS/Monitoring+System+Hardware

Thank You!