

Deployment Guide

This deployment guide is to help get your switch cluster up and running using PICA8's Cluster Configurator application. There are 6 CC deployment topologies documented in this deployment guide.

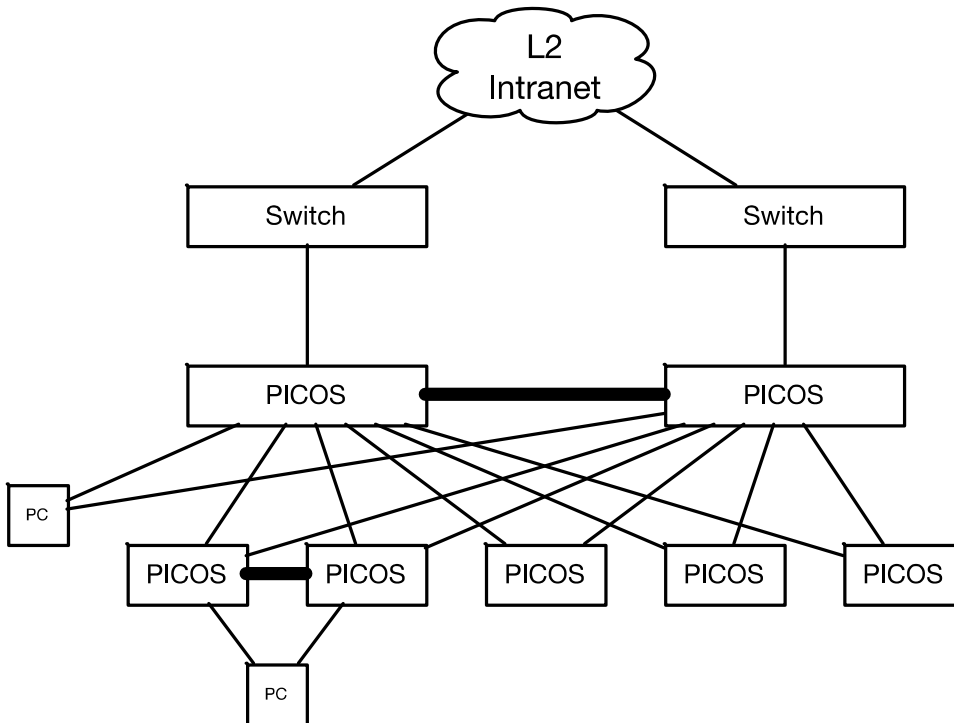
Two each of:

- L2 to L2
- L2 to L3
- L3 to L3

These configurations map to the Switch Cluster and upstream network topologies documented at the end of this document. Please customize them appropriately for your specific installation.

The QoS common configurations are documented separately under the QoS section.

L2 to L2 Topologies



L2 to L2 Topo #1

Description

External only VLANS

VLAN 10 - mgmt

External and Cluster VLANS

VLAN 11 - data

VLAN 12 - voice

Upstream: multiple topologies, some create topology loops and let STP protocols handle them.

CC-) setup init 1-6

```
manage_license install peer
switch_reinit peer
manage_license install self
switch_reinit self
```

```
manage_license install 1 .. 6
switch_reinit 1-6
```

CC-) setup net

Please wait few seconds ...

Please enter a blank space to erase configured values.

Please enter the Uplink Ports, e.g. te-1/1/48 ():te-1/1/48

Please enter the Mgmt Vlan ID():10

Please enter the IP Address1 for Mgmt Vlan, e.g. 192.168.1.12/24 ():172.16.100.101/24

Please enter the IP Address2 for Mgmt Vlan, e.g. 192.168.1.13/24 ():172.16.100.102/24

Please enter the VIP():172.16.100.100

Please enter the Gateway, e.g. 192.168.1.14 (:):172.16.100.10
 Please enter the NTP server, e.g. 192.168.1.16 (:):172.16.10.69
 Please enter the timezone, e.g. UTC (:):PST8PDT

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CC-) setup mgmt
 Please wait few seconds ...
 Please enter a blank space to erase configured values.
 Please enter the Cluster Name():LAB-0909
 Please enter the Login Banner():Installed on Setp 09
 Please enter the Tacacs Server, e.g. 192.168.1.15 (:):
 Please enter the Tacacs Secret-key():
 Please enter the Syslog server, e.g. 192.168.1.17 (:):172.16.100.7
 Please enter the Snmp server, e.g. 192.168.1.18 (:):172.16.100.8
 Please enter the Snmpwalk username, e.g. cc-user (:):cc-test-user
 Please enter the New Password():

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```
rem !! PA LAB Specific
send self,peer configure
send self,peer set interface gigabit-ethernet te-1/1/48 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/45 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/46 speed 1000
send self,peer commit
send self,peer exit
```

```
send "" config
send "" set vlans vlan-id 11 description "data"
send "" set vlans vlan-id 12 description "voice"
send "" set vlans voice-vlan
send "" set protocol lldp compliance cdp true
send "" set protocols spanning-tree force-version 4
send "" set protocols spanning-tree pvst vlan %11-12% enable true
```

```
send self,peer set protocols spanning-tree pvst vlan %10-12% enable true
send self,peer set protocols spanning-tree pvst vlan 4094 bridge-priority 8192
send self,peer set protocols spanning-tree pvst vlan %10-12% bridge-priority 4096
```

```
send self,peer set interface gigabit-ethernet te-1/1/48 family ethernet-switching vlan members %11-12%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %10-12%
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 11
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 12
```

```
send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %11-12%
```

```
send "" commit
```

```
rem !! ports
send self,peer set interface gigabit-ethernet te-1/1/%33-34% description "User Port"
send self,peer set interface gigabit-ethernet te-1/1/%33-34% family ethernet-switching native-vlan-id 11
```

```
send self,peer set protocols spanning-tree pvst interface te-1/1/%33-34% bpdu-guard true
send self,peer set interface gigabit-ethernet te-1/1/%33-34% storm-control broadcast ratio 1
```

```
send self,peer commit
```

```
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% description "User Port"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching port-mode "trunk"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching native-vlan-id 11
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% voice-vlan vlan-id 12
send 1,6 set protocols lldp interface ge-1/1/%1-4% compliance cdp true
send 1,6 set protocols spanning-tree pvst interface ge-1/1/%1-4% bpdu-guard true
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% storm-control broadcast ratio 1
```

```
send 1,6 commit
config_copy 1 2-5
```

```
send 3 set poe interface all enable true
send 3 set poe interface all threshold-mode 1
send 3 set poe interface all max-power 32
send 3 set poe power management-mode 3
send 3 set poe interface ge-1/1/%1-4% enable true
send 3 set poe interface ge-1/1/%1-4% detection-type 3
```

```
send 3 commit
config_copy 3 4
```

```
rem !! LAG
send 3 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
send 3 set interface aggregate-ethernet ae11 description "User LAG"
send 3 set interface aggregate-ethernet ae11 aggregated-ether-options lACP enable true
send 3 set interface aggregate-ethernet ae11 family ethernet-switching port-mode "trunk"
send 3 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 11
send 3 set protocols spanning-tree pvst interface ae11 bpdu-guard true
send 3 set interface aggregate-ethernet ae11 storm-control broadcast ratio 1
send 3 set interface gigabit-ethernet ge-1/1/%1-2% ether-options 802.3ad "ae11"
send 3 commit
```

```
rem !! QOS
```

```
rem !! MLAG spine
send self,peer set interface aggregate-ethernet ae34 description "User MLAG"
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag domain-id 34
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag reload-delay 300
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options lACP enable true
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching native-vlan-id 11
send self,peer set protocols spanning-tree pvst interface ae34 bpdu-guard true
send self,peer set interface aggregate-ethernet ae34 storm-control broadcast ratio 1
send self,peer set interface gigabit-ethernet te-1/1/34 ether-options 802.3ad "ae34"
```

```
rem !! CHECK peer IP values
```

```

send self set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
send peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
rem !! CHECK peer IP values

send self,peer commit

rem !! MLAG leafs
rem !! mlag system-id: 88:Chassis#:Leaf1#:Leaf2#
send 1,2 set interface mlag system-id 00:00:88:01:01:02
send 1,2 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan

send 1,2 set vlans vlan-id 4093 l3-interface "vlan4093"
send 1,2 set protocols spanning-tree pvst vlan 4093 enable true

send 1,2 set interface aggregate-ethernet ae48 aggregated-ether-options lACP enable true
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching native-vlan-id 4093
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching port-mode "trunk"

rem !! CHECK interface names for 2.11
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% speed "10000"
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% ether-options 802.3ad "ae48"
rem !! CHECK interface names for 2.11 53-54

send 1,2 set interface aggregate-ethernet ae%11-12% description "User MLAG"
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag reload-delay 300
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options lACP enable true
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching port-mode "trunk"
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching native-vlan-id 11
send 1,2 set protocols spanning-tree pvst interface ae%11-12% bpdu-guard true
send 1,2 set interface aggregate-ethernet ae%11-12% storm-control broadcast ratio 1

send 1,2 set interface aggregate-ethernet ae11 aggregated-ether-options mlag domain-id 1
send 1,2 set interface gigabit-ethernet ge-1/1/1 ether-options 802.3ad "ae11"

send 1,2 set interface aggregate-ethernet ae12 aggregated-ether-options mlag domain-id 2
send 1,2 set interface gigabit-ethernet ge-1/1/2 ether-options 802.3ad "ae12"

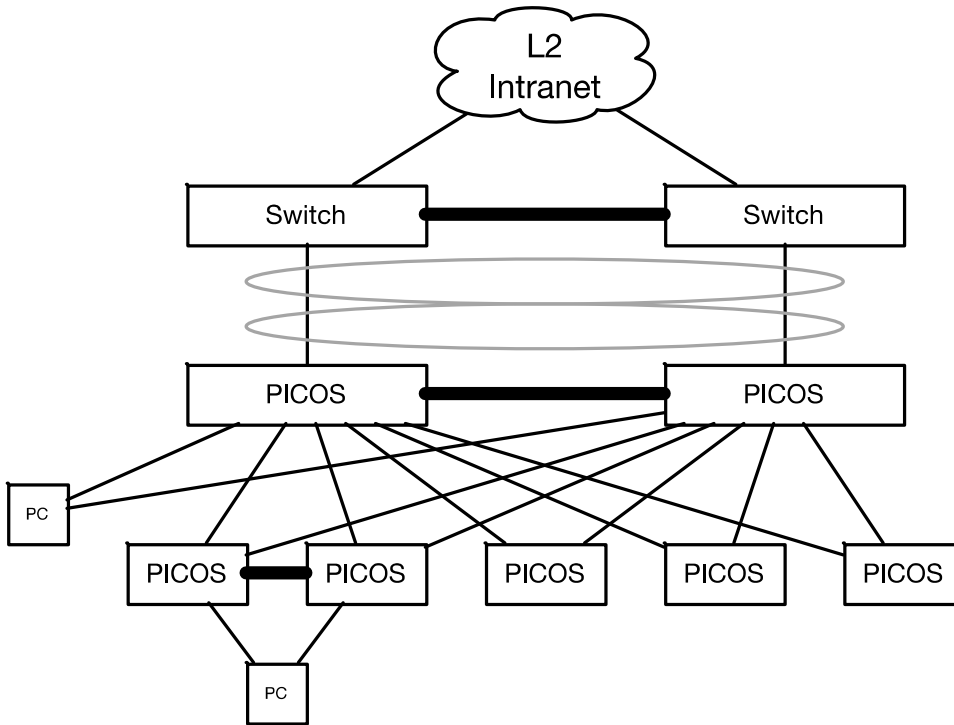
send 1 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.101 prefix-length 24
send 1 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.102 peer-link "ae48"

send 2 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.102 prefix-length 24
send 2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.101 peer-link "ae48"

send 1,2 commit

```

L2 to L2 Topologies #2



L2 to L2 Topo #2

Description

External only VLANS

VLAN 10 - mgmt

External and Cluster VLANS

VLAN 11 - data

VLAN 12 - voice

Upstream: connection to upstream switches is using a LAG that eliminates the requirement for STP and utilizes all uplinks distributing traffic flows across them.

CC-) setup init 1-6

```
manage_license install peer
switch_reinit peer
manage_license install peer
switch_reinit self
```

```
manage_license install 1 .. 6
switch_reinit 1-6
```

CC-) setup net

Please wait few seconds ...

Please enter a blank space to erase configured values.

Please enter the Uplink Ports, e.g. te-1/1/48 (): EMPTY

Please enter the Mgmt Vlan ID():10

Please enter the IP Address1 for Mgmt Vlan, e.g. 192.168.1.12/24 ():172.16.100.101/24
 Please enter the IP Address2 for Mgmt Vlan, e.g. 192.168.1.13/24 ():172.16.100.102/24
 Please enter the VIP():172.16.100.100
 Please enter the Gateway, e.g. 192.168.1.14 ():172.16.100.10
 Please enter the NTP server, e.g. 192.168.1.16 ():172.16.10.69
 Please enter the timezone, e.g. UTC ():PST8PDT

+++++

CC-) setup mgmt
 Please wait few seconds ...
 Please enter a blank space to erase configured values.
 Please enter the Cluster Name():LAB-0909
 Please enter the Login Banner():Installed on Setp 09
 Please enter the Tacacs Server, e.g. 192.168.1.15 ():
 Please enter the Tacacs Secret-key():
 Please enter the Syslog server, e.g. 192.168.1.17 ():172.16.100.7
 Please enter the Snmp server, e.g. 192.168.1.18 ():172.16.100.8
 Please enter the Snmpwalk username, e.g. cc-user ():cc-test-user
 Please enter the New Password():

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```
rem !! PA LAB Specific
send self,peer configure
rem send self,peer set interface gigabit-ethernet te-1/1/48 speed 1000
send self,peer set interface gigabit-ethernet te-1/1/45 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/46 speed 1000
send self,peer commit
send self,peer exit
```

```
send "" config
send "" set vlans vlan-id 11 description "data"
send "" set vlans vlan-id 12 description "voice"
send "" set vlans voice-vlan
send "" set protocol lldp compliance cdp true
send "" set protocols spanning-tree force-version 4
send "" set protocols spanning-tree pvst vlan %11-12% enable true
```

```
send self,peer set interface aggregate-ethernet ae45 aggregated-ether-options lacp enable true
send self,peer set interface aggregate-ethernet ae45 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae45 aggregated-ether-options mlag domain-id 45
send self,peer set interface aggregate-ethernet ae45 aggregated-ether-options mlag reload-delay 300
```

```
rem !! CHECK peer IP values
send self set interface aggregate-ethernet ae45 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
send peer set interface aggregate-ethernet ae45 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
rem !! CHECK peer IP values
```

```
send self,peer set interface gigabit-ethernet te-1/1/45 ether-options 802.3ad "ae45"
rem !! requires change in cabling on GNS3 topology - e2 connects to as2 port 5, disconnect e3 and e4
```

```
send self,peer set protocols spanning-tree pvst vlan %10-12% enable true
```

```
send self,peer set protocols spanning-tree pvst vlan 4094 bridge-priority 8192
send self,peer set protocols spanning-tree pvst vlan %10-12% bridge-priority 4096
```

```
send self,peer set interface aggregate-ethernet ae45 family ethernet-switching vlan members %10-12%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %10-12%
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 11
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 12
```

```
send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %11-12%
```

```
send "" commit
```

```
rem !! ports
```

```
send self,peer set interface gigabit-ethernet te-1/1/%33-34% description "User Port"
send self,peer set interface gigabit-ethernet te-1/1/%33-34% family ethernet-switching native-vlan-id 11
send self,peer set protocols spanning-tree pvst interface te-1/1/%33-34% bpdu-guard true
send self,peer set interface gigabit-ethernet te-1/1/%33-34% storm-control broadcast ratio 1
```

```
send self,peer commit
```

```
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% description "User Port"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching port-mode "trunk"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching native-vlan-id 11
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% voice-vlan vlan-id 12
send 1,6 set protocols lldp interface ge-1/1/%1-4% compliance cdp true
send 1,6 set protocols spanning-tree pvst interface ge-1/1/%1-4% bpdu-guard true
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% storm-control broadcast ratio 1
```

```
send 1,6 commit
config_copy 1 2-5
```

```
send 3 set poe interface all enable true
send 3 set poe interface all threshold-mode 1
send 3 set poe interface all max-power 32
send 3 set poe power management-mode 3
send 3 set poe interface ge-1/1/%1-4% enable true
send 3 set poe interface ge-1/1/%1-4% detection-type 3
```

```
send 3 commit
config_copy 3 4
```

```
rem !! LAG
```

```
send 3 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
send 3 set interface aggregate-ethernet ae11 description "User LAG"
send 3 set interface aggregate-ethernet ae11 aggregated-ether-options lacp enable true
send 3 set interface aggregate-ethernet ae11 family ethernet-switching port-mode "trunk"
send 3 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 11
send 3 set protocols spanning-tree pvst interface ae11 bpdu-guard true
send 3 set interface aggregate-ethernet ae11 storm-control broadcast ratio 1
send 3 set interface gigabit-ethernet ge-1/1/%1-2% ether-options 802.3ad "ae11"
send 3 commit
```


rem !! QOS

rem !! MLAG spine

```
send self,peer set interface aggregate-ethernet ae34 description "User MLAG"
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag domain-id 34
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag reload-delay 300
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options lACP enable true
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching native-vlan-id 11
send self,peer set protocols spanning-tree pvst interface ae34 bPdu-guard true
send self,peer set interface aggregate-ethernet ae34 storm-control broadcast ratio 1
send self,peer set interface gigabit-ethernet te-1/1/34 ether-options 802.3ad "ae34"
```

rem !! CHECK peer IP values

```
send self set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
send peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
rem !! CHECK peer IP values
```

send self,peer commit

rem !! MLAG leafs

```
rem !! mlag system-id: 88:Chassis#:Leaf1#:Leaf2#
send 1,2 set interface mlag system-id 00:00:88:01:01:02
send 1,2 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
```

```
send 1,2 set vlans vlan-id 4093 l3-interface "vlan4093"
send 1,2 set protocols spanning-tree pvst vlan 4093 enable true
```

```
send 1,2 set interface aggregate-ethernet ae48 aggregated-ether-options lACP enable true
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching native-vlan-id 4093
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching port-mode "trunk"
```

rem !! CHECK interface names for 2.11

```
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% speed "10000"
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% ether-options 802.3ad "ae48"
rem !! CHECK interface names for 2.11 53-54
```

```
send 1,2 set interface aggregate-ethernet ae%11-12% description "User MLAG"
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag reload-delay 300
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options lACP enable true
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching port-mode "trunk"
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching native-vlan-id 11
send 1,2 set protocols spanning-tree pvst interface ae%11-12% bPdu-guard true
send 1,2 set interface aggregate-ethernet ae%11-12% storm-control broadcast ratio 1
```

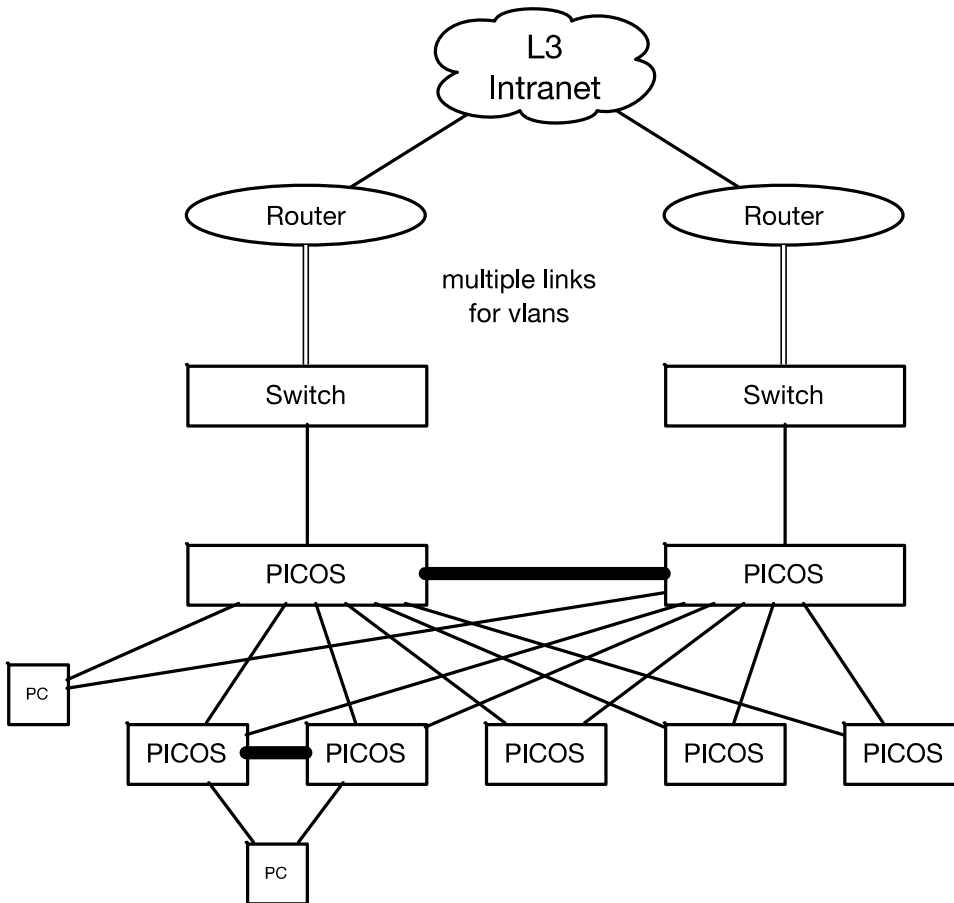
```
send 1,2 set interface aggregate-ethernet ae11 aggregated-ether-options mlag domain-id 1
send 1,2 set interface gigabit-ethernet ge-1/1/1 ether-options 802.3ad "ae11"
```

```
send 1,2 set interface aggregate-ethernet ae12 aggregated-ether-options mlag domain-id 2
send 1,2 set interface gigabit-ethernet ge-1/1/2 ether-options 802.3ad "ae12"
```

```
send 1 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.101 prefix-length 24
send 1 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.102 peer-link "ae48"
```

```
send 2 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.102 prefix-length 24
send 2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.101 peer-link "ae48"
send 1,2 commit
```

L2 to L3 Topologies #1



L2 to L3 Topo #1

Description

External only VLANS

VLAN 20 - mgmt

External and Cluster VLANS

VLAN 21 - data

VLAN 22 - voice

Upstream: connection to upstream network is over trunks connected to aggregation switches which connect to core routers. There are no L2 loops in the topology and the routers run their VRRP/HSRP sessions for VLAN 20 over the LAG link between the spines.

CC-) setup init 1-6

```
manage_license install peer
switch_reinit peer
manage_license install peer
switch_reinit self
```

```
manage_license install 1 .. 6
switch_reinit 1-6
```

```
CC-) setup net
Please wait few seconds ...
Please enter a blank space to erase configured values.
Please enter the Uplink Ports, e.g. te-1/1/48 ():te-1/1/48
Please enter the Mgmt Vlan ID():20
Please enter the IP Address1 for Mgmt Vlan, e.g. 192.168.1.12/24 ():172.16.120.101/24
Please enter the IP Address2 for Mgmt Vlan, e.g. 192.168.1.13/24 ():172.16.120.102/24
Please enter the VIP():172.16.120.100
Please enter the Gateway, e.g. 192.168.1.14 ():172.16.120.10
Please enter the NTP server, e.g. 192.168.1.16 ():172.16.10.69
Please enter the timezone, e.g. UTC ():PST8PDT
```

+++++

```
CC-) setup mgmt
Please wait few seconds ...
Please enter a blank space to erase configured values.
Please enter the Cluster Name():LAB-0909
Please enter the Login Banner():Installed on Setp 09
Please enter the Tacacs Server, e.g. 192.168.1.15 ():
Please enter the Tacacs Secret-key():
Please enter the Syslog server, e.g. 192.168.1.17 ():172.16.100.7
Please enter the Snmp server, e.g. 192.168.1.18 ():172.16.100.8
Please enter the Snmpwalk username, e.g. cc-user ():cc-test-user
Please enter the New Password():
```

+++++

```
rem !! PA LAB Specific
send self,peer configure
send self,peer set interface gigabit-ethernet te-1/1/48 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/45 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/46 speed 1000
send self,peer commit
send self,peer exit
```

```
send "" config
send "" set vlans vlan-id 21 description "data"
send "" set vlans vlan-id 22 description "voice"
send "" set vlans voice-vlan
send "" set protocol lldp compliance cdp true
send "" set protocols spanning-tree force-version 4
send "" set protocols spanning-tree pvst vlan %21-22% enable true
```

```
send self,peer set protocols spanning-tree pvst vlan %20-22% enable true
send self,peer set protocols spanning-tree pvst vlan 4094 bridge-priority 8192
send self,peer set protocols spanning-tree pvst vlan %20-22% bridge-priority 4096
```

```
send self,peer set interface gigabit-ethernet te-1/1/48 family ethernet-switching vlan members %21-22%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %20-22%
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 21
```

```
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 22

send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %21-22%

send "" commit

rem !! ports
send self,peer set interface gigabit-ethernet te-1/1/%33-34% description "User Port"
send self,peer set interface gigabit-ethernet te-1/1/%33-34% family ethernet-switching native-vlan-id 21
send self,peer set protocols spanning-tree pvst interface te-1/1/%33-34% bpdu-guard true
send self,peer set interface gigabit-ethernet te-1/1/%33-34% storm-control broadcast ratio 1

send self,peer commit

send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% description "User Port"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching port-mode "trunk"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching native-vlan-id 21
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% voice-vlan vlan-id 22
send 1,6 set protocols lldp interface ge-1/1/%1-4% compliance cdp true
send 1,6 set protocols spanning-tree pvst interface ge-1/1/%1-4% bpdu-guard true
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% storm-control broadcast ratio 1

send 1,6 commit
config_copy 1 2-5

send 3 set poe interface all enable true
send 3 set poe interface all threshold-mode 1
send 3 set poe interface all max-power 32
send 3 set poe power management-mode 3
send 3 set poe interface ge-1/1/%1-4% enable true
send 3 set poe interface ge-1/1/%1-4% detection-type 3

send 3 commit
config_copy 3 4

rem !! LAG
send 3 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
send 3 set interface aggregate-ethernet ae11 description "User LAG"
send 3 set interface aggregate-ethernet ae11 aggregated-ether-options lacp enable true
send 3 set interface aggregate-ethernet ae11 family ethernet-switching port-mode "trunk"
send 3 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 21
send 3 set protocols spanning-tree pvst interface ae11 bpdu-guard true
send 3 set interface aggregate-ethernet ae11 storm-control broadcast ratio 1
send 3 set interface gigabit-ethernet ge-1/1/%1-2% ether-options 802.3ad "ae11"
send 3 commit

rem !! QOS

rem !! MLAG spine
send self,peer set interface aggregate-ethernet ae34 description "User MLAG"
```

```

send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag domain-id 34
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag reload-delay 300
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options lacp enable true
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching native-vlan-id 21
send self,peer set protocols spanning-tree pvst interface ae34 bpdu-guard true
send self,peer set interface aggregate-ethernet ae34 storm-control broadcast ratio 1
send self,peer set interface gigabit-ethernet te-1/1/34 ether-options 802.3ad "ae34"

rem !! CHECK peer IP values
send self set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
send peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
rem !! CHECK peer IP values

send self,peer commit

rem !! MLAG leafs
rem !! mlag system-id: 88:Chassis#:Leaf1#:Leaf2#
send 1,2 set interface mlag system-id 00:00:88:01:01:02
send 1,2 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan

send 1,2 set vlans vlan-id 4093 l3-interface "vlan4093"
send 1,2 set protocols spanning-tree pvst vlan 4093 enable true

send 1,2 set interface aggregate-ethernet ae48 aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching native-vlan-id 4093
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching port-mode "trunk"

rem !! CHECK interface names for 2.11
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% speed "10000"
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% ether-options 802.3ad "ae48"
rem !! CHECK interface names for 2.11 53-54

send 1,2 set interface aggregate-ethernet ae%11-12% description "User MLAG"
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag reload-delay 300
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching port-mode "trunk"
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching native-vlan-id 21
send 1,2 set protocols spanning-tree pvst interface ae%11-12% bpdu-guard true
send 1,2 set interface aggregate-ethernet ae%11-12% storm-control broadcast ratio 1

send 1,2 set interface aggregate-ethernet ae11 aggregated-ether-options mlag domain-id 1
send 1,2 set interface gigabit-ethernet ge-1/1/1 ether-options 802.3ad "ae11"

send 1,2 set interface aggregate-ethernet ae12 aggregated-ether-options mlag domain-id 2
send 1,2 set interface gigabit-ethernet ge-1/1/2 ether-options 802.3ad "ae12"

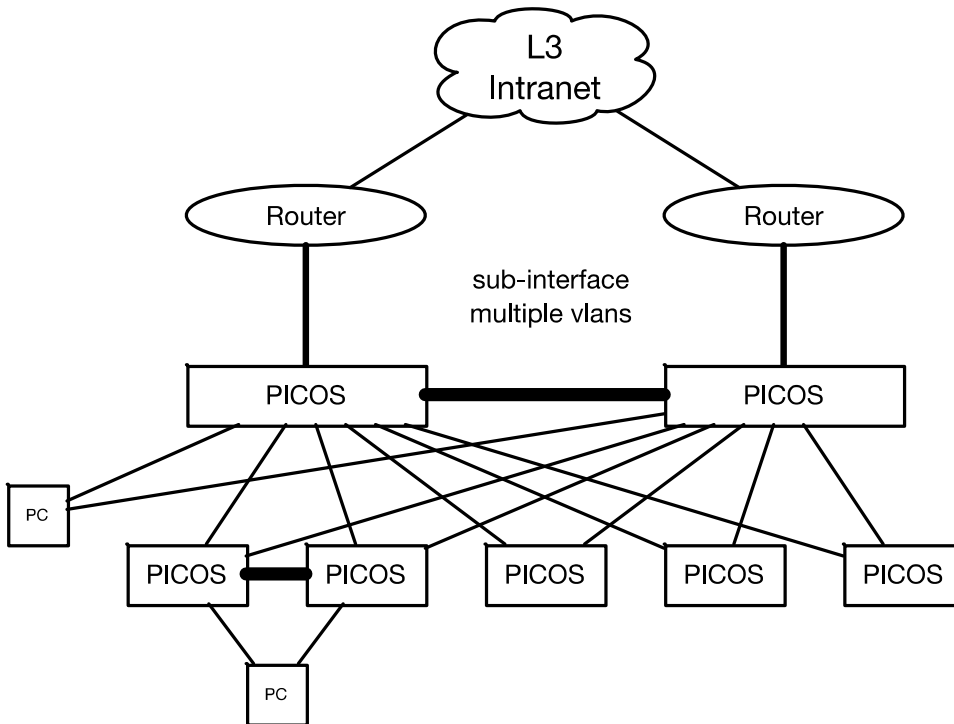
send 1 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.101 prefix-length 24
send 1 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.102 peer-link "ae48"

send 2 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.102 prefix-length 24
send 2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.101 peer-link "ae48"

send 1,2 commit

```

L2 to L3 Topologies #2



L2 to L3 Topo #2

Description

External only VLANS

VLAN 30 - mgmt

External and Cluster VLANS

VLAN 31 - data

VLAN 32 - voice

Upstream: connection to upstream network is over trunks connected to sub-interfaces on the routers. There are no L2 loops in the topology and the routers run their VRRP/HSRP sessions for VLAN 30 over the LAG link between the spines.

CC-) setup init 1-6

```
manage_license install peer
switch_reinit peer
manage_license install peer
switch_reinit self
```

```
manage_license install 1 .. 6
switch_reinit 1-6
```

CC-) setup net

Please wait few seconds ...

Please enter a blank space to erase configured values.

Please enter the Uplink Ports, e.g. te-1/1/48 ():te-1/1/48
 Please enter the Mgmt Vlan ID():30
 Please enter the IP Address1 for Mgmt Vlan, e.g. 192.168.1.12/24 ():172.16.130.101/24
 Please enter the IP Address2 for Mgmt Vlan, e.g. 192.168.1.13/24 ():172.16.130.102/24
 Please enter the VIP():172.16.130.100
 Please enter the Gateway, e.g. 192.168.1.14 ():172.16.130.10
 Please enter the NTP server, e.g. 192.168.1.16 ():172.16.10.69
 Please enter the timezone, e.g. UTC ():PST8PDT

+++++

CC-) setup mgmt
 Please wait few seconds ...
 Please enter a blank space to erase configured values.
 Please enter the Cluster Name():LAB-0909
 Please enter the Login Banner():Installed on Setp 09
 Please enter the Tacacs Server, e.g. 192.168.1.15 ():
 Please enter the Tacacs Secret-key():
 Please enter the Syslog server, e.g. 192.168.1.17 ():172.16.100.7
 Please enter the Snmp server, e.g. 192.168.1.18 ():172.16.100.8
 Please enter the Snmpwalk username, e.g. cc-user ():cc-test-user
 Please enter the New Password():

+++++

```
rem !! PA LAB Specific
send self,peer configure
send self,peer set interface gigabit-ethernet te-1/1/48 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/45 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/46 speed 1000
send self,peer commit
send self,peer exit
```

```
send "" config
send "" set vlans vlan-id 31 description "data"
send "" set vlans vlan-id 32 description "voice"
send "" set vlans voice-vlan
send "" set protocol lldp compliance cdp true
send "" set protocols spanning-tree force-version 4
send "" set protocols spanning-tree pvst vlan %31-32% enable true
```

```
send self,peer set protocols spanning-tree pvst vlan %30-32% enable true
send self,peer set protocols spanning-tree pvst vlan 4094 bridge-priority 8192
send self,peer set protocols spanning-tree pvst vlan %30-32% bridge-priority 4096
```

```
send self,peer set interface gigabit-ethernet te-1/1/48 family ethernet-switching vlan members %31-32%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %30-32%
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 31
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 32
```

```
send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %31-32%
```

```
send "" commit
```



```
rem !! ports
send self,peer set interface gigabit-ethernet te-1/1/%33-34% description "User Port"
send self,peer set interface gigabit-ethernet te-1/1/%33-34% family ethernet-switching native-vlan-id 31
send self,peer set protocols spanning-tree pvst interface te-1/1/%33-34% bpdu-guard true
send self,peer set interface gigabit-ethernet te-1/1/%33-34% storm-control broadcast ratio 1
```

```
send self,peer commit
```

```
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% description "User Port"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching port-mode "trunk"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching native-vlan-id 31
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% voice-vlan vlan-id 32
send 1,6 set protocols lldp interface ge-1/1/%1-4% compliance cdp true
send 1,6 set protocols spanning-tree pvst interface ge-1/1/%1-4% bpdu-guard true
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% storm-control broadcast ratio 1
```

```
send 1,6 commit
config_copy 1 2-5
```

```
send 3 set poe interface all enable true
send 3 set poe interface all threshold-mode 1
send 3 set poe interface all max-power 32
send 3 set poe power management-mode 3
send 3 set poe interface ge-1/1/%1-4% enable true
send 3 set poe interface ge-1/1/%1-4% detection-type 3
```

```
send 3 commit
config_copy 3 4
```

```
rem !! LAG
```

```
send 3 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
send 3 set interface aggregate-ethernet ae11 description "User LAG"
send 3 set interface aggregate-ethernet ae11 aggregated-ether-options lacp enable true
send 3 set interface aggregate-ethernet ae11 family ethernet-switching port-mode "trunk"
send 3 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 31
send 3 set protocols spanning-tree pvst interface ae11 bpdu-guard true
send 3 set interface aggregate-ethernet ae11 storm-control broadcast ratio 1
send 3 set interface gigabit-ethernet ge-1/1/%1-2% ether-options 802.3ad "ae11"
send 3 commit
```

```
rem !! QOS
```

```
rem !! MLAG spine
```

```
send self,peer set interface aggregate-ethernet ae34 description "User MLAG"
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag domain-id 34
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag reload-delay 300
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options lacp enable true
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching native-vlan-id 31
send self,peer set protocols spanning-tree pvst interface ae34 bpdu-guard true
```

```

send self,peer set interface aggregate-ethernet ae34 storm-control broadcast ratio 1
send self,peer set interface gigabit-ethernet te-1/1/34 ether-options 802.3ad "ae34"

rem !! CHECK peer IP values
send self set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
send peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
rem !! CHECK peer IP values

send self,peer commit

rem !! MLAG leafs
rem !! mlag system-id: 88:Chassis#:Leaf1#:Leaf2#
send 1,2 set interface mlag system-id 00:00:88:01:01:02
send 1,2 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan

send 1,2 set vlans vlan-id 4093 l3-interface "vlan4093"
send 1,2 set protocols spanning-tree pvst vlan 4093 enable true

send 1,2 set interface aggregate-ethernet ae48 aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching native-vlan-id 4093
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching port-mode "trunk"

rem !! CHECK interface names for 2.11
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% speed "10000"
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% ether-options 802.3ad "ae48"
rem !! CHECK interface names for 2.11 53-54

send 1,2 set interface aggregate-ethernet ae%11-12% description "User MLAG"
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag reload-delay 300
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching port-mode "trunk"
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching native-vlan-id 31
send 1,2 set protocols spanning-tree pvst interface ae%11-12% bpdu-guard true
send 1,2 set interface aggregate-ethernet ae%11-12% storm-control broadcast ratio 1

send 1,2 set interface aggregate-ethernet ae11 aggregated-ether-options mlag domain-id 1
send 1,2 set interface gigabit-ethernet ge-1/1/1 ether-options 802.3ad "ae11"

send 1,2 set interface aggregate-ethernet ae12 aggregated-ether-options mlag domain-id 2
send 1,2 set interface gigabit-ethernet ge-1/1/2 ether-options 802.3ad "ae12"

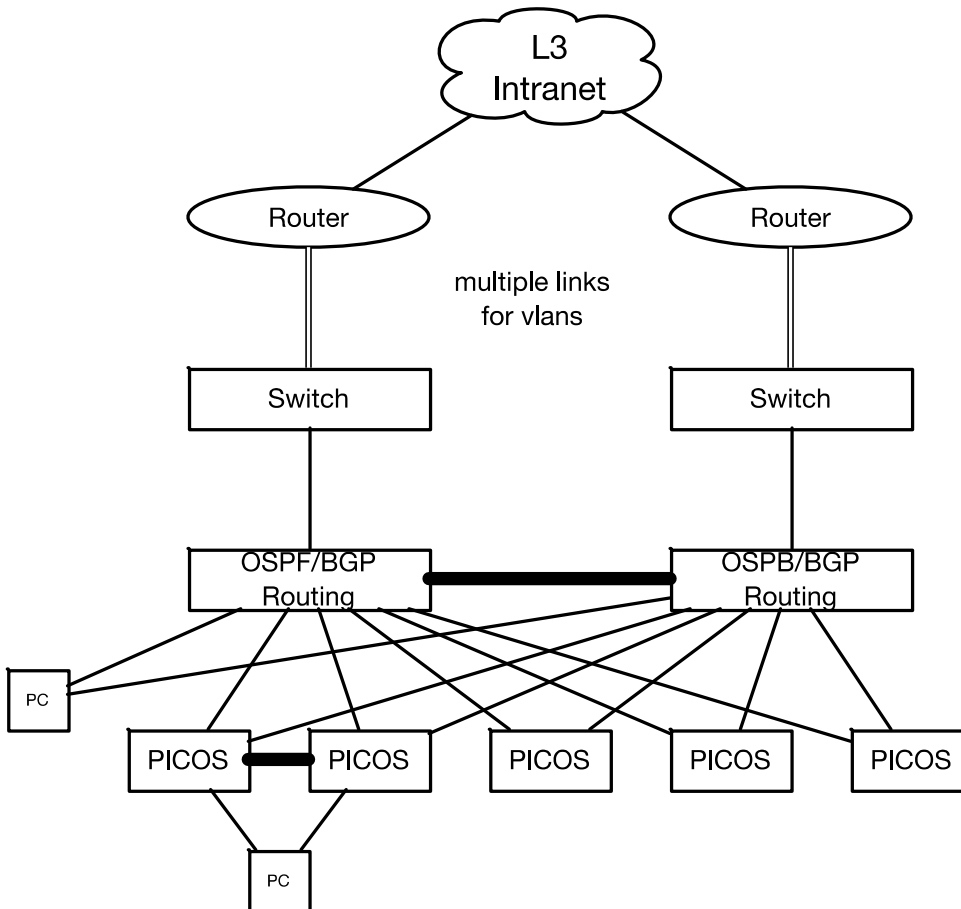
send 1 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.101 prefix-length 24
send 1 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.102 peer-link "ae48"

send 2 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.102 prefix-length 24
send 2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.101 peer-link "ae48"

send 1,2 commit

```

L3 to L3 Topologies #1



L3 to L3 Topo #1

Description

External only VLANS
 VLAN 20 - mgmt
 VLAN 21 - data
 VLAN 22 - voice
 Cluster only VLANS with VRRP VIPs and DHCP relay to upstream DHCP server
 VLANS 2101, 2102 - data
 VLANS 2201, 2202 - voice
 OSPF routing on spines
 Upstream: connection to upstream network is over trunks connected to aggregation switches which connect to core routers. There are no L2 loops in the topology and the routers run their VRRP/HSRP sessions for VLAN 20, 21 and 22 over the LAG link between the spines.
 The upstream routers learn of the 2101, 2102, 2201, 2202 networks via OSPF updates.

CC-) setup init 1-6

manage_license install peer

```
switch_reinit peer
manage_license install peer
switch_reinit self
```

```
manage_license install 1 .. 6
switch_reinit 1-6
```

```
CC-) setup net
Please wait few seconds ...
Please enter a blank space to erase configured values.
Please enter the Uplink Ports, e.g. te-1/1/48 ():te-1/1/48
Please enter the Mgmt Vlan ID():20
Please enter the IP Address1 for Mgmt Vlan, e.g. 192.168.1.12/24 ():172.16.120.101/24
Please enter the IP Address2 for Mgmt Vlan, e.g. 192.168.1.13/24 ():172.16.120.102/24
Please enter the VIP():172.16.120.100
Please enter the Gateway, e.g. 192.168.1.14 ():172.16.120.10
Please enter the NTP server, e.g. 192.168.1.16 ():172.16.10.69
Please enter the timezone, e.g. UTC ():PST8PDT
```

+++++

```
CC-) setup mgmt
Please wait few seconds ...
Please enter a blank space to erase configured values.
Please enter the Cluster Name():LAB-0909
Please enter the Login Banner():Installed on Setp 09
Please enter the Tacacs Server, e.g. 192.168.1.15 ():
Please enter the Tacacs Secret-key():
Please enter the Syslog server, e.g. 192.168.1.17 ():172.16.100.7
Please enter the Snmp server, e.g. 192.168.1.18 ():172.16.100.8
Please enter the Snmpwalk username, e.g. cc-user ():cc-test-user
Please enter the New Password():
```

+++++

```
rem !! PA LAB Specific
send self,peer configure
send self,peer set interface gigabit-ethernet te-1/1/48 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/45 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/46 speed 1000
```

```
send self,peer commit
send self,peer exit
```

```
send "" config
send "" set vlans vlan-id 2101 description "int-data-1"
send "" set vlans vlan-id 2102 description "int-data-2"
send "" set vlans vlan-id 2201 description "int-voice-1"
send "" set vlans vlan-id 2202 description "int-voice-2"
send "" set vlans voice-vlan
send "" set protocol lldp compliance cdp true
send "" set protocols spanning-tree force-version 4
send "" set protocols spanning-tree pvst vlan %2101-2102% enable true
send "" set protocols spanning-tree pvst vlan %2201-2202% enable true
```

```

send self,peer set protocols spanning-tree pvst vlan %20-22% enable true
send self,peer set protocols spanning-tree pvst vlan 4094 bridge-priority 8192
send self,peer set protocols spanning-tree pvst vlan %20-22% bridge-priority 4096
send self,peer set protocols spanning-tree pvst vlan %2101-2102% bridge-priority 4096
send self,peer set protocols spanning-tree pvst vlan %2201-2202% bridge-priority 4096

send self,peer set vlans vlan-id 21 description "ext-data"
send self,peer set vlans vlan-id 22 description "ext-voice"
send self,peer set protocols spanning-tree pvst vlan %21-22% enable true
send self,peer set interface gigabit-ethernet te-1/1/48 family ethernet-switching vlan members %21-22%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %20-22%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %2101-2102%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %2201-2202%
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2101
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2102
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2201
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2202

send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %2101-2102%
send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %2201-2202%

send "" commit

send self,peer set vlans vlan-id 21 l3-interface vlan21
send self,peer set vlans vlan-id 22 l3-interface vlan22
send self,peer set vlans vlan-id 2101 l3-interface vlan2101
send self,peer set vlans vlan-id 2102 l3-interface vlan2102
send self,peer set vlans vlan-id 2201 l3-interface vlan2201
send self,peer set vlans vlan-id 2202 l3-interface vlan2202

send self,peer set protocols ospf4 router-id 0.0.0.1
rem !! if you dont want the upstream network to reach inside the cluster declare the area as a stub
rem !! send self,peer set protocols ospf4 area 0.0.0.120 area-type stub

rem !! loopback 1.area#.chassis#[1|2]
rem !! send self set vlan-interface loopback address 1.120.1.1 prefix-length 32
send self set vlan-interface interface vlan21 vif vlan21 address 172.16.121.101 prefix-length 24
send self set vlan-interface interface vlan22 vif vlan22 address 172.16.122.101 prefix-length 24
send self set vlan-interface interface vlan2101 vif vlan2101 address 172.16.211.101 prefix-length 24
send self set vlan-interface interface vlan2102 vif vlan2102 address 172.16.212.101 prefix-length 24
send self set vlan-interface interface vlan2201 vif vlan2201 address 172.16.221.101 prefix-length 24
send self set vlan-interface interface vlan2202 vif vlan2202 address 172.16.222.101 prefix-length 24
rem !! send self set protocols ospf4 area 0.0.0.120 interface loopback vif loopback address 1.120.1.1
send self set protocols ospf4 area 0.0.0.120 interface vlan21 vif vlan21 address 172.16.121.101
send self set protocols ospf4 area 0.0.0.120 interface vlan22 vif vlan22 address 172.16.122.101
send self set protocols ospf4 area 0.0.0.120 interface vlan2101 vif vlan2101 address 172.16.211.101
send self set protocols ospf4 area 0.0.0.120 interface vlan2102 vif vlan2102 address 172.16.212.101
send self set protocols ospf4 area 0.0.0.120 interface vlan2201 vif vlan2201 address 172.16.221.101
send self set protocols ospf4 area 0.0.0.120 interface vlan2202 vif vlan2202 address 172.16.222.101

rem !! send peer set vlan-interface loopback address 1.120.1.2 prefix-length 32
send peer set vlan-interface interface vlan21 vif vlan21 address 172.16.121.102 prefix-length 24
send peer set vlan-interface interface vlan22 vif vlan22 address 172.16.122.102 prefix-length 24
send peer set vlan-interface interface vlan2101 vif vlan2101 address 172.16.211.102 prefix-length 24

```

```

send peer set vlan-interface interface vlan2102 vif vlan2102 address 172.16.212.102 prefix-length 24
send peer set vlan-interface interface vlan2201 vif vlan2201 address 172.16.221.102 prefix-length 24
send peer set vlan-interface interface vlan2202 vif vlan2202 address 172.16.222.102 prefix-length 24
rem !! send self set protocols ospf4 area 0.0.0.120 interface loopback vif loopback address 1.120.1.2
send peer set protocols ospf4 area 0.0.0.120 interface vlan21 vif vlan21 address 172.16.121.102
send peer set protocols ospf4 area 0.0.0.120 interface vlan22 vif vlan22 address 172.16.122.102
send peer set protocols ospf4 area 0.0.0.120 interface vlan2101 vif vlan2101 address 172.16.211.102
send peer set protocols ospf4 area 0.0.0.120 interface vlan2102 vif vlan2102 address 172.16.212.102
send peer set protocols ospf4 area 0.0.0.120 interface vlan2201 vif vlan2201 address 172.16.221.102
send peer set protocols ospf4 area 0.0.0.120 interface vlan2202 vif vlan2202 address 172.16.222.102

```

```

send self,peer set protocols vrrp interface vlan21 vif vlan21 vrid 21 ip 172.16.121.100
send self,peer set protocols vrrp interface vlan22 vif vlan22 vrid 22 ip 172.16.122.100
send self,peer set protocols vrrp interface vlan2101 vif vlan2101 vrid 211 ip 172.16.211.100
send self,peer set protocols vrrp interface vlan2102 vif vlan2102 vrid 212 ip 172.16.212.100
send self,peer set protocols vrrp interface vlan2201 vif vlan2201 vrid 221 ip 172.16.221.100
send self,peer set protocols vrrp interface vlan2202 vif vlan2202 vrid 222 ip 172.16.222.100

```

```

send self,peer set protocols dhcp relay vlan-interface vlan%2101-2102% disable false
send self,peer set protocols dhcp relay vlan-interface vlan%2101-2102% dhcp-server-address1 172.16.100.2
send self,peer set protocols dhcp relay vlan-interface vlan%2201-2202% disable false
send self,peer set protocols dhcp relay vlan-interface vlan%2201-2202% dhcp-server-address1 172.16.100.2
send self,peer set protocols dhcp snooping port te-1/1/48 trust true

```

```
send self,peer commit
```

```
rem !! ports
```

```

send self,peer set interface gigabit-ethernet te-1/1/%33-34% description "User Port"
send self,peer set interface gigabit-ethernet te-1/1/33 family ethernet-switching native-vlan-id 2101
send self,peer set protocols spanning-tree pvst interface te-1/1/%33-34% bpdu-guard true
send self,peer set interface gigabit-ethernet te-1/1/%33-34% storm-control broadcast ratio 1

```

```
send self,peer commit
```

```

send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% description "User Port"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching port-mode "trunk"
send 1,6 set interface gigabit-ethernet ge-1/1/1 family ethernet-switching native-vlan-id 2101
send 1,6 set interface gigabit-ethernet ge-1/1/2 family ethernet-switching native-vlan-id 2102
send 1,6 set interface gigabit-ethernet ge-1/1/3 family ethernet-switching native-vlan-id 2101
send 1,6 set interface gigabit-ethernet ge-1/1/4 family ethernet-switching native-vlan-id 2102
send 1,6 set interface gigabit-ethernet ge-1/1/1 voice-vlan vlan-id 2201
send 1,6 set interface gigabit-ethernet ge-1/1/2 voice-vlan vlan-id 2202
send 1,6 set interface gigabit-ethernet ge-1/1/3 voice-vlan vlan-id 2201
send 1,6 set interface gigabit-ethernet ge-1/1/4 voice-vlan vlan-id 2202
send 1,6 set protocols lldp interface ge-1/1/%1-4% compliance cdp true
send 1,6 set protocols spanning-tree pvst interface ge-1/1/%1-4% bpdu-guard true
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% storm-control broadcast ratio 1

```

```

send 1,6 commit
config_copy 1 2-5

```

```

send 3 set poe interface all enable true
send 3 set poe interface all threshold-mode 1

```

```
send 3 set poe interface all max-power 32
send 3 set poe power management-mode 3
send 3 set poe interface ge-1/1/%1-4% enable true
send 3 set poe interface ge-1/1/%1-4% detection-type 3
```

```
send 3 commit
config_copy 3 4
```

rem !! LAG

```
send 3 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
send 3 set interface aggregate-ethernet ae11 description "User LAG"
send 3 set interface aggregate-ethernet ae11 aggregated-ether-options lACP enable true
send 3 set interface aggregate-ethernet ae11 family ethernet-switching port-mode "trunk"
send 3 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 2101
send 3 set protocols spanning-tree pvst interface ae11 bPdu-guard true
send 3 set interface aggregate-ethernet ae11 storm-control broadcast ratio 1
send 3 set interface gigabit-ethernet ge-1/1/%1-2% ether-options 802.3ad "ae11"
```

```
send 3 commit
```

rem !! MLAG spine

```
send self,peer set interface aggregate-ethernet ae34 description "User MLAG"
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag domain-id 34
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag reload-delay 300
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options lACP enable true
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching native-vlan-id 2102
send self,peer set protocols spanning-tree pvst interface ae34 bPdu-guard true
send self,peer set interface aggregate-ethernet ae34 storm-control broadcast ratio 1
send self,peer set interface gigabit-ethernet te-1/1/34 ether-options 802.3ad "ae34"
```

rem !! CHECK peer IP values

```
send self set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
send peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
rem !! CHECK peer IP values
```

```
send self,peer commit
```

rem !! MLAG leafs

```
rem !! mlag system-id: 88:Chassis#:Leaf1#:Leaf2#
send 1,2 set interface mlag system-id 00:00:88:01:01:02
send 1,2 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
```

```
send 1,2 set vlans vlan-id 4093 l3-interface "vlan4093"
send 1,2 set protocols spanning-tree pvst vlan 4093 enable true
```

```
send 1,2 set interface aggregate-ethernet ae48 aggregated-ether-options lACP enable true
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching native-vlan-id 4093
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching port-mode "trunk"
```

rem !! CHECK interface names for 2.11

```
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% speed "10000"
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% ether-options 802.3ad "ae48"
```

rem !! CHECK interface names for 2.11 53-54

```
send 1,2 set interface aggregate-ethernet ae%11-12% description "User MLAG"
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag reload-delay 300
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching port-mode "trunk"
send 1,2 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 2101
send 1,2 set interface aggregate-ethernet ae12 family ethernet-switching native-vlan-id 2102
send 1,2 set protocols spanning-tree pvst interface ae%11-12% bpdu-guard true
send 1,2 set interface aggregate-ethernet ae%11-12% storm-control broadcast ratio 1

send 1,2 set interface aggregate-ethernet ae11 aggregated-ether-options mlag domain-id 1
send 1,2 set interface gigabit-ethernet ge-1/1/1 ether-options 802.3ad "ae11"

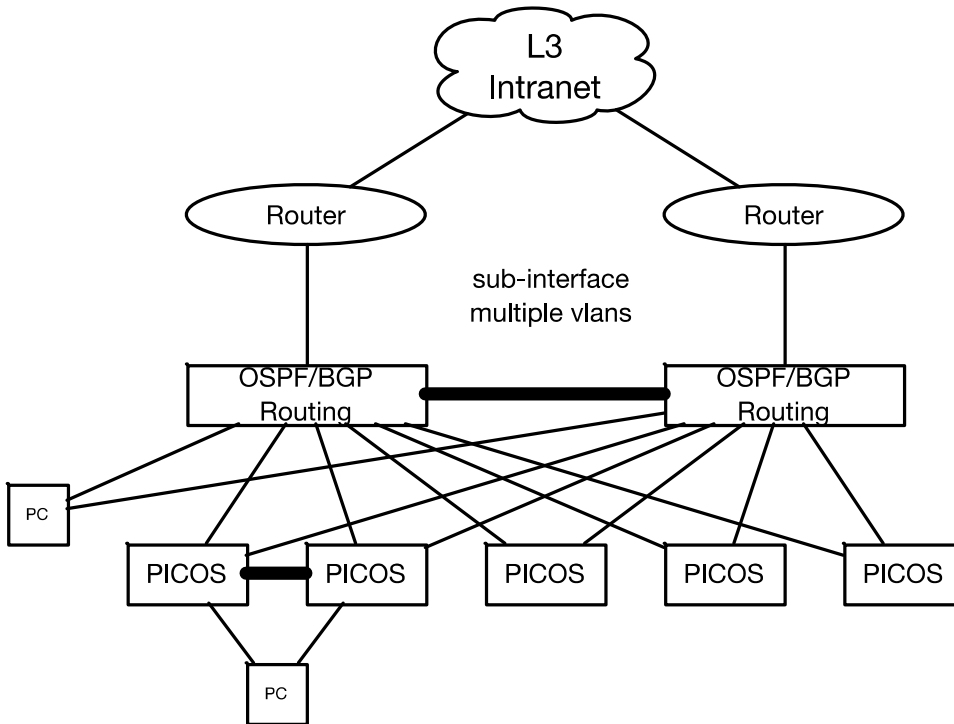
send 1,2 set interface aggregate-ethernet ae12 aggregated-ether-options mlag domain-id 2
send 1,2 set interface gigabit-ethernet ge-1/1/2 ether-options 802.3ad "ae12"

send 1 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.101 prefix-length 24
send 1 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.102 peer-link "ae48"

send 2 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.102 prefix-length 24
send 2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.101 peer-link "ae48"

send 1,2 commit
```


L3 to L3 Topologies #2



L3 to L3 Topo #2

Description

External only VLANS

VLAN 30 - mgmt

VLAN 31 - data

VLAN 32 - voice

Cluster only VLANS with VRRP VIPs and DHCP relay to upstream DHCP server

VLANS 2101, 2102 - data

VLANS 2201, 2202 - voice

OSPF routing on spines

Upstream: connection to upstream network is over trunks connected to sub-interfaces on the routers. There are no L2 loops in the topology and the routers run their VRRP/HSRP sessions for VLAN 30, 31 and 32 over the LAG link between the spines.

The upstream routers learn of the 2101, 2102, 2201, 2202 networks via OSPF updates.

CC-) setup init 1-6

```
manage_license install peer
switch_reinit peer
manage_license install peer
switch_reinit self
```

```
manage_license install 1 .. 6
switch_reinit 1-6
```

```
CC-) setup net
Please wait few seconds ...
Please enter a blank space to erase configured values.
Please enter the Uplink Ports, e.g. te-1/1/48 ():te-1/1/48
Please enter the Mgmt Vlan ID():30
Please enter the IP Address1 for Mgmt Vlan, e.g. 192.168.1.12/24 ():172.16.130.101/24
Please enter the IP Address2 for Mgmt Vlan, e.g. 192.168.1.13/24 ():172.16.130.102/24
Please enter the VIP():172.16.130.100
Please enter the Gateway, e.g. 192.168.1.14 ():172.16.130.10
Please enter the NTP server, e.g. 192.168.1.16 ():172.16.10.69
Please enter the timezone, e.g. UTC ():PST8PDT
```

```
+++++
```

```
CC-) setup mgmt
Please wait few seconds ...
Please enter a blank space to erase configured values.
Please enter the Cluster Name():LAB-0909
Please enter the Login Banner():Installed on Setp 09
Please enter the Tacacs Server, e.g. 192.168.1.15 ():
Please enter the Tacacs Secret-key():
Please enter the Syslog server, e.g. 192.168.1.17 ():172.16.100.7
Please enter the Snmp server, e.g. 192.168.1.18 ():172.16.100.8
Please enter the Snmpwalk username, e.g. cc-user ():cc-test-user
Please enter the New Password():
```

```
+++++
```

```
rem !! PA LAB Specific
send self,peer configure
send self,peer set interface gigabit-ethernet te-1/1/48 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/45 speed 1000
rem send self,peer set interface gigabit-ethernet te-1/1/46 speed 1000
send self,peer commit
send self,peer exit
```

```
send "" config
send "" set vlans vlan-id 2101 description "int-data-1"
send "" set vlans vlan-id 2102 description "int-data-2"
send "" set vlans vlan-id 2201 description "int-voice-1"
send "" set vlans vlan-id 2202 description "int-voice-2"
send "" set vlans voice-vlan
send "" set protocol lldp compliance cdp true
send "" set protocols spanning-tree force-version 4
send "" set protocols spanning-tree pvst vlan %2101-2102% enable true
send "" set protocols spanning-tree pvst vlan %2201-2202% enable true
```

```
send self,peer set protocols spanning-tree pvst vlan %30-32% enable true
send self,peer set protocols spanning-tree pvst vlan 4094 bridge-priority 8192
send self,peer set protocols spanning-tree pvst vlan %30-32% bridge-priority 4096
send self,peer set protocols spanning-tree pvst vlan %2101-2102% bridge-priority 4096
```

```
send self,peer set protocols spanning-tree pvst vlan %2201-2202% bridge-priority 4096
```

```
send self,peer set vlans vlan-id 31 description "ext-data"
send self,peer set vlans vlan-id 32 description "ext-voice"
send self,peer set protocols spanning-tree pvst vlan %31-32% enable true
send self,peer set interface gigabit-ethernet te-1/1/48 family ethernet-switching vlan members %31-32%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %30-32%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %2101-2102%
send self,peer set interface aggregate-ethernet ae48 family ethernet-switching vlan members %2201-2202%
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2101
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2102
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2201
send self,peer set interface aggregate-ethernet ae%1-6% family ethernet-switching vlan members 2202
```

```
send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %2101-2102%
send 1-6 set interface aggregate-ethernet ae1 family ethernet-switching vlan members %2201-2202%
```

```
send "" commit
```

```
send self,peer set vlans vlan-id 31 l3-interface vlan31
send self,peer set vlans vlan-id 32 l3-interface vlan32
send self,peer set vlans vlan-id 2101 l3-interface vlan2101
send self,peer set vlans vlan-id 2102 l3-interface vlan2102
send self,peer set vlans vlan-id 2201 l3-interface vlan2201
send self,peer set vlans vlan-id 2202 l3-interface vlan2202
```

```
send self,peer set protocols ospf4 router-id 0.0.0.1
rem !! if you dont want the upstream network to reach inside the cluster declare the area as a stub
rem !! send self,peer set protocols ospf4 area 0.0.0.130 area-type stub
```

```
rem !! loopback 1.area#.chassis#[1|2]
rem !! send self set vlan-interface loopback address 1.130.1.1 prefix-length 32
send self set vlan-interface interface vlan31 vif vlan31 address 172.16.131.101 prefix-length 24
send self set vlan-interface interface vlan32 vif vlan32 address 172.16.132.101 prefix-length 24
send self set vlan-interface interface vlan2101 vif vlan2101 address 172.16.211.101 prefix-length 24
send self set vlan-interface interface vlan2102 vif vlan2102 address 172.16.212.101 prefix-length 24
send self set vlan-interface interface vlan2201 vif vlan2201 address 172.16.221.101 prefix-length 24
send self set vlan-interface interface vlan2202 vif vlan2202 address 172.16.222.101 prefix-length 24
rem !! send self set protocols ospf4 area 0.0.0.130 interface loopback vif loopback address 1.130.1.1
send self set protocols ospf4 area 0.0.0.130 interface vlan31 vif vlan31 address 172.16.131.101
send self set protocols ospf4 area 0.0.0.130 interface vlan32 vif vlan32 address 172.16.132.101
send self set protocols ospf4 area 0.0.0.130 interface vlan2101 vif vlan2101 address 172.16.211.101
send self set protocols ospf4 area 0.0.0.130 interface vlan2102 vif vlan2102 address 172.16.212.101
send self set protocols ospf4 area 0.0.0.130 interface vlan2201 vif vlan2201 address 172.16.221.101
send self set protocols ospf4 area 0.0.0.130 interface vlan2202 vif vlan2202 address 172.16.222.101
```

```
rem !! send peer set vlan-interface loopback address 1.130.1.2 prefix-length 32
send peer set vlan-interface interface vlan31 vif vlan31 address 172.16.131.102 prefix-length 24
send peer set vlan-interface interface vlan32 vif vlan32 address 172.16.132.102 prefix-length 24
send peer set vlan-interface interface vlan2101 vif vlan2101 address 172.16.211.102 prefix-length 24
send peer set vlan-interface interface vlan2102 vif vlan2102 address 172.16.212.102 prefix-length 24
send peer set vlan-interface interface vlan2201 vif vlan2201 address 172.16.221.102 prefix-length 24
send peer set vlan-interface interface vlan2202 vif vlan2202 address 172.16.222.102 prefix-length 24
rem !! send self set protocols ospf4 area 0.0.0.130 interface loopback vif loopback address 1.130.1.2
send peer set protocols ospf4 area 0.0.0.130 interface vlan31 vif vlan31 address 172.16.131.102
```

```

send peer set protocols ospf4 area 0.0.0.130 interface vlan32 vif vlan32 address 172.16.132.102
send peer set protocols ospf4 area 0.0.0.130 interface vlan2101 vif vlan2101 address 172.16.211.102
send peer set protocols ospf4 area 0.0.0.130 interface vlan2102 vif vlan2102 address 172.16.212.102
send peer set protocols ospf4 area 0.0.0.130 interface vlan2201 vif vlan2201 address 172.16.221.102
send peer set protocols ospf4 area 0.0.0.130 interface vlan2202 vif vlan2202 address 172.16.222.102

send self,peer set protocols vrrp interface vlan31 vif vlan31 vrid 31 ip 172.16.131.100
send self,peer set protocols vrrp interface vlan32 vif vlan32 vrid 32 ip 172.16.132.100
send self,peer set protocols vrrp interface vlan2101 vif vlan2101 vrid 211 ip 172.16.211.100
send self,peer set protocols vrrp interface vlan2102 vif vlan2102 vrid 212 ip 172.16.212.100
send self,peer set protocols vrrp interface vlan2201 vif vlan2201 vrid 221 ip 172.16.221.100
send self,peer set protocols vrrp interface vlan2202 vif vlan2202 vrid 222 ip 172.16.222.100

send self,peer set protocols dhcp relay vlan-interface vlan%2101-2102% disable false
send self,peer set protocols dhcp relay vlan-interface vlan%2101-2102% dhcp-server-address1 172.16.100.2
send self,peer set protocols dhcp relay vlan-interface vlan%2201-2202% disable false
send self,peer set protocols dhcp relay vlan-interface vlan%2201-2202% dhcp-server-address1 172.16.100.2
send self,peer set protocols dhcp snooping port te-1/1/48 trust true

send self,peer commit

rem !! ports
send self,peer set interface gigabit-ethernet te-1/1/%33-34% description "User Port"
send self,peer set interface gigabit-ethernet te-1/1/33 family ethernet-switching native-vlan-id 2101
send self,peer set protocols spanning-tree pvst interface te-1/1/%33-34% bpdu-guard true
send self,peer set interface gigabit-ethernet te-1/1/%33-34% storm-control broadcast ratio 1

send self,peer commit

send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% description "User Port"
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% family ethernet-switching port-mode "trunk"
send 1,6 set interface gigabit-ethernet ge-1/1/1 family ethernet-switching native-vlan-id 2101
send 1,6 set interface gigabit-ethernet ge-1/1/2 family ethernet-switching native-vlan-id 2102
send 1,6 set interface gigabit-ethernet ge-1/1/3 family ethernet-switching native-vlan-id 2101
send 1,6 set interface gigabit-ethernet ge-1/1/4 family ethernet-switching native-vlan-id 2102
send 1,6 set interface gigabit-ethernet ge-1/1/1 voice-vlan vlan-id 2201
send 1,6 set interface gigabit-ethernet ge-1/1/2 voice-vlan vlan-id 2202
send 1,6 set interface gigabit-ethernet ge-1/1/3 voice-vlan vlan-id 2201
send 1,6 set interface gigabit-ethernet ge-1/1/4 voice-vlan vlan-id 2202
send 1,6 set protocols lldp interface ge-1/1/%1-4% compliance cdp true
send 1,6 set protocols spanning-tree pvst interface ge-1/1/%1-4% bpdu-guard true
send 1,6 set interface gigabit-ethernet ge-1/1/%1-4% storm-control broadcast ratio 1

send 1,6 commit
config_copy 1 2-5

send 3 set poe interface all enable true
send 3 set poe interface all threshold-mode 1
send 3 set poe interface all max-power 32
send 3 set poe power management-mode 3
send 3 set poe interface ge-1/1/%1-4% enable true
send 3 set poe interface ge-1/1/%1-4% detection-type 3

```

```
send 3 commit
config_copy 3 4
```

```
rem !! LAG
```

```
send 3 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
send 3 set interface aggregate-ethernet ae11 description "User LAG"
send 3 set interface aggregate-ethernet ae11 aggregated-ether-options lacp enable true
send 3 set interface aggregate-ethernet ae11 family ethernet-switching port-mode "trunk"
send 3 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 2101
send 3 set protocols spanning-tree pvst interface ae11 bpdu-guard true
send 3 set interface aggregate-ethernet ae11 storm-control broadcast ratio 1
send 3 set interface gigabit-ethernet ge-1/1/%1-2% ether-options 802.3ad "ae11"
send 3 commit
```

```
rem !! QOS
```

```
rem !! MLAG spine
```

```
send self,peer set interface aggregate-ethernet ae34 description "User MLAG"
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag domain-id 34
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag reload-delay 300
send self,peer set interface aggregate-ethernet ae34 aggregated-ether-options lacp enable true
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching port-mode "trunk"
send self,peer set interface aggregate-ethernet ae34 family ethernet-switching native-vlan-id 2102
send self,peer set protocols spanning-tree pvst interface ae34 bpdu-guard true
send self,peer set interface aggregate-ethernet ae34 storm-control broadcast ratio 1
send self,peer set interface gigabit-ethernet te-1/1/34 ether-options 802.3ad "ae34"
```

```
rem !! CHECK peer IP values
```

```
send self set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.2 peer-link "ae48"
send peer set interface aggregate-ethernet ae34 aggregated-ether-options mlag peer 192.168.1.1 peer-link "ae48"
rem !! CHECK peer IP values
```

```
send self,peer commit
```

```
rem !! MLAG leafs
```

```
rem !! mlag system-id: 88:Chassis#:Leaf1#:Leaf2#
send 1,2 set interface mlag system-id 00:00:88:01:01:02
send 1,2 delete interface gigabit-ethernet ge-1/1/%1-2% voice-vlan
```

```
send 1,2 set vlans vlan-id 4093 l3-interface "vlan4093"
send 1,2 set protocols spanning-tree pvst vlan 4093 enable true
```

```
send 1,2 set interface aggregate-ethernet ae48 aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching native-vlan-id 4093
send 1,2 set interface aggregate-ethernet ae48 family ethernet-switching port-mode "trunk"
```

```
rem !! CHECK interface names for 2.11
```

```
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% speed "10000"
send 1,2 set interface gigabit-ethernet te-1/1/%5-6% ether-options 802.3ad "ae48"
rem !! CHECK interface names for 2.11 53-54
```

```
send 1,2 set interface aggregate-ethernet ae%11-12% description "User MLAG"
```

```
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag reload-delay 300
send 1,2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options lacp enable true
send 1,2 set interface aggregate-ethernet ae%11-12% family ethernet-switching port-mode "trunk"
send 1,2 set interface aggregate-ethernet ae11 family ethernet-switching native-vlan-id 2101
send 1,2 set interface aggregate-ethernet ae12 family ethernet-switching native-vlan-id 2102
send 1,2 set protocols spanning-tree pvst interface ae%11-12% bpdu-guard true
send 1,2 set interface aggregate-ethernet ae%11-12% storm-control broadcast ratio 1

send 1,2 set interface aggregate-ethernet ae11 aggregated-ether-options mlag domain-id 1
send 1,2 set interface gigabit-ethernet ge-1/1/1 ether-options 802.3ad "ae11"

send 1,2 set interface aggregate-ethernet ae12 aggregated-ether-options mlag domain-id 2
send 1,2 set interface gigabit-ethernet ge-1/1/2 ether-options 802.3ad "ae12"

send 1 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.101 prefix-length 24
send 1 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.102 peer-link "ae48"

send 2 set vlan-interface interface vlan4093 vif vlan4093 address 192.168.10.102 prefix-length 24
send 2 set interface aggregate-ethernet ae%11-12% aggregated-ether-options mlag peer 192.168.10.101 peer-link "ae48"

send 1,2 commit
```

QoS

These QoS configurations deploy a specific policy and should be included in the configuration above after customizations. Its recommended to add this after you are comfortable managing your cluster with CC

rem !! QoS: Queueing

```
send self,peer,1 set class-of-service forwarding-class voip local-priority 7
send self,peer,1 set class-of-service forwarding-class routing local-priority 6
send self,peer,1 set class-of-service forwarding-class video local-priority 5
send self,peer,1 set class-of-service forwarding-class control local-priority 4
send self,peer,1 set class-of-service forwarding-class mc local-priority 3
send self,peer,1 set class-of-service forwarding-class bulkdata local-priority 1
send self,peer,1 set class-of-service forwarding-class default local-priority 0
```

```
send self,peer,1 set class-of-service classifier c1 trust-mode dscp
```

```
send self,peer,1 set class-of-service classifier c1 forwarding-class voip code-point 46
send self,peer,1 set class-of-service classifier c1 forwarding-class routing code-point 48
send self,peer,1 set class-of-service classifier c1 forwarding-class routing code-point 56
send self,peer,1 set class-of-service classifier c1 forwarding-class video code-point 32
send self,peer,1 set class-of-service classifier c1 forwarding-class video code-point 34
send self,peer,1 set class-of-service classifier c1 forwarding-class control code-point 24
send self,peer,1 set class-of-service classifier c1 forwarding-class control code-point 26
send self,peer,1 set class-of-service classifier c1 forwarding-class bulkdata code-point 10
send self,peer,1 set class-of-service classifier c1 forwarding-class bulkdata code-point 14
send self,peer,1 set class-of-service classifier c1 forwarding-class bulkdata code-point 22
send self,peer,1 set class-of-service classifier c1 forwarding-class mc code-point 16
send self,peer,1 set class-of-service classifier c1 forwarding-class mc code-point 28
send self,peer,1 set class-of-service classifier c1 forwarding-class mc code-point 30
send self,peer,1 set class-of-service classifier c1 forwarding-class mc code-point 36
send self,peer,1 set class-of-service classifier c1 forwarding-class default code-point 0
```

```
send 1 set class-of-service scheduler svoip1g guaranteed-rate 30000
send 1 set class-of-service scheduler srouting1g guaranteed-rate 49000
send 1 set class-of-service scheduler svideo1g guaranteed-rate 98000
send 1 set class-of-service scheduler scontrol1g guaranteed-rate 49000
send 1 set class-of-service scheduler sbulkdata1g guaranteed-rate 98000
send 1 set class-of-service scheduler smc1g guaranteed-rate 315000
send 1 set class-of-service scheduler sdefault1g guaranteed-rate 91000
```

```
send 1 set class-of-service scheduler srouting1g mode WFQ
send 1 set class-of-service scheduler svideo1g mode WFQ
send 1 set class-of-service scheduler scontrol1g mode WFQ
send 1 set class-of-service scheduler sbulkdata1g mode WFQ
send 1 set class-of-service scheduler smc1g mode WFQ
send 1 set class-of-service scheduler sdefault1g mode WFQ
```

```
send 1 set class-of-service scheduler-profile 1G forwarding-class voip scheduler svoip1g
send 1 set class-of-service scheduler-profile 1G forwarding-class routing scheduler srouting1g
send 1 set class-of-service scheduler-profile 1G forwarding-class video scheduler svideo1g
send 1 set class-of-service scheduler-profile 1G forwarding-class control scheduler scontrol1g
send 1 set class-of-service scheduler-profile 1G forwarding-class bulkdata scheduler sbulkdata1g
send 1 set class-of-service scheduler-profile 1G forwarding-class mc scheduler smc1g
send 1 set class-of-service scheduler-profile 1G forwarding-class default scheduler sdefault1g
```

```
send self,peer,1 set class-of-service scheduler svoip10g guaranteed-rate 3000000
send self,peer,1 set class-of-service scheduler srouting10g guaranteed-rate 490000
send self,peer,1 set class-of-service scheduler svideo10g guaranteed-rate 980000
send self,peer,1 set class-of-service scheduler scontrol10g guaranteed-rate 490000
send self,peer,1 set class-of-service scheduler sbulkdata10g guaranteed-rate 980000
send self,peer,1 set class-of-service scheduler smc10g guaranteed-rate 3150000
send self,peer,1 set class-of-service scheduler sdefault10g guaranteed-rate 910000
```

```
send self,peer,1 set class-of-service scheduler srouting10g mode WFQ
send self,peer,1 set class-of-service scheduler svideo10g mode WFQ
send self,peer,1 set class-of-service scheduler scontrol10g mode WFQ
send self,peer,1 set class-of-service scheduler sbulkdata10g mode WFQ
send self,peer,1 set class-of-service scheduler smc10g mode WFQ
send self,peer,1 set class-of-service scheduler sdefault10g mode WFQ
```

```
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class voip scheduler svoip10g
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class routing scheduler srouting10g
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class video scheduler svideo10g
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class control scheduler scontrol10g
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class bulkdata scheduler sbulkdata10g
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class mc scheduler smc10g
send self,peer,1 set class-of-service scheduler-profile 10G forwarding-class default scheduler sdefault10g
```

```
send self,peer set class-of-service scheduler svoip40g guaranteed-rate 12000000
send self,peer set class-of-service scheduler srouting40g guaranteed-rate 1960000
send self,peer set class-of-service scheduler svideo40g guaranteed-rate 3920000
send self,peer set class-of-service scheduler scontrol40g guaranteed-rate 1960000
send self,peer set class-of-service scheduler sbulkdata40g guaranteed-rate 3920000
send self,peer set class-of-service scheduler smc40g guaranteed-rate 12600000
send self,peer set class-of-service scheduler sdefault40g guaranteed-rate 3640000
```

```
send self,peer set class-of-service scheduler srouting40g mode WFQ
send self,peer set class-of-service scheduler svideo40g mode WFQ
send self,peer set class-of-service scheduler scontrol40g mode WFQ
send self,peer set class-of-service scheduler sbulkdata40g mode WFQ
send self,peer set class-of-service scheduler smc40g mode WFQ
send self,peer set class-of-service scheduler sdefault40g mode WFQ
```

```
send self,peer set class-of-service scheduler-profile 40G forwarding-class voip scheduler svoip40g
send self,peer set class-of-service scheduler-profile 40G forwarding-class routing scheduler srouting40g
send self,peer set class-of-service scheduler-profile 40G forwarding-class video scheduler svideo40g
send self,peer set class-of-service scheduler-profile 40G forwarding-class control scheduler scontrol40g
send self,peer set class-of-service scheduler-profile 40G forwarding-class bulkdata scheduler sbulkdata40g
send self,peer set class-of-service scheduler-profile 40G forwarding-class mc scheduler smc40g
send self,peer set class-of-service scheduler-profile 40G forwarding-class default scheduler sdefault40g
```

rem !! QoS - ACL Marking and Rate-limiting

```
send self,peer set firewall policer p1 if-exceeding count-mode kbit
send self,peer set firewall policer p1 if-exceeding rate-limit 3300000
send self,peer set firewall policer p1 then action discard
send self,peer set firewall policer p2 if-exceeding count-mode kbit
send self,peer set firewall policer p2 if-exceeding rate-limit 10000000
send self,peer set firewall policer p2 then action discard
send self,peer commit
```



```
send 1 set firewall policer p1 if-exceeding count-mode kbit
send 1 set firewall policer p1 if-exceeding rate-limit 330000
send 1 set firewall policer p1 then action discard
send 1 set firewall policer p2 if-exceeding count-mode kbit
send 1 set firewall policer p2 if-exceeding rate-limit 1000000
send 1 set firewall policer p2 then action discard
send 1 commit
```

```
rem !! send self,peer set firewall filter marking input interface te-1/1/%1-48%
rem !! send self,peer commit
```

```
send 1 set firewall filter marking input interface ge-1/1/%1-48%
send 1 commit
```

```
send self,peer,1 set class-of-service forwarding-class 0 local-priority 0
send self,peer,1 set class-of-service forwarding-class 1 local-priority 1
send self,peer,1 set class-of-service forwarding-class 2 local-priority 2
send self,peer,1 set class-of-service forwarding-class 3 local-priority 3
send self,peer,1 set class-of-service forwarding-class 4 local-priority 4
send self,peer,1 set class-of-service forwarding-class 5 local-priority 5
send self,peer,1 set class-of-service forwarding-class 6 local-priority 6
send self,peer,1 set class-of-service forwarding-class 7 local-priority 7
send self,peer,1 commit
```

```
send self,peer,1 set firewall filter marking sequence 1 from protocol udp
send self,peer,1 set firewall filter marking sequence 1 from destination-port 16384..32767
send self,peer,1 set firewall filter marking sequence 1 from ip trust-mode dscp
send self,peer,1 set firewall filter marking sequence 1 from ip value 46
send self,peer,1 set firewall filter marking sequence 1 then policer p1
send self,peer,1 set firewall filter marking sequence 1 then dscp 46
send self,peer,1 set firewall filter marking sequence 1 then forwarding-class 7
send self,peer,1 set firewall filter marking sequence 2 from protocol udp
send self,peer,1 set firewall filter marking sequence 2 from source-port 16384..32767
send self,peer,1 set firewall filter marking sequence 2 from ip trust-mode dscp
send self,peer,1 set firewall filter marking sequence 2 from ip value 46
send self,peer,1 set firewall filter marking sequence 2 then policer p1
send self,peer,1 set firewall filter marking sequence 2 then dscp 46
send self,peer,1 set firewall filter marking sequence 2 then forwarding-class 7
send self,peer,1 set firewall filter marking sequence 3 from protocol udp
send self,peer,1 set firewall filter marking sequence 3 from destination-port 16384..32767
send self,peer,1 set firewall filter marking sequence 3 from ip trust-mode dscp
send self,peer,1 set firewall filter marking sequence 3 from ip value 34
send self,peer,1 set firewall filter marking sequence 3 then policer p2
send self,peer,1 set firewall filter marking sequence 3 then dscp 34
send self,peer,1 set firewall filter marking sequence 3 then forwarding-class 5
send self,peer,1 set firewall filter marking sequence 4 from protocol udp
send self,peer,1 set firewall filter marking sequence 4 from source-port 16384..32767
send self,peer,1 set firewall filter marking sequence 4 from ip trust-mode dscp
send self,peer,1 set firewall filter marking sequence 4 from ip value 34
send self,peer,1 set firewall filter marking sequence 4 then policer p2
send self,peer,1 set firewall filter marking sequence 4 then dscp 34
send self,peer,1 set firewall filter marking sequence 4 then forwarding-class 5
send self,peer,1 set firewall filter marking sequence 5 from protocol udp
send self,peer,1 set firewall filter marking sequence 5 from destination-port 16384..32767
send self,peer,1 set firewall filter marking sequence 5 from ip trust-mode dscp
send self,peer,1 set firewall filter marking sequence 5 from ip value 0
```

```
send self,peer,1 set firewall filter marking sequence 5 then policer p2
send self,peer,1 set firewall filter marking sequence 5 then dscp 0
send self,peer,1 set firewall filter marking sequence 5 then forwarding-class 0
send self,peer,1 set firewall filter marking sequence 6 from protocol udp
send self,peer,1 set firewall filter marking sequence 6 from source-port 16384..32767
send self,peer,1 set firewall filter marking sequence 6 from ip trust-mode dscp
send self,peer,1 set firewall filter marking sequence 6 from ip value 0
send self,peer,1 set firewall filter marking sequence 6 then policer p2
send self,peer,1 set firewall filter marking sequence 6 then dscp 0
send self,peer,1 set firewall filter marking sequence 6 then forwarding-class 0
send self,peer,1 set firewall filter marking sequence 7 from protocol tcp
send self,peer,1 set firewall filter marking sequence 7 from destination-port 2000
send self,peer,1 set firewall filter marking sequence 7 then policer p2
send self,peer,1 set firewall filter marking sequence 7 then dscp 24
send self,peer,1 set firewall filter marking sequence 7 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 8 from protocol tcp
send self,peer,1 set firewall filter marking sequence 8 from destination-port 2001
send self,peer,1 set firewall filter marking sequence 8 then policer p2
send self,peer,1 set firewall filter marking sequence 8 then dscp 24
send self,peer,1 set firewall filter marking sequence 8 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 9 from protocol tcp
send self,peer,1 set firewall filter marking sequence 9 from destination-port 2002
send self,peer,1 set firewall filter marking sequence 9 then policer p2
send self,peer,1 set firewall filter marking sequence 9 then dscp 24
send self,peer,1 set firewall filter marking sequence 9 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 10 from protocol tcp
send self,peer,1 set firewall filter marking sequence 10 from source-port 2000
send self,peer,1 set firewall filter marking sequence 10 then policer p2
send self,peer,1 set firewall filter marking sequence 10 then dscp 24
send self,peer,1 set firewall filter marking sequence 10 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 11 from protocol tcp
send self,peer,1 set firewall filter marking sequence 11 from source-port 2001
send self,peer,1 set firewall filter marking sequence 11 then policer p2
send self,peer,1 set firewall filter marking sequence 11 then dscp 24
send self,peer,1 set firewall filter marking sequence 11 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 12 from protocol tcp
send self,peer,1 set firewall filter marking sequence 12 from source-port 2002
send self,peer,1 set firewall filter marking sequence 12 then policer p2
send self,peer,1 set firewall filter marking sequence 12 then dscp 24
send self,peer,1 set firewall filter marking sequence 12 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 13 from protocol tcp
send self,peer,1 set firewall filter marking sequence 13 from destination-port 2443
send self,peer,1 set firewall filter marking sequence 13 then policer p2
send self,peer,1 set firewall filter marking sequence 13 then dscp 24
send self,peer,1 set firewall filter marking sequence 13 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 14 from protocol tcp
send self,peer,1 set firewall filter marking sequence 14 from source-port 2443
send self,peer,1 set firewall filter marking sequence 14 then policer p2
send self,peer,1 set firewall filter marking sequence 14 then dscp 24
send self,peer,1 set firewall filter marking sequence 14 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 15 from protocol tcp
send self,peer,1 set firewall filter marking sequence 15 from destination-port 1719
send self,peer,1 set firewall filter marking sequence 15 then policer p2
send self,peer,1 set firewall filter marking sequence 15 then dscp 24
send self,peer,1 set firewall filter marking sequence 15 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 16 from protocol tcp
```

```

send self,peer,1 set firewall filter marking sequence 16 from destination-port 1720
send self,peer,1 set firewall filter marking sequence 16 then policer p2
send self,peer,1 set firewall filter marking sequence 16 then dscp 24
send self,peer,1 set firewall filter marking sequence 16 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 17 from protocol tcp
send self,peer,1 set firewall filter marking sequence 17 from source-port 1719
send self,peer,1 set firewall filter marking sequence 17 then policer p2
send self,peer,1 set firewall filter marking sequence 17 then dscp 24
send self,peer,1 set firewall filter marking sequence 17 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 18 from protocol tcp
send self,peer,1 set firewall filter marking sequence 18 from source-port 1720
send self,peer,1 set firewall filter marking sequence 18 then policer p2
send self,peer,1 set firewall filter marking sequence 18 then dscp 24
send self,peer,1 set firewall filter marking sequence 18 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 19 from protocol udp
send self,peer,1 set firewall filter marking sequence 19 from destination-port 2427
send self,peer,1 set firewall filter marking sequence 19 then policer p2
send self,peer,1 set firewall filter marking sequence 19 then dscp 24
send self,peer,1 set firewall filter marking sequence 19 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 20 from protocol udp
send self,peer,1 set firewall filter marking sequence 20 from source-port 2427
send self,peer,1 set firewall filter marking sequence 20 then policer p2
send self,peer,1 set firewall filter marking sequence 20 then dscp 24
send self,peer,1 set firewall filter marking sequence 20 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 21 from protocol tcp
send self,peer,1 set firewall filter marking sequence 21 from destination-port 2428
send self,peer,1 set firewall filter marking sequence 21 then policer p2
send self,peer,1 set firewall filter marking sequence 21 then dscp 24
send self,peer,1 set firewall filter marking sequence 21 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 22 from protocol tcp
send self,peer,1 set firewall filter marking sequence 22 from source-port 2428
send self,peer,1 set firewall filter marking sequence 22 then policer p2
send self,peer,1 set firewall filter marking sequence 22 then dscp 24
send self,peer,1 set firewall filter marking sequence 22 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 23 from protocol udp
send self,peer,1 set firewall filter marking sequence 23 from destination-port 5060
send self,peer,1 set firewall filter marking sequence 23 then policer p2
send self,peer,1 set firewall filter marking sequence 23 then dscp 24
send self,peer,1 set firewall filter marking sequence 23 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 24 from protocol udp
send self,peer,1 set firewall filter marking sequence 24 from source-port 5060
send self,peer,1 set firewall filter marking sequence 24 then policer p2
send self,peer,1 set firewall filter marking sequence 24 then dscp 24
send self,peer,1 set firewall filter marking sequence 24 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 25 from protocol udp
send self,peer,1 set firewall filter marking sequence 25 from destination-port 5061
send self,peer,1 set firewall filter marking sequence 25 then policer p2
send self,peer,1 set firewall filter marking sequence 25 then dscp 24
send self,peer,1 set firewall filter marking sequence 25 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 26 from protocol udp
send self,peer,1 set firewall filter marking sequence 26 from source-port 5061
send self,peer,1 set firewall filter marking sequence 26 then policer p2
send self,peer,1 set firewall filter marking sequence 26 then dscp 24
send self,peer,1 set firewall filter marking sequence 26 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 27 from protocol tcp
send self,peer,1 set firewall filter marking sequence 27 from destination-port 42028

```

```

send self,peer,1 set firewall filter marking sequence 27 then policer p2
send self,peer,1 set firewall filter marking sequence 27 then dscp 24
send self,peer,1 set firewall filter marking sequence 27 then forwarding-class 4
send self,peer,1 set firewall filter marking sequence 28 from protocol tcp
send self,peer,1 set firewall filter marking sequence 28 from source-port 42028
send self,peer,1 set firewall filter marking sequence 28 then policer p2
send self,peer,1 set firewall filter marking sequence 28 then dscp 24
send self,peer,1 set firewall filter marking sequence 28 then forwarding-class 4

```

```

send self,peer,1 set firewall filter marking sequence 57 from protocol tcp
send self,peer,1 set firewall filter marking sequence 57 from destination-port 21
send self,peer,1 set firewall filter marking sequence 57 then policer p2
send self,peer,1 set firewall filter marking sequence 57 then dscp 22
send self,peer,1 set firewall filter marking sequence 57 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 58 from protocol tcp
send self,peer,1 set firewall filter marking sequence 58 from source-port 21
send self,peer,1 set firewall filter marking sequence 58 then policer p2
send self,peer,1 set firewall filter marking sequence 58 then dscp 22
send self,peer,1 set firewall filter marking sequence 58 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 59 from protocol tcp
send self,peer,1 set firewall filter marking sequence 59 from destination-port 20
send self,peer,1 set firewall filter marking sequence 59 then policer p2
send self,peer,1 set firewall filter marking sequence 59 then dscp 22
send self,peer,1 set firewall filter marking sequence 59 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 60 from protocol tcp
send self,peer,1 set firewall filter marking sequence 60 from source-port 20
send self,peer,1 set firewall filter marking sequence 60 then policer p2
send self,peer,1 set firewall filter marking sequence 60 then dscp 22
send self,peer,1 set firewall filter marking sequence 60 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 61 from protocol tcp
send self,peer,1 set firewall filter marking sequence 61 from destination-port 22
send self,peer,1 set firewall filter marking sequence 61 then policer p2
send self,peer,1 set firewall filter marking sequence 61 then dscp 22
send self,peer,1 set firewall filter marking sequence 61 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 62 from protocol tcp
send self,peer,1 set firewall filter marking sequence 62 from source-port 22
send self,peer,1 set firewall filter marking sequence 62 then policer p2
send self,peer,1 set firewall filter marking sequence 62 then dscp 22
send self,peer,1 set firewall filter marking sequence 62 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 63 from protocol tcp
send self,peer,1 set firewall filter marking sequence 63 from destination-port 445
send self,peer,1 set firewall filter marking sequence 63 then policer p2
send self,peer,1 set firewall filter marking sequence 63 then dscp 22
send self,peer,1 set firewall filter marking sequence 63 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 64 from protocol tcp
send self,peer,1 set firewall filter marking sequence 64 from source-port 445
send self,peer,1 set firewall filter marking sequence 64 then policer p2
send self,peer,1 set firewall filter marking sequence 64 then dscp 22
send self,peer,1 set firewall filter marking sequence 64 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 65 from protocol udp
send self,peer,1 set firewall filter marking sequence 65 from destination-port 69
send self,peer,1 set firewall filter marking sequence 65 then policer p2
send self,peer,1 set firewall filter marking sequence 65 then dscp 22
send self,peer,1 set firewall filter marking sequence 65 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 66 from protocol udp
send self,peer,1 set firewall filter marking sequence 66 from source-port 69

```

```
send self,peer,1 set firewall filter marking sequence 66 then policer p2
send self,peer,1 set firewall filter marking sequence 66 then dscp 22
send self,peer,1 set firewall filter marking sequence 66 then forwarding-class 1
```

```
send self,peer,1 set firewall filter marking sequence 75 from protocol udp
send self,peer,1 set firewall filter marking sequence 75 from destination-port 790
send self,peer,1 set firewall filter marking sequence 75 then policer p2
send self,peer,1 set firewall filter marking sequence 75 then dscp 22
send self,peer,1 set firewall filter marking sequence 75 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 76 from protocol tcp
send self,peer,1 set firewall filter marking sequence 76 from destination-port 5282
send self,peer,1 set firewall filter marking sequence 76 then policer p2
send self,peer,1 set firewall filter marking sequence 76 then dscp 10
send self,peer,1 set firewall filter marking sequence 76 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 77 from protocol tcp
send self,peer,1 set firewall filter marking sequence 77 from source-port 5282
send self,peer,1 set firewall filter marking sequence 77 then policer p2
send self,peer,1 set firewall filter marking sequence 77 then dscp 10
send self,peer,1 set firewall filter marking sequence 77 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 78 from protocol udp
send self,peer,1 set firewall filter marking sequence 78 from destination-port 11577
send self,peer,1 set firewall filter marking sequence 78 then policer p2
send self,peer,1 set firewall filter marking sequence 78 then dscp 22
send self,peer,1 set firewall filter marking sequence 78 then forwarding-class 1
send self,peer,1 set firewall filter marking sequence 79 from protocol udp
send self,peer,1 set firewall filter marking sequence 79 from source-port 11577
send self,peer,1 set firewall filter marking sequence 79 then policer p2
send self,peer,1 set firewall filter marking sequence 79 then dscp 22
send self,peer,1 set firewall filter marking sequence 79 then forwarding-class 1
```

```
send self,peer,1 set firewall filter marking sequence 159 from protocol udp
send self,peer,1 set firewall filter marking sequence 159 from source-port 1645
send self,peer,1 set firewall filter marking sequence 159 then policer p2
send self,peer,1 set firewall filter marking sequence 159 then dscp 16
send self,peer,1 set firewall filter marking sequence 159 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 160 from protocol udp
send self,peer,1 set firewall filter marking sequence 160 from destination-port 1645
send self,peer,1 set firewall filter marking sequence 160 then policer p2
send self,peer,1 set firewall filter marking sequence 160 then dscp 16
send self,peer,1 set firewall filter marking sequence 160 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 161 from protocol udp
send self,peer,1 set firewall filter marking sequence 161 from source-port 1646
send self,peer,1 set firewall filter marking sequence 161 then policer p2
send self,peer,1 set firewall filter marking sequence 161 then dscp 16
send self,peer,1 set firewall filter marking sequence 161 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 162 from protocol udp
send self,peer,1 set firewall filter marking sequence 162 from destination-port 1646
send self,peer,1 set firewall filter marking sequence 162 then policer p2
send self,peer,1 set firewall filter marking sequence 162 then dscp 16
send self,peer,1 set firewall filter marking sequence 162 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 163 from protocol tcp
send self,peer,1 set firewall filter marking sequence 163 from source-port 1645
send self,peer,1 set firewall filter marking sequence 163 then policer p2
send self,peer,1 set firewall filter marking sequence 163 then dscp 16
send self,peer,1 set firewall filter marking sequence 163 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 164 from protocol tcp
```

```
send self,peer,1 set firewall filter marking sequence 164 from destination-port 1645
send self,peer,1 set firewall filter marking sequence 164 then policer p2
send self,peer,1 set firewall filter marking sequence 164 then dscp 16
send self,peer,1 set firewall filter marking sequence 164 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 165 from protocol tcp
send self,peer,1 set firewall filter marking sequence 165 from source-port 1646
send self,peer,1 set firewall filter marking sequence 165 then policer p2
send self,peer,1 set firewall filter marking sequence 165 then dscp 16
send self,peer,1 set firewall filter marking sequence 165 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 166 from protocol tcp
send self,peer,1 set firewall filter marking sequence 166 from destination-port 1646
send self,peer,1 set firewall filter marking sequence 166 then policer p2
send self,peer,1 set firewall filter marking sequence 166 then dscp 16
send self,peer,1 set firewall filter marking sequence 166 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 167 from protocol udp
send self,peer,1 set firewall filter marking sequence 167 from source-port 1812
send self,peer,1 set firewall filter marking sequence 167 then policer p2
send self,peer,1 set firewall filter marking sequence 167 then dscp 16
send self,peer,1 set firewall filter marking sequence 167 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 168 from protocol udp
send self,peer,1 set firewall filter marking sequence 168 from destination-port 1812
send self,peer,1 set firewall filter marking sequence 168 then policer p2
send self,peer,1 set firewall filter marking sequence 168 then dscp 16
send self,peer,1 set firewall filter marking sequence 168 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 169 from protocol udp
send self,peer,1 set firewall filter marking sequence 169 from source-port 1813
send self,peer,1 set firewall filter marking sequence 169 then policer p2
send self,peer,1 set firewall filter marking sequence 169 then dscp 16
send self,peer,1 set firewall filter marking sequence 169 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 170 from protocol udp
send self,peer,1 set firewall filter marking sequence 170 from destination-port 1813
send self,peer,1 set firewall filter marking sequence 170 then policer p2
send self,peer,1 set firewall filter marking sequence 170 then dscp 16
send self,peer,1 set firewall filter marking sequence 170 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 171 from source-port 4500
send self,peer,1 set firewall filter marking sequence 171 then policer p2
send self,peer,1 set firewall filter marking sequence 171 then dscp 30
send self,peer,1 set firewall filter marking sequence 171 then forwarding-class 3
send self,peer,1 set firewall filter marking sequence 172 from protocol udp
send self,peer,1 set firewall filter marking sequence 172 from destination-port 4500
send self,peer,1 set firewall filter marking sequence 172 then policer p2
send self,peer,1 set firewall filter marking sequence 172 then dscp 30
send self,peer,1 set firewall filter marking sequence 172 then forwarding-class 3

send self,peer,1 set firewall filter marking sequence 999 then forward
send self,peer,1 commit
```

Physical Topology

Notes:

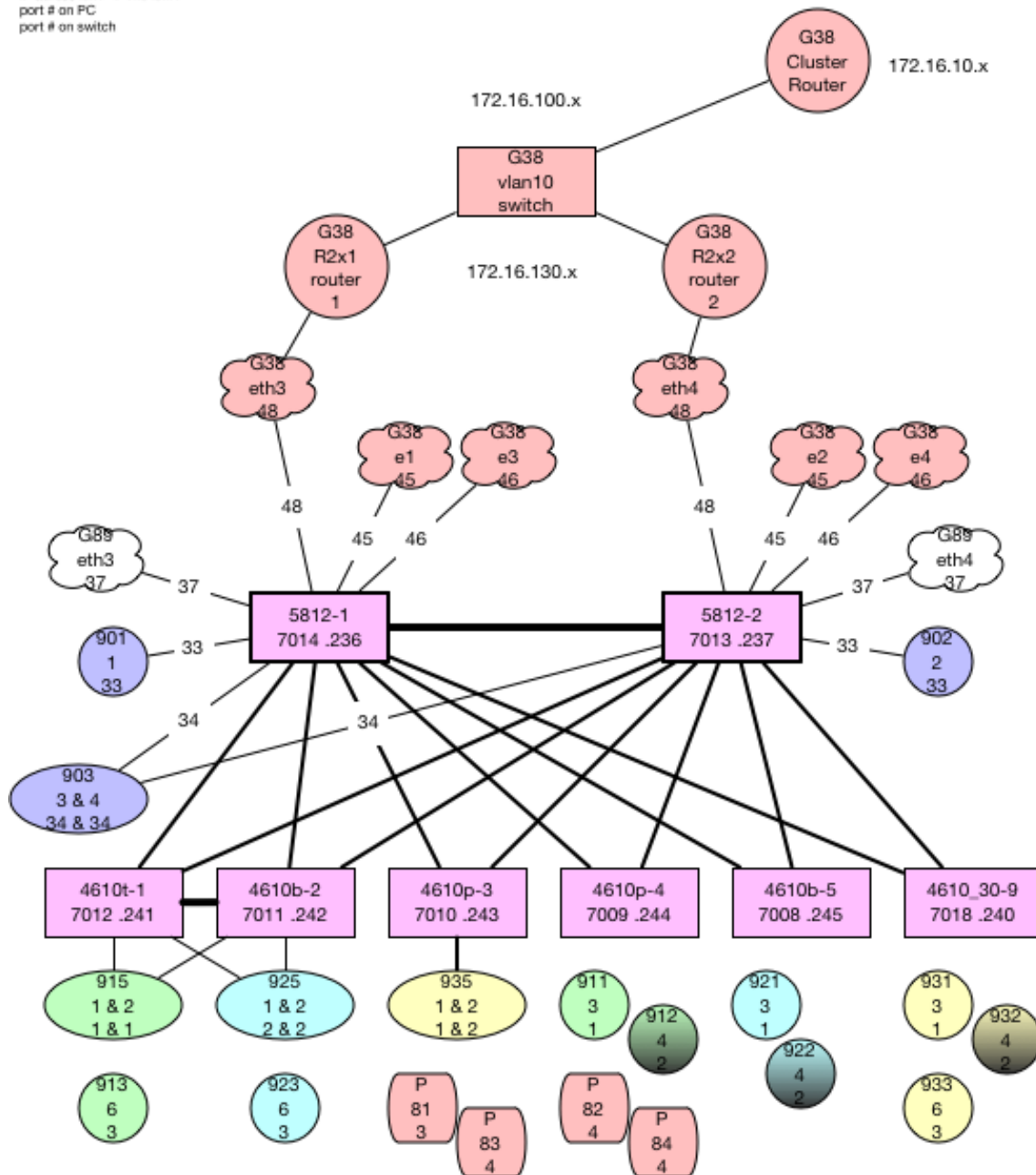
IP subnet - 172.16.0.

Terminal Server - 172.16.0.19
telnet port 70xx

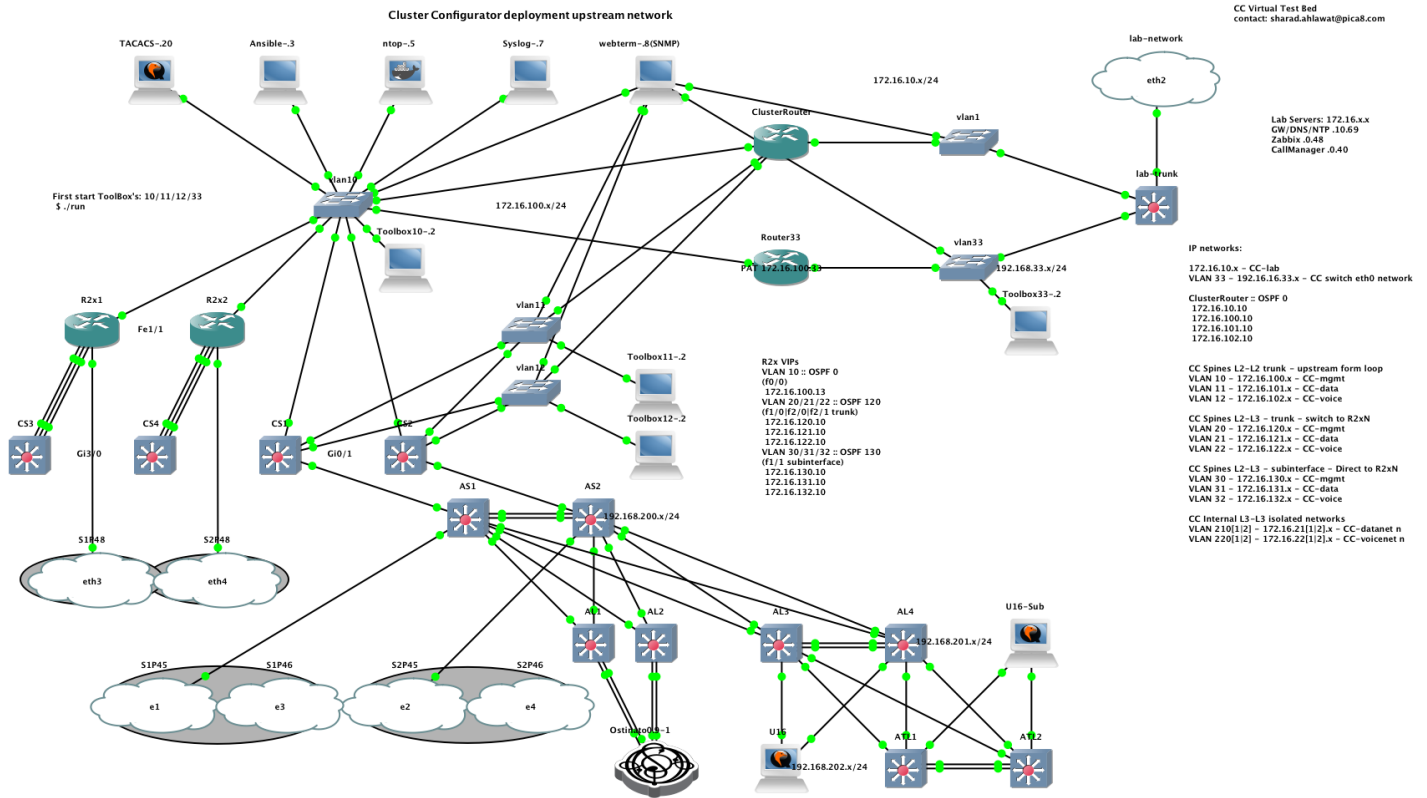
IP address .5xY -> vnc .5x:Y
port # on PC
port # on switch

CC Test Bed

contact: sharad.ahlawat@pica8.com



GNS3 Upstream Network Topology



Notes

ensure to not make configuration changes that are required to keep the ISL or other links operational - CC does not make configuration fool-proof

ae1 to ae16 are reserved for CC usage to map up to 16 leaves in the switch cluster

Tips

configuration

pre

```
send "" configure
showleafs
```

post

```
send "" commit
send "" exit
showleafs
```

abort


```
send "" exit discard
showleafs
CC status
send "" sudo service picos-cc status
```

SNMPwalk example

- o <http://snmplabs.com/snmpfwd/index.html>
- o `snmpwalk -u cc-user -v 3 -n spine-1 172.16.100.100:1161`
- o `snmpwalk -u cc-user -v 3 -n leaf-1 172.16.100.100:1161`
- o for traps we redirect via iptables on spines
 - `iptables -t nat -vnL PREROUTING --line-number`
 - `tcpdump -i eth0 -n -s0 port 162 and udp`
 - The SNMP trap server is configured as part of setup-mgmt
- o The SNMP walk user name configured as part of setup-mgmt is different from the SNMP user name configured in the CLI