Report

Cloud Infrastructre Lab 1

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1. Tabellenverzeichnis

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2. Informationsbeschaffung

In einem ersten Schritt wurden sämtliche Konfigurationen mit dem Tool Tftpd64 von den Router und Switches kopiert. Diese wurden dann in einem nächsten Schritt auf Fehlkonfigurationen analysiert. Dabei gingen wir nach folgendem Schema vor:

1. Übersicht verschaffen.
2. Kopieren aller benötigten Konfigurationen
3. Ordnen und Analysieren der Konfiguration. Was ist überhaupt vorhanden?
4. Prüfen auf "Common Mistakes" mit besonderem Augenmerk auf die Layer 2 (VLAN, VTP, STP, Frame Relay) und Layer 3 Protokolle (OSPF)
5. Auswerten der gefunden Fehler
6. Feedback und Lösungsvorschläge

2.1. Tools

Für die Analyse wurden folgende Tools verwendet

1. Tftpd64 um Konfigurationen zu dumpen
2. jPerf um den Durchsatz zu messen
3. Putty für die Telnet und Serielle Verbindung zu den Router und Switches

2.2. Terminologie

Damit die Namen mehr an Bedeutung gewinnen, sollen folgend einige Abkürzungen nach besten Wissen ausgeschrieben werden.

HQ Head Quarter

BR Branch

DS Distribution Switch

CS Core Switch

WER WAN Exchange Router

IER Internet Exchange Router

FRR FrameRelayRouter

2.3. Konfiguration kopieren

Für jedes Geräte wurden die Outputs der folgenden Befehle auf die lokalen Notebooks kopiert. Alle Konfiguration sind im Anhang B zu finden:

```
copy run tftp und dann [your local ip addr]
show ip interface brief
show cdp neighbors
show interface status
show interface trunk
show vlan
show ip route
show spanning
```

2.4. Analyse des Konfigurationen

Folgende Tabellen dienen als Erweiterung zu den graphischen Schemas.

2.5. DHCP

DHCP Pool	Beschreibung	Bemerkung
172.16.1.0/24	HR	
172.16.2.0/24	ENGINEERING	
172.16.3.0/24	PRODUCTION	
172.16.4.0/24	FINANCE	
172.16.16.0/24	IT	DHCP exlude 172.16.16.1, 172.16.16.10 172.16.16.12
172.16.17.0/24	SERVER	DHCP exclude 172.16.17.1, 172.16.17.10 172.16.17.12
172.16.18.0/24	MARKETING	DHCP exclude 172.16.18.250, 172.16.18.254, 172.16.18.10 172.16.18.12
172.16.19.0/24	SALES	DHCP exclude 172.16.19.250, 172.16.19.254, 172.16.19.10 172.16.19.12
172.16.103.0/24	Branch 2	DHCP exlude 172.16.103.1, 172.16.103.10, 172.16.103.12

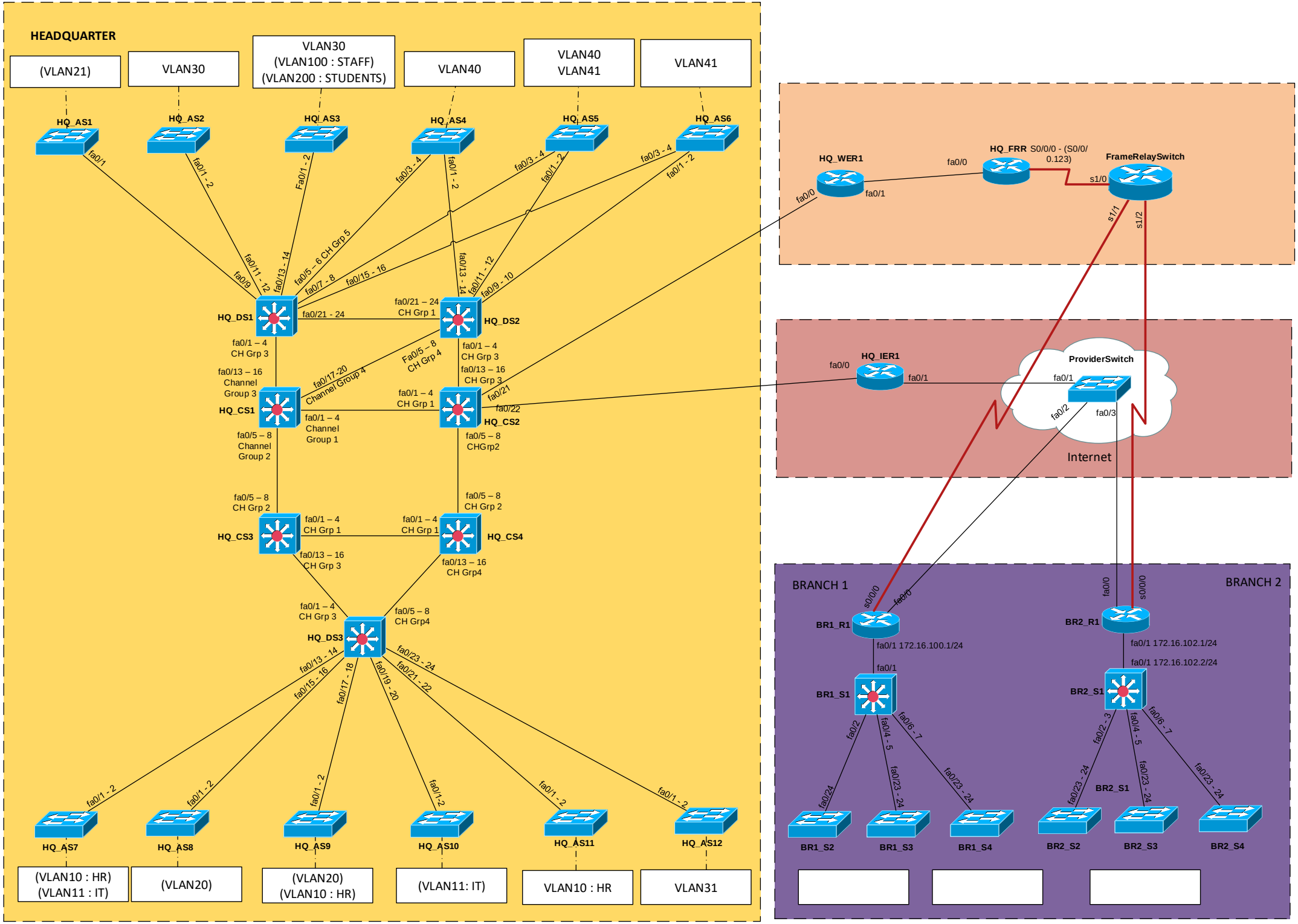
Tabelle 1: DHCP Pools

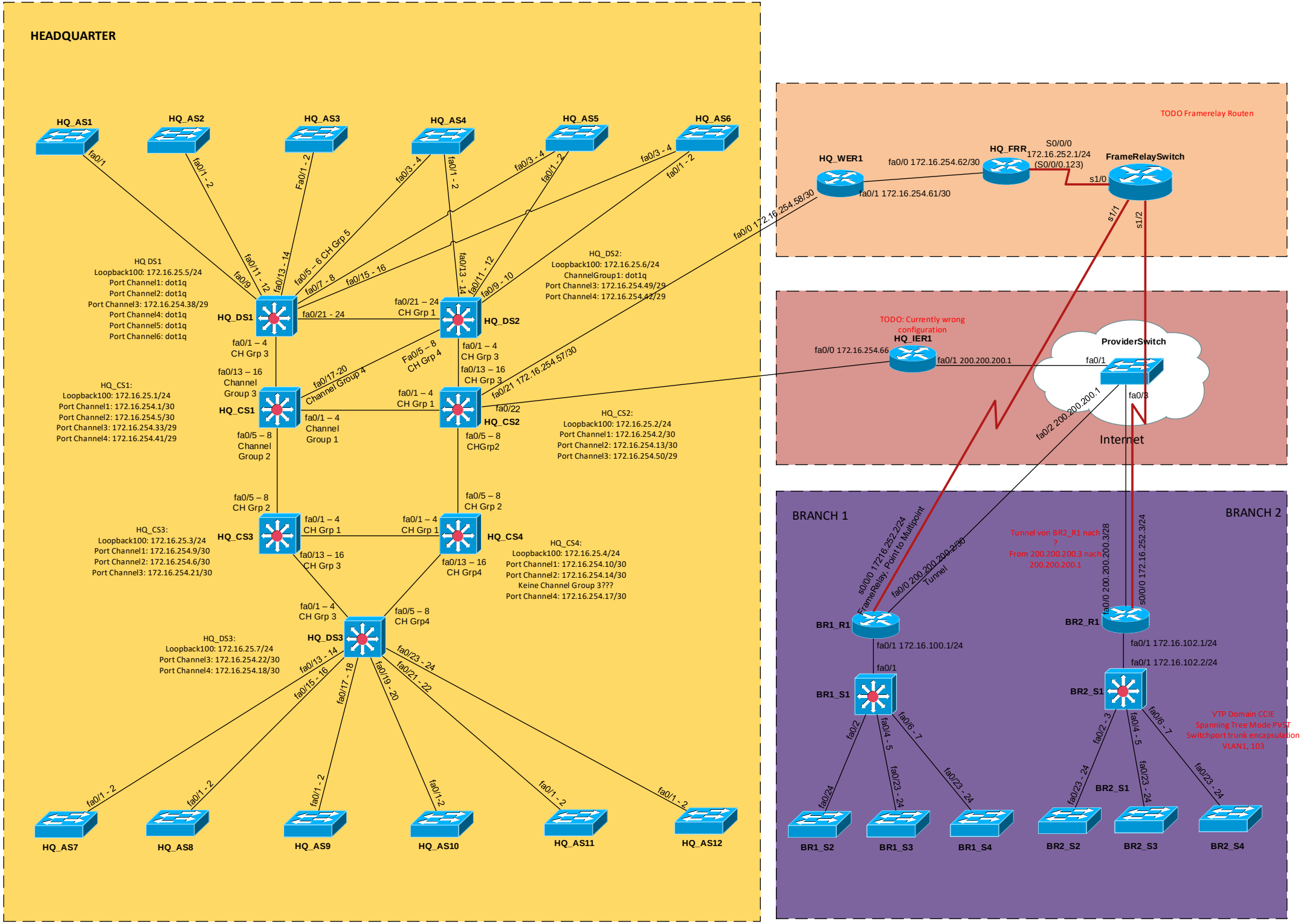
2.6. VLAN

IEEE 802.1Q = Paketbasierte tagged VLAN's

VLAN	Name	Bedeutung
VLAN 10	HR	Personalabteilung
VLAN 11	IT	IT Abteilung
VLAN 99	MGMT	Management
VLAN 100	STAFF	Mitarbeiter
VLAN 150	IWAS	???
VLAN 200	STUDENTS	Studenten

Tabelle 2: VLAN's


HEADQUARTER
(VLAN21)
VLAN30
VLAN30
(VLAN100 : STAFF)
(VLAN200 : STUDENTS)
VLAN40
VLAN40
VLAN41
VLAN41
HQ_AS1
HQ_AS2
HQ_AS3
HQ_AS4
HQ_AS5
HQ_AS6
HQ_DS1
HQ_DS2
HQ_CS1
HQ_CS2
HQ_CS3
HQ_CS4
HQ_DS3
HQ_AS7
HQ_AS8
HQ_AS9
HQ_AS10
HQ_AS11
HQ_AS12
(VLAN10 : HR)
(VLAN11 : IT)
(VLAN20)
(VLAN20)
(VLAN10 : HR)
(VLAN11: IT)
VLAN10 : HR
VLAN31
fa0/1 - 2
fa0/11 - 12
fa0/13 - 14
fa0/5 – 6 CH Grp 5
fa0/7 - 8
fa0/15 - 16
fa0/3 - 4
fa0/9 - 10
fa0/21 - 24
fa0/1 – 4
CH Grp 3
fa0/13 – 16
Channel
Group 3
fa0/5 – 8
Channel
Group 2
fa0/17-20
Channel Group 4
Fa0/5 – 8
CH Grp 4
fa0/1 – 4
CH Grp 1
fa0/21
fa0/22
fa0/1 – 4
Channel
Group 1
fa0/5 – 8
CHGrp2
fa0/5 – 8
CH Grp 2
fa0/13 – 16
CH Grp 3
fa0/13 – 16
CH Grp4
fa0/1 – 4
CH Grp 3
fa0/5 – 8
CH Grp4
fa0/23 - 24
fa0/15 - 16
fa0/17 - 18
fa0/19 - 20
fa0/21 - 22
HQ_WER1
HQ_FRR
S0/0/0 - (S0/0/
0.123)
FrameRelaySwitch
s1/0
s1/1
s1/2
HQ_IER1
ProviderSwitch
Internet
BRANCH 1
BRANCH 2
BR1_R1
BR2_R1
fa0/1 172.16.100.1/24
fa0/1 172.16.102.1/24
fa0/1 172.16.102.2/24
BR1_S1
BR2_S1
BR1_S2
BR1_S3
BR1_S4
BR2_S2
BR2_S3
BR2_S4
fa0/2
fa0/4 - 5
fa0/6 - 7
fa0/24
fa0/23 - 24
fa0/2 - 3


HEADQUARTER
HQ_AS1
HQ_AS2
HQ_AS3
HQ_AS4
HQ_AS5
HQ_AS6
HQ DS1
Loopback100: 172.16.25.5/24
Port Channel1: dot1q
Port Channel2: dot1q
Port Channel3: 172.16.254.38/29
Port Channel4: dot1q
Port Channel5: dot1q
Port Channel6: dot1q
HQ_DS1
HQ_DS2
HQ_DS2:
Loopback100: 172.16.25.6/24
ChannelGroup1: dot1q
Port Channel3: 172.16.254.49/29
Port Channel4: 172.16.254.42/29
HQ_CS1:
Loopback100: 172.16.25.1/24
Port Channel1: 172.16.254.1/30
Port Channel2: 172.16.254.5/30
Port Channel3: 172.16.254.33/29
Port Channel4: 172.16.254.41/29
HQ_CS1
HQ_CS2
HQ_CS2:
Loopback100: 172.16.25.2/24
Port Channel1: 172.16.254.2/30
Port Channel2: 172.16.254.13/30
Port Channel3: 172.16.254.50/29
HQ_CS3:
Loopback100: 172.16.25.3/24
Port Channel1: 172.16.254.9/30
Port Channel2: 172.16.254.6/30
Port Channel3: 172.16.254.21/30
HQ_CS3
HQ_CS4
HQ_CS4:
Loopback100: 172.16.25.4/24
Port Channel1: 172.16.254.10/30
Port Channel2: 172.16.254.14/30
Keine Channel Group 3???
Port Channel4: 172.16.254.17/30
HQ_DS3:
Loopback100: 172.16.25.7/24
Port Channel3: 172.16.254.22/30
Port Channel4: 172.16.254.18/30
HQ_DS3
HQ_AS7
HQ_AS8
HQ_AS9
HQ_AS10
HQ_AS11
HQ_AS12
TODO Framerelay Routen
HQ_WER1
HQ_FRR
FrameRelaySwitch
S0/0/0
172.16.252.1/24
(S0/0/0.123)
fa0/0 172.16.254.62/30
fa0/1 172.16.254.61/30
fa0/0 172.16.254.58/30
s1/0
s1/1
s1/2
TODO: Currently wrong configuration
HQ_IER1
fa0/0 172.16.254.66
fa0/1 200.200.200.1
ProviderSwitch
fa0/1
fa0/3
fa0/2 200.200.200.1
Internet
fa0/21 172.16.254.57/30
fa0/22
BRANCH 1
BRANCH 2
s0/0/0 172.16.252.2/24
FrameRelay, Point to Multipoint
fa0/0 200.200.200.2/30
Tunnel
Tunnel von BR2_R1 nach ?
From 200.200.200.3 nach 200.200.200.1
fa0/0 200.200.200.3/28
s0/0/0 172.16.252.3/24
BR1_R1
BR2_R1
fa0/1 172.16.100.1/24
fa0/1 172.16.102.1/24
fa0/1 172.16.102.2/24
BR1_S1
BR2_S1
BR2_S1
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BR1_S2
BR1_S3
BR1_S4
BR2_S2
BR2_S3
BR2_S4

VLAN	Subnetz	Bemerkung
VLAN1	172.16.103.0/24	
VLAN10	172.16.1.0/24	
VLAN11	172.16.2.0/24	
VLAN20	no ip addr assigned	(router ospf)
VLAN21	172.16.16.0/24	(mtu-ignore)
VLAN30	172.16.17.0/24	
VLAN40	172.16.18.0/24	(standby)
VLAN41	172.16.19.0/24	(mtu ignore)
VLAN100	172.16.20.0/24	(mtu ignore)
VLAN103	172.16.23.0/24	

Tabelle 3: VLAN Subnetze

3. Gefundene Fehler

Unschön: Bei vertippern im Komando wird immer nache dem Nameserver gesucht.

3.1. Layer 1

Auf OSI Layer 1 wurden keine Fehler gefunden.

3.2. Layer 2

3.2.1. Design

- HQ_CS2 bildet die einzige Verbindung zu den Branches. Es bildet somit einen Single Point of Failure

3.2.2. Speed

- Die Port Channel Group 4 beim HQ_CS1 ist auf Half Duplex 100Mbit/s eingestellt.
- Die Port Channel Group 2 bei HQ_CS2 ist auf 10Mbit/s eingestellt.

3.2.3. Spanning Tree

3.2.4. VLAN

- VLAN1 auf HQ_AS1 ist Administratively Down
- Nur Fa0/2, Gi0/1, Gi0/2 sind auf HQ_AS1 für VLAN1 konfiguriert
- Die meisten Interfaces auf HQ_AS1 sind im VLAN 21; dies ist in der VLAN Konfiguration nicht eingerichtet.
- Beim HQ_AS7 sind VLAN 10 und 11 auf Ports eingerichtet, aber nicht in der VLAN-Konfiguration
- Beim HQ_AS3 sind VLAN 100 und 200 auf Ports eingerichtet, aber nicht in der VLAN-Konfiguration.
- Beim HQ_AS8 ist VLAN 20 auf Ports eingerichtet, aber nicht in der VLAN-Konfiguration.
- Beim HQ_AS9 VLAN 10 und VLAN 20 auf Ports eingerichtet, aber nicht in der VLAN-Konfiguration.
- Beim HQ_AS10 VLAN 11 auf Ports eingerichtet, aber nicht in der VLAN-Konfiguration.

3.3. Layer 3

3.3.1. Routen

3.3.2. OSPF

4. Messungen

Alle Durchgeführten Messungen sind im Anhang A zu finden.

4.1. Folgerungen

5. Empfehlungen

Aufgrund der vorangehenden Erkenntnissen empfehlen wir, an folgenden Punkten anzusetzen:

1. Alle 10 und 100Mbit/s Leitung auf den maximal physisch möglichen Durchsatz aufschrauben.

5.1. Kostenvoranschlag

Für die Umsetzung unserer Empfehlungen würden folgende Kosten anfallen.

Beschreibung	Zeitaufwand in h	Stundenansatz in CHF	Total
Total			1 Million

Tabelle 4: Kostenvoranschlag

A. Messungen

A.1. jPerf

A.2. BR1-S2 nach AS2

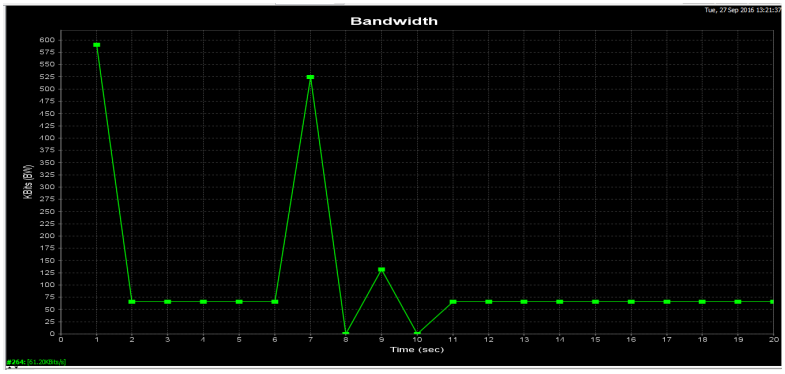

Abbildung 1: jPerf Graph von BR1-S2 nach AS2

A.3. AS2 nach AS6

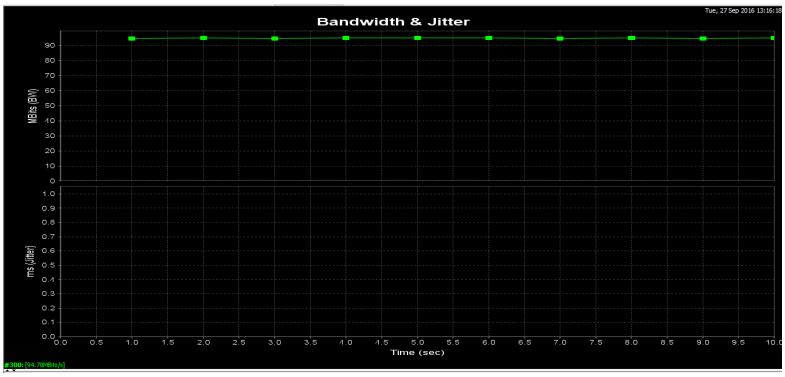

Abbildung 2: jPerf Graph von AS2 nach AS6

A.4. Traceroutes

A.4.1. HQ-AS2 nach BR1-S1 via FRR

```
hq_as2 to br1_s1 via frr
Tracing route to 172.16.100.2 over a maximum of 30 hops

  1    1 ms   1 ms   1 ms 172.16.17.1
  2    3 ms   2 ms   2 ms 172.16.19.253
  3    1 ms   1 ms  <1 ms 172.16.254.50
```

```
 4    1 ms   1 ms   1 ms 172.16.254.58
 5    1 ms   1 ms   1 ms 172.16.254.62
 6   44 ms  44 ms  44 ms 172.16.252.2
 7   57 ms  54 ms  54 ms 172.16.100.2
```

A.4.2. HQ-DS3 nach BR1-S1 via FRR

```
hq_ds3 to br1_s1 via frr
Tracing the route to 172.16.100.2

 1 172.16.254.21 0 msec 0 msec 0 msec
 2 172.16.254.5 0 msec 0 msec 8 msec
 3 172.16.254.2 0 msec 0 msec 8 msec
 4 172.16.254.58 0 msec 0 msec 9 msec
 5 172.16.254.62 0 msec 0 msec 0 msec
 6 172.16.252.2 34 msec 25 msec 34 msec
 7 172.16.100.2 33 msec 25 msec *
```

A.4.3. HQ-AS2 nach BR2-S1 via IER1

```
hq_as2 to br2_s1 via ier1
Tracing route to 172.16.102.2 over a maximum of 30 hops

 1    2 ms   1 ms   1 ms 172.16.17.1
 2    2 ms   1 ms   1 ms 172.16.18.253
 3    1 ms  <1 ms  <1 ms 172.16.254.50
 4    1 ms   1 ms   1 ms 172.16.254.66
 5    2 ms   1 ms   1 ms 172.16.255.6
 6    3 ms   1 ms   1 ms 172.16.102.2
```

A.4.4. IER1 nach BR1-SR1

```
traceroute ier1 to br1_s1
Tracing the route to 172.16.252.2
VRF info: (vrf in name/id, vrf out name/id)
 1 172.16.254.65 0 msec 0 msec 4 msec
 2 172.16.254.58 0 msec 0 msec 0 msec
 3 172.16.254.62 0 msec 0 msec 4 msec
 4 172.16.252.2 28 msec 28 msec *
```

A.4.5. AS6 nach AS2

```
tracert as_6 to as_2
Tracing route to 172.16.17.20 over a maximum of 30 hops

 1   <1 ms  <1 ms  <1 ms 172.16.19.253
 2    1 ms  <1 ms  <1 ms 172.16.18.252
 3   <1 ms  <1 ms  <1 ms 172.16.17.20
```

A.4.6. 172.16.100.2

```
traceroute 172.16.100.2
Type escape sequence to abort.
Tracing the route to 172.16.100.2
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.254.65 0 msec 4 msec 0 msec
  2 172.16.254.58 0 msec 0 msec 4 msec
  3 172.16.254.62 0 msec 0 msec 4 msec
  4 172.16.252.2 28 msec 28 msec 28 msec
  5 172.16.100.2 32 msec 28 msec *
```

A.4.7. 172.16.102.2

```
traceroute 172.16.102.2
Type escape sequence to abort.
Tracing the route to 172.16.102.2
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.255.6 0 msec 0 msec 4 msec
  2 172.16.102.2 4 msec 4 msec *
```

A.5. Pings

A.5.1. FRR nach BR1-SR1

```
ping frr to br1_s1
ping 172.16.252.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.252.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 56/56/56 ms
```

A.5.2. FRR nach BR2-SR1

```
ping frr to br2_s1
HQ_FRR#ping 172.16.252.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.252.3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
```

B. Konfigurationen

B.1. BR1-R1

B.1.1. Running Configuration

```
BR1_R1#show run
Building configuration...


Current configuration : 1829 bytes
!
! Last configuration change at 16:09:57 UTC Fri Jul 4 2014
version 15.1
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR1_R1
!
boot-start-marker
boot-end-marker
!
!
enable secret 5 $1$iIN0$WQSejQFOMmTy6nGBblqi60
!
no aaa new-model
!
memory-size iomem 10
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
!
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
voice-card 0
!
crypto pki token default removal timeout 0
!
!
!
!
license udi pid CISCO2811 sn FCZ14322073
archive
```

```
 log config
  hidekeys
!
redundancy
!
!
!
!
!
!
!
!
!
!
interface Tunnel0
 ip address 172.16.255.2 255.255.255.252
 ip ospf 1 area 0
 tunnel source 200.200.200.2
 tunnel destination 200.200.200.1
!
interface FastEthernet0/0
 ip address 200.200.200.2 255.255.255.240
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.16.100.1 255.255.255.0
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 172.16.252.2 255.255.255.0
 encapsulation frame-relay
 ip ospf network point-to-multipoint
 ip ospf 1 area 0
 no fair-queue
 frame-relay map ip 172.16.252.1 201 broadcast
 no frame-relay inverse-arp IP 203
 frame-relay lmi-type cisco
!
interface Serial0/0/1
 no ip address
 shutdown
 clock rate 2000000
!
interface Serial1/0
 no ip address
 shutdown
!
interface Serial1/1
 no ip address
 shutdown
!
interface Serial1/2
 no ip address
 shutdown
!
interface Serial1/3
 no ip address
 shutdown
!
```

```
router ospf 1
!
ip forward-protocol nd
ip http server
no ip http secure-server
!
!
!
!
!
!
!
snmp-server community public RO
snmp-server community private RW
!
!
control-plane
!
!
!
!
mgcp profile default
!
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
 password ins@lab
 login
 transport input all
!
scheduler allocate 20000 1000
end
```

B.1.2. IP Interfaces

```
BR1_R1#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        200.200.200.2   YES manual up                    up
FastEthernet0/1        172.16.100.1    YES manual up                    up
Serial0/0/0            172.16.252.2    YES manual up                    up
Serial0/0/1            unassigned      YES unset  administratively down down
Serial1/0              unassigned      YES unset  administratively down down
Serial1/1              unassigned      YES unset  administratively down down
Serial1/2              unassigned      YES unset  administratively down down
Serial1/3              unassigned      YES unset  administratively down down
Tunnel0                172.16.255.2    YES manual up                    up
```

B.1.3. Interface Status

```
BR1_R1>show interface status
```

B.1.4. Interface Trunk

```
BR1_R1>show interface trunk
```

B.1.5. Neighbors

```
BR1_R1#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR1_S1       Fas 0/1       130        R S I WS-C3560- Fas 0/1
Switch       Fas 0/0       120         S I  WS-C2960- Fas 0/2
BR1_R1#
```

B.1.6. IP Route

```
BR1_R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      172.16.0.0/16 is variably subnetted, 34 subnets, 4 masks
O       172.16.17.0/24 [110/69] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.18.0/24 [110/68] via 172.16.252.1, 3d07h, Serial0/0/0
O       172.16.19.0/24 [110/68] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.25.1/32 [110/68] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.25.2/32 [110/67] via 172.16.252.1, 3d07h, Serial0/0/0
O       172.16.25.3/32 [110/69] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.25.4/32 [110/70] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.25.5/32 [110/69] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.25.6/32 [110/68] via 172.16.252.1, 3d07h, Serial0/0/0
O       172.16.25.7/32 [110/70] via 172.16.252.1, 3d06h, Serial0/0/0
C       172.16.100.0/24 is directly connected, FastEthernet0/1
L       172.16.100.1/32 is directly connected, FastEthernet0/1
O       172.16.101.0/24 [110/2] via 172.16.100.2, 3d06h, FastEthernet0/1
O       172.16.102.0/24 [110/1068] via 172.16.252.1, 3d06h, Serial0/0/0
C       172.16.252.0/24 is directly connected, Serial0/0/0
O       172.16.252.1/32 [110/64] via 172.16.252.1, 3d13h, Serial0/0/0
L       172.16.252.2/32 is directly connected, Serial0/0/0
O       172.16.252.3/32 [110/1067] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.0/30 [110/67] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.4/30 [110/68] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.8/30 [110/69] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.12/30 [110/76] via 172.16.252.1, 3d07h, Serial0/0/0
O       172.16.254.16/30 [110/70] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.20/30 [110/69] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.32/29 [110/70] via 172.16.252.1, 3d06h, Serial0/0/0
O       172.16.254.40/29 [110/68] via 172.16.252.1, 3d06h, Serial0/0/0
```

```
O      172.16.254.48/29 [110/67] via 172.16.252.1, 3d07h, Serial0/0/0
O      172.16.254.56/30 [110/66] via 172.16.252.1, 3d07h, Serial0/0/0
O      172.16.254.60/30 [110/65] via 172.16.252.1, 3d13h, Serial0/0/0
O      172.16.254.64/30 [110/67] via 172.16.252.1, 3d07h, Serial0/0/0
C      172.16.255.0/30 is directly connected, Tunnel0
L      172.16.255.2/32 is directly connected, Tunnel0
O      172.16.255.4/30 [110/1067] via 172.16.252.1, 3d07h, Serial0/0/0
O      172.16.255.8/30 [110/1067] via 172.16.252.1, 3d07h, Serial0/0/0
     200.200.200.0/24 is variably subnetted, 2 subnets, 2 masks
C      200.200.200.0/28 is directly connected, FastEthernet0/0
L      200.200.200.2/32 is directly connected, FastEthernet0/0
```

B.1.7. Spanning Tree

```
BR1_R1#show spanning

No spanning tree instances exist.
```

B.1.8. VLAN

```
BR1_R1#show vlans
No Virtual LANs configured
```

B.2. BR1-S1

B.2.1. Running Configuration

```
BR1_S1#show run
Building configuration...

Current configuration : 3888 bytes
!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR1_S1
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$dJ4X$aH6RNcO9SZ.ooz6ktrrMn1
!
username ins password 0 ins@lab
!
!
no aaa new-model
system mtu routing 1500
ip routing
ip dhcp excluded-address 172.16.101.1
ip dhcp excluded-address 172.16.101.10 172.16.101.12
!
ip dhcp pool Branch1
  network 172.16.101.0 255.255.255.0
```

```
  default-router 172.16.101.1
!
!
!
!
crypto pki trustpoint TP-self-signed-802432128
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-802432128
 revocation-check none
 rsakeypair TP-self-signed-802432128
!
!
crypto pki certificate chain TP-self-signed-802432128
 certificate self-signed 01
  3082023D 308201A6 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
  30312E30 2C060355 04031325 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 38303234 33323132 38301E17 0D393330 33303130 35353230
  325A170D 32303031 30313030 30303030 5A303031 2E302C06 03550403 1325494F
  532D5365 6C662D53 69676E65 642D4365 72746966 69636174 652D3830 32343332
  31323830 819F300D 06092A86 4886F70D 01010105 0003818D 00308189 02818100
  C6767C8B 74F76A0B E52B17D3 EDB140B1 FB84E668 2060B119 57F18207 C581AB9B
  5460655A CE5B6D41 839BDA45 F3FBFB4C 13F1AEB2 72BFA93C FB84FB71 18479182
  E33D9F85 E9ABF67D B7A70443 8E3BA50E 645BA919 2F1F0F95 C273BCA2 3815D92D
  E0E5A57D 3256CE21 F8A6D722 375884AF 69F71986 37D5CF6D DAF04C43 E43EACD5
  02030100 01A36730 65300F06 03551D13 0101FF04 05300301 01FF3012 0603551D
  11040B30 09820742 52315F53 312E301F 0603551D 23041830 16801459 42E114A0
  B9A79060 D06C6C00 251F1132 38083530 1D060355 1D0E0416 04145942 E114A0B9
  A79060D0 6C6C0025 1F113238 0835300D 06092A86 4886F70D 01010405 00038181
  0056383D 463FEBCD 6408EC1B B6FB7509 1137C129 F9BE2DA7 6FAE9C50 C8C9CE12
  30C0564D 4F64F5CA A531575B F56F6E99 54BE16F4 7763843E 893842ED 33FDE7B2
  84180226 BEBE83CB 540E557F F07162ED 0AA190B7 4758EB4F EAEE4DA1 52F7F9CD
  7E53365D AA90243F 308A56B4 B99516C2 E1991FFC E203EA4F 821DFF83 EDB2FBA5 72
  quit
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
interface FastEthernet0/1
 no switchport
 ip address 172.16.100.2 255.255.255.0
 ip ospf 1 area 0
!
interface FastEthernet0/2
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/3
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/4
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/5
```

```
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/6
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/7
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 172.16.101.1 255.255.255.0
 ip ospf 1 area 0
!
interface Vlan102
 ip address 172.16.22.1 255.255.255.0
 ip ospf 1 area 0
!
router ospf 1
 log-adjacency-changes
!
ip classless
ip http server
```

```
ip http secure-server
!
!
ip sla enable reaction-alerts
!
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.2.2. IP Interfaces

```
BR1_S1#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected routed  a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 1       auto auto 10/100BaseTX
Fa0/4                 connected trunk   a-full a-100 10/100BaseTX
Fa0/5                 connected trunk   a-full a-100 10/100BaseTX
Fa0/6                 connected trunk   a-full a-100 10/100BaseTX
Fa0/7                 connected trunk   a-full a-100 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                connected 1       a-full a-100 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                notconnect 1       auto auto 10/100BaseTX
Fa0/24                notconnect 1       auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.2.3. Interface Status

```
BR1_S1>show interface status

Port    Name          Status    Vlan    Duplex Speed Type
```

```
Fa0/1                connected routed  a-full a-100 10/100BaseTX
Fa0/2                connected trunk   a-full a-100 10/100BaseTX
Fa0/3                notconnect 1       auto auto 10/100BaseTX
Fa0/4                connected trunk   a-full a-100 10/100BaseTX
Fa0/5                connected trunk   a-full a-100 10/100BaseTX
Fa0/6                connected trunk   a-full a-100 10/100BaseTX
Fa0/7                connected trunk   a-full a-100 10/100BaseTX
Fa0/8                notconnect 1       auto auto 10/100BaseTX
Fa0/9                notconnect 1       auto auto 10/100BaseTX
Fa0/10               notconnect 1       auto auto 10/100BaseTX
Fa0/11               notconnect 1       auto auto 10/100BaseTX
Fa0/12               connected 1       a-full a-100 10/100BaseTX
Fa0/13               notconnect 1       auto auto 10/100BaseTX
Fa0/14               notconnect 1       auto auto 10/100BaseTX
Fa0/15               notconnect 1       auto auto 10/100BaseTX
Fa0/16               notconnect 1       auto auto 10/100BaseTX
Fa0/17               notconnect 1       auto auto 10/100BaseTX
Fa0/18               notconnect 1       auto auto 10/100BaseTX
Fa0/19               notconnect 1       auto auto 10/100BaseTX
Fa0/20               notconnect 1       auto auto 10/100BaseTX
Fa0/21               notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 1       auto auto 10/100BaseTX
Fa0/23               notconnect 1       auto auto 10/100BaseTX
Fa0/24               notconnect 1       auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
```

B.2.4. Interface Trunk

```
BR1_S1> show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/2    on           802.1q     trunking   1
Fa0/4    on           802.1q     trunking   1
Fa0/5    on           802.1q     trunking   1
Fa0/6    on           802.1q     trunking   1
Fa0/7    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/2    1-4094
Fa0/4    1-4094
Fa0/5    1-4094
Fa0/6    1-4094
Fa0/7    1-4094

Port     Vlans allowed and active in management domain
Fa0/2    1
Fa0/4    1
Fa0/5    1
Fa0/6    1
Fa0/7    1

Port     Vlans in spanning tree forwarding state and not pruned

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/2    1
Fa0/4    1
Fa0/5    1
```

```
Fa0/6    1
Fa0/7    1
```

B.2.5. Neighbors

```
BR1_S1#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR1_S4       Fas 0/7       143          S I  WS-C2960- Fas 0/24
BR1_S4       Fas 0/6       143          S I  WS-C2960- Fas 0/23
BR1_R1       Fas 0/1       151         R S I 2811   Fas 0/1
BR1_S3       Fas 0/5       162          S I  WS-C2960- Fas 0/24
BR1_S3       Fas 0/4       162          S I  WS-C2960- Fas 0/23
BR1_S2       Fas 0/2       132          S I  WS-C2960- Fas 0/24
```

B.2.6. IP Route

```
BR1_S1> show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    200.200.200.0/28 is subnetted, 1 subnets
O     200.200.200.0 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
    172.16.0.0/16 is variably subnetted, 31 subnets, 4 masks
O     172.16.254.64/30 [110/68] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.252.1/32 [110/65] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.0/30 [110/68] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.252.2/32 [110/1] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.255.0/30 [110/1001] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.252.3/32 [110/1068] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.4/30 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.255.4/30 [110/1068] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.8/30 [110/70] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.255.8/30 [110/1068] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.12/30 [110/77] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.16/30 [110/71] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.20/30 [110/70] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.32/29 [110/71] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.40/29 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.48/29 [110/68] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.56/30 [110/67] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.254.60/30 [110/66] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.25.5/32 [110/70] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.25.4/32 [110/71] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.25.7/32 [110/71] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.25.6/32 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.25.1/32 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.25.3/32 [110/70] via 172.16.100.1, 3d06h, FastEthernet0/1
```

```
O     172.16.25.2/32 [110/68] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.17.0/24 [110/70] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.18.0/24 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
O     172.16.19.0/24 [110/69] via 172.16.100.1, 3d06h, FastEthernet0/1
C     172.16.100.0/24 is directly connected, FastEthernet0/1
C     172.16.101.0/24 is directly connected, Vlan1
O     172.16.102.0/24 [110/1069] via 172.16.100.1, 3d06h, FastEthernet0/1
```

B.2.7. Spanning Tree

```
BR1_S1>show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.2480
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  001a.2fd4.2480
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p
Fa0/12         Desg FWD 19   128.14 P2p
```

B.2.8. VLAN

```
BR1_S1> show vlan

VLAN Name                   Status  Ports
---- ------------------------------ --------- --------------------------------
1   default                 active  Fa0/3, Fa0/8, Fa0/9, Fa0/10
                                    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                    Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                    Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                    Fa0/23, Fa0/24, Gi0/1, Gi0/2
1002 fddi-default           act/unsup
1003 token-ring-default     act/unsup
1004 fddinet-default        act/unsup
1005 trnet-default          act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -      -      -   -      0    0
1002 fddi 101002 1500 -    -      -      -   -      0    0
1003 tr 101003  1500 -    -      -      -   -      0    0
1004 fdnet 101004 1500 -   -      -      ieee -     0    0
1005 trnet 101005 1500 -   -      -      ibm -      0    0

Remote SPAN VLANs
```

```
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ----------------------------------------
```

B.3. BR2-R1

B.3.1. Running Configuration

```
BR2_R1#show run
Building configuration...


Current configuration : 1595 bytes
!
! Last configuration change at 23:56:23 UTC Thu Sep 22 2016
version 15.1
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR2_R1
!
boot-start-marker
boot-end-marker
!
!
enable secret 5 $1$tooV$GpQ3VCxj1U3jlmnAZbnQr/
!
no aaa new-model
!
memory-size iomem 10
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
!
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
!
voice-card 0
!
crypto pki token default removal timeout 0
!
```

```
!
!
!
license udi pid CISCO2811 sn FCZ1432207G
archive
 log config
  hidekeys
!
redundancy
!
!
!
!
!
!
!
!
!
!
interface Tunnel0
 ip address 172.16.255.6 255.255.255.252
 ip ospf 1 area 0
 tunnel source 200.200.200.3
 tunnel destination 200.200.200.1
!
interface FastEthernet0/0
 ip address 200.200.200.3 255.255.255.240
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.16.102.1 255.255.255.0
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 172.16.252.3 255.255.255.0
 encapsulation frame-relay
 ip ospf network point-to-multipoint
 ip ospf 1 area 0
 frame-relay map ip 172.16.252.1 301 broadcast
 frame-relay lmi-type cisco
!
interface Serial0/0/1
 no ip address
 shutdown
 clock rate 2000000
!
router ospf 1
!
ip forward-protocol nd
no ip http server
no ip http secure-server
!
!
!
!
!
!
!
snmp-server community public RO
```

```
snmp-server community private RW
!
!
control-plane
!
!
!
!
mgcp profile default
!
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
 password ins@lab
 login
 transport input all
!
scheduler allocate 20000 1000
end
```

B.3.2. IP Interfaces

```
BR2_R1#show ip interface brief
Interface              IP-Address  OK? Method Status        Protocol
FastEthernet0/0        200.200.200.3 YES manual up          up
FastEthernet0/1        172.16.102.1 YES manual up           up
Serial0/0/0            172.16.252.3 YES manual up           up
Serial0/0/1            unassigned  YES unset administratively down down
Tunnel0                172.16.255.6 YES manual up           up
```

B.3.3. Interface Status

```
BR2_R1>show interface status
```

B.3.4. Interface Trunk

```
BR2_R1>show interface trunk
```

B.3.5. Neighbors

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR2_S1       Fas 0/1       134        R S I WS-C3560V Fas 0/1
Switch       Fas 0/0       137         S I  WS-C2960- Fas 0/3
```

B.3.6. IP Route

```
BR2_R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
     + - replicated route, % - next hop override

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 34 subnets, 4 masks
O       172.16.17.0/24 [110/1004] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.18.0/24 [110/1003] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.19.0/24 [110/1003] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.25.1/32 [110/1003] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.25.2/32 [110/1002] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.25.3/32 [110/1004] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.25.4/32 [110/1005] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.25.5/32 [110/1004] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.25.6/32 [110/1003] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.25.7/32 [110/1005] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.100.0/24 [110/1068] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.101.0/24 [110/1069] via 172.16.255.5, 3d06h, Tunnel0
C       172.16.102.0/24 is directly connected, FastEthernet0/1
L       172.16.102.1/32 is directly connected, FastEthernet0/1
C       172.16.252.0/24 is directly connected, Serial0/0/0
O       172.16.252.1/32 [110/1003] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.252.2/32 [110/1067] via 172.16.255.5, 3d07h, Tunnel0
L       172.16.252.3/32 is directly connected, Serial0/0/0
O       172.16.254.0/30 [110/1002] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.4/30 [110/1003] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.8/30 [110/1004] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.12/30 [110/1011] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.254.16/30 [110/1005] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.20/30 [110/1004] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.32/29 [110/1005] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.40/29 [110/1003] via 172.16.255.5, 3d06h, Tunnel0
O       172.16.254.48/29 [110/1002] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.254.56/30 [110/1002] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.254.60/30 [110/1003] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.254.64/30 [110/1001] via 172.16.255.5, 3d07h, Tunnel0
O       172.16.255.0/30 [110/2000] via 172.16.255.5, 3d13h, Tunnel0
C       172.16.255.4/30 is directly connected, Tunnel0
L       172.16.255.6/32 is directly connected, Tunnel0
O       172.16.255.8/30 [110/2000] via 172.16.255.5, 3d13h, Tunnel0
     200.200.200.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.200.200.0/28 is directly connected, FastEthernet0/0
L       200.200.200.3/32 is directly connected, FastEthernet0/0
```

B.3.7. Spanning Tree

```
BR2_R1#show spanning

No spanning tree instances exist.
```

B.3.8. VLAN

```
BR2_R1#show vlans
No Virtual LANs configured
```

B.4. BR2-S1

B.4.1. Running Configuration

```
BR2_S1#show running-config
Building configuration...

Current configuration : 2667 bytes
!
! Last configuration change at 13:10:42 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR2_S1
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$51.0$ebtjgur4cQu.x/Jy1FUIA1
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
vtp domain CCIE
vtp mode transparent
ip routing
no ip domain-lookup
ip dhcp excluded-address 172.16.103.1
ip dhcp excluded-address 172.16.103.10 172.16.103.12
!
ip dhcp pool BRANCH2
 network 172.16.103.0 255.255.255.0
 default-router 172.16.103.1
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
       quit
!
!
!
```

```
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
vlan 2-5
!
vlan 10
 name HR
!
vlan 11
 name IT
!
vlan 17,19,46,1006
!
!
!
!
!
!
!
!
!
!
!
!
!
interface FastEthernet0/1
 no switchport
 ip address 172.16.102.2 255.255.255.0
 ip ospf 1 area 0
!
interface FastEthernet0/2
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/3
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/4
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/5
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/6
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/7
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/8
!
interface FastEthernet0/9
```

```
113 !
114 interface FastEthernet0/10
115 !
116 interface FastEthernet0/11
117 !
118 interface FastEthernet0/12
119 !
120 interface FastEthernet0/13
121 !
122 interface FastEthernet0/14
123 !
124 interface FastEthernet0/15
125 !
126 interface FastEthernet0/16
127 !
128 interface FastEthernet0/17
129 !
130 interface FastEthernet0/18
131 !
132 interface FastEthernet0/19
133 !
134 interface FastEthernet0/20
135 !
136 interface FastEthernet0/21
137 !
138 interface FastEthernet0/22
139 !
140 interface FastEthernet0/23
141 !
142 interface FastEthernet0/24
143 !
144 interface GigabitEthernet0/1
145 !
146 interface GigabitEthernet0/2
147 !
148 interface Vlan1
149  ip address 172.16.103.1 255.255.255.0
150  ip ospf 1 area 0
151  shutdown
152 !
153 interface Vlan103
154  ip address 172.16.23.1 255.255.255.0
155  ip ospf 1 area 0
156 !
157 router ospf 1
158 !
159 ip http server
160 ip http secure-server
161 !
162 !
163 ip sla enable reaction-alerts
164 snmp-server community private RW
165 snmp-server community public RO
166 !
167 !
168 line con 0
169 line vty 0 4
170  password cisco
171  login
172 line vty 5 15
173  password cisco
174  login
```

```
!
end
```

B.4.2. IP Interfaces

```
BR2_S1#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            172.16.103.1 YES manual administratively down down
Vlan103          172.16.23.1 YES manual down          down
FastEthernet0/1  172.16.102.2 YES manual up           up
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset up            up
FastEthernet0/4  unassigned  YES unset up            up
FastEthernet0/5  unassigned  YES unset up            up
FastEthernet0/6  unassigned  YES unset up            up
FastEthernet0/7  unassigned  YES unset up            up
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.4.3. Interface Status

```
BR2_S1>show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected routed  a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 connected trunk   a-full a-100 10/100BaseTX
Fa0/4                 connected trunk   a-full a-100 10/100BaseTX
Fa0/5                 connected trunk   a-full a-100 10/100BaseTX
Fa0/6                 connected trunk   a-full a-100 10/100BaseTX
Fa0/7                 connected trunk   a-full a-100 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
```

```
Fa0/18               notconnect 1       auto auto 10/100BaseTX
Fa0/19               notconnect 1       auto auto 10/100BaseTX
Fa0/20               notconnect 1       auto auto 10/100BaseTX
Fa0/21               notconnect 1       auto auto 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 1       auto auto 10/100BaseTX
Fa0/23               notconnect 1       auto auto 10/100BaseTX
Fa0/24               notconnect 1       auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
```

B.4.4. Interface Trunk

```
BR2_S1> show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/2    on           802.1q     trunking   1
Fa0/3    on           802.1q     trunking   1
Fa0/4    on           802.1q     trunking   1
Fa0/5    on           802.1q     trunking   1
Fa0/6    on           802.1q     trunking   1
Fa0/7    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/2    1-4094
Fa0/3    1-4094
Fa0/4    1-4094
Fa0/5    1-4094
Fa0/6    1-4094
Fa0/7    1-4094

Port     Vlans allowed and active in management domain
Fa0/2    1-5,10-11,17,19,46,1006
Fa0/3    1-5,10-11,17,19,46,1006
Fa0/4    1-5,10-11,17,19,46,1006
Fa0/5    1-5,10-11,17,19,46,1006
Fa0/6    1-5,10-11,17,19,46,1006

Port     Vlans allowed and active in management domain
Fa0/7    1-5,10-11,17,19,46,1006

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/2    1-5,10-11,17,19,46,1006
Fa0/3    2-5,10-11,17,19,46,1006
Fa0/4    1-5,10-11,17,19,46,1006
Fa0/5    1-5,10-11,17,19,46,1006
Fa0/6    1-5,10-11,17,19,46,1006
Fa0/7    1-5,10-11,17,19,46,1006
```

B.4.5. Neighbors

```
BR2_S1# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
```

```
BR2_S4       Fas 0/7      150          S I  WS-C2960- Fas 0/24
BR2_S4       Fas 0/6      150          S I  WS-C2960- Fas 0/23
BR2_S2       Fas 0/3      143          S I  WS-C3560V Fas 0/24
BR2_S2       Fas 0/2      143          S I  WS-C3560V Fas 0/23
BR2_S3       Fas 0/5      175          S I  WS-C2960- Fas 0/24
BR2_S3       Fas 0/4      175          S I  WS-C2960- Fas 0/23
BR2_R1       Fas 0/1      131        R S I 2811   Fas 0/1
BR2_S1#
```

B.4.6. IP Route

```
BR2_S1> show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
     + - replicated route, % - next hop override

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 32 subnets, 4 masks
O      172.16.17.0/24 [110/1005] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.18.0/24 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.19.0/24 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.1/32 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.2/32 [110/1003] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.3/32 [110/1005] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.4/32 [110/1006] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.5/32 [110/1005] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.6/32 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.25.7/32 [110/1006] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.100.0/24 [110/1069] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.101.0/24 [110/1070] via 172.16.102.1, 3d07h, FastEthernet0/1
C      172.16.102.0/24 is directly connected, FastEthernet0/1
L      172.16.102.2/32 is directly connected, FastEthernet0/1
O      172.16.252.1/32 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.252.2/32 [110/1068] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.252.3/32 [110/1] via 172.16.102.1, 3d06h, FastEthernet0/1
O      172.16.254.0/30 [110/1003] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.4/30 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.8/30 [110/1005] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.12/30 [110/1012] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.16/30 [110/1006] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.20/30 [110/1005] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.32/29 [110/1006] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.40/29 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.48/29 [110/1003] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.56/30 [110/1003] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.60/30 [110/1004] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.254.64/30 [110/1002] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.255.0/30 [110/2001] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.255.4/30 [110/1001] via 172.16.102.1, 3d07h, FastEthernet0/1
O      172.16.255.8/30 [110/2001] via 172.16.102.1, 3d07h, FastEthernet0/1
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/1002] via 172.16.102.1, 3d07h, FastEthernet0/1
```

B.4.7. Spanning Tree

```
BR2_S1> show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  24b6.5725.d180
          Cost     19
          Port     4 (FastEthernet0/2)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  24b6.572a.9d80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Root FWD 19   128.4  P2p
Fa0/3          Altn BLK 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN0002
  Spanning tree enabled protocol ieee
  Root ID Priority 32770
          Address  24b6.5725.d180
          Cost     19
          Port     5 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32770 (priority 32768 sys-id-ext 2)
          Address  24b6.572a.9d80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN0003
  Spanning tree enabled protocol ieee
  Root ID Priority 32771
          Address  24b6.5725.d180
          Cost     19
          Port     5 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32771 (priority 32768 sys-id-ext 3)
```

```
         Address  24b6.572a.9d80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN0004
  Spanning tree enabled protocol ieee
  Root ID Priority 32772
         Address  24b6.5725.d180
         Cost     19
         Port     5 (FastEthernet0/3)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32772 (priority 32768 sys-id-ext 4)
         Address  24b6.572a.9d80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN0005
  Spanning tree enabled protocol ieee
  Root ID Priority 32773
         Address  24b6.5725.d180
         Cost     19
         Port     5 (FastEthernet0/3)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32773 (priority 32768 sys-id-ext 5)
         Address  24b6.572a.9d80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p


```

```
122
123 VLAN0010
124   Spanning tree enabled protocol ieee
125   Root ID Priority 32778
126           Address  24b6.5725.d180
127           Cost     19
128           Port     5 (FastEthernet0/3)
129           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
130
131   Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
132           Address  24b6.572a.9d80
133           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
134           Aging Time 300 sec
135
136 Interface      Role Sts Cost Prio.Nbr Type
137 ------------------- ---- --- --------- -------- --------------------------------
138 Fa0/2          Desg FWD 19   128.4  P2p
139 Fa0/3          Root FWD 19   128.5  P2p
140 Fa0/4          Desg FWD 19   128.6  P2p
141 Fa0/5          Desg FWD 19   128.7  P2p
142 Fa0/6          Desg FWD 19   128.8  P2p
143 Fa0/7          Desg FWD 19   128.9  P2p
144
145
146
147 VLAN0011
148   Spanning tree enabled protocol ieee
149   Root ID Priority 32779
150           Address  24b6.5725.d180
151           Cost     19
152           Port     5 (FastEthernet0/3)
153           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
154
155   Bridge ID Priority 32779 (priority 32768 sys-id-ext 11)
156           Address  24b6.572a.9d80
157           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
158           Aging Time 300 sec
159
160 Interface      Role Sts Cost Prio.Nbr Type
161 ------------------- ---- --- --------- -------- --------------------------------
162 Fa0/2          Desg FWD 19   128.4  P2p
163 Fa0/3          Root FWD 19   128.5  P2p
164 Fa0/4          Desg FWD 19   128.6  P2p
165 Fa0/5          Desg FWD 19   128.7  P2p
166 Fa0/6          Desg FWD 19   128.8  P2p
167 Fa0/7          Desg FWD 19   128.9  P2p
168
169
170
171 VLAN0017
172   Spanning tree enabled protocol ieee
173   Root ID Priority 32785
174           Address  24b6.5725.d180
175           Cost     19
176           Port     5 (FastEthernet0/3)
177           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
178
179   Bridge ID Priority 32785 (priority 32768 sys-id-ext 17)
180           Address  24b6.572a.9d80
181           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
182           Aging Time 300 sec
183
```

```
Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN0019
  Spanning tree enabled protocol ieee
  Root ID Priority 32787
          Address  24b6.5725.d180
          Cost     19
          Port     5 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32787 (priority 32768 sys-id-ext 19)
          Address  24b6.572a.9d80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN0046
  Spanning tree enabled protocol ieee
  Root ID Priority 32814
          Address  24b6.5725.d180
          Cost     19
          Port     5 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32814 (priority 32768 sys-id-ext 46)
          Address  24b6.572a.9d80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p



VLAN1006
  Spanning tree enabled protocol ieee
  Root ID Priority 33774
```

```
         Address  24b6.5725.d180
         Cost     19
         Port     5 (FastEthernet0/3)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

 Bridge ID Priority 33774 (priority 32768 sys-id-ext 1006)
         Address  24b6.572a.9d80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/2          Desg FWD 19   128.4  P2p
Fa0/3          Root FWD 19   128.5  P2p
Fa0/4          Desg FWD 19   128.6  P2p
Fa0/5          Desg FWD 19   128.7  P2p
Fa0/6          Desg FWD 19   128.8  P2p
Fa0/7          Desg FWD 19   128.9  P2p
```

B.4.8. VLAN

```
BR2_S1> show vlan

VLAN Name                             Status  Ports
---- -------------------------------- --------- -------------------------------
1   default                          active  Fa0/8, Fa0/9, Fa0/10, Fa0/11
                                             Fa0/12, Fa0/13, Fa0/14, Fa0/15
                                             Fa0/16, Fa0/17, Fa0/18, Fa0/19
                                             Fa0/20, Fa0/21, Fa0/22, Fa0/23
                                             Fa0/24, Gi0/1, Gi0/2
2   VLAN0002                         active
3   VLAN0003                         active
4   VLAN0004                         active
5   VLAN0005                         active
10  HR                               active
11  IT                               active
17  VLAN0017                         active
19  VLAN0019                         active
46  VLAN0046                         active
1002 fddi-default                    act/unsup
1003 trcrf-default                   act/unsup
1004 fddinet-default                 act/unsup
1005 trbrf-default                   act/unsup
1006 VLAN1006                        active

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
2   enet 100002  1500 -    -     -      -   -      0    0
3   enet 100003  1500 -    -     -      -   -      0    0
4   enet 100004  1500 -    -     -      -   -      0    0
5   enet 100005  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0
11  enet 100011  1500 -    -     -      -   -      0    0
17  enet 100017  1500 -    -     -      -   -      0    0
19  enet 100019  1500 -    -     -      -   -      0    0
46  enet 100046  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
```

```
1005 trbrf 101005 4472 -   -     15     ibm -      0    0
1006 enet 101006 1500 -    -     -      -   -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.5. CCNA-CCNP-FRSwitch

B.5.1. Running Configuration

```
CCNA-CCNP-FRSwitch#show run
Building configuration...

Current configuration : 2648 bytes
!
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CCNA-CCNP-FRSwitch
!
boot-start-marker
boot-end-marker
!
!
memory-size iomem 10
no aaa new-model
ip subnet-zero
!
!
!
ip cef
frame-relay switching
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
interface Ethernet0/0
 no ip address
```

```
 shutdown
 half-duplex
 no cdp enable
 no clns route-cache
!
interface Ethernet0/1
 no ip address
 shutdown
 half-duplex
 no cdp enable
 no clns route-cache
!
interface Serial1/0
 description 102 103 104
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no fair-queue
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 102 interface Serial1/1 201
 frame-relay route 103 interface Serial1/2 301
 frame-relay route 104 interface Serial1/3 401
!
interface Serial1/1
 description 201 203
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 201 interface Serial1/0 102
 frame-relay route 203 interface Serial1/2 302
!
interface Serial1/2
 description 301 302
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 301 interface Serial1/0 103
 frame-relay route 302 interface Serial1/1 203
!
interface Serial1/3
 description 301 302
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 301 interface Serial1/0 103
 frame-relay route 302 interface Serial1/1 203
!
interface Serial1/4
 description 102 103 104
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no fair-queue
 no clns route-cache
 frame-relay intf-type dce
```

```
 frame-relay route 102 interface Serial1/5 201
 frame-relay route 103 interface Serial1/6 301
 frame-relay route 104 interface Serial1/7 401
!
interface Serial1/5
 description 201 203
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 201 interface Serial1/4 102
 frame-relay route 203 interface Serial1/6 302
!
interface Serial1/6
 description 301 302
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 301 interface Serial1/4 103
 frame-relay route 302 interface Serial1/5 203
!
interface Serial1/7
 description 401
 no ip address
 encapsulation frame-relay
 clockrate 64000
 no clns route-cache
 frame-relay intf-type dce
 frame-relay route 401 interface Serial1/4 104
!
no ip http server
ip classless
!
!
no cdp run
!
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
 login
!
!
end
```

B.5.2. IP Interfaces

```
CCNA-CCNP-FRSwitch#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
Ethernet0/0            unassigned      YES NVRAM  administratively down down
Ethernet0/1            unassigned      YES NVRAM  administratively down down
Serial1/0              unassigned      YES NVRAM  up                    up
Serial1/1              unassigned      YES NVRAM  up                    up
```

```
Serial1/2           unassigned  YES NVRAM down          down
Serial1/3           unassigned  YES manual up           up
Serial1/4           unassigned  YES NVRAM down          down
Serial1/5           unassigned  YES NVRAM down          down
Serial1/6           unassigned  YES NVRAM down          down
Serial1/7           unassigned  YES NVRAM down          down
```

B.5.3. Interface Status

```
CCNA-CCNP-FRSwitch>show interface status
                                ^
% Invalid input detected at '^' marker.
```

B.5.4. Interface Trunk

```
CCNA-CCNP-FRSwitch>show interface trunk
                                ^
% Invalid input detected at '^' marker.
```

B.5.5. Neighbors

```
CCNA-CCNP-FRSwitch#show cdp neighbors
% CDP is not enabled
CCNA-CCNP-FRSwitch#
```

B.5.6. IP Route

```
CCNA-CCNP-FRSwitch>show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

B.5.7. Spanning Tree

```
CCNA-CCNP-FRSwitch>show spanning

No spanning tree instances exist.
```

B.5.8. VLAN

```
CCNA-CCNP-FRSwitch>show vlan

No Virtual LANs configured.
```

B.6. HQ-FRR (HQ FrameRelay Router)

B.6.1. Running Configuration

```
HQ_FRR#show run

Building configuration...


Current configuration : 1810 bytes
!
! Last configuration change at 22:56:57 UTC Thu Sep 22 2016
version 15.1
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname HQ_FRR
!
boot-start-marker
boot-end-marker
!
!
enable secret 5 $1$FscR$wXNeNkzJuiZqfM2mESMKM/
!
no aaa new-model
!
memory-size iomem 10
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
!
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
voice-card 0
!
crypto pki token default removal timeout 0
!
!
!
!
license udi pid CISCO2811 sn FCZ1432207U
archive
 log config
  hidekeys
```

```
!
redundancy
!
!
!
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.16.254.62 255.255.255.252
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 no ip address
 encapsulation frame-relay
 no fair-queue
 frame-relay lmi-type cisco
!
interface Serial0/0/0.123 multipoint
 ip address 172.16.252.1 255.255.255.0
 ip ospf network point-to-multipoint
 ip ospf 1 area 0
 snmp trap link-status
 frame-relay map ip 172.16.252.3 103 broadcast
 frame-relay map ip 172.16.252.4 104 broadcast
 frame-relay map ip 172.16.252.2 102 broadcast
!
interface Serial0/0/1
 no ip address
 shutdown
 clock rate 2000000
!
interface Serial1/0
 no ip address
 shutdown
!
interface Serial1/1
 no ip address
 shutdown
!
interface Serial1/2
 no ip address
 shutdown
!
interface Serial1/3
 no ip address
 shutdown
!
router ospf 1
!
```

```
ip forward-protocol nd
ip http server
no ip http secure-server
!
!
!
!
!
!
!
snmp-server community public RO
snmp-server community private RW
!
!
control-plane
!
!
!
!
mgcp profile default
!
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
 password ins@lab
 login
 transport input all
!
scheduler allocate 20000 1000
end       R S I 2811   Fas 0/1
HQ_FRR#
```

B.6.2. IP Interfaces

```
HQ_FRR#show ip interface brief
Interface              IP-Address  OK? Method Status        Protocol
FastEthernet0/0        172.16.254.62 YES manual up          up
FastEthernet0/1        unassigned  YES unset administratively down down
Serial0/0/0            unassigned  YES unset up             up
Serial0/0/0.123        172.16.252.1 YES manual up           up
Serial0/0/1            unassigned  YES unset administratively down down
Serial1/0              unassigned  YES unset administratively down down
Serial1/1              unassigned  YES unset administratively down down
Serial1/2              unassigned  YES unset administratively down down
Serial1/3              unassigned  YES unset administratively down down
```

B.6.3. Interface Status

```
HQ_FRR>show interface status
```

B.6.4. Interface Trunk

```
HQ_FRR>show interface trunk
```

B.6.5. Neighbors

```
HQ_FRR#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_WER1      Fas 0/0       145
```

B.6.6. IP Route

```
HQ_FRR>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
     + - replicated route, % - next hop override

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 33 subnets, 4 masks
O      172.16.17.0/24 [110/5] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.18.0/24 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.19.0/24 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.1/32 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.2/32 [110/3] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.3/32 [110/5] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.4/32 [110/6] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.5/32 [110/5] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.6/32 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.25.7/32 [110/6] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.100.0/24 [110/65] via 172.16.252.2, 3d06h, Serial0/0/0.123
O      172.16.101.0/24 [110/66] via 172.16.252.2, 3d06h, Serial0/0/0.123
O      172.16.102.0/24 [110/1004] via 172.16.254.61, 3d06h, FastEthernet0/0
C      172.16.252.0/24 is directly connected, Serial0/0/0.123
L      172.16.252.1/32 is directly connected, Serial0/0/0.123
O      172.16.252.2/32 [110/64] via 172.16.252.2, 3d13h, Serial0/0/0.123
O      172.16.252.3/32 [110/1003] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.0/30 [110/3] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.4/30 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.8/30 [110/5] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.12/30 [110/12] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.16/30 [110/6] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.20/30 [110/5] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.32/29 [110/6] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.40/29 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.48/29 [110/3] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.254.56/30 [110/2] via 172.16.254.61, 3d06h, FastEthernet0/0
C      172.16.254.60/30 is directly connected, FastEthernet0/0
```

```
L      172.16.254.62/32 is directly connected, FastEthernet0/0
O      172.16.254.64/30 [110/3] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.255.0/30 [110/1003] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.255.4/30 [110/1003] via 172.16.254.61, 3d06h, FastEthernet0/0
O      172.16.255.8/30 [110/1003] via 172.16.254.61, 3d06h, FastEthernet0/0
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/4] via 172.16.254.61, 3d06h, FastEthernet0/0
```

B.6.7. Spanning Tree

```
HQ_FRR>show spanning

No spanning tree instances exist.
```

B.6.8. VLAN

```
HQ_FRR>show vlan
% Ambiguous command: "show vlan"
```

B.7. HQ-WER1

B.7.1. Running Configuration

```
HQ_WER1#show running-config
Building configuration...


Current configuration : 1524 bytes
!
! Last configuration change at 23:58:14 UTC Thu Sep 22 2016
version 15.1
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname HQ_WER1
!
boot-start-marker
boot-end-marker
!
!
enable secret 5 $1$RJxO$6QppMo5PI1VrlwnDvu//l1
!
no aaa new-model
!
memory-size iomem 10
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
!
no ipv6 cef
```

```
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
voice-card 0
!
crypto pki token default removal timeout 0
!
!
!
!
license udi pid CISCO2811 sn FCZ104770XM
archive
 log config
  hidekeys
!
redundancy
!
!
!
!
!
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.16.254.58 255.255.255.252
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.16.254.61 255.255.255.252
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface Serial0/0/0
 no ip address
 shutdown
 no fair-queue
 clock rate 2000000
!
interface Serial0/0/1
 no ip address
 shutdown
 clock rate 2000000
!
interface Serial1/0
 no ip address
 shutdown
```

```
!
interface Serial1/1
 no ip address
 shutdown
!
interface Serial1/2
 no ip address
 shutdown
!
interface Serial1/3
 no ip address
 shutdown
!
router ospf 1
!
ip forward-protocol nd
ip http server
no ip http secure-server
!
!
!
!
!
!
!
snmp-server community public RO
snmp-server community private RW
!
!
control-plane
!
!
!
!
mgcp profile default
!
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
 password ins@lab
 login
 transport input all
!
scheduler allocate 20000 1000
end
```

B.7.2. IP Interfaces

```
HQ_WER1#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        172.16.254.58   YES manual up                    up
FastEthernet0/1        172.16.254.61   YES manual up                    up
Serial0/0/0            unassigned      YES unset  administratively down down
Serial0/0/1            unassigned      YES unset  administratively down down
Serial1/0              unassigned      YES unset  administratively down down
```

```
Serial1/1           unassigned  YES unset administratively down down
Serial1/2           unassigned  YES unset administratively down down
Serial1/3           unassigned  YES unset administratively down down
```

B.7.3. Interface Status

```
HQ_WER1>show interface status
```

B.7.4. Interface Trunk

```
HQ_WER1>show interface trunk
```

B.7.5. Neighbors

```
HQ_WER1#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_FRR       Fas 0/1       125        R S I 2811   Fas 0/0
HQ_CS2       Fas 0/0       155        R S I WS-C3560V Fas 0/21
```

B.7.6. IP Route

```
HQ_WER1>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
     + - replicated route, % - next hop override

Gateway of last resort is not set

    172.16.0.0/16 is variably subnetted, 33 subnets, 4 masks
O      172.16.17.0/24 [110/4] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.18.0/24 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.19.0/24 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.1/32 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.2/32 [110/2] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.3/32 [110/4] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.4/32 [110/5] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.5/32 [110/4] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.6/32 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.25.7/32 [110/5] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.100.0/24 [110/66] via 172.16.254.62, 3d06h, FastEthernet0/1
O      172.16.101.0/24 [110/67] via 172.16.254.62, 3d06h, FastEthernet0/1
O      172.16.102.0/24 [110/1003] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.252.1/32 [110/1] via 172.16.254.62, 3d14h, FastEthernet0/1
O      172.16.252.2/32 [110/65] via 172.16.254.62, 3d13h, FastEthernet0/1
```

```
O      172.16.252.3/32 [110/1002] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.0/30 [110/2] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.4/30 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.8/30 [110/4] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.12/30 [110/11] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.16/30 [110/5] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.20/30 [110/4] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.32/29 [110/5] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.40/29 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.254.48/29 [110/2] via 172.16.254.57, 3d06h, FastEthernet0/0
C      172.16.254.56/30 is directly connected, FastEthernet0/0
L      172.16.254.58/32 is directly connected, FastEthernet0/0
C      172.16.254.60/30 is directly connected, FastEthernet0/1
L      172.16.254.61/32 is directly connected, FastEthernet0/1
O      172.16.254.64/30 [110/2] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.255.0/30 [110/1002] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.255.4/30 [110/1002] via 172.16.254.57, 3d06h, FastEthernet0/0
O      172.16.255.8/30 [110/1002] via 172.16.254.57, 3d06h, FastEthernet0/0
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/3] via 172.16.254.57, 3d06h, FastEthernet0/0
```

B.7.7. Spanning Tree

```
HQ_WER1>show spanning

No spanning tree instances exist.
```

B.7.8. VLAN

```
HQ_WER1>show vlan
% Ambiguous command: "show vlan"
```

B.8. HQ-IER1

B.8.1. Running Configuration

```
HQ_IER1#show run
Building configuration...


Current configuration : 1977 bytes
!
! Last configuration change at 17:14:57 UTC Mon Jan 2 2006
version 15.1
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname HQ_IER1
!
boot-start-marker
boot-end-marker
!
!
enable secret 5 $1$59bW$.eTpV8UBqKkJfmSRZCWHH/
!
```

```
no aaa new-model
!
memory-size iomem 10
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
!
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
voice-card 0
!
crypto pki token default removal timeout 0
!
!
!
!
license udi pid CISCO2811 sn FGL154811KR
archive
 log config
  hidekeys
!
redundancy
!
!
!
!
!
!
!
!
!
!
interface Tunnel0
 ip address 172.16.255.1 255.255.255.252
 ip ospf 1 area 0
 tunnel source 200.200.200.1
 tunnel destination 200.200.200.2
!
interface Tunnel1
 ip address 172.16.255.5 255.255.255.252
 ip ospf 1 area 0
 tunnel source 200.200.200.1
 tunnel destination 200.200.200.3
!
interface Tunnel2
```

```
 ip address 172.16.255.9 255.255.255.252
 ip ospf 1 area 0
 tunnel source 200.200.200.1
 tunnel destination 200.200.200.4
!
interface FastEthernet0/0
 ip address 172.16.254.66 255.255.255.252
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 200.200.200.1 255.255.255.240
 ip ospf 1 area 0
 duplex auto
 speed auto
!
interface Serial0/0/0
 no ip address
 shutdown
 no fair-queue
 clock rate 2000000
!
interface Serial0/0/1
 no ip address
 shutdown
 clock rate 2000000
!
interface Serial0/1/0
 no ip address
 shutdown
 clock rate 2000000
!
interface Serial0/1/1
 no ip address
 shutdown
 clock rate 2000000
!
interface FastEthernet1/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
router ospf 1
!
ip forward-protocol nd
ip http server
no ip http secure-server
!
!
!
!
!
!
!
snmp-server community public RO
snmp-server community private RW
!
!
control-plane
!
```

```
!
!
!
mgcp profile default
!
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
 password ins@lab
 login
 transport input all
!
scheduler allocate 20000 1000
end
```

B.8.2. IP Interfaces

```
HQ_IER1#show ip interface brief
Interface              IP-Address  OK? Method Status        Protocol
FastEthernet0/0        172.16.254.66 YES manual up          up
FastEthernet0/1        200.200.200.1 YES manual up          up
Serial0/0/0            unassigned  YES unset administratively down down
Serial0/0/1            unassigned  YES unset administratively down down
Serial0/1/0            unassigned  YES unset administratively down down
Serial0/1/1            unassigned  YES unset administratively down down
FastEthernet1/0        unassigned  YES unset administratively down down
Tunnel0                172.16.255.1 YES manual up           up
Tunnel1                172.16.255.5 YES manual up           up
Tunnel2                172.16.255.9 YES manual up           up
```

B.8.3. Interface Status

```
HQ_IER1#show interface status
```

B.8.4. Interface Trunk

```
HQ_IER1#show interface trunk
```

B.8.5. Neighbors

```
BR1_R1#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR1_S1       Fas 0/1       143        R S I WS-C3560- Fas 0/1
Switch       Fas 0/0       133         S I  WS-C2960- Fas 0/2
BR1_R1#
```

B.8.6. IP Route

```
HQ_IER1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      172.16.0.0/16 is variably subnetted, 35 subnets, 4 masks
O       172.16.17.0/24 [110/4] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.18.0/24 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.19.0/24 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.1/32 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.2/32 [110/2] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.3/32 [110/4] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.4/32 [110/5] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.5/32 [110/4] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.6/32 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.25.7/32 [110/5] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.100.0/24 [110/68] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.101.0/24 [110/69] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.102.0/24 [110/1001] via 172.16.255.6, 3d07h, Tunnel1
O       172.16.252.1/32 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.252.2/32 [110/67] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.252.3/32 [110/1000] via 172.16.255.6, 3d07h, Tunnel1
O       172.16.254.0/30 [110/2] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.4/30 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.8/30 [110/4] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.12/30 [110/11] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.16/30 [110/5] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.20/30 [110/4] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.32/29 [110/5] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.40/29 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.48/29 [110/2] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.56/30 [110/2] via 172.16.254.65, 3d07h, FastEthernet0/0
O       172.16.254.60/30 [110/3] via 172.16.254.65, 3d07h, FastEthernet0/0
C       172.16.254.64/30 is directly connected, FastEthernet0/0
L       172.16.254.66/32 is directly connected, FastEthernet0/0
C       172.16.255.0/30 is directly connected, Tunnel0
L       172.16.255.1/32 is directly connected, Tunnel0
C       172.16.255.4/30 is directly connected, Tunnel1
L       172.16.255.5/32 is directly connected, Tunnel1
C       172.16.255.8/30 is directly connected, Tunnel2
L       172.16.255.9/32 is directly connected, Tunnel2
      200.200.200.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.200.200.0/28 is directly connected, FastEthernet0/1
L       200.200.200.1/32 is directly connected, FastEthernet0/1
```

B.8.7. Spanning Tree

```
HQ_IER1#show spanning

No spanning tree instances exist.
```

B.8.8. VLAN

```
HQ_IER1# show vlans

No Virtual LANs configured.
```

B.9. Provider Switch

B.9.1. Running Configuration

```
Switch#show run
Building configuration...

Current configuration : 1222 bytes
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Switch
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
system mtu routing 1500
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
```

```
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
!
ip http server
ip http secure-server
!
!
line con 0
line vty 5 15
!
end
```

B.9.2. IP Interfaces

```
Switch#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset up            up
FastEthernet0/1  unassigned  YES unset up            up
```

```
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset up            up
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.9.3. Interface Status

```
Switch# show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected 1       a-full a-100 10/100BaseTX
Fa0/2                 connected 1       a-full a-100 10/100BaseTX
Fa0/3                 connected 1       a-full a-100 10/100BaseTX
Fa0/4                 notconnect 1       auto auto 10/100BaseTX
Fa0/5                 notconnect 1       auto auto 10/100BaseTX
Fa0/6                 notconnect 1       auto auto 10/100BaseTX
Fa0/7                 notconnect 1       auto auto 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                notconnect 1       auto auto 10/100BaseTX
Fa0/24                notconnect 1       auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.9.4. Interface Trunk

```
Switch# show interface trunk
```

B.9.5. Neighbors

```
Switch# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID        Local Intrfce Holdtme Capability Platform Port ID
BR1_R1           Fas 0/2       129         R S I 2811   Fas 0/0
BR2_R1           Fas 0/3       141         R S I 2811   Fas 0/0
HQ_IER1          Fas 0/1       142         R S I 2811   Fas 0/1
```

B.9.6. IP Route

```
Switch#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.9.7. Spanning Tree

```
Switch#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  f025.72d1.8700
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  f025.72d1.8700
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Fa0/3          Desg FWD 19   128.3  P2p
```

B.9.8. VLAN

```
Switch#show vlan

VLAN Name                    Status  Ports
---- ------------------------------ --------- -------------------------------
1   default                  active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                     Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                     Fa0/9, Fa0/10, Fa0/11, Fa0/12
```

```
                                    Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                    Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                    Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                    Gi0/1, Gi0/2
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -      -      -   -      0    0
1002 fddi 101002 1500 -    -      -      -   -      0    0
1003 tr 101003  1500 -    -      -      -   -      0    0
1004 fdnet 101004 1500 -   -      -      ieee -     0    0
1005 trnet 101005 1500 -   -      -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.10. HQ CS1

B.10.1. Running Configuration

```

!
! Last configuration change at 07:31:17 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_CS1
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$sMhJ$dd5KAmhu1twZdO/DAD/Lm/
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
ip routing
no ip domain-lookup
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
```

```
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
!
!
!
!
!
!
!
interface Loopback100
 ip address 172.16.25.1 255.255.255.0
 ip ospf 1 area 0
!
interface Port-channel1
 no switchport
 ip address 172.16.254.1 255.255.255.252
 ip ospf 1 area 0
!
interface Port-channel2
 no switchport
 ip address 172.16.254.5 255.255.255.252
 ip ospf 1 area 0
!
interface Port-channel3
 no switchport
 bandwidth 10000
 ip address 172.16.254.33 255.255.255.248
 ip ospf mtu-ignore
 ip ospf 1 area 0
 speed 10
!
interface Port-channel4
 no switchport
 bandwidth 100000
 ip address 172.16.254.41 255.255.255.248
 ip ospf mtu-ignore
 ip ospf 1 area 0
 speed 100
 duplex half
!
interface FastEthernet0/1
 no switchport
 no ip address
```

```
 channel-group 1 mode on
!
interface FastEthernet0/2
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/3
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/4
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/5
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/6
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/7
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/8
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
 no switchport
 no ip address
 speed 10
 channel-group 3 mode on
!
interface FastEthernet0/14
 no switchport
 no ip address
 speed 10
 channel-group 3 mode on
!
interface FastEthernet0/15
 no switchport
 no ip address
 speed 10
 channel-group 3 mode on
```

```
157 !
158 interface FastEthernet0/16
159  no switchport
160  no ip address
161  speed 10
162  channel-group 3 mode on
163 !
164 interface FastEthernet0/17
165  no switchport
166  no ip address
167  speed 100
168  duplex half
169  channel-group 4 mode on
170 !
171 interface FastEthernet0/18
172  no switchport
173  no ip address
174  speed 100
175  duplex half
176  channel-group 4 mode on
177 !
178 interface FastEthernet0/19
179  no switchport
180  no ip address
181  speed 100
182  duplex half
183  channel-group 4 mode on
184 !
185 interface FastEthernet0/20
186  no switchport
187  no ip address
188  speed 100
189  duplex half
190  channel-group 4 mode on
191 !
192 interface FastEthernet0/21
193 !
194 interface FastEthernet0/22
195 !
196 interface FastEthernet0/23
197 !
198 interface FastEthernet0/24
199 !
200 interface GigabitEthernet0/1
201 !
202 interface GigabitEthernet0/2
203 !
204 interface Vlan1
205  no ip address
206 !
207 router ospf 1
208 !
209 ip http server
210 ip http secure-server
211 !
212 !
213 ip sla enable reaction-alerts
214 snmp-server community public RO
215 snmp-server community private RW
216 !
217 !
218 line con 0
```

```
 logging synchronous
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.10.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset up            down
FastEthernet0/1  unassigned  YES manual up           up
FastEthernet0/2  unassigned  YES manual up           up
FastEthernet0/3  unassigned  YES manual up           up
FastEthernet0/4  unassigned  YES manual up           up
FastEthernet0/5  unassigned  YES manual up           up
FastEthernet0/6  unassigned  YES manual up           up
FastEthernet0/7  unassigned  YES manual up           up
FastEthernet0/8  unassigned  YES manual up           up
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES manual up           up
FastEthernet0/14 unassigned  YES manual up           up
FastEthernet0/15 unassigned  YES manual up           up
FastEthernet0/16 unassigned  YES manual up           up
FastEthernet0/17 unassigned  YES manual up           up
FastEthernet0/18 unassigned  YES manual up           up
FastEthernet0/19 unassigned  YES manual up           up
FastEthernet0/20 unassigned  YES manual up           up
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel1    172.16.254.1 YES manual up          up
Port-channel2    172.16.254.5 YES manual up          up
Port-channel3    172.16.254.33 YES manual up         up
Port-channel4    172.16.254.41 YES manual up         up
Loopback100      172.16.25.1 YES manual up           up
```

B.10.3. Interface Status

```
HQ_CS1#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected routed  a-full a-100 10/100BaseTX
Fa0/2                 connected routed  a-full a-100 10/100BaseTX
Fa0/3                 connected routed  a-full a-100 10/100BaseTX
Fa0/4                 connected routed  a-full a-100 10/100BaseTX
Fa0/5                 connected routed  a-full a-100 10/100BaseTX
Fa0/6                 connected routed  a-full a-100 10/100BaseTX
Fa0/7                 connected routed  a-full a-100 10/100BaseTX
```

```
Fa0/8                connected routed  a-full a-100 10/100BaseTX
Fa0/9                notconnect 1       auto auto 10/100BaseTX
Fa0/10               notconnect 1       auto auto 10/100BaseTX
Fa0/11               notconnect 1       auto auto 10/100BaseTX
Fa0/12               notconnect 1       auto auto 10/100BaseTX
Fa0/13               connected routed  a-full  10 10/100BaseTX
Fa0/14               connected routed  a-full  10 10/100BaseTX
Fa0/15               connected routed  a-full  10 10/100BaseTX
Fa0/16               connected routed  a-full  10 10/100BaseTX
Fa0/17               connected routed   half  100 10/100BaseTX
Fa0/18               connected routed   half  100 10/100BaseTX
Fa0/19               connected routed   half  100 10/100BaseTX
Fa0/20               connected routed   half  100 10/100BaseTX
Fa0/21               notconnect 1       auto auto 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 1       auto auto 10/100BaseTX
Fa0/23               notconnect 1       auto auto 10/100BaseTX
Fa0/24               notconnect 1       auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
Po1                  connected routed  a-full a-100
Po2                  connected routed  a-full a-100
Po3                  connected routed  a-full  10
Po4                  connected routed   half  100
```

B.10.4. Interface Trunk

```
wurde nichts angezeigt
```

B.10.5. Neighbors

```
Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS1       Fas 0/16      175         R S I WS-C3560V Fas 0/4
HQ_DS1       Fas 0/15      175         R S I WS-C3560V Fas 0/3
HQ_DS1       Fas 0/14      175         R S I WS-C3560V Fas 0/2
HQ_DS1       Fas 0/13      160         R S I WS-C3560V Fas 0/1
HQ_DS2       Fas 0/20      160         R S I WS-C3560V Fas 0/8
HQ_DS2       Fas 0/19      160         R S I WS-C3560V Fas 0/7
HQ_DS2       Fas 0/18      160         R S I WS-C3560V Fas 0/6
HQ_DS2       Fas 0/17      160         R S I WS-C3560V Fas 0/5
HQ_CS2       Fas 0/4       170         R S I WS-C3560V Fas 0/4
HQ_CS2       Fas 0/3       159         R S I WS-C3560V Fas 0/3
HQ_CS2       Fas 0/2       159         R S I WS-C3560V Fas 0/2
HQ_CS2       Fas 0/1       159         R S I WS-C3560V Fas 0/1
HQ_CS3       Fas 0/8       178         R S I WS-C3560- Fas 0/8
HQ_CS3       Fas 0/6       178         R S I WS-C3560- Fas 0/6
HQ_CS3       Fas 0/7       178         R S I WS-C3560- Fas 0/7
HQ_CS3       Fas 0/5       178         R S I WS-C3560- Fas 0/5
```

B.10.6. IP Route

```
HQ_CS1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
```

```
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-user static route
      o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
      + - replicated route, % - next hop override

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 36 subnets, 4 masks
O      172.16.17.0/24 [110/3] via 172.16.254.42, 3d05h, Port-channel4
O      172.16.18.0/24 [110/2] via 172.16.254.42, 3d05h, Port-channel4
O      172.16.19.0/24 [110/2] via 172.16.254.42, 3d05h, Port-channel4
C      172.16.25.0/24 is directly connected, Loopback100
L      172.16.25.1/32 is directly connected, Loopback100
O      172.16.25.2/32 [110/2] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.25.3/32 [110/2] via 172.16.254.6, 3d13h, Port-channel2
O      172.16.25.4/32 [110/3] via 172.16.254.6, 3d13h, Port-channel2
O      172.16.25.5/32 [110/3] via 172.16.254.42, 3d05h, Port-channel4
O      172.16.25.6/32 [110/2] via 172.16.254.42, 3d05h, Port-channel4
O      172.16.25.7/32 [110/3] via 172.16.254.6, 3d13h, Port-channel2
O      172.16.100.0/24 [110/68] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.101.0/24 [110/69] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.102.0/24 [110/1003] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.252.1/32 [110/3] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.252.2/32 [110/67] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.252.3/32 [110/1002] via 172.16.254.2, 3d05h, Port-channel1
C      172.16.254.0/30 is directly connected, Port-channel1
L      172.16.254.1/32 is directly connected, Port-channel1
C      172.16.254.4/30 is directly connected, Port-channel2
L      172.16.254.5/32 is directly connected, Port-channel2
O      172.16.254.8/30 [110/2] via 172.16.254.6, 3d13h, Port-channel2
O      172.16.254.12/30 [110/11] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.254.16/30 [110/3] via 172.16.254.6, 3d13h, Port-channel2
O      172.16.254.20/30 [110/2] via 172.16.254.6, 3d13h, Port-channel2
C      172.16.254.32/29 is directly connected, Port-channel3
L      172.16.254.33/32 is directly connected, Port-channel3
C      172.16.254.40/29 is directly connected, Port-channel4
L      172.16.254.41/32 is directly connected, Port-channel4
O      172.16.254.48/29 [110/2] via 172.16.254.42, 3d05h, Port-channel4
                        [110/2] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.254.56/30 [110/2] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.254.60/30 [110/3] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.254.64/30 [110/2] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.255.0/30 [110/1002] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.255.4/30 [110/1002] via 172.16.254.2, 3d05h, Port-channel1
O      172.16.255.8/30 [110/1002] via 172.16.254.2, 3d05h, Port-channel1
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/3] via 172.16.254.2, 3d05h, Port-channel1
```

B.10.7. Spanning Tree

```
HQ_CS1# show spanning-tree

No spanning tree instance exists.
```

B.10.8. VLAN

```
HQ_CS1#show vlan
```

```
VLAN Name                   Status  Ports
---- ------------------------------ --------- ------------------------------
1   default                 active  Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                    Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                    Gi0/1, Gi0/2
1002 fddi-default           act/unsup
1003 token-ring-default     act/unsup
1004 fddinet-default        act/unsup
1005 trnet-default          act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.11. HQ CS2

B.11.1. Running Configuration

```

!
! Last configuration change at 08:38:55 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_CS2
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$2GLo$vSF1.pg28M8/YjQJtzH.r/
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
ip routing
no ip domain-lookup
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
```

```
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
!
!
!
!
!
!
!
interface Loopback100
 ip address 172.16.25.2 255.255.255.0
 ip ospf 1 area 0
!
interface Port-channel1
 no switchport
 ip address 172.16.254.2 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel2
 no switchport
 bandwidth 10000
 ip address 172.16.254.13 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
 speed 10
!
interface Port-channel3
 no switchport
 ip address 172.16.254.50 255.255.255.248
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface FastEthernet0/1
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/2
 no switchport
 no ip address
```

```
 channel-group 1 mode on
!
interface FastEthernet0/3
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/4
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/5
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/6
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/7
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/8
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
 no switchport
 no ip address
 ip ospf mtu-ignore
 ip ospf 1 area 0
 channel-group 3 mode on
!
interface FastEthernet0/14
 no switchport
 no ip address
 ip ospf mtu-ignore
 ip ospf 1 area 0
 channel-group 3 mode on
!
interface FastEthernet0/15
 no switchport
 no ip address
 ip ospf mtu-ignore
```

```
 ip ospf 1 area 0
 channel-group 3 mode on
!
interface FastEthernet0/16
 no switchport
 no ip address
 ip ospf mtu-ignore
 ip ospf 1 area 0
 channel-group 3 mode on
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
 no switchport
 ip address 172.16.254.57 255.255.255.252
 ip ospf 1 area 0
!
interface FastEthernet0/22
 no switchport
 ip address 172.16.254.65 255.255.255.252
 ip ospf 1 area 0
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
!
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
 logging synchronous
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.11.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
FastEthernet0/1  unassigned  YES manual up            up
FastEthernet0/2  unassigned  YES manual up            up
FastEthernet0/3  unassigned  YES manual up            up
FastEthernet0/4  unassigned  YES manual up            up
FastEthernet0/5  unassigned  YES manual up            up
FastEthernet0/6  unassigned  YES manual up            up
FastEthernet0/7  unassigned  YES manual up            up
FastEthernet0/8  unassigned  YES manual up            up
FastEthernet0/9  unassigned  YES unset down           down
FastEthernet0/10 unassigned  YES unset down           down
FastEthernet0/11 unassigned  YES unset down           down
FastEthernet0/12 unassigned  YES unset down           down
FastEthernet0/13 unassigned  YES manual up            up
FastEthernet0/14 unassigned  YES manual up            up
FastEthernet0/15 unassigned  YES manual up            up
FastEthernet0/16 unassigned  YES manual up            up
FastEthernet0/17 unassigned  YES unset down           down
FastEthernet0/18 unassigned  YES unset down           down
FastEthernet0/19 unassigned  YES unset down           down
FastEthernet0/20 unassigned  YES unset down           down
FastEthernet0/21 172.16.254.57 YES manual up          up
FastEthernet0/22 172.16.254.65 YES manual up          up
FastEthernet0/23 unassigned  YES unset down           down
FastEthernet0/24 unassigned  YES unset down           down
GigabitEthernet0/1 unassigned YES unset down          down
GigabitEthernet0/2 unassigned YES unset down          down
Port-channel1    172.16.254.2 YES manual up           up
Port-channel2    172.16.254.13 YES manual up          up
Port-channel3    172.16.254.50 YES manual up          up
Loopback100      172.16.25.2 YES manual up            up
```

B.11.3. Interface Status

```
HQ_CS2>show int status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected routed  a-full a-100 10/100BaseTX
Fa0/2                 connected routed  a-full a-100 10/100BaseTX
Fa0/3                 connected routed  a-full a-100 10/100BaseTX
Fa0/4                 connected routed  a-full a-100 10/100BaseTX
Fa0/5                 connected routed  a-full  10 10/100BaseTX
Fa0/6                 connected routed  a-full  10 10/100BaseTX
Fa0/7                 connected routed  a-full  10 10/100BaseTX
Fa0/8                 connected routed  a-full  10 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                connected routed  a-full a-100 10/100BaseTX
Fa0/14                connected routed  a-full a-100 10/100BaseTX
Fa0/15                connected routed  a-full a-100 10/100BaseTX
Fa0/16                connected routed  a-full a-100 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
```

```
Fa0/20               notconnect 1       auto auto 10/100BaseTX
Fa0/21               connected routed  a-full a-100 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               connected routed  a-full a-100 10/100BaseTX
Fa0/23               notconnect 1       auto auto 10/100BaseTX
Fa0/24               notconnect 1       auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
Po1                  connected routed  a-full a-100
Po2                  connected routed  a-full  10
Po3                  connected routed  a-full a-100
```

B.11.4. Interface Trunk

```
wurde nichts angezeigt
```

B.11.5. Neighbors

```
Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_IER1      Fas 0/22      130         R S I 2811   Fas 0/0
HQ_WER1      Fas 0/21      157         R S I 2811   Fas 0/0
HQ_CS4       Fas 0/8       148         R S I WS-C3560- Fas 0/8
HQ_CS4       Fas 0/7       148         R S I WS-C3560- Fas 0/7
HQ_CS4       Fas 0/6       148         R S I WS-C3560- Fas 0/6
HQ_CS4       Fas 0/5       148         R S I WS-C3560- Fas 0/5
HQ_DS2       Fas 0/16      159         R S I WS-C3560V Fas 0/4
HQ_DS2       Fas 0/15      159         R S I WS-C3560V Fas 0/3
HQ_DS2       Fas 0/14      159         R S I WS-C3560V Fas 0/2
HQ_DS2       Fas 0/13      159         R S I WS-C3560V Fas 0/1
HQ_CS1       Fas 0/3       167         R S I WS-C3560V Fas 0/3
HQ_CS1       Fas 0/4       167         R S I WS-C3560V Fas 0/4
HQ_CS1       Fas 0/1       167         R S I WS-C3560V Fas 0/1
HQ_CS1       Fas 0/2       167         R S I WS-C3560V Fas 0/2
```

B.11.6. IP Route

```
HQ_CS2> show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      172.16.0.0/16 is variably subnetted, 37 subnets, 4 masks
O       172.16.17.0/24 [110/3] via 172.16.254.49, 3d06h, Port-channel3
O       172.16.18.0/24 [110/2] via 172.16.254.49, 3d06h, Port-channel3
O       172.16.19.0/24 [110/2] via 172.16.254.49, 3d06h, Port-channel3
C       172.16.25.0/24 is directly connected, Loopback100
O       172.16.25.1/32 [110/2] via 172.16.254.1, 3d06h, Port-channel1
L       172.16.25.2/32 is directly connected, Loopback100
```

```
O      172.16.25.3/32 [110/3] via 172.16.254.1, 3d06h, Port-channel1
O      172.16.25.4/32 [110/4] via 172.16.254.1, 3d06h, Port-channel1
O      172.16.25.5/32 [110/3] via 172.16.254.49, 3d06h, Port-channel3
O      172.16.25.6/32 [110/2] via 172.16.254.49, 3d06h, Port-channel3
O      172.16.25.7/32 [110/4] via 172.16.254.1, 3d06h, Port-channel1
O      172.16.100.0/24 [110/67] via 172.16.254.58, 3d05h, FastEthernet0/21
O      172.16.101.0/24 [110/68] via 172.16.254.58, 3d05h, FastEthernet0/21
O      172.16.102.0/24 [110/1002] via 172.16.254.66, 3d05h, FastEthernet0/22
O      172.16.252.1/32 [110/2] via 172.16.254.58, 3d06h, FastEthernet0/21
O      172.16.252.2/32 [110/66] via 172.16.254.58, 3d06h, FastEthernet0/21
O      172.16.252.3/32 [110/1001] via 172.16.254.66, 3d05h, FastEthernet0/22
C      172.16.254.0/30 is directly connected, Port-channel1
L      172.16.254.2/32 is directly connected, Port-channel1
O      172.16.254.4/30 [110/2] via 172.16.254.1, 3d06h, Port-channel1
O      172.16.254.8/30 [110/3] via 172.16.254.1, 3d06h, Port-channel1
C      172.16.254.12/30 is directly connected, Port-channel2
L      172.16.254.13/32 is directly connected, Port-channel2
O      172.16.254.16/30 [110/4] via 172.16.254.1, 3d06h, Port-channel1
O      172.16.254.20/30 [110/3] via 172.16.254.1, 3d06h, Port-channel1
O      172.16.254.32/29 [110/4] via 172.16.254.49, 3d06h, Port-channel3
O      172.16.254.40/29 [110/2] via 172.16.254.49, 3d06h, Port-channel3
                        [110/2] via 172.16.254.1, 3d06h, Port-channel1
C      172.16.254.48/29 is directly connected, Port-channel3
L      172.16.254.50/32 is directly connected, Port-channel3
C      172.16.254.56/30 is directly connected, FastEthernet0/21
L      172.16.254.57/32 is directly connected, FastEthernet0/21
O      172.16.254.60/30 [110/2] via 172.16.254.58, 3d06h, FastEthernet0/21
C      172.16.254.64/30 is directly connected, FastEthernet0/22
L      172.16.254.65/32 is directly connected, FastEthernet0/22
O      172.16.255.0/30 [110/1001] via 172.16.254.66, 3d06h, FastEthernet0/22
O      172.16.255.4/30 [110/1001] via 172.16.254.66, 3d06h, FastEthernet0/22
O      172.16.255.8/30 [110/1001] via 172.16.254.66, 3d06h, FastEthernet0/22
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/2] via 172.16.254.66, 3d06h, FastEthernet0/22
```

B.11.7. Spanning Tree

```
HQ_CS2# show spanning-tree

No spanning tree instance exists.
```

B.11.8. VLAN

```
HQ_CS2>show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/23, Fa0/24, Gi0/1, Gi0/2
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
```

```
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -     -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.12. HQ CS3

B.12.1. Running Configuration

```

!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_CS3
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$vTJp$Y2wLOoVslvoOaBBNAr1oX0
!
username ins password 0 ins@lab
!
!
no aaa new-model
system mtu routing 1500
vtp mode transparent
ip routing
!
!
!
!
crypto pki trustpoint TP-self-signed-789190400
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-789190400
 revocation-check none
 rsakeypair TP-self-signed-789190400
!
!
crypto pki certificate chain TP-self-signed-789190400
 certificate self-signed 01
  3082023D 308201A6 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
  30312E30 2C060355 04031325 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 37383931 39303430 30301E17 0D393330 33303130 35343835
  315A170D 32303031 30313030 30303030 5A303031 2E302C06 03550403 1325494F
  532D5365 6C662D53 69676E65 642D4365 72746966 69636174 652D3738 39313930
  34303030 819F300D 06092A86 4886F70D 01010105 0003818D 00308189 02818100
  C6C5446B BBCF34FF 439D0799 2EB637D6 822843B1 3A8D9AE5 4E1BCE76 6BA2FC1D
  2E4B00FE 98620634 368959FB 97A92D32 9128ED2B A06BAAA8 D597C7A2 83918ECB
```

```
  0CFBCFA3 C5655F94 530C8875 DF278C94 37D7CDC4 50A60294 170E9EDE 42D9F5AF
  4BB1C6EC D12E59BD 7B813469 2C2CE6E0 160347A3 B33953FF E1B41BBE 63B967EF
  02030100 01A36730 65300F06 03551D13 0101FF04 05300301 01FF3012 0603551D
  11040B30 09820748 515F4353 332E301F 0603551D 23041830 168014C9 52E60A9F
  D61C6333 B57971FA 63F81D9E 1E6ED830 1D060355 1D0E0416 0414C952 E60A9FD6
  1C6333B5 7971FA63 F81D9E1E 6ED8300D 06092A86 4886F70D 01010405 00038181
  005EEE8C 4FD31148 0FDC9155 BFAE63D4 0C28666B 1B9B3504 3E0353AF 124EF810
  1E13F6D9 5F080222 433F481F 82B2EC7D 564A5EFA 0693404A C1B2F33A 6421460A
  D05C704A DCA0D681 8A3D3D22 956F4BFC CBEE4EAD 9A51EB53 802FF1E0 81DFCBF6
  A8AF70AE 785BECB2 3D02114C 43138B7E CC472238 98501F4B 936FED21 C53F0293 D1
  quit
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
vlan 99
 name mgmt
!
vlan 100
 name staff
!
vlan 150
 name iwas
!
vlan 200
 name students
!
!
!
!
interface Loopback100
 ip address 172.16.25.3 255.255.255.0
 ip ospf 1 area 0
!
interface Port-channel1
 no switchport
 ip address 172.16.254.9 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel2
 no switchport
 ip address 172.16.254.6 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel3
 no switchport
 ip address 172.16.254.21 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface FastEthernet0/1
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/2
```

```
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/3
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/4
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/5
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/6
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/7
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/8
 no switchport
 no ip address
 channel-group 2 mode on
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/14
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/15
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/16
 no switchport
 no ip address
 channel-group 3 mode on
!
```

```
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
 log-adjacency-changes
!
ip classless
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
!
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.12.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES manual administratively down down
FastEthernet0/1  unassigned  YES manual up            up
FastEthernet0/2  unassigned  YES manual up            up
FastEthernet0/3  unassigned  YES manual up            up
FastEthernet0/4  unassigned  YES manual up            up
FastEthernet0/5  unassigned  YES manual up            up
FastEthernet0/6  unassigned  YES manual up            up
FastEthernet0/7  unassigned  YES manual up            up
FastEthernet0/8  unassigned  YES manual up            up
```

```
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES manual up           up
FastEthernet0/14 unassigned  YES manual up           up
FastEthernet0/15 unassigned  YES manual up           up
FastEthernet0/16 unassigned  YES manual up           up
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel1    172.16.254.9 YES manual up          up
Port-channel2    172.16.254.6 YES manual up          up
Port-channel3    172.16.254.21 YES manual up         up
Loopback100      172.16.25.3 YES manual up           up
```

B.12.3. Interface Status

```

HQ_CS3>show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected routed  a-full a-100 10/100BaseTX
Fa0/2                 connected routed  a-full a-100 10/100BaseTX
Fa0/3                 connected routed  a-full a-100 10/100BaseTX
Fa0/4                 connected routed  a-full a-100 10/100BaseTX
Fa0/5                 connected routed  a-full a-100 10/100BaseTX
Fa0/6                 connected routed  a-full a-100 10/100BaseTX
Fa0/7                 connected routed  a-full a-100 10/100BaseTX
Fa0/8                 connected routed  a-full a-100 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                connected routed  a-full a-100 10/100BaseTX
Fa0/14                connected routed  a-full a-100 10/100BaseTX
Fa0/15                connected routed  a-full a-100 10/100BaseTX
Fa0/16                connected routed  a-full a-100 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                notconnect 1       auto auto 10/100BaseTX
Fa0/24                notconnect 1       auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
Po1                   connected routed  a-full a-100
Po2                   connected routed  a-full a-100
Po3                   connected routed  a-full a-100
```

B.12.4. Interface Trunk

```
wurde nichts angezeigt
```

B.12.5. Neighbors

```
Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_CS4       Fas 0/4       140         R S I WS-C3560- Fas 0/4
HQ_CS4       Fas 0/2       170         R S I WS-C3560- Fas 0/2
HQ_CS4       Fas 0/1       170         R S I WS-C3560- Fas 0/1
HQ_DS3       Fas 0/16      160         R S I WS-C3560- Fas 0/4
HQ_DS3       Fas 0/15      160         R S I WS-C3560- Fas 0/3
HQ_DS3       Fas 0/14      160         R S I WS-C3560- Fas 0/2
HQ_DS3       Fas 0/13      153         R S I WS-C3560- Fas 0/1
HQ_CS4       Fas 0/3       153         R S I WS-C3560- Fas 0/3
HQ_CS1       Fas 0/5       140         R S I WS-C3560V Fas 0/5
HQ_CS1       Fas 0/8       129         R S I WS-C3560V Fas 0/8
HQ_CS1       Fas 0/7       129         R S I WS-C3560V Fas 0/7
HQ_CS1       Fas 0/6       153         R S I WS-C3560V Fas 0/6
```

B.12.6. IP Route

```
HQ_CS3>show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    200.200.200.0/28 is subnetted, 1 subnets
O     200.200.200.0 [110/4] via 172.16.254.5, 3d05h, Port-channel2
    172.16.0.0/16 is variably subnetted, 31 subnets, 4 masks
O     172.16.254.64/30 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.252.1/32 [110/4] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.254.0/30 [110/2] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.252.2/32 [110/68] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.255.0/30 [110/1003] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.252.3/32 [110/1003] via 172.16.254.5, 3d05h, Port-channel2
C     172.16.254.4/30 is directly connected, Port-channel2
O     172.16.255.4/30 [110/1003] via 172.16.254.5, 3d05h, Port-channel2
C     172.16.254.8/30 is directly connected, Port-channel1
O     172.16.255.8/30 [110/1003] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.254.12/30 [110/11] via 172.16.254.10, 3d05h, Port-channel1
O     172.16.254.16/30 [110/2] via 172.16.254.22, 3d05h, Port-channel3
                       [110/2] via 172.16.254.10, 3d05h, Port-channel1
C     172.16.254.20/30 is directly connected, Port-channel3
O     172.16.254.32/29 [110/5] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.254.40/29 [110/2] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.254.48/29 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.254.56/30 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.254.60/30 [110/4] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.25.5/32 [110/4] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.25.4/32 [110/2] via 172.16.254.10, 3d05h, Port-channel1
```

```
O     172.16.25.7/32 [110/2] via 172.16.254.22, 3d05h, Port-channel3
O     172.16.25.6/32 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.25.1/32 [110/2] via 172.16.254.5, 3d05h, Port-channel2
C     172.16.25.0/24 is directly connected, Loopback100
O     172.16.25.2/32 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.17.0/24 [110/4] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.18.0/24 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.19.0/24 [110/3] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.100.0/24 [110/69] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.101.0/24 [110/70] via 172.16.254.5, 3d05h, Port-channel2
O     172.16.102.0/24 [110/1004] via 172.16.254.5, 3d05h, Port-channel2
```

B.12.7. Spanning Tree

```
HQ_CS3# show spanning-tree

No spanning tree instance exists.
```

B.12.8. VLAN

```
HQ_CS3>show vlan

VLAN Name                             Status  Ports
---- -------------------------------- --------- -------------------------------
1   default                          active  Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                             Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                             Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                             Gi0/1, Gi0/2
99  mgmt                             active
100 staff                            active
150 iwas                             active
200 students                         active
1002 fddi-default                    act/unsup
1003 token-ring-default              act/unsup
1004 fddinet-default                 act/unsup
1005 trnet-default                   act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
100 enet 100100  1500 -    -     -      -   -      0    0
150 enet 100150  1500 -    -     -      -   -      0    0
200 enet 100200  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.13. HQ CS4

B.13.1. Running Configuration

```

!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_CS4
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$N5nF$HEL..CSYKgf7JWvzQ3nmT.
!
username ins password 0 ins@lab
!
!
no aaa new-model
system mtu routing 1500
ip routing
!
!
!
!
crypto pki trustpoint TP-self-signed-802424960
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-802424960
 revocation-check none
 rsakeypair TP-self-signed-802424960
!
crypto pki trustpoint TP-self-signed-802432128
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-802432128
 revocation-check none
 rsakeypair TP-self-signed-802432128
!
!
crypto pki certificate chain TP-self-signed-802424960
 certificate self-signed 01
  3082023D 308201A6 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
  30312E30 2C060355 04031325 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 38303234 32343936 30301E17 0D393330 33303130 34333535
  305A170D 32303031 30313030 30303030 5A303031 2E302C06 03550403 1325494F
  532D5365 6C662D53 69676E65 642D4365 72746966 69636174 652D3830 32343234
  39363030 819F300D 06092A86 4886F70D 01010105 0003818D 00308189 02818100
  A9193D67 CE1F2E8A 7AB17D29 9971816E 22E047F8 2955A0D1 AD5C07B1 0F1E57B8
  297A57E3 C9FB80F0 F4F23D41 D5BC46A8 89AF0D40 1635CEFC F5E11F87 299918FF
  0F96B019 93ACF31B 25B150C5 5EAB53F0 896D3798 79654043 2C7D0198 038E1461
  CF40C791 4672B925 F378404B 82044B68 2736E846 10BACD2B 32B6DA93 4C87F97D
  02030100 01A36730 65300F06 03551D13 0101FF04 05300301 01FF3012 0603551D
  11040B30 09820748 515F4353 342E301F 0603551D 23041830 168014E7 AA5F970C
  25B6B81A 35D4F86C 77D83F5B 9C913330 1D060355 1D0E0416 0414E7AA 5F970C25
  B6B81A35 D4F86C77 D83F5B9C 9133300D 06092A86 4886F70D 01010405 00038181
  0077A6C0 DC369CBE 5624731D 5D458961 E5FAC002 CCF40AD5 620A07F6 6CF9AD29
  0EE5B0B9 4AEA8804 33220FD7 31159C38 2898D38B E236DDD1 9ADACEFC 4FCD32D9
  6A3B8351 8A5BBFA3 BB1DFA0C 63E93422 94290CE6 D8015255 7D7BF9FA AC8D5D4E
```

```
 67D63E98 B31EA49E 2F79E42D 77F10414 A245B30D 49D95466 9873C600 EED03BBD 5B
 quit
crypto pki certificate chain TP-self-signed-802432128
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
interface Loopback100
 ip address 172.16.25.4 255.255.255.0
 ip ospf 1 area 0
!
interface Port-channel1
 no switchport
 ip address 172.16.254.10 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel2
 no switchport
 bandwidth 10000
 ip address 172.16.254.14 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
 speed 10
!
interface Port-channel3
!
interface Port-channel4
 no switchport
 ip address 172.16.254.17 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface FastEthernet0/1
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/2
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/3
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/4
 no switchport
 no ip address
 channel-group 1 mode on
!
interface FastEthernet0/5
 no switchport
```

```
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/6
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/7
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/8
 no switchport
 no ip address
 speed 10
 channel-group 2 mode on
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/14
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/15
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/16
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
```

```
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
 log-adjacency-changes
!
ip classless
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
!
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.13.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES manual administratively down down
FastEthernet0/1  unassigned  YES manual up            up
FastEthernet0/2  unassigned  YES manual up            up
FastEthernet0/3  unassigned  YES manual up            up
FastEthernet0/4  unassigned  YES manual up            up
FastEthernet0/5  unassigned  YES manual up            up
FastEthernet0/6  unassigned  YES manual up            up
FastEthernet0/7  unassigned  YES manual up            up
FastEthernet0/8  unassigned  YES manual up            up
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES manual up            up
FastEthernet0/14 unassigned  YES manual up            up
FastEthernet0/15 unassigned  YES manual up            up
FastEthernet0/16 unassigned  YES manual up            up
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
```

```
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel1    172.16.254.10 YES manual up         up
Port-channel2    172.16.254.14 YES manual up         up
Port-channel3    unassigned  YES unset down          down
Port-channel4    172.16.254.17 YES manual up         up
Loopback100      172.16.25.4 YES manual up           up
```

B.13.3. Interface Status

```
HQ_CS4>show int status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected routed  a-full a-100 10/100BaseTX
Fa0/2                 connected routed  a-full a-100 10/100BaseTX
Fa0/3                 connected routed  a-full a-100 10/100BaseTX
Fa0/4                 connected routed  a-full a-100 10/100BaseTX
Fa0/5                 connected routed  a-full  10 10/100BaseTX
Fa0/6                 connected routed  a-full  10 10/100BaseTX
Fa0/7                 connected routed  a-full  10 10/100BaseTX
Fa0/8                 connected routed  a-full  10 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                connected routed  a-full a-100 10/100BaseTX
Fa0/14                connected routed  a-full a-100 10/100BaseTX
Fa0/15                connected routed  a-full a-100 10/100BaseTX
Fa0/16                connected routed  a-full a-100 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                notconnect 1       auto auto 10/100BaseTX
Fa0/24                notconnect 1       auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
Po1                   connected routed  a-full a-100
Po2                   connected routed  a-full  10
Po3                   notconnect unassigned auto auto
Po4                   connected routed  a-full a-100
```

B.13.4. Interface Trunk

```
wurde nichts angezeigt
```

B.13.5. Neighbors

```
Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/16      156         R S I WS-C3560- Fas 0/8
HQ_DS3       Fas 0/15      156         R S I WS-C3560- Fas 0/7
HQ_DS3       Fas 0/14      156         R S I WS-C3560- Fas 0/6
HQ_DS3       Fas 0/13      156         R S I WS-C3560- Fas 0/5
HQ_CS2       Fas 0/8       140         R S I WS-C3560V Fas 0/8
HQ_CS2       Fas 0/7       140         R S I WS-C3560V Fas 0/7
HQ_CS2       Fas 0/6       140         R S I WS-C3560V Fas 0/6
HQ_CS2       Fas 0/5       140         R S I WS-C3560V Fas 0/5
HQ_CS3       Fas 0/3       148         R S I WS-C3560- Fas 0/3
HQ_CS3       Fas 0/4       148         R S I WS-C3560- Fas 0/4
HQ_CS3       Fas 0/2       148         R S I WS-C3560- Fas 0/2
HQ_CS3       Fas 0/1       148         R S I WS-C3560- Fas 0/1
```

B.13.6. IP Route

```
HQ_CS4>show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    200.200.200.0/28 is subnetted, 1 subnets
O     200.200.200.0 [110/5] via 172.16.254.9, 3d06h, Port-channel1
    172.16.0.0/16 is variably subnetted, 31 subnets, 4 masks
O     172.16.254.64/30 [110/4] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.252.1/32 [110/5] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.0/30 [110/3] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.252.2/32 [110/69] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.255.0/30 [110/1004] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.252.3/32 [110/1004] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.4/30 [110/2] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.255.4/30 [110/1004] via 172.16.254.9, 3d06h, Port-channel1
C     172.16.254.8/30 is directly connected, Port-channel1
O     172.16.255.8/30 [110/1004] via 172.16.254.9, 3d06h, Port-channel1
C     172.16.254.12/30 is directly connected, Port-channel2
C     172.16.254.16/30 is directly connected, Port-channel4
O     172.16.254.20/30 [110/2] via 172.16.254.18, 3d06h, Port-channel4
                       [110/2] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.32/29 [110/6] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.40/29 [110/3] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.48/29 [110/4] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.56/30 [110/4] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.254.60/30 [110/5] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.25.5/32 [110/5] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.25.7/32 [110/2] via 172.16.254.18, 3d06h, Port-channel4
O     172.16.25.6/32 [110/4] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.25.1/32 [110/3] via 172.16.254.9, 3d06h, Port-channel1
C     172.16.25.0/24 is directly connected, Loopback100
O     172.16.25.3/32 [110/2] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.25.2/32 [110/4] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.17.0/24 [110/5] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.18.0/24 [110/4] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.19.0/24 [110/4] via 172.16.254.9, 3d06h, Port-channel1
```

```
O     172.16.100.0/24 [110/70] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.101.0/24 [110/71] via 172.16.254.9, 3d06h, Port-channel1
O     172.16.102.0/24 [110/1005] via 172.16.254.9, 3d06h, Port-channel1
```

B.13.7. Spanning Tree

```
HQ_CS4# show spanning-tree

No spanning tree instance exists.
```

B.13.8. VLAN

```
HQ_CS4>show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                     Gi0/1, Gi0/2
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.14. HQ DS1

B.14.1. Running Configuration

```

!
! Last configuration change at 07:40:47 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_DS1
```

```
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$ajf9$7aDklFhjLgZzrCO95VIDm0
!
username cisco password 0 cisco
username ins password 0 ins@lab
aaa new-model
!
!
!
!
!
!
!
!
aaa session-id common
system mtu routing 1500
ip routing
no ip domain-lookup
ip dhcp excluded-address 172.16.16.1
ip dhcp excluded-address 172.16.16.10 172.16.16.12
ip dhcp excluded-address 172.16.17.1
ip dhcp excluded-address 172.16.17.10 172.16.17.12
ip dhcp excluded-address 172.16.18.250 172.16.18.254
ip dhcp excluded-address 172.16.18.10 172.16.18.12
ip dhcp excluded-address 172.16.19.250 172.16.19.254
ip dhcp excluded-address 172.16.19.10 172.16.19.12
!
ip dhcp pool IT
 network 172.16.16.0 255.255.255.0
 default-router 172.16.16.1
!
ip dhcp pool SERVER
 network 172.16.17.0 255.255.255.0
 default-router 172.16.17.1
!
ip dhcp pool MARKETING
 network 172.16.18.0 255.255.255.0
 default-router 172.16.18.254
!
ip dhcp pool SALES
 network 172.16.19.0 255.255.255.0
 default-router 172.16.19.254
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
       quit
!
!
!
```

```
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
!
!
!
!
!
!
!
interface Loopback100
 ip address 172.16.25.5 255.255.255.0
 ip ospf 1 area 0
!
interface Port-channel1
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel2
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel3
 no switchport
 ip address 172.16.254.38 255.255.255.248
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel4
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel5
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel6
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/1
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/2
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/3
 no switchport
```

```
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/4
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/5
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 5 mode on
!
interface FastEthernet0/6
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 5 mode on
!
interface FastEthernet0/7
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/8
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/9
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/10
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/11
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode on
!
interface FastEthernet0/12
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode on
!
interface FastEthernet0/13
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/14
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/15
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 6 mode on
!
interface FastEthernet0/16
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 6 mode on
!
```

```
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/22
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/23
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/24
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan21
 ip address 172.16.16.1 255.255.255.0
 standby 40 preempt
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Vlan30
 ip address 172.16.17.1 255.255.255.0
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Vlan40
 ip address 172.16.18.252 255.255.255.0
 standby 40 ip 172.16.18.254
 standby 40 priority 150
 standby 40 preempt
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Vlan41
 ip address 172.16.19.252 255.255.255.0
 standby 41 ip 172.16.19.254
 standby 41 preempt
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
```

```
interface Vlan100
 ip address 172.16.20.1 255.255.255.0
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
router ospf 1
!
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
snmp-server community public RO
snmp-server community private RW
!
!
!
!
line con 0
line vty 0 4
 password cisco
line vty 5 15
 password cisco
!
end
```

B.14.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan21           172.16.16.1 YES manual down          down
Vlan30           172.16.17.1 YES manual up            up
Vlan40           172.16.18.252 YES manual up          up
Vlan41           172.16.19.252 YES manual up          up
Vlan100          172.16.20.1 YES manual down          down
FastEthernet0/1  unassigned  YES manual up            up
FastEthernet0/2  unassigned  YES manual up            up
FastEthernet0/3  unassigned  YES manual up            up
FastEthernet0/4  unassigned  YES manual up            up
FastEthernet0/5  unassigned  YES unset up            up
FastEthernet0/6  unassigned  YES unset up            up
FastEthernet0/7  unassigned  YES unset up            up
FastEthernet0/8  unassigned  YES unset up            up
FastEthernet0/9  unassigned  YES unset up            up
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset up            up
FastEthernet0/12 unassigned  YES unset up            up
FastEthernet0/13 unassigned  YES unset up            up
FastEthernet0/14 unassigned  YES unset up            up
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
```

```
GigabitEthernet0/2 unassigned YES unset down          down
Port-channel1     unassigned  YES unset down          down
Port-channel2     unassigned  YES unset down          down
Port-channel3     172.16.254.38 YES manual up        up
Port-channel4     unassigned  YES unset up            up
Port-channel5     unassigned  YES unset up            up
Port-channel6     unassigned  YES unset down          down
Loopback100       172.16.25.5 YES manual up           up
```

B.14.3. Interface Status

```
HQ_DS1>show interface status

Port    Name           Status    Vlan    Duplex Speed Type
Fa0/1                  connected routed  a-full a-10 10/100BaseTX
Fa0/2                  connected routed  a-full a-10 10/100BaseTX
Fa0/3                  connected routed  a-full a-10 10/100BaseTX
Fa0/4                  connected routed  a-full a-10 10/100BaseTX
Fa0/5                  connected trunk   a-full a-100 10/100BaseTX
Fa0/6                  connected trunk   a-full a-100 10/100BaseTX
Fa0/7                  connected trunk   a-full a-100 10/100BaseTX
Fa0/8                  connected trunk   a-full a-100 10/100BaseTX
Fa0/9                  connected trunk   a-full a-100 10/100BaseTX
Fa0/10                 notconnect 1       auto auto 10/100BaseTX
Fa0/11                 connected trunk   a-full a-100 10/100BaseTX
Fa0/12                 connected trunk   a-full a-100 10/100BaseTX
Fa0/13                 connected trunk   a-full a-100 10/100BaseTX
Fa0/14                 connected trunk   a-full a-100 10/100BaseTX
Fa0/15                 notconnect 1       auto auto 10/100BaseTX
Fa0/16                 notconnect 1       auto auto 10/100BaseTX
Fa0/17                 notconnect 1       auto auto 10/100BaseTX
Fa0/18                 notconnect 1       auto auto 10/100BaseTX
Fa0/19                 notconnect 1       auto auto 10/100BaseTX
Fa0/20                 notconnect 1       auto auto 10/100BaseTX
Fa0/21                 notconnect 1       auto auto 10/100BaseTX

Port    Name           Status    Vlan    Duplex Speed Type
Fa0/22                 notconnect 1       auto auto 10/100BaseTX
Fa0/23                 notconnect 1       auto auto 10/100BaseTX
Fa0/24                 notconnect 1       auto auto 10/100BaseTX
Gi0/1                  notconnect 1       auto auto Not Present
Gi0/2                  notconnect 1       auto auto Not Present
Po1                    notconnect unassigned auto auto
Po2                    notconnect unassigned auto auto
Po3                    connected routed  a-full a-10
Po4                    connected trunk   a-full a-100
Po5                    connected trunk   a-full a-100
Po6                    notconnect unassigned auto auto
```

B.14.4. Interface Trunk

```
HQ_DS1> show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/7    on           802.1q     trunking   1
Fa0/8    on           802.1q     trunking   1
Fa0/9    on           802.1q     trunking   1
Fa0/13   on           802.1q     trunking   1
```

```
Fa0/14   on          802.1q     trunking   1
Po4      on          802.1q     trunking   1
Po5      on          802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/7    1-4094
Fa0/8    1-4094
Fa0/9    1-4094
Fa0/13   1-4094
Fa0/14   1-4094
Po4      1-4094
Po5      1-4094

Port     Vlans allowed and active in management domain
Fa0/7    1,10,20,30,40-41,99
Fa0/8    1,10,20,30,40-41,99
Fa0/9    1,10,20,30,40-41,99

Port     Vlans allowed and active in management domain
Fa0/13   1,10,20,30,40-41,99
Fa0/14   1,10,20,30,40-41,99
Po4      1,10,20,30,40-41,99
Po5      1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/7    1,10,20,30,40-41,99
Fa0/8    1,10,20,30,40-41,99
Fa0/9    1,10,20,30,40-41,99
Fa0/13   1,10,20,30,40-41,99
Fa0/14   1,10,20,30,40-41,99
Po4      1,10,20,30,40-41,99
Po5      1,10,20,30,40-41,99
```

B.14.5. Neighbors

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_AS4       Fas 0/5       163          S I  WS-C2960- Fas 0/3
HQ_AS4       Fas 0/6       126          S I  WS-C2960- Fas 0/4
HQ_AS5       Fas 0/8       126          S I  WS-C2960- Fas 0/4
HQ_AS5       Fas 0/7       126          S I  WS-C2960- Fas 0/3
HQ_AS1       Fas 0/9       126          S I  WS-C3560- Fas 0/1
HQ_AS2       Fas 0/12      127          S I  WS-C3560- Fas 0/2
HQ_AS2       Fas 0/11      127          S I  WS-C3560- Fas 0/1
HQ_CS1       Fas 0/4       162         R S I WS-C3560V Fas 0/16
HQ_CS1       Fas 0/3       162         R S I WS-C3560V Fas 0/15
HQ_CS1       Fas 0/2       162         R S I WS-C3560V Fas 0/14
HQ_CS1       Fas 0/1       162         R S I WS-C3560V Fas 0/13
HQ_AS3       Fas 0/14      126          S I  WS-C2960- Fas 0/2
HQ_AS3       Fas 0/13      126          S I  WS-C2960- Fas 0/1
HQ_DS1#
```

B.14.6. IP Route

```
HQ_DS1> show ip route
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      172.16.0.0/16 is variably subnetted, 36 subnets, 4 masks
C       172.16.17.0/24 is directly connected, Vlan30
L       172.16.17.1/32 is directly connected, Vlan30
C       172.16.18.0/24 is directly connected, Vlan40
L       172.16.18.252/32 is directly connected, Vlan40
C       172.16.19.0/24 is directly connected, Vlan41
L       172.16.19.252/32 is directly connected, Vlan41
C       172.16.25.0/24 is directly connected, Loopback100
O       172.16.25.1/32 [110/3] via 172.16.254.33, 3d06h, Port-channel3
                       [110/3] via 172.16.19.253, 3d06h, Vlan41
                       [110/3] via 172.16.18.253, 3d06h, Vlan40
O       172.16.25.2/32 [110/3] via 172.16.19.253, 3d06h, Vlan41
                       [110/3] via 172.16.18.253, 3d06h, Vlan40
O       172.16.25.3/32 [110/4] via 172.16.254.33, 3d06h, Port-channel3
                       [110/4] via 172.16.19.253, 3d06h, Vlan41
                       [110/4] via 172.16.18.253, 3d06h, Vlan40
O       172.16.25.4/32 [110/5] via 172.16.254.33, 3d06h, Port-channel3
                       [110/5] via 172.16.19.253, 3d06h, Vlan41
                       [110/5] via 172.16.18.253, 3d06h, Vlan40
L       172.16.25.5/32 is directly connected, Loopback100
O       172.16.25.6/32 [110/2] via 172.16.19.253, 3d06h, Vlan41
                       [110/2] via 172.16.18.253, 3d06h, Vlan40
O       172.16.25.7/32 [110/5] via 172.16.254.33, 3d06h, Port-channel3
                       [110/5] via 172.16.19.253, 3d06h, Vlan41
                       [110/5] via 172.16.18.253, 3d06h, Vlan40
O       172.16.100.0/24 [110/69] via 172.16.19.253, 3d06h, Vlan41
                        [110/69] via 172.16.18.253, 3d06h, Vlan40
O       172.16.101.0/24 [110/70] via 172.16.19.253, 3d06h, Vlan41
                        [110/70] via 172.16.18.253, 3d06h, Vlan40
O       172.16.102.0/24 [110/1004] via 172.16.19.253, 3d06h, Vlan41
                        [110/1004] via 172.16.18.253, 3d06h, Vlan40
O       172.16.252.1/32 [110/4] via 172.16.19.253, 3d06h, Vlan41
                        [110/4] via 172.16.18.253, 3d06h, Vlan40
O       172.16.252.2/32 [110/68] via 172.16.19.253, 3d06h, Vlan41
                        [110/68] via 172.16.18.253, 3d06h, Vlan40
O       172.16.252.3/32 [110/1003] via 172.16.19.253, 3d06h, Vlan41
                        [110/1003] via 172.16.18.253, 3d06h, Vlan40
O       172.16.254.0/30 [110/3] via 172.16.254.33, 3d06h, Port-channel3
                        [110/3] via 172.16.19.253, 3d06h, Vlan41
                        [110/3] via 172.16.18.253, 3d06h, Vlan40
O       172.16.254.4/30 [110/3] via 172.16.254.33, 3d06h, Port-channel3
                        [110/3] via 172.16.19.253, 3d06h, Vlan41
                        [110/3] via 172.16.18.253, 3d06h, Vlan40
O       172.16.254.8/30 [110/4] via 172.16.254.33, 3d06h, Port-channel3
                        [110/4] via 172.16.19.253, 3d06h, Vlan41
                        [110/4] via 172.16.18.253, 3d06h, Vlan40
O       172.16.254.12/30 [110/12] via 172.16.19.253, 3d06h, Vlan41
                         [110/12] via 172.16.18.253, 3d06h, Vlan40
O       172.16.254.16/30 [110/5] via 172.16.254.33, 3d06h, Port-channel3
                         [110/5] via 172.16.19.253, 3d06h, Vlan41
                         [110/5] via 172.16.18.253, 3d06h, Vlan40
```

```
O      172.16.254.20/30 [110/4] via 172.16.254.33, 3d06h, Port-channel3
                        [110/4] via 172.16.19.253, 3d06h, Vlan41
                        [110/4] via 172.16.18.253, 3d06h, Vlan40
C      172.16.254.32/29 is directly connected, Port-channel3
L      172.16.254.38/32 is directly connected, Port-channel3
O      172.16.254.40/29 [110/2] via 172.16.19.253, 3d06h, Vlan41
                        [110/2] via 172.16.18.253, 3d06h, Vlan40
O      172.16.254.48/29 [110/2] via 172.16.19.253, 3d06h, Vlan41
                        [110/2] via 172.16.18.253, 3d06h, Vlan40
O      172.16.254.56/30 [110/3] via 172.16.19.253, 3d06h, Vlan41
                        [110/3] via 172.16.18.253, 3d06h, Vlan40
O      172.16.254.60/30 [110/4] via 172.16.19.253, 3d06h, Vlan41
                        [110/4] via 172.16.18.253, 3d06h, Vlan40
O      172.16.254.64/30 [110/3] via 172.16.19.253, 3d06h, Vlan41
                        [110/3] via 172.16.18.253, 3d06h, Vlan40
O      172.16.255.0/30 [110/1003] via 172.16.19.253, 3d06h, Vlan41
                       [110/1003] via 172.16.18.253, 3d06h, Vlan40
O      172.16.255.4/30 [110/1003] via 172.16.19.253, 3d06h, Vlan41
                       [110/1003] via 172.16.18.253, 3d06h, Vlan40
O      172.16.255.8/30 [110/1003] via 172.16.19.253, 3d06h, Vlan41
                       [110/1003] via 172.16.18.253, 3d06h, Vlan40
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/4] via 172.16.19.253, 3d06h, Vlan41
                     [110/4] via 172.16.18.253, 3d06h, Vlan40
```

B.14.7. Spanning Tree

```
HQ_DS1>show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          Cost     19
          Port     11 (FastEthernet0/9)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  24b6.572a.da00
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7          Desg FWD 19   128.9  P2p
Fa0/8          Desg FWD 19   128.10 P2p
Fa0/9          Root FWD 19   128.11 P2p
Fa0/13         Desg FWD 19   128.15 P2p
Fa0/14         Desg FWD 19   128.16 P2p
Po4            Desg FWD 12   128.88 P2p
Po5            Desg FWD 12   128.96 P2p


VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  001a.2fa8.ea80
          Cost     19
          Port     11 (FastEthernet0/9)
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
         Address  24b6.572a.da00
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7          Desg FWD 19   128.9  P2p
Fa0/8          Desg FWD 19   128.10 P2p
Fa0/9          Root FWD 19   128.11 P2p
Fa0/13         Desg FWD 19   128.15 P2p
Fa0/14         Desg FWD 19   128.16 P2p
Po4            Desg FWD 12   128.88 P2p
Po5            Desg FWD 12   128.96 P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
         Address  001a.2fa8.ea80
         Cost     19
         Port     11 (FastEthernet0/9)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
         Address  24b6.572a.da00
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7          Desg FWD 19   128.9  P2p
Fa0/8          Desg FWD 19   128.10 P2p
Fa0/9          Root FWD 19   128.11 P2p
Fa0/13         Desg FWD 19   128.15 P2p
Fa0/14         Desg FWD 19   128.16 P2p
Po4            Desg FWD 12   128.88 P2p
Po5            Desg FWD 12   128.96 P2p



VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
         Address  001a.2fa8.ea80
         Cost     19
         Port     11 (FastEthernet0/9)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
         Address  24b6.572a.da00
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7          Desg FWD 19   128.9  P2p
Fa0/8          Desg FWD 19   128.10 P2p
Fa0/9          Root FWD 19   128.11 P2p
```

```
Fa0/13          Desg FWD 19   128.15 P2p
Fa0/14          Desg FWD 19   128.16 P2p
Po4             Desg FWD 12   128.88 P2p
Po5             Desg FWD 12   128.96 P2p



VLAN0040
  Spanning tree enabled protocol ieee
  Root ID Priority 32808
          Address  001a.2fa8.ea80
          Cost     19
          Port     11 (FastEthernet0/9)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
          Address  24b6.572a.da00
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7           Desg FWD 19   128.9  P2p
Fa0/8           Desg FWD 19   128.10 P2p
Fa0/9           Root FWD 19   128.11 P2p
Fa0/13          Desg FWD 19   128.15 P2p
Fa0/14          Desg FWD 19   128.16 P2p
Po4             Desg FWD 12   128.88 P2p
Po5             Desg FWD 12   128.96 P2p



VLAN0041
  Spanning tree enabled protocol ieee
  Root ID Priority 32809
          Address  001a.2fa8.ea80
          Cost     19
          Port     11 (FastEthernet0/9)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
          Address  24b6.572a.da00
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7           Desg FWD 19   128.9  P2p
Fa0/8           Desg FWD 19   128.10 P2p
Fa0/9           Root FWD 19   128.11 P2p
Fa0/13          Desg FWD 19   128.15 P2p
Fa0/14          Desg FWD 19   128.16 P2p
Po4             Desg FWD 12   128.88 P2p
Po5             Desg FWD 12   128.96 P2p



VLAN0099
  Spanning tree enabled protocol ieee
  Root ID Priority 32867
          Address  001a.2fa8.ea80
          Cost     19
```

```
         Port     11 (FastEthernet0/9)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

 Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
         Address  24b6.572a.da00
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/7          Desg FWD 19    128.9  P2p
Fa0/8          Desg FWD 19    128.10 P2p
Fa0/9          Root FWD 19    128.11 P2p
Fa0/13         Desg FWD 19    128.15 P2p
Fa0/14         Desg FWD 19    128.16 P2p
Po4            Desg FWD 12    128.88 P2p
Po5            Desg FWD 12    128.96 P2p
```

B.14.8. VLAN

```
HQ_DS1>show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/10, Fa0/15, Fa0/16, Fa0/17
                                     Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                     Fa0/22, Fa0/23, Fa0/24, Gi0/1
                                     Gi0/2
10  VLAN0010                 active
20  VLAN0020                 active
30  VLAN0030                 active
40  VLAN0040                 active
41  VLAN0041                 active
99  Management               active
1002 fddi-default            act/unsup
1003 trcrf-default           act/unsup
1004 fddinet-default         act/unsup
1005 trbrf-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0
20  enet 100020  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
30  enet 100030  1500 -    -     -      -   -      0    0
40  enet 100040  1500 -    -     -      -   -      0    0
41  enet 100041  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -    -     -      ieee -     0    0
1005 trbrf 101005 4472 -    -     15     ibm -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off
```

```

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ----------------------------------------
```

B.15. HQ DS2

B.15.1. Running Configuration

```

!
! Last configuration change at 08:47:52 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_DS2
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$Gfma$G0lb8g0YFbxMJ8FjtkmpF/
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1504
ip routing
no ip domain-lookup
ip dhcp excluded-address 172.16.18.250 172.16.18.254
ip dhcp excluded-address 172.16.18.10 172.16.18.12
ip dhcp excluded-address 172.16.19.250 172.16.19.254
ip dhcp excluded-address 172.16.19.10 172.16.19.12
!
ip dhcp pool MARKETING
 network 172.16.18.0 255.255.255.0
 default-router 172.16.18.254
!
ip dhcp pool SALES
 network 172.16.19.0 255.255.255.0
 default-router 172.16.19.254
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
```

```
49       quit
50  !
51  !
52  !
53  !
54  !
55  spanning-tree mode pvst
56  spanning-tree extend system-id
57  !
58  vlan internal allocation policy ascending
59  !
60  !
61  !
62  !
63  !
64  !
65  !
66  !
67  !
68  !
69  !
70  !
71  !
72  !
73  interface Loopback100
74   ip address 172.16.25.6 255.255.255.0
75   ip ospf 1 area 0
76  !
77  interface Port-channel1
78   switchport trunk encapsulation dot1q
79   switchport mode trunk
80  !
81  interface Port-channel3
82   no switchport
83   ip address 172.16.254.49 255.255.255.248
84   ip ospf mtu-ignore
85   ip ospf 1 area 0
86  !
87  interface Port-channel4
88   no switchport
89   ip address 172.16.254.42 255.255.255.248
90   ip ospf mtu-ignore
91   ip ospf 1 area 0
92  !
93  interface FastEthernet0/1
94   no switchport
95   no ip address
96   channel-group 3 mode on
97  !
98  interface FastEthernet0/2
99   no switchport
100  no ip address
101  channel-group 3 mode on
102 !
103 interface FastEthernet0/3
104  no switchport
105  no ip address
106  channel-group 3 mode on
107 !
108 interface FastEthernet0/4
109  no switchport
110  no ip address
```

```
 channel-group 3 mode on
!
interface FastEthernet0/5
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/6
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/7
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/8
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/22
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/23
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/24
```

```
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan21
 no ip address
 ip ospf mtu-ignore
!
interface Vlan30
 no ip address
 ip ospf mtu-ignore
!
interface Vlan40
 ip address 172.16.18.253 255.255.255.0
 standby 40 ip 172.16.18.254
 standby 40 preempt
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Vlan41
 ip address 172.16.19.253 255.255.255.0
 standby 41 ip 172.16.19.254
 standby 41 priority 150
 standby 41 preempt
 ip ospf 1 area 0
!
interface Vlan100
 ip address 172.16.20.2 255.255.255.0
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
router ospf 1
!
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.15.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan21           unassigned  YES unset down           down
Vlan30           unassigned  YES unset up             up
Vlan40           172.16.18.253 YES manual up          up
Vlan41           172.16.19.253 YES manual up          up
Vlan100          172.16.20.2 YES manual down          down
FastEthernet0/1  unassigned  YES manual up            up
FastEthernet0/2  unassigned  YES manual up            up
FastEthernet0/3  unassigned  YES manual up            up
FastEthernet0/4  unassigned  YES manual up            up
FastEthernet0/5  unassigned  YES manual up            up
FastEthernet0/6  unassigned  YES manual up            up
FastEthernet0/7  unassigned  YES manual up            up
FastEthernet0/8  unassigned  YES manual up            up
FastEthernet0/9  unassigned  YES unset up             up
FastEthernet0/10 unassigned  YES unset up             up
FastEthernet0/11 unassigned  YES unset up             up
FastEthernet0/12 unassigned  YES unset up             up
FastEthernet0/13 unassigned  YES unset up             up
FastEthernet0/14 unassigned  YES unset up             up
FastEthernet0/15 unassigned  YES unset down           down
FastEthernet0/16 unassigned  YES unset down           down
FastEthernet0/17 unassigned  YES unset down           down
FastEthernet0/18 unassigned  YES unset down           down
FastEthernet0/19 unassigned  YES unset down           down
FastEthernet0/20 unassigned  YES unset down           down
FastEthernet0/21 unassigned  YES unset down           down
FastEthernet0/22 unassigned  YES unset down           down
FastEthernet0/23 unassigned  YES unset down           down
FastEthernet0/24 unassigned  YES unset down           down
GigabitEthernet0/1 unassigned YES unset down          down
GigabitEthernet0/2 unassigned YES unset down          down
Port-channel1    unassigned  YES unset down           down
Port-channel3    172.16.254.49 YES manual up          up
Port-channel4    172.16.254.42 YES manual up          up
Loopback100      172.16.25.6 YES manual up            up
```

B.15.3. Interface Status

```
HQ_DS2>show interface status

Port    Name               Status    Vlan     Duplex Speed Type
Fa0/1                      connected routed   a-full a-100 10/100BaseTX
Fa0/2                      connected routed   a-full a-100 10/100BaseTX
Fa0/3                      connected routed   a-full a-100 10/100BaseTX
Fa0/4                      connected routed   a-full a-100 10/100BaseTX
Fa0/5                      connected routed   a-half a-100 10/100BaseTX
Fa0/6                      connected routed   a-half a-100 10/100BaseTX
Fa0/7                      connected routed   a-half a-100 10/100BaseTX
Fa0/8                      connected routed   a-half a-100 10/100BaseTX
Fa0/9                      connected trunk    a-full a-100 10/100BaseTX
Fa0/10                     connected trunk    a-full a-100 10/100BaseTX
Fa0/11                     connected trunk    a-full a-100 10/100BaseTX
Fa0/12                     connected trunk    a-full a-100 10/100BaseTX
Fa0/13                     connected trunk    a-full a-100 10/100BaseTX
Fa0/14                     connected trunk    a-full a-100 10/100BaseTX
```

```
Fa0/15               notconnect 1       auto auto 10/100BaseTX
Fa0/16               notconnect 1       auto auto 10/100BaseTX
Fa0/17               notconnect 1       auto auto 10/100BaseTX
Fa0/18               notconnect 1       auto auto 10/100BaseTX
Fa0/19               notconnect 1       auto auto 10/100BaseTX
Fa0/20               notconnect 1       auto auto 10/100BaseTX
Fa0/21               err-disabled 1     auto auto 10/100BaseTX

Port    Name         Status    Vlan     Duplex Speed Type
Fa0/22               err-disabled 1     auto auto 10/100BaseTX
Fa0/23               err-disabled 1     auto auto 10/100BaseTX
Fa0/24               err-disabled 1     auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
Po1                  err-disabled 1     auto auto
Po3                  connected routed   a-full a-100
Po4                  connected routed   a-half a-100
```

B.15.4. Interface Trunk

```
HQ_DS2>show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/9    auto         n-802.1q   trunking   1
Fa0/10   auto         n-802.1q   trunking   1
Fa0/11   auto         n-802.1q   trunking   1
Fa0/12   auto         n-802.1q   trunking   1
Fa0/13   auto         n-802.1q   trunking   1
Fa0/14   auto         n-802.1q   trunking   1

Port     Vlans allowed on trunk
Fa0/9    1-4094
Fa0/10   1-4094
Fa0/11   1-4094
Fa0/12   1-4094
Fa0/13   1-4094
Fa0/14   1-4094

Port     Vlans allowed and active in management domain
Fa0/9    1,10,20,30,40-41,99
Fa0/10   1,10,20,30,40-41,99
Fa0/11   1,10,20,30,40-41,99
Fa0/12   1,10,20,30,40-41,99
Fa0/13   1,10,20,30,40-41,99

Port     Vlans allowed and active in management domain
Fa0/14   1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/9    1,10,20,30,40-41,99
Fa0/10   1,10,20,30,40-41,99
Fa0/11   none
Fa0/12   none
Fa0/13   1,10,20,30,40-41,99
Fa0/14   none
```

B.15.5. Neighbors

```
Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_AS4       Fas 0/13      166          S I  WS-C2960- Fas 0/1
HQ_AS4       Fas 0/14      166          S I  WS-C2960- Fas 0/2
HQ_AS5       Fas 0/11      158          S I  WS-C2960- Fas 0/1
HQ_AS5       Fas 0/12      158          S I  WS-C2960- Fas 0/2
HQ_AS6       Fas 0/9       133          S I  WS-C2960- Fas 0/1
HQ_AS6       Fas 0/10      133          S I  WS-C2960- Fas 0/2
HQ_CS2       Fas 0/1       123         R S I WS-C3560V Fas 0/13
HQ_CS2       Fas 0/4       123         R S I WS-C3560V Fas 0/16
HQ_CS2       Fas 0/3       123         R S I WS-C3560V Fas 0/15
HQ_CS2       Fas 0/2       123         R S I WS-C3560V Fas 0/14
HQ_CS1       Fas 0/8       169         R S I WS-C3560V Fas 0/20
HQ_CS1       Fas 0/7       169         R S I WS-C3560V Fas 0/19
HQ_CS1       Fas 0/6       169         R S I WS-C3560V Fas 0/18
HQ_CS1       Fas 0/5       169         R S I WS-C3560V Fas 0/17
```

B.15.6. IP Route

```
HQ_DS2>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
     + - replicated route, % - next hop override

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 36 subnets, 4 masks
O      172.16.17.0/24 [110/2] via 172.16.19.252, 3d06h, Vlan41
                      [110/2] via 172.16.18.252, 3d06h, Vlan40
C      172.16.18.0/24 is directly connected, Vlan40
L      172.16.18.253/32 is directly connected, Vlan40
C      172.16.19.0/24 is directly connected, Vlan41
L      172.16.19.253/32 is directly connected, Vlan41
C      172.16.25.0/24 is directly connected, Loopback100
O      172.16.25.1/32 [110/2] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.25.2/32 [110/2] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.25.3/32 [110/3] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.25.4/32 [110/4] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.25.5/32 [110/2] via 172.16.19.252, 3d06h, Vlan41
                      [110/2] via 172.16.18.252, 3d06h, Vlan40
L      172.16.25.6/32 is directly connected, Loopback100
O      172.16.25.7/32 [110/4] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.100.0/24 [110/68] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.101.0/24 [110/69] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.102.0/24 [110/1003] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.252.1/32 [110/3] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.252.2/32 [110/67] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.252.3/32 [110/1002] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.254.0/30 [110/2] via 172.16.254.50, 3d06h, Port-channel3
                       [110/2] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.254.4/30 [110/2] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.254.8/30 [110/3] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.254.12/30 [110/11] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.254.16/30 [110/4] via 172.16.254.41, 3d06h, Port-channel4
O      172.16.254.20/30 [110/3] via 172.16.254.41, 3d06h, Port-channel4
```

```
O      172.16.254.32/29 [110/3] via 172.16.19.252, 3d06h, Vlan41
                        [110/3] via 172.16.18.252, 3d06h, Vlan40
C      172.16.254.40/29 is directly connected, Port-channel4
L      172.16.254.42/32 is directly connected, Port-channel4
C      172.16.254.48/29 is directly connected, Port-channel3
L      172.16.254.49/32 is directly connected, Port-channel3
O      172.16.254.56/30 [110/2] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.254.60/30 [110/3] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.254.64/30 [110/2] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.255.0/30 [110/1002] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.255.4/30 [110/1002] via 172.16.254.50, 3d06h, Port-channel3
O      172.16.255.8/30 [110/1002] via 172.16.254.50, 3d06h, Port-channel3
     200.200.200.0/28 is subnetted, 1 subnets
O      200.200.200.0 [110/3] via 172.16.254.50, 3d06h, Port-channel3
```

B.15.7. Spanning Tree

```

HQ_DS2> show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          Cost     50
          Port     15 (FastEthernet0/13)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  24b6.5725.d200
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
Fa0/14         Altn BLK 19   128.16 P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  001a.2fa8.ea80
          Cost     50
          Port     15 (FastEthernet0/13)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
          Address  24b6.5725.d200
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
```

```
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
Fa0/14         Altn BLK 19   128.16 P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
          Address  001a.2fa8.ea80
          Cost     50
          Port     15 (FastEthernet0/13)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
          Address  24b6.5725.d200
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
Fa0/14         Altn BLK 19   128.16 P2p



VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
          Address  001a.2fa8.ea80
          Cost     50
          Port     15 (FastEthernet0/13)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
          Address  24b6.5725.d200
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
Fa0/14         Altn BLK 19   128.16 P2p



VLAN0040
  Spanning tree enabled protocol ieee
  Root ID Priority 32808
          Address  001a.2fa8.ea80
          Cost     50
          Port     15 (FastEthernet0/13)
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
         Address  24b6.5725.d200
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
Fa0/14         Altn BLK 19   128.16 P2p



VLAN0041
  Spanning tree enabled protocol ieee
  Root ID Priority 32809
         Address  001a.2fa8.ea80
         Cost     50
         Port     15 (FastEthernet0/13)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
         Address  24b6.5725.d200
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
Fa0/14         Altn BLK 19   128.16 P2p



VLAN0099
  Spanning tree enabled protocol ieee
  Root ID Priority 32867
         Address  001a.2fa8.ea80
         Cost     50
         Port     15 (FastEthernet0/13)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
         Address  24b6.5725.d200
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/9          Desg FWD 19   128.11 P2p
Fa0/10         Desg FWD 19   128.12 P2p
Fa0/11         Altn BLK 19   128.13 P2p
Fa0/12         Altn BLK 19   128.14 P2p
Fa0/13         Root FWD 19   128.15 P2p
```

```
Fa0/14         Altn BLK 19   128.16 P2p
```

B.15.8. VLAN

```
HQ_DS2>show vlan

VLAN Name                     Status  Ports
---- -------------------------------- --------- -------------------------------
1   default                   active  Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                      Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                      Fa0/23, Fa0/24, Gi0/1, Gi0/2
10  VLAN0010                  active
20  VLAN0020                  active
30  VLAN0030                  active
40  VLAN0040                  active
41  VLAN0041                  active
99  Management                active
1002 fddi-default             act/unsup
1003 trcrf-default            act/unsup
1004 fddinet-default          act/unsup
1005 trbrf-default            act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0
20  enet 100020  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
40  enet 100040  1500 -    -     -      -   -      0    0
41  enet 100041  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trbrf 101005 4472 -   -     15     ibm -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ----------------------------------------
```

B.16. HQ DS3

B.16.1. Running Configuration

```

!
version 12.2
```

```
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_DS3
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$ys7e$..Pxw.v7DcwVg.V9ngdUH0
!
username ins password 0 ins@lab
!
!
no aaa new-model
system mtu routing 1500
ip routing
ip dhcp excluded-address 172.16.1.1
ip dhcp excluded-address 172.16.1.10 172.16.1.12
ip dhcp excluded-address 172.16.2.1
ip dhcp excluded-address 172.16.2.10 172.16.2.12
ip dhcp excluded-address 172.16.3.1
ip dhcp excluded-address 172.16.3.10 172.16.3.12
ip dhcp excluded-address 172.16.4.1
ip dhcp excluded-address 172.16.4.10 172.16.4.12
!
ip dhcp pool HR
  network 172.16.1.0 255.255.255.0
  default-router 172.16.1.1
!
ip dhcp pool Engineering
  network 172.16.2.0 255.255.255.0
  default-router 172.16.2.1
!
ip dhcp pool Production
  network 172.16.3.0 255.255.255.0
  default-router 172.16.3.1
!
ip dhcp pool Finance
  network 172.16.4.0 255.255.255.0
  default-router 172.16.4.1
!
!
!
!
crypto pki trustpoint TP-self-signed-802439168
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-802439168
 revocation-check none
 rsakeypair TP-self-signed-802439168
!
!
crypto pki certificate chain TP-self-signed-802439168
 certificate self-signed 01
  3082023D 308201A6 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
  30312E30 2C060355 04031325 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 38303234 33393136 38301E17 0D393330 33303130 34333931
  305A170D 32303031 30313030 30303030 5A303031 2E302C06 03550403 1325494F
  532D5365 6C662D53 69676E65 642D4365 72746966 69636174 652D3830 32343339
  31363830 819F300D 06092A86 4886F70D 01010105 0003818D 00308189 02818100
```

```
 9AA9B98F 41CCCEEB 5C4D40C1 79B15141 B62D29CC DF4C1A50 645C0DB0 12FE530C
 B7A75864 117CD82B 55B196FC 7A5F0245 EF5C9DEF 107AA59A 19F235E7 B9E879B0
 FFEC9A80 BB1C4716 46290B09 3215925B A19F9254 F8FE1C44 91E394BC 536F7626
 30954CBD 01B12522 9AD8BDFB 9D4F1BB3 DDA34F1C 703C2F5C B0BD9E5E 01D9CD23
 02030100 01A36730 65300F06 03551D13 0101FF04 05300301 01FF3012 0603551D
 11040B30 09820748 515F4453 332E301F 0603551D 23041830 168014E0 7465A734
 D841B9DA 9031A687 77121B5B D3CB4D30 1D060355 1D0E0416 0414E074 65A734D8
 41B9DA90 31A68777 121B5BD3 CB4D300D 06092A86 4886F70D 01010405 00038181
 006E1C1B 5B43389D 40C1A70A DCE625B9 613DC29A D7E8FF96 CAA00071 3CFDBA11
 2907ED48 2473DFE1 85F93637 ED4E9468 2A7D70B8 4998FA1F 8B1F3FBA 42FC454B
 A4311370 F188DD94 C70C2B12 D183FF82 CA18C95C 5362ADB2 EAB29A82 99CD4A9C
 F21FFE7B 8581E8DE 53517CD2 B428193D BD936ADB 9DD0147B E02773BE E2577379 26
 quit
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
interface Loopback100
 ip address 172.16.25.7 255.255.255.0
 ip ospf 1 area 0
!
interface Port-channel1
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel2
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel3
 no switchport
 ip address 172.16.254.22 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel4
 no switchport
 ip address 172.16.254.18 255.255.255.252
 ip ospf mtu-ignore
 ip ospf 1 area 0
!
interface Port-channel5
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel15
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/1
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/2
```

```
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/3
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/4
 no switchport
 no ip address
 channel-group 3 mode on
!
interface FastEthernet0/5
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/6
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/7
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/8
 no switchport
 no ip address
 channel-group 4 mode on
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/14
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/15
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/16
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/17
 switchport trunk encapsulation dot1q
```

```
 switchport mode trunk
!
interface FastEthernet0/18
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/19
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode on
!
interface FastEthernet0/20
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode on
!
interface FastEthernet0/21
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/22
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 5 mode on
!
interface FastEthernet0/23
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 5 mode on
!
interface FastEthernet0/24
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan10
 ip address 172.16.1.1 255.255.255.0
 ip ospf 1 area 0
!
interface Vlan11
 ip address 172.16.2.1 255.255.255.0
 ip ospf 1 area 0
!
interface Vlan20
 no ip address
!
router ospf 1
 log-adjacency-changes
!
ip classless
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
```

```
!
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.16.2. IP Interfaces

```
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES manual administratively down down
Vlan10           172.16.1.1  YES manual down          down
Vlan11           172.16.2.1  YES manual down          down
Vlan20           unassigned  YES unset down           down
FastEthernet0/1  unassigned  YES manual up            up
FastEthernet0/2  unassigned  YES manual up            up
FastEthernet0/3  unassigned  YES manual up            up
FastEthernet0/4  unassigned  YES manual up            up
FastEthernet0/5  unassigned  YES manual up            up
FastEthernet0/6  unassigned  YES manual up            up
FastEthernet0/7  unassigned  YES manual up            up
FastEthernet0/8  unassigned  YES manual up            up
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset up            up
FastEthernet0/14 unassigned  YES unset up            up
FastEthernet0/15 unassigned  YES unset up            up
FastEthernet0/16 unassigned  YES unset up            up
FastEthernet0/17 unassigned  YES unset up            up
FastEthernet0/18 unassigned  YES unset up            up
FastEthernet0/19 unassigned  YES unset up            up
FastEthernet0/20 unassigned  YES unset up            up
FastEthernet0/21 unassigned  YES unset up            up
FastEthernet0/22 unassigned  YES unset up            up
FastEthernet0/23 unassigned  YES unset up            up
FastEthernet0/24 unassigned  YES unset up            up
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel1    unassigned  YES unset up            up
Port-channel2    unassigned  YES unset up            up
Port-channel3    172.16.254.22 YES manual up         up
Port-channel4    172.16.254.18 YES manual up         up
Port-channel5    unassigned  YES unset up            up
Port-channel15   unassigned  YES unset down          down
Loopback100      172.16.25.7 YES manual up           up
```

B.16.3. Interface Status

```
HQ_DS3>show interface status

Port    Name           Status    Vlan    Duplex Speed Type
Fa0/1                  connected routed  a-full a-100 10/100BaseTX
Fa0/2                  connected routed  a-full a-100 10/100BaseTX
Fa0/3                  connected routed  a-full a-100 10/100BaseTX
Fa0/4                  connected routed  a-full a-100 10/100BaseTX
Fa0/5                  connected routed  a-full a-100 10/100BaseTX
Fa0/6                  connected routed  a-full a-100 10/100BaseTX
Fa0/7                  connected routed  a-full a-100 10/100BaseTX
Fa0/8                  connected routed  a-full a-100 10/100BaseTX
Fa0/9                  notconnect 1       auto auto 10/100BaseTX
Fa0/10                 notconnect 1       auto auto 10/100BaseTX
Fa0/11                 notconnect 1       auto auto 10/100BaseTX
Fa0/12                 notconnect 1       auto auto 10/100BaseTX
Fa0/13                 connected trunk   a-full a-100 10/100BaseTX
Fa0/14                 connected trunk   a-full a-100 10/100BaseTX
Fa0/15                 connected trunk   a-full a-100 10/100BaseTX
Fa0/16                 connected trunk   a-full a-100 10/100BaseTX
Fa0/17                 connected trunk   a-full a-100 10/100BaseTX
Fa0/18                 connected trunk   a-full a-100 10/100BaseTX
Fa0/19                 connected trunk   a-full a-100 10/100BaseTX
Fa0/20                 connected trunk   a-full a-100 10/100BaseTX
Fa0/21                 connected trunk   a-full a-100 10/100BaseTX

Port    Name           Status    Vlan    Duplex Speed Type
Fa0/22                 connected trunk   a-full a-100 10/100BaseTX
Fa0/23                 connected trunk   a-full a-100 10/100BaseTX
Fa0/24                 connected trunk   a-full a-100 10/100BaseTX
Gi0/1                  notconnect 1       auto auto Not Present
Gi0/2                  notconnect 1       auto auto Not Present
Po1                    connected trunk   a-full a-100
Po2                    connected trunk   a-full a-100
Po3                    connected routed  a-full a-100
Po4                    connected routed  a-full a-100
Po5                    connected trunk   a-full a-100
Po15                   notconnect unassigned auto auto
```

B.16.4. Interface Trunk

```
HQ_DS3> show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/13   on           802.1q     trunking   1
Fa0/14   on           802.1q     trunking   1
Fa0/17   on           802.1q     trunking   1
Fa0/18   on           802.1q     trunking   1
Fa0/21   on           802.1q     trunking   1
Fa0/24   on           802.1q     trunking   1
Po1      on           802.1q     trunking   1
Po2      on           802.1q     trunking   1
Po5      on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/13   1-4094
Fa0/14   1-4094
Fa0/17   1-4094
Fa0/18   1-4094
Fa0/21   1-4094
```

```
Fa0/24   1-4094
Po1      1-4094
Po2      1-4094
Po5      1-4094

Port     Vlans allowed and active in management domain
Fa0/13   1,31
Fa0/14   1,31
Fa0/17   1,31
Fa0/18   1,31
Fa0/21   1,31
Fa0/24   1,31
Po1      1,31
Po2      1,31
Po5      1,31

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/13   1,31
Fa0/14   1,31
Fa0/17   1,31
Fa0/18   1,31
Fa0/21   1,31
Fa0/24   1,31
Po1      1,31
Po2      1,31
Po5      1,31
```

B.16.5. Neighbors

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
             S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
             D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_AS11      Fas 0/22      132          S I  WS-C2960- Fas 0/2
HQ_AS11      Fas 0/21      132          S I  WS-C2960- Fas 0/1
HQ_AS10      Fas 0/20      142          S I  WS-C3560V Fas 0/2
HQ_AS10      Fas 0/19      142          S I  WS-C3560V Fas 0/1
HQ_AS12      Fas 0/24      159          S I  WS-C2960- Fas 0/2
HQ_AS12      Fas 0/23      159          S I  WS-C2960- Fas 0/1
HQ_CS4       Fas 0/6       172         R S I WS-C3560- Fas 0/14
HQ_CS4       Fas 0/7       172         R S I WS-C3560- Fas 0/15
HQ_CS4       Fas 0/8       172         R S I WS-C3560- Fas 0/16
HQ_CS4       Fas 0/5       172         R S I WS-C3560- Fas 0/13
HQ_AS7       Fas 0/14      145          S I  WS-C2960- Fas 0/2
HQ_AS7       Fas 0/13      145          S I  WS-C2960- Fas 0/1
HQ_CS3       Fas 0/1       155         R S I WS-C3560- Fas 0/13
HQ_CS3       Fas 0/4       155         R S I WS-C3560- Fas 0/16
HQ_CS3       Fas 0/3       155         R S I WS-C3560- Fas 0/15
HQ_CS3       Fas 0/2       155         R S I WS-C3560- Fas 0/14
HQ_AS8       Fas 0/16      166          S I  WS-C2960- Fas 0/2
HQ_AS8       Fas 0/15      166          S I  WS-C2960- Fas 0/1
HQ_AS9       Fas 0/18      150          S I  WS-C3560V Fas 0/2
HQ_AS9       Fas 0/17      150          S I  WS-C3560V Fas 0/1
```

B.16.6. IP Route

```
HQ_DS3>show ip route
```

```
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
     D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
     N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
     E1 - OSPF external type 1, E2 - OSPF external type 2
     i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
     ia - IS-IS inter area, * - candidate default, U - per-user static route
     o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    200.200.200.0/28 is subnetted, 1 subnets
O     200.200.200.0 [110/5] via 172.16.254.21, 3d06h, Port-channel3
    172.16.0.0/16 is variably subnetted, 31 subnets, 4 masks
O     172.16.254.64/30 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.252.1/32 [110/5] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.0/30 [110/3] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.252.2/32 [110/69] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.255.0/30 [110/1004] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.252.3/32 [110/1004] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.4/30 [110/2] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.255.4/30 [110/1004] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.8/30 [110/2] via 172.16.254.21, 3d06h, Port-channel3
                      [110/2] via 172.16.254.17, 3d06h, Port-channel4
O     172.16.255.8/30 [110/1004] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.12/30 [110/11] via 172.16.254.17, 3d06h, Port-channel4
C     172.16.254.16/30 is directly connected, Port-channel4
C     172.16.254.20/30 is directly connected, Port-channel3
O     172.16.254.32/29 [110/6] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.40/29 [110/3] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.48/29 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.56/30 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.254.60/30 [110/5] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.25.5/32 [110/5] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.25.4/32 [110/2] via 172.16.254.17, 3d06h, Port-channel4
O     172.16.25.6/32 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.25.1/32 [110/3] via 172.16.254.21, 3d06h, Port-channel3
C     172.16.25.0/24 is directly connected, Loopback100
O     172.16.25.3/32 [110/2] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.25.2/32 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.17.0/24 [110/5] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.18.0/24 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.19.0/24 [110/4] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.100.0/24 [110/70] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.101.0/24 [110/71] via 172.16.254.21, 3d06h, Port-channel3
O     172.16.102.0/24 [110/1005] via 172.16.254.21, 3d06h, Port-channel3
```

B.16.7. Spanning Tree

```
HQ_DS3> show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
           Address  001a.2fd4.4000
           This bridge is the root
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
           Address  001a.2fd4.4000
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/13         Desg FWD 19   128.15 P2p
Fa0/14         Desg FWD 19   128.16 P2p
Fa0/17         Desg FWD 19   128.19 P2p
Fa0/18         Desg FWD 19   128.20 P2p
Fa0/21         Desg FWD 19   128.23 P2p
Fa0/24         Desg FWD 19   128.26 P2p
Po1            Desg FWD 12   128.56 P2p
Po2            Desg FWD 12   128.64 P2p

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------

Po5            Desg FWD 12   128.88 P2p



VLAN0031
  Spanning tree enabled protocol ieee
  Root ID Priority 32799
         Address  001a.2fd4.4000
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32799 (priority 32768 sys-id-ext 31)
         Address  001a.2fd4.4000
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/13         Desg FWD 19   128.15 P2p
Fa0/14         Desg FWD 19   128.16 P2p
Fa0/17         Desg FWD 19   128.19 P2p
Fa0/18         Desg FWD 19   128.20 P2p
Fa0/21         Desg FWD 19   128.23 P2p
Fa0/24         Desg FWD 19   128.26 P2p
Po1            Desg FWD 12   128.56 P2p
Po2            Desg FWD 12   128.64 P2p

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------

Po5            Desg FWD 12   128.88 P2p
```

B.16.8. VLAN

```
HQ_DS3> show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Gi0/1, Gi0/2
31  VLAN0031                 active
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
```

```
1005 trnet-default          act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
31  enet 100031  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.17. HQ-AS1

B.17.1. Running Configuration

```
HQ_AS1#show run
Building configuration...

Current configuration : 4824 bytes
!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS1
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$KrNA$mpj78GUcsy3K0OM98AA5O.
!
username ins password 0 ins@lab
!
!
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-799599232
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-799599232
 revocation-check none
 rsakeypair TP-self-signed-799599232
!
!
crypto pki certificate chain TP-self-signed-799599232
 certificate self-signed 01
  3082023D 308201A6 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
```

```
 30312E30 2C060355 04031325 494F532D 53656C66 2D536967 6E65642D 43657274
 69666963 6174652D 37393935 39393233 32301E17 0D393330 33303130 33343431
 375A170D 32303031 30313030 30303030 5A303031 2E302C06 03550403 1325494F
 532D5365 6C662D53 69676E65 642D4365 72746966 69636174 652D3739 39353939
 32333230 819F300D 06092A86 4886F70D 01010105 0003818D 00308189 02818100
 A28CC657 AF63376B BA45B194 DE31FA4F C44D271B 6D474C07 7F2F70AF CF63CCC9
 BBC49C67 A2A38B73 34A844AD FEA198F5 01E0DC70 6522CD20 07E538AC EAE66721
 3BC7704B C385EB67 50F71747 129C1662 EDE4FA06 694FFB46 E15820D4 64234421
 F692432F A110C868 D6ABE713 3080457B BFE58EBB B976F9F5 D020D1DA 9EF7A493
 02030100 01A36730 65300F06 03551D13 0101FF04 05300301 01FF3012 0603551D
 11040B30 09820748 515F4153 312E301F 0603551D 23041830 168014EB AA5BAC4C
 140652A3 BDB8E922 AAB26DA6 3C8E8130 1D060355 1D0E0416 0414EBAA 5BAC4C14
 0652A3BD B8E922AA B26DA63C 8E81300D 06092A86 4886F70D 01010405 00038181
 007D330D 0413906D 80596209 3F9DE46D DE69628D 2FC5E331 3DE8BE27 D878C7D5
 7A59B082 424660E5 286D4F15 72355FD6 215579F1 14690EB1 7B28D7F7 8BE79F82
 C6B2D348 CE7695FD B525CAF0 9384605B F8C2309D D1A4AB84 1D1DAD50 E971E57A
 2F6DC0DC 9F61A2E0 BD9802F2 21D9B4FA 686E8EEB 93584804 02264231 6AACA45D 25
 quit
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
```

```
!
interface FastEthernet0/9
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
```

```
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 21
!
interface FastEthernet0/24
 switchport access vlan 21
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan100
 ip address 172.16.20.3 255.255.255.0
!
ip default-gateway 172.16.20.1
ip classless
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
!
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.17.2. IP Interfaces

```
HQ_AS1#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES manual administratively down down
Vlan100          172.16.20.3 YES manual down          down
FastEthernet0/1  unassigned  YES unset up            up
FastEthernet0/2  unassigned  YES unset down          down
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
```

```
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.17.3. Interface Status

```
HQ_AS1# show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 notconnect 1       auto auto 10/100BaseTX
Fa0/3                 notconnect 21      auto auto 10/100BaseTX
Fa0/4                 notconnect 21      auto auto 10/100BaseTX
Fa0/5                 notconnect 21      auto auto 10/100BaseTX
Fa0/6                 notconnect 21      auto auto 10/100BaseTX
Fa0/7                 notconnect 21      auto auto 10/100BaseTX
Fa0/8                 notconnect 21      auto auto 10/100BaseTX
Fa0/9                 notconnect 21      auto auto 10/100BaseTX
Fa0/10                notconnect 21      auto auto 10/100BaseTX
Fa0/11                notconnect 21      auto auto 10/100BaseTX
Fa0/12                notconnect 21      auto auto 10/100BaseTX
Fa0/13                notconnect 21      auto auto 10/100BaseTX
Fa0/14                notconnect 21      auto auto 10/100BaseTX
Fa0/15                notconnect 21      auto auto 10/100BaseTX
Fa0/16                notconnect 21      auto auto 10/100BaseTX
Fa0/17                notconnect 21      auto auto 10/100BaseTX
Fa0/18                notconnect 21      auto auto 10/100BaseTX
Fa0/19                notconnect 21      auto auto 10/100BaseTX
Fa0/20                notconnect 21      auto auto 10/100BaseTX
Fa0/21                notconnect 21      auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 21      auto auto 10/100BaseTX
Fa0/23                notconnect 21      auto auto 10/100BaseTX
Fa0/24                notconnect 21      auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.17.4. Interface Trunk

```
HQ_AS1#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    auto         n-802.1q   trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,10,20,30,40-41,99
```

B.17.5. Neighbors

```
HQ_AS1#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS1       Fas 0/1       167         R S I WS-C3560V Fas 0/9
```

B.17.6. IP Route

```
HQ_AS1#show ip route
Default gateway is 172.16.20.1

Host          Gateway      Last Use Total Uses Interface
ICMP redirect cache is empty
```

B.17.7. Spanning Tree

```
HQ_AS1#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  001a.2fa8.ea80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p



VLAN0010
```

```
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  001a.2fa8.ea80
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
          Address  001a.2fa8.ea80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
          Address  001a.2fa8.ea80
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
          Address  001a.2fa8.ea80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p



VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
          Address  001a.2fa8.ea80
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
          Address  001a.2fa8.ea80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p



VLAN0040
  Spanning tree enabled protocol ieee
  Root ID Priority 32808
          Address  001a.2fa8.ea80
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
          Address  001a.2fa8.ea80
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p



VLAN0041
  Spanning tree enabled protocol ieee
  Root ID Priority 32809
         Address  001a.2fa8.ea80
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
         Address  001a.2fa8.ea80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p



VLAN0099
  Spanning tree enabled protocol ieee
  Root ID Priority 32867
         Address  001a.2fa8.ea80
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
         Address  001a.2fa8.ea80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.3  P2p
```

B.17.8. VLAN

```
HQ_AS1#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/2, Gi0/1, Gi0/2
10  VLAN0010                 active
20  VLAN0020                 active
30  VLAN0030                 active
40  VLAN0040                 active
41  VLAN0041                 active
99  Management               active
1002 fddi-default            act/unsup
1003 trcrf-default           act/unsup
1004 fddinet-default         act/unsup
1005 trbrf-default           act/unsup
```

```
16
17 VLAN Type SAID  MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
18 ---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
19 1   enet 100001  1500 -    -     -      -   -      0    0
20 10  enet 100010  1500 -    -     -      -   -      0    0
21 20  enet 100020  1500 -    -     -      -   -      0    0
22 30  enet 100030  1500 -    -     -      -   -      0    0
23 40  enet 100040  1500 -    -     -      -   -      0    0
24 41  enet 100041  1500 -    -     -      -   -      0    0
25
26 VLAN Type SAID  MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
27 ---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
28 99  enet 100099  1500 -    -     -      -   -      0    0
29 1002 fddi 101002 1500 -    -     -      -   -      0    0
30 1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
31 1004 fdnet 101004 1500 -  -     -      ieee -     0    0
32 1005 trbrf 101005 4472 -  -     15     ibm -      0    0
33
34
35 VLAN AREHops STEHops Backup CRF
36 ---- ------- ------- ----------
37 1003 7    7     off
38
39 Remote SPAN VLANs
40 ------------------------------------------------------------------------------
41
42
43 Primary Secondary Type     Ports
44 ------- --------- ----------------- ------------------------------------------
```

B.18. HQ-AS2

B.18.1. Running Configuration

```
1  HQ_AS2#show run
2  Building configuration...
3
4  Current configuration : 5008 bytes
5  !
6  version 12.2
7  no service pad
8  service timestamps debug datetime msec
9  service timestamps log datetime msec
10 no service password-encryption
11 service sequence-numbers
12 !
13 hostname HQ_AS2
14 !
15 boot-start-marker
16 boot-end-marker
17 !
18 enable secret 5 $1$ciKQ$RVyoWc8CS2uVCZHzkaIEX0
19 !
20 username ins password 0 ins@lab
21 !
22 !
23 no aaa new-model
24 system mtu routing 1500
25 !
26 !
```

```
!
!
crypto pki trustpoint TP-self-signed-802423424
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-802423424
 revocation-check none
 rsakeypair TP-self-signed-802423424
!
!
crypto pki certificate chain TP-self-signed-802423424
 certificate self-signed 01
  3082023D 308201A6 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
  30312E30 2C060355 04031325 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 38303234 32333432 34301E17 0D393330 33303130 30303235
  365A170D 32303031 30313030 30303030 5A303031 2E302C06 03550403 1325494F
  532D5365 6C662D53 69676E65 642D4365 72746966 69636174 652D3830 32343233
  34323430 819F300D 06092A86 4886F70D 01010105 0003818D 00308189 02818100
  BE1B450F BC9D4578 5902864B 08DCDFA1 8FA43928 01677B9F F529AC2A 035F8238
  112C3F1E 844E546E A5E5D24F 73CB611D F433617B 04E2BB98 847F34D7 64F0185A
  9E3D7D30 0EBF756E A6EA5868 636CBE31 5A23699A 278D32E2 65B251AC 39B3CD28
  8EDF19B7 D5084B51 485A4572 314A2C9B F23D80D2 40E7E09C 6D0E6796 09C33371
  02030100 01A36730 65300F06 03551D13 0101FF04 05300301 01FF3012 0603551D
  11040B30 09820748 515F4153 322E301F 0603551D 23041830 168014FE B90A34C9
  E95C0849 11FD0D1F 308776C8 69EEE430 1D060355 1D0E0416 0414FEB9 0A34C9E9
  5C084911 FD0D1F30 8776C869 EEE4300D 06092A86 4886F70D 01010405 00038181
  00B5F49A 6D5DF4AB F1A5FFE8 7B93CF69 2CAE6976 63ADAFB2 2CCE90AD B38873E0
  4D33668E 0A0D8F9E EE68A92B 9DFC2A7C DE600517 05A87DAF 777CCC0E 644ADB56
  25140224 285A180D 29D42CAE B528196A D5930E32 AA316AC5 AA03F645 1B62F85D
  533A42A0 AA79AA10 AA5F16B3 6D865614 15C2EE7F 341B0097 09FC6EE6 AEDA6E14 86
  quit
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
interface Port-channel4
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/1
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode on
!
interface FastEthernet0/2
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode on
!
interface FastEthernet0/3
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 30
```

```
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 30
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 30
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
```

```
151  switchport access vlan 30
152  switchport mode access
153  spanning-tree portfast
154  !
155 interface FastEthernet0/18
156  switchport access vlan 30
157  switchport mode access
158  spanning-tree portfast
159  !
160 interface FastEthernet0/19
161  switchport access vlan 30
162  switchport mode access
163  spanning-tree portfast
164  !
165 interface FastEthernet0/20
166  switchport access vlan 30
167  switchport mode access
168  spanning-tree portfast
169  !
170 interface FastEthernet0/21
171  switchport access vlan 30
172  switchport mode access
173  spanning-tree portfast
174  !
175 interface FastEthernet0/22
176  switchport access vlan 30
177  switchport mode access
178  spanning-tree portfast
179  !
180 interface FastEthernet0/23
181  !
182 interface FastEthernet0/24
183  switchport access vlan 30
184  switchport mode access
185  spanning-tree portfast
186  !
187 interface GigabitEthernet0/1
188  !
189 interface GigabitEthernet0/2
190  !
191 interface Vlan1
192  no ip address
193  shutdown
194  !
195 interface Vlan100
196  ip address 172.16.20.4 255.255.255.0
197  !
198 ip default-gateway 172.16.20.1
199 ip classless
200 ip http server
201 ip http secure-server
202 !
203 !
204 ip sla enable reaction-alerts
205 !
206 snmp-server community public RO
207 snmp-server community private RW
208 !
209 !
210 line con 0
211 line vty 0 4
212  password cisco
```

```
 login
line vty 5 15
 password cisco
 login
!
end
```

B.18.2. IP Interfaces

```
HQ_AS2#show ip interface brief
Interface        IP-Address  OK? Method Status       Protocol
Vlan1            unassigned  YES manual administratively down down
Vlan100          172.16.20.4 YES manual down         down
FastEthernet0/1  unassigned  YES unset up           up
FastEthernet0/2  unassigned  YES unset up           up
FastEthernet0/3  unassigned  YES unset down         down
FastEthernet0/4  unassigned  YES unset down         down
FastEthernet0/5  unassigned  YES unset down         down
FastEthernet0/6  unassigned  YES unset down         down
FastEthernet0/7  unassigned  YES unset down         down
FastEthernet0/8  unassigned  YES unset down         down
FastEthernet0/9  unassigned  YES unset down         down
FastEthernet0/10 unassigned  YES unset down         down
FastEthernet0/11 unassigned  YES unset down         down
FastEthernet0/12 unassigned  YES unset down         down
FastEthernet0/13 unassigned  YES unset down         down
FastEthernet0/14 unassigned  YES unset down         down
FastEthernet0/15 unassigned  YES unset down         down
FastEthernet0/16 unassigned  YES unset down         down
FastEthernet0/17 unassigned  YES unset down         down
FastEthernet0/18 unassigned  YES unset down         down
FastEthernet0/19 unassigned  YES unset down         down
FastEthernet0/20 unassigned  YES unset down         down
FastEthernet0/21 unassigned  YES unset down         down
FastEthernet0/22 unassigned  YES unset down         down
FastEthernet0/23 unassigned  YES unset down         down
FastEthernet0/24 unassigned  YES unset down         down
GigabitEthernet0/1 unassigned YES unset down        down
GigabitEthernet0/2 unassigned YES unset down        down
Port-channel4    unassigned  YES unset up           up
```

B.18.3. Interface Status

```
HQ_AS2# show interface status

Port    Name               Status    Vlan    Duplex Speed Type
Fa0/1                      connected trunk   a-full a-100 10/100BaseTX
Fa0/2                      connected trunk   a-full a-100 10/100BaseTX
Fa0/3                      notconnect 30       auto auto 10/100BaseTX
Fa0/4                      notconnect 30       auto auto 10/100BaseTX
Fa0/5                      notconnect 30       auto auto 10/100BaseTX
Fa0/6                      notconnect 30       auto auto 10/100BaseTX
Fa0/7                      notconnect 30       auto auto 10/100BaseTX
Fa0/8                      notconnect 30       auto auto 10/100BaseTX
Fa0/9                      notconnect 30       auto auto 10/100BaseTX
Fa0/10                     notconnect 30       auto auto 10/100BaseTX
Fa0/11                     notconnect 30       auto auto 10/100BaseTX
Fa0/12                     notconnect 30       auto auto 10/100BaseTX
```

```
Fa0/13               notconnect 30      auto auto 10/100BaseTX
Fa0/14               notconnect 30      auto auto 10/100BaseTX
Fa0/15               notconnect 30      auto auto 10/100BaseTX
Fa0/16               notconnect 30      auto auto 10/100BaseTX
Fa0/17               notconnect 30      auto auto 10/100BaseTX
Fa0/18               notconnect 30      auto auto 10/100BaseTX
Fa0/19               notconnect 30      auto auto 10/100BaseTX
Fa0/20               notconnect 30      auto auto 10/100BaseTX
Fa0/21               notconnect 30      auto auto 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 30      auto auto 10/100BaseTX
Fa0/23               notconnect 1       auto auto 10/100BaseTX
Fa0/24               notconnect 30      auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
Po4                  connected trunk   a-full a-100
```

B.18.4. Interface Trunk

```
HQ_AS2#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Po4      on           802.1q     trunking   1

Port     Vlans allowed on trunk
Po4      1-4094

Port     Vlans allowed and active in management domain
Po4      1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Po4      1,10,20,30,40-41,99
```

B.18.5. Neighbors

```
HQ_AS2#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS1       Fas 0/2       163         R S I WS-C3560V Fas 0/12
HQ_DS1       Fas 0/1       163         R S I WS-C3560V Fas 0/11
```

B.18.6. IP Route

```
HQ_AS2#show ip route
Default gateway is 172.16.20.1

Host          Gateway      Last Use Total Uses Interface
ICMP redirect cache is empty
```

B.18.7. Spanning Tree

```
HQ_AS2#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          Cost     31
          Port     80 (Port-channel4)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  001a.2fd4.0280
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12   128.80 P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  001a.2fa8.ea80
          Cost     31
          Port     80 (Port-channel4)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
          Address  001a.2fd4.0280
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12   128.80 P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
          Address  001a.2fa8.ea80
          Cost     31
          Port     80 (Port-channel4)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
          Address  001a.2fd4.0280
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12   128.80 P2p



```

```
VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
          Address  001a.2fa8.ea80
          Cost     31
          Port     80 (Port-channel4)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
          Address  001a.2fd4.0280
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12   128.80 P2p



VLAN0040
  Spanning tree enabled protocol ieee
  Root ID Priority 32808
          Address  001a.2fa8.ea80
          Cost     31
          Port     80 (Port-channel4)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
          Address  001a.2fd4.0280
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12   128.80 P2p



VLAN0041
  Spanning tree enabled protocol ieee
  Root ID Priority 32809
          Address  001a.2fa8.ea80
          Cost     31
          Port     80 (Port-channel4)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
          Address  001a.2fd4.0280
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12   128.80 P2p



VLAN0099
  Spanning tree enabled protocol ieee
  Root ID Priority 32867
          Address  001a.2fa8.ea80
          Cost     31
```

```
         Port     80 (Port-channel4)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
         Address  001a.2fd4.0280
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po4            Root FWD 12    128.80 P2p
```

B.18.8. VLAN

```
HQ_AS2#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/23, Gi0/1, Gi0/2
10  VLAN0010                 active
20  VLAN0020                 active
30  VLAN0030                 active  Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                     Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                     Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                     Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                     Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                     Fa0/24
40  VLAN0040                 active
41  VLAN0041                 active
99  Management               active
1002 fddi-default            act/unsup
1003 trcrf-default           act/unsup
1004 fddinet-default         act/unsup
1005 trbrf-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
10  enet 100010  1500 -    -     -      -   -      0    0
20  enet 100020  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0
40  enet 100040  1500 -    -     -      -   -      0    0
41  enet 100041  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -    -     -      ieee -     0    0
1005 trbrf 101005 4472 -    -     15     ibm -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------

```

```
47
48 Primary Secondary Type     Ports
49 ------- --------- ----------------- ----------------------------------------
```

B.19. HQ-AS3

B.19.1. Running Configuration

```
1  HQ_AS3#show run
2  Building configuration...
3
4  Current configuration : 3597 bytes
5  !
6  ! Last configuration change at 09:00:57 UTC Mon Mar 1 1993
7  !
8  version 15.0
9  no service pad
10 service timestamps debug datetime msec
11 service timestamps log datetime msec
12 no service password-encryption
13 service sequence-numbers
14 !
15 hostname HQ_AS3
16 !
17 boot-start-marker
18 boot-end-marker
19 !
20 enable secret 5 $1$OXwg$9bKCNodBhSE/KAC6BioIY.
21 !
22 username ins password 0 ins@lab
23 no aaa new-model
24 system mtu routing 1500
25 vtp domain CISCO
26 vtp mode transparent
27 !
28 !
29 !
30 !
31 crypto pki trustpoint TP-self-signed-1928982528
32  enrollment selfsigned
33  subject-name cn=IOS-Self-Signed-Certificate-1928982528
34  revocation-check none
35  rsakeypair TP-self-signed-1928982528
36 !
37 !
38 crypto pki certificate chain TP-self-signed-1928982528
39  certificate self-signed 01
40       quit
41 !
42 !
43 !
44 !
45 !
46 spanning-tree mode pvst
47 spanning-tree extend system-id
48 !
49 vlan internal allocation policy ascending
50 !
51 vlan 30
52  name Server
```

```
!
vlan 100
 name MGMT
!
vlan 200
 name staff
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
```

```
115 !
116 interface FastEthernet0/12
117  switchport access vlan 30
118  switchport mode access
119  spanning-tree portfast
120 !
121 interface FastEthernet0/13
122  switchport access vlan 30
123  switchport mode access
124  spanning-tree portfast
125 !
126 interface FastEthernet0/14
127  switchport access vlan 30
128  switchport mode access
129  spanning-tree portfast
130 !
131 interface FastEthernet0/15
132  switchport access vlan 30
133  switchport mode access
134  spanning-tree portfast
135 !
136 interface FastEthernet0/16
137  switchport access vlan 30
138  switchport mode access
139  spanning-tree portfast
140 !
141 interface FastEthernet0/17
142  switchport access vlan 30
143  switchport mode access
144  spanning-tree portfast
145 !
146 interface FastEthernet0/18
147  switchport access vlan 30
148  switchport mode access
149  spanning-tree portfast
150 !
151 interface FastEthernet0/19
152  switchport access vlan 30
153  switchport mode access
154  spanning-tree portfast
155 !
156 interface FastEthernet0/20
157  switchport access vlan 30
158  switchport mode access
159  spanning-tree portfast
160 !
161 interface FastEthernet0/21
162  switchport access vlan 30
163  switchport mode access
164  spanning-tree portfast
165 !
166 interface FastEthernet0/22
167  switchport access vlan 30
168  switchport mode access
169  spanning-tree portfast
170 !
171 interface FastEthernet0/23
172  switchport access vlan 30
173  switchport mode access
174  spanning-tree portfast
175 !
176 interface FastEthernet0/24
```

```
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan100
 ip address 172.16.20.5 255.255.255.0
!
ip http server
ip http secure-server
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.19.2. IP Interfaces

```
HQ_AS3#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan100          172.16.20.5 YES manual up            up
FastEthernet0/1  unassigned  YES unset up            up
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
```

```
GigabitEthernet0/2 unassigned YES unset down          down
```

B.19.3. Interface Status

```
HQ_AS3# show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 30       auto auto 10/100BaseTX
Fa0/4                 notconnect 30       auto auto 10/100BaseTX
Fa0/5                 notconnect 30       auto auto 10/100BaseTX
Fa0/6                 notconnect 30       auto auto 10/100BaseTX
Fa0/7                 notconnect 30       auto auto 10/100BaseTX
Fa0/8                 notconnect 30       auto auto 10/100BaseTX
Fa0/9                 notconnect 30       auto auto 10/100BaseTX
Fa0/10                notconnect 30       auto auto 10/100BaseTX
Fa0/11                notconnect 30       auto auto 10/100BaseTX
Fa0/12                notconnect 30       auto auto 10/100BaseTX
Fa0/13                notconnect 30       auto auto 10/100BaseTX
Fa0/14                notconnect 30       auto auto 10/100BaseTX
Fa0/15                notconnect 30       auto auto 10/100BaseTX
Fa0/16                notconnect 30       auto auto 10/100BaseTX
Fa0/17                notconnect 30       auto auto 10/100BaseTX
Fa0/18                notconnect 30       auto auto 10/100BaseTX
Fa0/19                notconnect 30       auto auto 10/100BaseTX
Fa0/20                notconnect 30       auto auto 10/100BaseTX
Fa0/21                notconnect 30       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 30       auto auto 10/100BaseTX
Fa0/23                notconnect 30       auto auto 10/100BaseTX
Fa0/24                notconnect 30       auto auto 10/100BaseTX
Gi0/1                 notconnect 1        auto auto Not Present
Gi0/2                 notconnect 1        auto auto Not Present
```

B.19.4. Interface Trunk

```
HQ_AS3#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    on           802.1q     trunking   1
Fa0/2    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,30,100,200
Fa0/2    1,30,100,200

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,30,100,200
Fa0/2    100,200
```

B.19.5. Neighbors

```
HQ_AS3#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS1       Fas 0/2       151         R S I WS-C3560V Fas 0/14
HQ_DS1       Fas 0/1       151         R S I WS-C3560V Fas 0/13
```

B.19.6. IP Route

```
HQ_AS3#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.19.7. Spanning Tree

```
HQ_AS3#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          Cost     38
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  f025.72f9.d980
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p



VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
          Address  001a.2fa8.ea80
          Cost     38
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
          Address  f025.72f9.d980
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
```

```
Fa0/2          Altn BLK 19   128.2  P2p


VLAN0100
  Spanning tree enabled protocol ieee
  Root ID Priority 32868
          Address  f025.72f9.d980
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32868 (priority 32768 sys-id-ext 100)
          Address  f025.72f9.d980
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p


VLAN0200
  Spanning tree enabled protocol ieee
  Root ID Priority 32968
          Address  f025.72f9.d980
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32968 (priority 32768 sys-id-ext 200)
          Address  f025.72f9.d980
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
```

B.19.8. VLAN

```
HQ_AS3#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Gi0/1, Gi0/2
30  Server                   active  Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                     Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                     Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                     Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                     Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                     Fa0/23, Fa0/24
100 MGMT                     active
200 staff                    active
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

```

```
VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0
100 enet 100100  1500 -    -     -      -   -      0    0
200 enet 100200  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.20. HQ-AS4

B.20.1. Running Configuration

```
HQ_AS4#show run
Building configuration...

Current configuration : 3723 bytes
!
! Last configuration change at 08:53:18 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS4
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$0jJT$.jKMDhjTGYdL6S.YcE/lx0
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
```

```
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface Port-channel5
 switchport access vlan 40
 switchport mode trunk
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport access vlan 40
 switchport mode trunk
 channel-group 5 mode on
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 40
 switchport mode trunk
 channel-group 5 mode on
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 40
```

```
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
```

```
!
interface FastEthernet0/22
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan40
 no ip address
!
interface Vlan100
 ip address 172.16.20.6 255.255.255.0
!
ip default-gateway 172.16.20.1
ip http server
ip http secure-server
snmp-server community publi RO
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.20.2. IP Interfaces

```
HQ_AS4#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan40           unassigned  YES unset up             up
Vlan100          172.16.20.6 YES manual down          down
FastEthernet0/1  unassigned  YES unset up             up
FastEthernet0/2  unassigned  YES unset up             up
FastEthernet0/3  unassigned  YES unset up             up
FastEthernet0/4  unassigned  YES unset up             up
FastEthernet0/5  unassigned  YES unset down           down
```

```
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel5    unassigned  YES unset up            up
```

B.20.3. Interface Status

```
HQ_AS4#show interface status

Port    Name               Status    Vlan    Duplex Speed Type
Fa0/1                      connected trunk   a-full a-100 10/100BaseTX
Fa0/2                      connected trunk   a-full a-100 10/100BaseTX
Fa0/3                      connected trunk   a-full a-100 10/100BaseTX
Fa0/4                      connected trunk   a-full a-100 10/100BaseTX
Fa0/5                      notconnect 40       auto auto 10/100BaseTX
Fa0/6                      notconnect 40       auto auto 10/100BaseTX
Fa0/7                      notconnect 40       auto auto 10/100BaseTX
Fa0/8                      notconnect 40       auto auto 10/100BaseTX
Fa0/9                      notconnect 40       auto auto 10/100BaseTX
Fa0/10                     notconnect 40       auto auto 10/100BaseTX
Fa0/11                     notconnect 40       auto auto 10/100BaseTX
Fa0/12                     notconnect 40       auto auto 10/100BaseTX
Fa0/13                     notconnect 40       auto auto 10/100BaseTX
Fa0/14                     notconnect 40       auto auto 10/100BaseTX
Fa0/15                     notconnect 40       auto auto 10/100BaseTX
Fa0/16                     notconnect 40       auto auto 10/100BaseTX
Fa0/17                     notconnect 40       auto auto 10/100BaseTX
Fa0/18                     notconnect 40       auto auto 10/100BaseTX
Fa0/19                     notconnect 40       auto auto 10/100BaseTX
Fa0/20                     notconnect 40       auto auto 10/100BaseTX
Fa0/21                     notconnect 40       auto auto 10/100BaseTX

Port    Name               Status    Vlan    Duplex Speed Type
Fa0/22                     notconnect 40       auto auto 10/100BaseTX
Fa0/23                     notconnect 40       auto auto 10/100BaseTX
Fa0/24                     notconnect 40       auto auto 10/100BaseTX
Gi0/1                      notconnect 1        auto auto Not Present
Gi0/2                      notconnect 1        auto auto Not Present
Po5                        connected trunk   a-full a-100
```

B.20.4. Interface Trunk

```
HQ_AS4#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    on           802.1q     trunking   1
Fa0/2    on           802.1q     trunking   1
Po5      on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094
Po5      1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,10,20,30,40-41,99
Fa0/2    1,10,20,30,40-41,99
Po5      1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,10,20,30,40-41,99
Fa0/2    1,10,20,30,40-41,99
Po5      1,10,20,30,40-41,99
```

B.20.5. Neighbors

```
HQ_AS4#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS1       Fas 0/3       125         R S I WS-C3560V Fas 0/5
HQ_DS1       Fas 0/4       125         R S I WS-C3560V Fas 0/6
HQ_DS2       Fas 0/2       154         R S I WS-C3560V Fas 0/14
HQ_DS2       Fas 0/1       154         R S I WS-C3560V Fas 0/13
```

B.20.6. IP Route

```
HQ_AS4#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.20.7. Spanning Tree

```
HQ_AS4#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
           Address  001a.2fa8.ea80
           Cost     31
           Port     96 (Port-channel5)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

```

```
  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
           Address  f025.72f7.fc80
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Po5            Root FWD 12   128.96 P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
           Address  001a.2fa8.ea80
           Cost     31
           Port     96 (Port-channel5)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
           Address  f025.72f7.fc80
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Po5            Root FWD 12   128.96 P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
           Address  001a.2fa8.ea80
           Cost     31
           Port     96 (Port-channel5)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
           Address  f025.72f7.fc80
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Po5            Root FWD 12   128.96 P2p



VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
           Address  001a.2fa8.ea80
           Cost     31
           Port     96 (Port-channel5)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
73
74    Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
75              Address  f025.72f7.fc80
76              Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
77              Aging Time 300 sec
78
79  Interface      Role Sts Cost Prio.Nbr Type
80  ------------------- ---- --- --------- -------- --------------------------------
81  Fa0/1          Desg FWD 19   128.1  P2p
82  Fa0/2          Desg FWD 19   128.2  P2p
83  Po5            Root FWD 12   128.96 P2p
84
85
86
87  VLAN0040
88    Spanning tree enabled protocol ieee
89    Root ID Priority 32808
90              Address  001a.2fa8.ea80
91              Cost     31
92              Port     96 (Port-channel5)
93              Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
94
95    Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
96              Address  f025.72f7.fc80
97              Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
98              Aging Time 300 sec
99
100 Interface      Role Sts Cost Prio.Nbr Type
101 ------------------- ---- --- --------- -------- --------------------------------
102 Fa0/1          Desg FWD 19   128.1  P2p
103 Fa0/2          Desg FWD 19   128.2  P2p
104 Po5            Root FWD 12   128.96 P2p
105
106
107
108 VLAN0041
109   Spanning tree enabled protocol ieee
110   Root ID Priority 32809
111             Address  001a.2fa8.ea80
112             Cost     31
113             Port     96 (Port-channel5)
114             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
115
116   Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
117             Address  f025.72f7.fc80
118             Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
119             Aging Time 300 sec
120
121 Interface      Role Sts Cost Prio.Nbr Type
122 ------------------- ---- --- --------- -------- --------------------------------
123 Fa0/1          Desg FWD 19   128.1  P2p
124 Fa0/2          Desg FWD 19   128.2  P2p
125 Po5            Root FWD 12   128.96 P2p
126
127
128
129 VLAN0099
130   Spanning tree enabled protocol ieee
131   Root ID Priority 32867
132             Address  001a.2fa8.ea80
133             Cost     31
134             Port     96 (Port-channel5)
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
         Address  f025.72f7.fc80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19    128.1  P2p
Fa0/2          Desg FWD 19    128.2  P2p
Po5            Root FWD 12    128.96 P2p
```

B.20.8. VLAN

```
HQ_AS4#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- ------------------------------
1   default                  active  Gi0/1, Gi0/2
10  VLAN0010                 active
20  VLAN0020                 active
30  VLAN0030                 active
40  VLAN0040                 active  Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                     Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/21, Fa0/22, Fa0/23, Fa0/24
41  VLAN0041                 active
99  Management               active
1002 fddi-default            act/unsup
1003 trcrf-default           act/unsup
1004 fddinet-default         act/unsup
1005 trbrf-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
20  enet 100020  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0
40  enet 100040  1500 -    -     -      -   -      0    0
41  enet 100041  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -    -     -      ieee -     0    0
1005 trbrf 101005 4472 -    -     15     ibm -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------

```

```
46
47 Primary Secondary Type     Ports
48 ------- --------- ----------------- ----------------------------------------
```

B.21. HQ-AS5

B.21.1. Running Configuration

```
1  HQ_AS5#show run
2  Building configuration...
3
4  Current configuration : 3430 bytes
5  !
6  ! Last configuration change at 08:34:42 UTC Mon Mar 1 1993
7  !
8  version 15.0
9  no service pad
10 service timestamps debug datetime msec
11 service timestamps log datetime msec
12 no service password-encryption
13 service sequence-numbers
14 !
15 hostname HQ_AS5
16 !
17 boot-start-marker
18 boot-end-marker
19 !
20 enable secret 5 $1$tyUg$pgPx2FXCZWpABw0N/eyfz.
21 !
22 username ins password 0 ins@lab
23 no aaa new-model
24 system mtu routing 1500
25 !
26 !
27 !
28 !
29 crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
30  enrollment selfsigned
31  serial-number
32  revocation-check none
33  rsakeypair HTTPS_SS_CERT_KEYPAIR
34 !
35 !
36 crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
37  certificate self-signed 01
38       quit
39 !
40 !
41 !
42 !
43 !
44 spanning-tree mode pvst
45 spanning-tree extend system-id
46 !
47 vlan internal allocation policy ascending
48 !
49 !
50 !
51 !
52 !
```

```
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport mode trunk
!
interface FastEthernet0/4
 switchport mode trunk
!
interface FastEthernet0/5
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 40
 switchport mode access
 spanning-tree portfast
```

```
115 !
116 interface FastEthernet0/15
117  switchport access vlan 40
118  switchport mode access
119  spanning-tree portfast
120 !
121 interface FastEthernet0/16
122  switchport access vlan 40
123  switchport mode access
124  spanning-tree portfast
125 !
126 interface FastEthernet0/17
127  switchport access vlan 40
128  switchport mode access
129  spanning-tree portfast
130 !
131 interface FastEthernet0/18
132  switchport access vlan 41
133  switchport mode access
134  spanning-tree portfast
135 !
136 interface FastEthernet0/19
137  switchport access vlan 41
138  switchport mode access
139  spanning-tree portfast
140 !
141 interface FastEthernet0/20
142  switchport access vlan 41
143  switchport mode access
144  spanning-tree portfast
145 !
146 interface FastEthernet0/21
147  switchport access vlan 41
148  switchport mode access
149  spanning-tree portfast
150 !
151 interface FastEthernet0/22
152  switchport access vlan 41
153  switchport mode access
154  spanning-tree portfast
155 !
156 interface FastEthernet0/23
157  switchport access vlan 41
158  switchport mode access
159  spanning-tree portfast
160 !
161 interface FastEthernet0/24
162  switchport access vlan 41
163  switchport mode access
164  spanning-tree portfast
165 !
166 interface GigabitEthernet0/1
167 !
168 interface GigabitEthernet0/2
169 !
170 interface Vlan1
171  no ip address
172  shutdown
173 !
174 interface Vlan100
175  ip address 172.16.20.7 255.255.255.0
176 !
```

```
ip default-gateway 172.16.20.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.21.2. IP Interfaces

```
HQ_AS5#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan100          172.16.20.7 YES manual down          down
FastEthernet0/1  unassigned  YES unset up            up
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset up            up
FastEthernet0/4  unassigned  YES unset up            up
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.21.3. Interface Status

```
HQ_AS5# show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 connected trunk   a-full a-100 10/100BaseTX
```

```
Fa0/4                connected trunk   a-full a-100 10/100BaseTX
Fa0/5                notconnect 40       auto auto 10/100BaseTX
Fa0/6                notconnect 40       auto auto 10/100BaseTX
Fa0/7                notconnect 40       auto auto 10/100BaseTX
Fa0/8                notconnect 40       auto auto 10/100BaseTX
Fa0/9                notconnect 40       auto auto 10/100BaseTX
Fa0/10               notconnect 40       auto auto 10/100BaseTX
Fa0/11               notconnect 40       auto auto 10/100BaseTX
Fa0/12               notconnect 40       auto auto 10/100BaseTX
Fa0/13               notconnect 40       auto auto 10/100BaseTX
Fa0/14               notconnect 40       auto auto 10/100BaseTX
Fa0/15               notconnect 40       auto auto 10/100BaseTX
Fa0/16               notconnect 40       auto auto 10/100BaseTX
Fa0/17               notconnect 40       auto auto 10/100BaseTX
Fa0/18               notconnect 41       auto auto 10/100BaseTX
Fa0/19               notconnect 41       auto auto 10/100BaseTX
Fa0/20               notconnect 41       auto auto 10/100BaseTX
Fa0/21               notconnect 41       auto auto 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 41       auto auto 10/100BaseTX
Fa0/23               notconnect 41       auto auto 10/100BaseTX
Fa0/24               notconnect 41       auto auto 10/100BaseTX
Gi0/1                notconnect 1        auto auto Not Present
Gi0/2                notconnect 1        auto auto Not Present
```

B.21.4. Interface Trunk

```
HQ_AS5# show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    on           802.1q     trunking   1
Fa0/2    on           802.1q     trunking   1
Fa0/3    on           802.1q     trunking   1
Fa0/4    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094
Fa0/3    1-4094
Fa0/4    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,10,20,30,40-41,99
Fa0/2    1,10,20,30,40-41,99
Fa0/3    1,10,20,30,40-41,99
Fa0/4    1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,10,20,30,40-41,99
Fa0/2    1,10,20,30,40-41,99
Fa0/3    1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/4    none
```

B.21.5. Neighbors

```
HQ_AS5#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS1       Fas 0/4       176         R S I WS-C3560V Fas 0/8
HQ_DS1       Fas 0/3       176         R S I WS-C3560V Fas 0/7
HQ_DS2       Fas 0/1       144         R S I WS-C3560V Fas 0/11
HQ_DS2       Fas 0/2       144         R S I WS-C3560V Fas 0/12
```

B.21.6. IP Route

```
HQ_AS5#show ip route
               ^

% Invalid input detected at '^' marker.
```

B.21.7. Spanning Tree

```
HQ_AS5#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          Cost     38
          Port     3 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  0817.3508.6380
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Fa0/3          Root FWD 19   128.3  P2p
Fa0/4          Altn BLK 19   128.4  P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  001a.2fa8.ea80
          Cost     38
          Port     3 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
          Address  0817.3508.6380
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
```

```
------------------- ---- --- --------- -------- --------------------------------
Fa0/1           Desg FWD 19   128.1  P2p
Fa0/2           Desg FWD 19   128.2  P2p
Fa0/3           Root FWD 19   128.3  P2p
Fa0/4           Altn BLK 19   128.4  P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
          Address  001a.2fa8.ea80
          Cost     38
          Port     3 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
          Address  0817.3508.6380
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1           Desg FWD 19   128.1  P2p
Fa0/2           Desg FWD 19   128.2  P2p
Fa0/3           Root FWD 19   128.3  P2p
Fa0/4           Altn BLK 19   128.4  P2p



VLAN0030
  Spanning tree enabled protocol ieee
  Root ID Priority 32798
          Address  001a.2fa8.ea80
          Cost     38
          Port     3 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
          Address  0817.3508.6380
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1           Desg FWD 19   128.1  P2p
Fa0/2           Desg FWD 19   128.2  P2p
Fa0/3           Root FWD 19   128.3  P2p
Fa0/4           Altn BLK 19   128.4  P2p



VLAN0040
  Spanning tree enabled protocol ieee
  Root ID Priority 32808
          Address  001a.2fa8.ea80
          Cost     38
          Port     3 (FastEthernet0/3)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
          Address  0817.3508.6380
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Fa0/3          Root FWD 19   128.3  P2p
Fa0/4          Altn BLK 19   128.4  P2p



VLAN0041
  Spanning tree enabled protocol ieee
  Root ID Priority 32809
         Address  001a.2fa8.ea80
         Cost     38
         Port     3 (FastEthernet0/3)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
         Address  0817.3508.6380
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Fa0/3          Root FWD 19   128.3  P2p
Fa0/4          Altn BLK 19   128.4  P2p



VLAN0099
  Spanning tree enabled protocol ieee
  Root ID Priority 32867
         Address  001a.2fa8.ea80
         Cost     38
         Port     3 (FastEthernet0/3)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
         Address  0817.3508.6380
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p
Fa0/3          Root FWD 19   128.3  P2p
Fa0/4          Altn BLK 19   128.4  P2p
```

B.21.8. VLAN

```
HQ_AS5# show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
```

```
1   default                 active  Gi0/1, Gi0/2
10  VLAN0010                active
20  VLAN0020                active
30  VLAN0030                active
40  VLAN0040                active  Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                    Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                    Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                    Fa0/17
41  VLAN0041                active  Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                    Fa0/22, Fa0/23, Fa0/24
99  Management              active
1002 fddi-default           act/unsup
1003 trcrf-default          act/unsup
1004 fddinet-default        act/unsup
1005 trbrf-default          act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
20  enet 100020  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0
40  enet 100040  1500 -    -     -      -   -      0    0
41  enet 100041  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trbrf 101005 4472 -   -     15     ibm -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.22. HQ-AS6

B.22.1. Running Configuration

```
HQ_AS6#show run
Building configuration...

Current configuration : 3582 bytes
!
! Last configuration change at 08:49:24 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
```

```
no service password-encryption
service sequence-numbers
!
hostname HQ_AS6
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$WLna$skcqaB3lt.gaHzXtnN1Xb0
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-1926334208
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-1926334208
 revocation-check none
 rsakeypair TP-self-signed-1926334208
!
!
crypto pki certificate chain TP-self-signed-1926334208
 certificate self-signed 01
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface Port-channel6
 switchport mode trunk
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport mode trunk
 channel-group 6 mode on
!
interface FastEthernet0/4
 switchport mode trunk
 channel-group 6 mode on
!
interface FastEthernet0/5
 switchport access vlan 41
 switchport mode access
```

```
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
```

```
interface FastEthernet0/18
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 41
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan100
 ip address 172.16.20.8 255.255.255.0
!
ip default-gateway 172.16.20.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.22.2. IP Interfaces

```
HQ_AS6#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan100          172.16.20.8 YES manual down          down
FastEthernet0/1  unassigned  YES unset up            up
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset up            up
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel6    unassigned  YES unset down          down
```

B.22.3. Interface Status

```
HQ_AS6# show interface status

Port    Name               Status    Vlan    Duplex Speed Type
Fa0/1                      connected trunk   a-full a-100 10/100BaseTX
Fa0/2                      connected trunk   a-full a-100 10/100BaseTX
Fa0/3                      err-disabled 1      auto auto 10/100BaseTX
Fa0/4                      err-disabled 1      auto auto 10/100BaseTX
Fa0/5                      connected 41      a-full a-100 10/100BaseTX
Fa0/6                      notconnect 41       auto auto 10/100BaseTX
Fa0/7                      notconnect 41       auto auto 10/100BaseTX
Fa0/8                      notconnect 41       auto auto 10/100BaseTX
Fa0/9                      notconnect 41       auto auto 10/100BaseTX
Fa0/10                     notconnect 41       auto auto 10/100BaseTX
Fa0/11                     notconnect 41       auto auto 10/100BaseTX
Fa0/12                     notconnect 41       auto auto 10/100BaseTX
Fa0/13                     notconnect 41       auto auto 10/100BaseTX
Fa0/14                     notconnect 41       auto auto 10/100BaseTX
Fa0/15                     notconnect 41       auto auto 10/100BaseTX
Fa0/16                     notconnect 41       auto auto 10/100BaseTX
Fa0/17                     notconnect 41       auto auto 10/100BaseTX
```

```
Fa0/18               notconnect 41      auto auto 10/100BaseTX
Fa0/19               notconnect 41      auto auto 10/100BaseTX
Fa0/20               notconnect 41      auto auto 10/100BaseTX
Fa0/21               notconnect 41      auto auto 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 41      auto auto 10/100BaseTX
Fa0/23               notconnect 41      auto auto 10/100BaseTX
Fa0/24               notconnect 41      auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
Po6                  err-disabled 1     auto auto
```

B.22.4. Interface Trunk

```
HQ_AS6# show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    on           802.1q     trunking   1
Fa0/2    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,10,20,30,40-41,99
Fa0/2    1,10,20,30,40-41,99

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,10,20,30,40-41,99
Fa0/2    none
```

B.22.5. Neighbors

```
HQ_AS6#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS2       Fas 0/1       123         R S I WS-C3560V Fas 0/9
HQ_DS2       Fas 0/2       123         R S I WS-C3560V Fas 0/10
```

B.22.6. IP Route

```
HQ_AS6#show ip route
           ^

% Invalid input detected at '^' marker.
```

B.22.7. Spanning Tree

```
HQ_AS6#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fa8.ea80
          Cost     69
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  f025.7226.5a80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  001a.2fa8.ea80
          Cost     69
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
          Address  f025.7226.5a80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
          Address  001a.2fa8.ea80
          Cost     69
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
          Address  f025.7226.5a80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p


```

```
62
63 VLAN0030
64   Spanning tree enabled protocol ieee
65   Root ID Priority 32798
66           Address  001a.2fa8.ea80
67           Cost     69
68           Port     1 (FastEthernet0/1)
69           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
70
71   Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
72           Address  f025.7226.5a80
73           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
74           Aging Time 300 sec
75
76 Interface      Role Sts Cost Prio.Nbr Type
77 ------------------- ---- --- --------- -------- --------------------------------
78 Fa0/1          Root FWD 19   128.1  P2p
79 Fa0/2          Altn BLK 19   128.2  P2p
80
81
82
83 VLAN0040
84   Spanning tree enabled protocol ieee
85   Root ID Priority 32808
86           Address  001a.2fa8.ea80
87           Cost     69
88           Port     1 (FastEthernet0/1)
89           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
90
91   Bridge ID Priority 32808 (priority 32768 sys-id-ext 40)
92           Address  f025.7226.5a80
93           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
94           Aging Time 300 sec
95
96 Interface      Role Sts Cost Prio.Nbr Type
97 ------------------- ---- --- --------- -------- --------------------------------
98 Fa0/1          Root FWD 19   128.1  P2p
99 Fa0/2          Altn BLK 19   128.2  P2p
100
101
102
103 VLAN0041
104   Spanning tree enabled protocol ieee
105   Root ID Priority 32809
106           Address  001a.2fa8.ea80
107           Cost     69
108           Port     1 (FastEthernet0/1)
109           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
110
111   Bridge ID Priority 32809 (priority 32768 sys-id-ext 41)
112           Address  f025.7226.5a80
113           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
114           Aging Time 300 sec
115
116 Interface      Role Sts Cost Prio.Nbr Type
117 ------------------- ---- --- --------- -------- --------------------------------
118 Fa0/1          Root FWD 19   128.1  P2p
119 Fa0/2          Altn BLK 19   128.2  P2p
120 Fa0/5          Desg FWD 19   128.5  P2p Edge
121
122
123
```

```
VLAN0099
  Spanning tree enabled protocol ieee
  Root ID Priority 32867
          Address  001a.2fa8.ea80
          Cost     69
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
          Address  f025.7226.5a80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------ ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p
```

B.22.8. VLAN

```
HQ_AS6#show vlan

VLAN Name                    Status  Ports
---- ------------------------------ --------- ------------------------------
1   default                  active  Fa0/3, Fa0/4, Gi0/1, Gi0/2
10  VLAN0010                 active
20  VLAN0020                 active
30  VLAN0030                 active
40  VLAN0040                 active
41  VLAN0041                 active  Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                     Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/21, Fa0/22, Fa0/23, Fa0/24
99  Management               active
1002 fddi-default            act/unsup
1003 trcrf-default           act/unsup
1004 fddinet-default         act/unsup
1005 trbrf-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
20  enet 100020  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0
40  enet 100040  1500 -    -     -      -   -      0    0
41  enet 100041  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trbrf 101005 4472 -   -     15     ibm -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
```

```
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.23. HQ-AS7

B.23.1. Running Configuration

```
HQ_AS7#show run
Building configuration...

Current configuration : 3583 bytes
!
! Last configuration change at 13:03:02 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS7
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$SAhN$GoZyjaeqMXu3/3IKDMSpI.
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-889599104
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-889599104
 revocation-check none
 rsakeypair TP-self-signed-889599104
!
!
crypto pki certificate chain TP-self-signed-889599104
 certificate self-signed 01
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
```

```
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
```

```
interface FastEthernet0/13
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
```

```
172 interface GigabitEthernet0/2
173 !
174 interface Vlan1
175  no ip address
176  shutdown
177 !
178 interface Vlan101
179  ip address 172.16.21.2 255.255.255.0
180 !
181 ip default-gateway 172.16.21.1
182 ip http server
183 ip http secure-server
184 snmp-server community public RO
185 snmp-server community private RW
186 !
187 !
188 line con 0
189 line vty 0 4
190  password cisco
191  login
192 line vty 5 15
193  password cisco
194  login
195 !
196 end
```

B.23.2. IP Interfaces

```
1  HQ_AS7#show ip interface brief
2  Interface        IP-Address  OK? Method Status        Protocol
3  Vlan1            unassigned  YES unset administratively down down
4  Vlan101          172.16.21.2 YES manual down          down
5  FastEthernet0/1  unassigned  YES unset up             up
6  FastEthernet0/2  unassigned  YES unset up             up
7  FastEthernet0/3  unassigned  YES unset down           down
8  FastEthernet0/4  unassigned  YES unset down           down
9  FastEthernet0/5  unassigned  YES unset down           down
10 FastEthernet0/6  unassigned  YES unset down           down
11 FastEthernet0/7  unassigned  YES unset down           down
12 FastEthernet0/8  unassigned  YES unset down           down
13 FastEthernet0/9  unassigned  YES unset down           down
14 FastEthernet0/10 unassigned  YES unset down           down
15 FastEthernet0/11 unassigned  YES unset down           down
16 FastEthernet0/12 unassigned  YES unset down           down
17 FastEthernet0/13 unassigned  YES unset down           down
18 FastEthernet0/14 unassigned  YES unset down           down
19 FastEthernet0/15 unassigned  YES unset down           down
20 FastEthernet0/16 unassigned  YES unset down           down
21 FastEthernet0/17 unassigned  YES unset down           down
22 FastEthernet0/18 unassigned  YES unset down           down
23 FastEthernet0/19 unassigned  YES unset down           down
24 FastEthernet0/20 unassigned  YES unset down           down
25 FastEthernet0/21 unassigned  YES unset down           down
26 FastEthernet0/22 unassigned  YES unset down           down
27 FastEthernet0/23 unassigned  YES unset down           down
28 FastEthernet0/24 unassigned  YES unset down           down
29 GigabitEthernet0/1 unassigned YES unset down          down
30 GigabitEthernet0/2 unassigned YES unset down          down
```

B.23.3. Interface Status

```
HQ_AS7# show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 10      auto auto 10/100BaseTX
Fa0/4                 notconnect 10      auto auto 10/100BaseTX
Fa0/5                 notconnect 10      auto auto 10/100BaseTX
Fa0/6                 notconnect 10      auto auto 10/100BaseTX
Fa0/7                 notconnect 10      auto auto 10/100BaseTX
Fa0/8                 notconnect 10      auto auto 10/100BaseTX
Fa0/9                 notconnect 10      auto auto 10/100BaseTX
Fa0/10                notconnect 10      auto auto 10/100BaseTX
Fa0/11                notconnect 10      auto auto 10/100BaseTX
Fa0/12                notconnect 10      auto auto 10/100BaseTX
Fa0/13                notconnect 10      auto auto 10/100BaseTX
Fa0/14                notconnect 10      auto auto 10/100BaseTX
Fa0/15                notconnect 10      auto auto 10/100BaseTX
Fa0/16                notconnect 10      auto auto 10/100BaseTX
Fa0/17                notconnect 10      auto auto 10/100BaseTX
Fa0/18                notconnect 10      auto auto 10/100BaseTX
Fa0/19                notconnect 10      auto auto 10/100BaseTX
Fa0/20                notconnect 10      auto auto 10/100BaseTX
Fa0/21                notconnect 11      auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 11      auto auto 10/100BaseTX
Fa0/23                notconnect 11      auto auto 10/100BaseTX
Fa0/24                notconnect 11      auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.23.4. Interface Trunk

```
HQ_AS7# show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    on           802.1q     trunking   1
Fa0/2    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,31
Fa0/2    1,31

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,31
Fa0/2    none
```

B.23.5. Neighbors

```
HQ_AS7#show cdp neighbors
```

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/2      142         R S I WS-C3560- Fas 0/14
HQ_DS3       Fas 0/1      142         R S I WS-C3560- Fas 0/13
```

B.23.6. IP Route

```
HQ_AS7#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.23.7. Spanning Tree

```
HQ_AS7#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.4000
          Cost     19
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  0817.3508.4080
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p



VLAN0031
  Spanning tree enabled protocol ieee
  Root ID Priority 32799
          Address  001a.2fd4.4000
          Cost     19
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32799 (priority 32768 sys-id-ext 31)
          Address  0817.3508.4080
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p
```

B.23.8. VLAN

```
HQ_AS7#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Gi0/1, Gi0/2
31  VLAN0031                 active
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
31  enet 100031  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.24. HQ-AS8

B.24.1. Running Configuration

```
HQ_AS8#show run
Building configuration...

Current configuration : 3633 bytes
!
! Last configuration change at 13:03:28 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS8
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$Y608$1fI5zZPwJGbQqIs6KgndA1
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
```

```
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface Port-channel1
 switchport mode trunk
!
interface FastEthernet0/1
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/2
 switchport mode trunk
 channel-group 1 mode on
!
interface FastEthernet0/3
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
```

```
89  !
90  interface FastEthernet0/8
91   switchport access vlan 20
92   switchport mode access
93   spanning-tree portfast
94  !
95  interface FastEthernet0/9
96   switchport access vlan 20
97   switchport mode access
98   spanning-tree portfast
99  !
100 interface FastEthernet0/10
101  switchport access vlan 20
102  switchport mode access
103  spanning-tree portfast
104 !
105 interface FastEthernet0/11
106  switchport access vlan 20
107  switchport mode access
108  spanning-tree portfast
109 !
110 interface FastEthernet0/12
111  switchport access vlan 20
112  switchport mode access
113  spanning-tree portfast
114 !
115 interface FastEthernet0/13
116  switchport access vlan 20
117  switchport mode access
118  spanning-tree portfast
119 !
120 interface FastEthernet0/14
121  switchport access vlan 20
122  switchport mode access
123  spanning-tree portfast
124 !
125 interface FastEthernet0/15
126  switchport access vlan 20
127  switchport mode access
128  spanning-tree portfast
129 !
130 interface FastEthernet0/16
131  switchport access vlan 20
132  switchport mode access
133  spanning-tree portfast
134 !
135 interface FastEthernet0/17
136  switchport access vlan 20
137  switchport mode access
138  spanning-tree portfast
139 !
140 interface FastEthernet0/18
141  switchport access vlan 20
142  switchport mode access
143  spanning-tree portfast
144 !
145 interface FastEthernet0/19
146  switchport access vlan 20
147  switchport mode access
148  spanning-tree portfast
149 !
150 interface FastEthernet0/20
```

```
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan101
 ip address 172.16.21.3 255.255.255.0
!
ip default-gateway 172.16.21.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.24.2. IP Interfaces

```
HQ_AS8#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan101          172.16.21.3 YES manual down          down
FastEthernet0/1  unassigned  YES unset up             up
FastEthernet0/2  unassigned  YES unset up             up
```

```
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel1    unassigned  YES unset up            up
```

B.24.3. Interface Status

```
HQ_AS8#  show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 20       auto auto 10/100BaseTX
Fa0/4                 notconnect 20       auto auto 10/100BaseTX
Fa0/5                 notconnect 20       auto auto 10/100BaseTX
Fa0/6                 notconnect 20       auto auto 10/100BaseTX
Fa0/7                 notconnect 20       auto auto 10/100BaseTX
Fa0/8                 notconnect 20       auto auto 10/100BaseTX
Fa0/9                 notconnect 20       auto auto 10/100BaseTX
Fa0/10                notconnect 20       auto auto 10/100BaseTX
Fa0/11                notconnect 20       auto auto 10/100BaseTX
Fa0/12                notconnect 20       auto auto 10/100BaseTX
Fa0/13                notconnect 20       auto auto 10/100BaseTX
Fa0/14                notconnect 20       auto auto 10/100BaseTX
Fa0/15                notconnect 20       auto auto 10/100BaseTX
Fa0/16                notconnect 20       auto auto 10/100BaseTX
Fa0/17                notconnect 20       auto auto 10/100BaseTX
Fa0/18                notconnect 20       auto auto 10/100BaseTX
Fa0/19                notconnect 20       auto auto 10/100BaseTX
Fa0/20                notconnect 20       auto auto 10/100BaseTX
Fa0/21                notconnect 20       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 20       auto auto 10/100BaseTX
Fa0/23                notconnect 20       auto auto 10/100BaseTX
Fa0/24                notconnect 20       auto auto 10/100BaseTX
Gi0/1                 notconnect 1        auto auto Not Present
Gi0/2                 notconnect 1        auto auto Not Present
Po1                   connected trunk   a-full a-100
```

B.24.4. Interface Trunk

```
HQ_AS8#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Po1      on           802.1q     trunking   1

Port     Vlans allowed on trunk
Po1      1-4094

Port     Vlans allowed and active in management domain
Po1      1,31

Port     Vlans in spanning tree forwarding state and not pruned
Po1      1,31
```

B.24.5. Neighbors

```
HQ_AS8#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/2       175         R S I WS-C3560- Fas 0/16
HQ_DS3       Fas 0/1       172         R S I WS-C3560- Fas 0/15
```

B.24.6. IP Route

```
HQ_AS8#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.24.7. Spanning Tree

```
HQ_AS8#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
           Address  001a.2fd4.4000
           Cost     12
           Port     64 (Port-channel1)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
           Address  f025.72f9.eb80
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po1            Root FWD 12   128.64 P2p


```

```
21
22 VLAN0031
23   Spanning tree enabled protocol ieee
24   Root ID Priority 32799
25           Address  001a.2fd4.4000
26           Cost     12
27           Port     64 (Port-channel1)
28           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
29
30   Bridge ID Priority 32799 (priority 32768 sys-id-ext 31)
31           Address  f025.72f9.eb80
32           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
33           Aging Time 300 sec
34
35 Interface      Role Sts Cost Prio.Nbr Type
36 ------------------- ---- --- --------- -------- --------------------------------
37 Po1            Root FWD 12   128.64 P2p
```

B.24.8. VLAN

```
1  HQ_AS8#show vlan
2
3  VLAN Name                    Status  Ports
4  ---- ------------------------------- --------- -------------------------------
5  1   default                  active  Gi0/1, Gi0/2
6  31  VLAN0031                 active
7  1002 fddi-default            act/unsup
8  1003 token-ring-default      act/unsup
9  1004 fddinet-default         act/unsup
10 1005 trnet-default           act/unsup
11
12 VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
13 ---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
14 1   enet 100001  1500 -    -     -      -   -      0    0
15 31  enet 100031  1500 -    -     -      -   -      0    0
16 1002 fddi 101002 1500 -    -     -      -   -      0    0
17 1003 tr 101003   1500 -    -     -      -   srb    0    0
18 1004 fdnet 101004 1500 -   -     -      ieee -     0    0
19 1005 trnet 101005 1500 -   -     -      ibm -      0    0
20
21 Remote SPAN VLANs
22 ------------------------------------------------------------------------------
23
24
25 Primary Secondary Type     Ports
26 ------- --------- ----------------- ------------------------------------------
```

B.25. HQ-AS9

B.25.1. Running Configuration

```
1  HQ_AS9#show run
2  Building configuration...
3
4  Current configuration : 3588 bytes
5  !
6  ! Last configuration change at 08:15:48 UTC Mon Mar 1 1993
7  !
```

```
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS9
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$Y2Qg$IGc5ZVwjnbouE7BBZ3.2b.
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-889775872
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-889775872
 revocation-check none
 rsakeypair TP-self-signed-889775872
!
!
crypto pki certificate chain TP-self-signed-889775872
 certificate self-signed 01
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
!
!
!
!
!
!
!
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
```

```
!
interface FastEthernet0/4
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
```

```
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan101
 ip address 172.16.21.4 255.255.255.0
!
ip default-gateway 172.16.21.1
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
snmp-server community public RO
```

```
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.25.2. IP Interfaces

```
HQ_AS9#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan101          172.16.21.4 YES manual down          down
FastEthernet0/1  unassigned  YES unset up            up
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.25.3. Interface Status

```
HQ_AS9# show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 20       auto auto 10/100BaseTX
Fa0/4                 notconnect 20       auto auto 10/100BaseTX
Fa0/5                 notconnect 20       auto auto 10/100BaseTX
Fa0/6                 notconnect 20       auto auto 10/100BaseTX
Fa0/7                 notconnect 20       auto auto 10/100BaseTX
```

```
Fa0/8                notconnect 20      auto auto 10/100BaseTX
Fa0/9                notconnect 20      auto auto 10/100BaseTX
Fa0/10               notconnect 20      auto auto 10/100BaseTX
Fa0/11               notconnect 20      auto auto 10/100BaseTX
Fa0/12               notconnect 20      auto auto 10/100BaseTX
Fa0/13               notconnect 20      auto auto 10/100BaseTX
Fa0/14               notconnect 20      auto auto 10/100BaseTX
Fa0/15               notconnect 20      auto auto 10/100BaseTX
Fa0/16               notconnect 10      auto auto 10/100BaseTX
Fa0/17               notconnect 10      auto auto 10/100BaseTX
Fa0/18               notconnect 10      auto auto 10/100BaseTX
Fa0/19               notconnect 10      auto auto 10/100BaseTX
Fa0/20               notconnect 10      auto auto 10/100BaseTX
Fa0/21               notconnect 10      auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 10      auto auto 10/100BaseTX
Fa0/23               notconnect 10      auto auto 10/100BaseTX
Fa0/24               notconnect 10      auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
```

B.25.4. Interface Trunk

```
HQ_AS9#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    auto         n-802.1q   trunking   1
Fa0/2    auto         n-802.1q   trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,31
Fa0/2    1,31

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,31
Fa0/2    none
```

B.25.5. Neighbors

```
HQ_AS9#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/1      122         R S I WS-C3560- Fas 0/17
HQ_DS3       Fas 0/2      122         R S I WS-C3560- Fas 0/18
```

B.25.6. IP Route

```
HQ_AS9#show ip route
Default gateway is 172.16.21.1

Host          Gateway      Last Use Total Uses Interface
ICMP redirect cache is empty
```

B.25.7. Spanning Tree

```
HQ_AS9#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.4000
          Cost     19
          Port     3 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  24b6.572a.e000
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.3  P2p
Fa0/2          Altn BLK 19   128.4  P2p



VLAN0031
  Spanning tree enabled protocol ieee
  Root ID Priority 32799
          Address  001a.2fd4.4000
          Cost     19
          Port     3 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32799 (priority 32768 sys-id-ext 31)
          Address  24b6.572a.e000
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.3  P2p
Fa0/2          Altn BLK 19   128.4  P2p
```

B.25.8. VLAN

```
Q_AS9#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Gi0/1, Gi0/2
31  VLAN0031                 active
1002 fddi-default            act/unsup
```

```
1003 token-ring-default     act/unsup
1004 fddinet-default        act/unsup
1005 trnet-default          act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
31  enet 100031  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.26. HQ-AS10

B.26.1. Running Configuration

```
HQ_AS10#show run
Building configuration...

Current configuration : 3569 bytes
!
! Last configuration change at 08:07:59 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS10
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$VvXB$dZ2E13oaZ1BEYVi0W5y4K/
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-1926335104
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-1926335104
 revocation-check none
 rsakeypair TP-self-signed-1926335104
!
!
crypto pki certificate chain TP-self-signed-1926335104
```

```
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
!
!
!
!
!
!
!
interface Port-channel2
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/1
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode on
!
interface FastEthernet0/2
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode on
!
interface FastEthernet0/3
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 11
 switchport mode access
```

```
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
```

```
interface FastEthernet0/20
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 11
 switchport mode access
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
ip http server
ip http secure-server
!
!
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.26.2. IP Interfaces

```
HQ_AS10#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
FastEthernet0/1  unassigned  YES unset up              up
FastEthernet0/2  unassigned  YES unset up              up
FastEthernet0/3  unassigned  YES unset down            down
FastEthernet0/4  unassigned  YES unset down            down
FastEthernet0/5  unassigned  YES unset down            down
FastEthernet0/6  unassigned  YES unset down            down
FastEthernet0/7  unassigned  YES unset down            down
FastEthernet0/8  unassigned  YES unset down            down
FastEthernet0/9  unassigned  YES unset down            down
FastEthernet0/10 unassigned  YES unset down            down
```

```
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel2    unassigned  YES unset up            up
```

B.26.3. Interface Status

```
HQ_AS10#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 11      auto auto 10/100BaseTX
Fa0/4                 notconnect 11      auto auto 10/100BaseTX
Fa0/5                 notconnect 11      auto auto 10/100BaseTX
Fa0/6                 notconnect 11      auto auto 10/100BaseTX
Fa0/7                 notconnect 11      auto auto 10/100BaseTX
Fa0/8                 notconnect 11      auto auto 10/100BaseTX
Fa0/9                 notconnect 11      auto auto 10/100BaseTX
Fa0/10                notconnect 11      auto auto 10/100BaseTX
Fa0/11                notconnect 11      auto auto 10/100BaseTX
Fa0/12                notconnect 11      auto auto 10/100BaseTX
Fa0/13                notconnect 11      auto auto 10/100BaseTX
Fa0/14                notconnect 11      auto auto 10/100BaseTX
Fa0/15                notconnect 11      auto auto 10/100BaseTX
Fa0/16                notconnect 11      auto auto 10/100BaseTX
Fa0/17                notconnect 11      auto auto 10/100BaseTX
Fa0/18                notconnect 11      auto auto 10/100BaseTX
Fa0/19                notconnect 11      auto auto 10/100BaseTX
Fa0/20                notconnect 11      auto auto 10/100BaseTX
Fa0/21                notconnect 11      auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 11      auto auto 10/100BaseTX
Fa0/23                notconnect 11      auto auto 10/100BaseTX
Fa0/24                notconnect 1       auto auto 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
Po2                   connected trunk   a-full a-100
```

B.26.4. Interface Trunk

```
HQ_AS10#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
```

```
Po2      on          802.1q     trunking   1

Port     Vlans allowed on trunk
Po2      1-4094

Port     Vlans allowed and active in management domain
Po2      1,31

Port     Vlans in spanning tree forwarding state and not pruned
Po2      1,31
```

B.26.5. Neighbors

```
HQ_AS10# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/2       124         R S I WS-C3560- Fas 0/20
HQ_DS3       Fas 0/1       124         R S I WS-C3560- Fas 0/19
```

B.26.6. IP Route

```
HQ_AS10#show ip route
Default gateway is not set

Host          Gateway      Last Use Total Uses Interface
ICMP redirect cache is empty
```

B.26.7. Spanning Tree

```
HQ_AS10#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.4000
          Cost     12
          Port     72 (Port-channel2)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  24b6.5725.db00
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po2            Root FWD 12   128.72 P2p


VLAN0031
  Spanning tree enabled protocol ieee
  Root ID Priority 32799
```

```
          Address  001a.2fd4.4000
          Cost     12
          Port     72 (Port-channel2)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32799 (priority 32768 sys-id-ext 31)
          Address  24b6.5725.db00
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po2            Root FWD 12   128.72 P2p
```

B.26.8. VLAN

```
HQ_AS10#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/24, Gi0/1, Gi0/2
31  VLAN0031                 active
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
31  enet 100031  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.27. HQ-AS11

B.27.1. Running Configuration

```
HQ_AS11#show run
Building configuration...

Current configuration : 3619 bytes
!
! Last configuration change at 08:00:59 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
```

```
no service password-encryption
service sequence-numbers
!
hostname HQ_AS11
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$j9wB$cZONl.q0dLaxq5U/qhtod1
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
vtp domain LAB4
vtp mode transparent
!
!
!
!
crypto pki trustpoint TP-self-signed-1928849024
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-1928849024
 revocation-check none
 rsakeypair TP-self-signed-1928849024
!
!
crypto pki certificate chain TP-self-signed-1928849024
 certificate self-signed 01
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
vlan 10
 name HR
!
vlan 20
 name students
!
vlan 30
 name guest
!
vlan 99
 name management
!
vlan 101
 name MGMT
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode trunk
!
```

```
74  interface FastEthernet0/2
75   switchport mode trunk
76  !
77  interface FastEthernet0/3
78   switchport access vlan 10
79   switchport mode access
80   spanning-tree portfast
81  !
82  interface FastEthernet0/4
83   switchport access vlan 10
84   switchport mode access
85   spanning-tree portfast
86  !
87  interface FastEthernet0/5
88   switchport access vlan 10
89   switchport mode access
90   spanning-tree portfast
91  !
92  interface FastEthernet0/6
93   switchport access vlan 10
94   switchport mode access
95   spanning-tree portfast
96  !
97  interface FastEthernet0/7
98   switchport access vlan 10
99   switchport mode access
100  spanning-tree portfast
101 !
102 interface FastEthernet0/8
103  switchport access vlan 10
104  switchport mode access
105  spanning-tree portfast
106 !
107 interface FastEthernet0/9
108  switchport access vlan 10
109  switchport mode access
110  spanning-tree portfast
111 !
112 interface FastEthernet0/10
113  switchport access vlan 10
114  switchport mode access
115  spanning-tree portfast
116 !
117 interface FastEthernet0/11
118  switchport access vlan 10
119  switchport mode access
120  spanning-tree portfast
121 !
122 interface FastEthernet0/12
123  switchport access vlan 10
124  switchport mode access
125  spanning-tree portfast
126 !
127 interface FastEthernet0/13
128  switchport access vlan 10
129  switchport mode access
130  spanning-tree portfast
131 !
132 interface FastEthernet0/14
133  switchport access vlan 10
134  switchport mode access
135  spanning-tree portfast
```

```
!
interface FastEthernet0/15
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
ip http server
ip http secure-server
snmp-server community private RW
```

```
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.27.2. IP Interfaces

```
HQ_AS11#show ip interface brief
Interface        IP-Address  OK? Method Status       Protocol
Vlan1            unassigned  YES unset administratively down down
FastEthernet0/1  unassigned  YES unset up             up
FastEthernet0/2  unassigned  YES unset up             up
FastEthernet0/3  unassigned  YES unset down           down
FastEthernet0/4  unassigned  YES unset down           down
FastEthernet0/5  unassigned  YES unset down           down
FastEthernet0/6  unassigned  YES unset down           down
FastEthernet0/7  unassigned  YES unset down           down
FastEthernet0/8  unassigned  YES unset down           down
FastEthernet0/9  unassigned  YES unset down           down
FastEthernet0/10 unassigned  YES unset down           down
FastEthernet0/11 unassigned  YES unset down           down
FastEthernet0/12 unassigned  YES unset down           down
FastEthernet0/13 unassigned  YES unset down           down
FastEthernet0/14 unassigned  YES unset down           down
FastEthernet0/15 unassigned  YES unset down           down
FastEthernet0/16 unassigned  YES unset down           down
FastEthernet0/17 unassigned  YES unset down           down
FastEthernet0/18 unassigned  YES unset down           down
FastEthernet0/19 unassigned  YES unset down           down
FastEthernet0/20 unassigned  YES unset down           down
FastEthernet0/21 unassigned  YES unset down           down
FastEthernet0/22 unassigned  YES unset down           down
FastEthernet0/23 unassigned  YES unset down           down
FastEthernet0/24 unassigned  YES unset down           down
GigabitEthernet0/1 unassigned YES unset down          down
GigabitEthernet0/2 unassigned YES unset down          down
```

B.27.3. Interface Status

```
HQ_AS11#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 connected trunk   a-full a-100 10/100BaseTX
Fa0/2                 connected trunk   a-full a-100 10/100BaseTX
Fa0/3                 notconnect 10       auto auto 10/100BaseTX
Fa0/4                 notconnect 10       auto auto 10/100BaseTX
Fa0/5                 notconnect 10       auto auto 10/100BaseTX
Fa0/6                 notconnect 10       auto auto 10/100BaseTX
Fa0/7                 notconnect 10       auto auto 10/100BaseTX
Fa0/8                 notconnect 10       auto auto 10/100BaseTX
Fa0/9                 notconnect 10       auto auto 10/100BaseTX
```

```
Fa0/10               notconnect 10      auto auto 10/100BaseTX
Fa0/11               notconnect 10      auto auto 10/100BaseTX
Fa0/12               notconnect 10      auto auto 10/100BaseTX
Fa0/13               notconnect 10      auto auto 10/100BaseTX
Fa0/14               notconnect 10      auto auto 10/100BaseTX
Fa0/15               notconnect 10      auto auto 10/100BaseTX
Fa0/16               notconnect 10      auto auto 10/100BaseTX
Fa0/17               notconnect 10      auto auto 10/100BaseTX
Fa0/18               notconnect 10      auto auto 10/100BaseTX
Fa0/19               notconnect 10      auto auto 10/100BaseTX
Fa0/20               notconnect 10      auto auto 10/100BaseTX
Fa0/21               notconnect 10      auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 10      auto auto 10/100BaseTX
Fa0/23               notconnect 10      auto auto 10/100BaseTX
Fa0/24               notconnect 10      auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
```

B.27.4. Interface Trunk

```
HQ_AS11# show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/1    on           802.1q     trunking   1
Fa0/2    on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/1    1-4094
Fa0/2    1-4094

Port     Vlans allowed and active in management domain
Fa0/1    1,10,20,30,99,101
Fa0/2    1,10,20,30,99,101

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,10,20,30,99,101
Fa0/2    10,20,30,99,101
```

B.27.5. Neighbors

```
HQ_AS11#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/1       159         R S I WS-C3560- Fas 0/21
HQ_DS3       Fas 0/2       159         R S I WS-C3560- Fas 0/22
```

B.27.6. IP Route

```
HQ_AS11#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.27.7. Spanning Tree

```
HQ_AS11#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.4000
          Cost     19
          Port     1 (FastEthernet0/1)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  0817.3508.f180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Root FWD 19   128.1  P2p
Fa0/2          Altn BLK 19   128.2  P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
          Address  0817.3508.f180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
          Address  0817.3508.f180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p



VLAN0020
  Spanning tree enabled protocol ieee
  Root ID Priority 32788
          Address  0817.3508.f180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
          Address  0817.3508.f180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/1          Desg FWD 19   128.1  P2p
Fa0/2          Desg FWD 19   128.2  P2p


```

```
60
61 VLAN0030
62   Spanning tree enabled protocol ieee
63   Root ID Priority 32798
64           Address  0817.3508.f180
65           This bridge is the root
66           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
67
68   Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
69           Address  0817.3508.f180
70           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
71           Aging Time 300 sec
72
73 Interface      Role Sts Cost Prio.Nbr Type
74 ------------------- ---- --- --------- -------- --------------------------------
75 Fa0/1          Desg FWD 19   128.1  P2p
76 Fa0/2          Desg FWD 19   128.2  P2p
77
78
79
80 VLAN0099
81   Spanning tree enabled protocol ieee
82   Root ID Priority 32867
83           Address  0817.3508.f180
84           This bridge is the root
85           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
86
87   Bridge ID Priority 32867 (priority 32768 sys-id-ext 99)
88           Address  0817.3508.f180
89           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
90           Aging Time 300 sec
91
92 Interface      Role Sts Cost Prio.Nbr Type
93 ------------------- ---- --- --------- -------- --------------------------------
94 Fa0/1          Desg FWD 19   128.1  P2p
95 Fa0/2          Desg FWD 19   128.2  P2p
96
97
98
99 VLAN0101
100   Spanning tree enabled protocol ieee
101   Root ID Priority 32869
102           Address  0817.3508.f180
103           This bridge is the root
104           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
105
106   Bridge ID Priority 32869 (priority 32768 sys-id-ext 101)
107           Address  0817.3508.f180
108           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
109           Aging Time 300 sec
110
111 Interface      Role Sts Cost Prio.Nbr Type
112 ------------------- ---- --- --------- -------- --------------------------------
113 Fa0/1          Desg FWD 19   128.1  P2p
114 Fa0/2          Desg FWD 19   128.2  P2p
```

B.27.8. VLAN

```
1 HQ_AS11#show vlan
2
```

```
VLAN Name                   Status  Ports
---- ------------------------------ --------- -------------------------------
1   default                 active  Gi0/1, Gi0/2
10  HR                      active  Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                    Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                    Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                    Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                    Fa0/23, Fa0/24
20  students                active
30  guest                   active
99  management              active
101 MGMT                    active
1002 fddi-default           act/unsup
1003 token-ring-default     act/unsup
1004 fddinet-default        act/unsup
1005 trnet-default          act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
20  enet 100020  1500 -    -     -      -   -      0    0
30  enet 100030  1500 -    -     -      -   -      0    0
99  enet 100099  1500 -    -     -      -   -      0    0
101 enet 100101  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003   1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.28. HQ-AS12

B.28.1. Running Configuration

```
HQ_AS12#show run
Building configuration...

Current configuration : 3634 bytes
!
! Last configuration change at 07:55:37 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service sequence-numbers
!
hostname HQ_AS12
```

```
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$8EsQ$ZW2MewBNZIMh1iMgwJ9pr1
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface Port-channel5
 switchport mode trunk
!
interface FastEthernet0/1
 switchport mode trunk
 channel-group 5 mode on
!
interface FastEthernet0/2
 switchport mode trunk
 channel-group 5 mode on
!
interface FastEthernet0/3
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport access vlan 31
 switchport mode access
```

```
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
```

```
interface FastEthernet0/18
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport access vlan 31
 switchport mode access
 spanning-tree portfast
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan101
 ip address 172.16.21.7 255.255.255.0
!
ip default-gateway 172.16.21.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.28.2. IP Interfaces

```
HQ_AS12#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan101          172.16.21.7 YES manual down          down
FastEthernet0/1  unassigned  YES unset up            up
FastEthernet0/2  unassigned  YES unset up            up
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset down          down
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
Port-channel5    unassigned  YES unset up            up
```

B.28.3. Interface Status

```
HQ_AS12#show interface status

Port    Name               Status    Vlan    Duplex Speed Type
Fa0/1                      connected trunk   a-full a-100 10/100BaseTX
Fa0/2                      connected trunk   a-full a-100 10/100BaseTX
Fa0/3                      notconnect 31       auto  auto 10/100BaseTX
Fa0/4                      notconnect 31       auto  auto 10/100BaseTX
Fa0/5                      notconnect 31       auto  auto 10/100BaseTX
Fa0/6                      notconnect 31       auto  auto 10/100BaseTX
Fa0/7                      notconnect 31       auto  auto 10/100BaseTX
Fa0/8                      notconnect 31       auto  auto 10/100BaseTX
Fa0/9                      notconnect 31       auto  auto 10/100BaseTX
Fa0/10                     notconnect 31       auto  auto 10/100BaseTX
Fa0/11                     notconnect 31       auto  auto 10/100BaseTX
Fa0/12                     notconnect 31       auto  auto 10/100BaseTX
Fa0/13                     notconnect 31       auto  auto 10/100BaseTX
Fa0/14                     notconnect 31       auto  auto 10/100BaseTX
Fa0/15                     notconnect 31       auto  auto 10/100BaseTX
Fa0/16                     notconnect 31       auto  auto 10/100BaseTX
Fa0/17                     notconnect 31       auto  auto 10/100BaseTX
```

```
Fa0/18               notconnect 31      auto auto 10/100BaseTX
Fa0/19               notconnect 31      auto auto 10/100BaseTX
Fa0/20               notconnect 31      auto auto 10/100BaseTX
Fa0/21               notconnect 31      auto auto 10/100BaseTX

Port    Name         Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 31      auto auto 10/100BaseTX
Fa0/23               notconnect 31      auto auto 10/100BaseTX
Fa0/24               notconnect 31      auto auto 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
Po5                  connected trunk   a-full a-100
```

B.28.4. Interface Trunk

```
HQ_AS12#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Po5      on           802.1q     trunking   1

Port     Vlans allowed on trunk
Po5      1-4094

Port     Vlans allowed and active in management domain
Po5      1,31

Port     Vlans in spanning tree forwarding state and not pruned
Po5      1,31
```

B.28.5. Neighbors

```
HQ_AS12# show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
HQ_DS3       Fas 0/2       162         R S I WS-C3560- Fas 0/24
HQ_DS3       Fas 0/1       162         R S I WS-C3560- Fas 0/23
```

B.28.6. IP Route

```
HQ_AS12#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.28.7. Spanning Tree

```
HQ_AS12#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
```

```
          Address  001a.2fd4.4000
          Cost     12
          Port     96 (Port-channel5)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  0817.3508.2d80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po5            Root FWD 12    128.96 P2p



VLAN0031
  Spanning tree enabled protocol ieee
  Root ID Priority 32799
          Address  001a.2fd4.4000
          Cost     12
          Port     96 (Port-channel5)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32799 (priority 32768 sys-id-ext 31)
          Address  0817.3508.2d80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po5            Root FWD 12    128.96 P2p
```

B.28.8. VLAN

```
HQ_AS12#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Gi0/1, Gi0/2
31  VLAN0031                 active  Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                     Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                     Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                     Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                     Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                     Fa0/23, Fa0/24
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
31  enet 100031  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003   1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

```

```
Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.29. BR1-S2

B.29.1. Running Configuration

```
BR1_S2#show run
Building configuration...

Current configuration : 2940 bytes
!
! Last configuration change at 07:14:05 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR1_S2
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$Z7N0$gcC.KzyaWHzoy5LqlSdoJ1
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
```

```
!
!
!
interface FastEthernet0/1
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/2
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/3
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport mode access
 spanning-tree portfast
```

```
!
interface FastEthernet0/16
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
 switchport mode trunk
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan102
 ip address 172.16.22.2 255.255.255.0
!
ip default-gateway 172.16.22.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
```

```
end
```

B.29.2. IP Interfaces

```
BR1_S2# show ip interface brief
Interface        IP-Address  OK? Method Status       Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan102          172.16.22.2 YES manual down         down
FastEthernet0/1  unassigned  YES unset down          down
FastEthernet0/2  unassigned  YES unset down          down
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset down          down
FastEthernet0/24 unassigned  YES unset up            up
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.29.3. Interface Status

```
BR1_S2#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 notconnect 1       auto auto 10/100BaseTX
Fa0/2                 notconnect 1       auto auto 10/100BaseTX
Fa0/3                 notconnect 1       auto auto 10/100BaseTX
Fa0/4                 notconnect 1       auto auto 10/100BaseTX
Fa0/5                 notconnect 1       auto auto 10/100BaseTX
Fa0/6                 notconnect 1       auto auto 10/100BaseTX
Fa0/7                 notconnect 1       auto auto 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
```

```
Fa0/19               notconnect 1       auto auto 10/100BaseTX
Fa0/20               notconnect 1       auto auto 10/100BaseTX
Fa0/21               notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22               notconnect 1       auto auto 10/100BaseTX
Fa0/23               notconnect 1       auto auto 10/100BaseTX
Fa0/24               connected trunk   a-full a-100 10/100BaseTX
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
```

B.29.4. Interface Trunk

```
BR1_S2#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/24   on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/24   1-4094

Port     Vlans allowed and active in management domain
Fa0/24   1

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/24   1
```

B.29.5. Neighbors

```
BR1_S2#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR1_S1       Fas 0/24     175         R S I WS-C3560- Fas 0/2
```

B.29.6. IP Route

```
BR1_S2#show ip route
               ^
% Invalid input detected at '^' marker.
```

B.29.7. Spanning Tree

```
BR1_S2#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.2480
          Cost     19
          Port     24 (FastEthernet0/24)
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
         Address  0817.3508.e700
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p
```

B.29.8. VLAN

```
BR1_S2#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- ------------------------------
1   default                  active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                     Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                     Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/21, Fa0/22, Fa0/23, Gi0/1
                                     Gi0/2
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.30. BR1-S3

B.30.1. Running Configuration

```
BR1_S3#show run
Building configuration...

Current configuration : 2964 bytes
!
! Last configuration change at 07:08:45 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
no service password-encryption
!
hostname BR1_S3
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$OGze$JaqI.iMWefJ2vul7r0l4C0
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-889742208
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-889742208
 revocation-check none
 rsakeypair TP-self-signed-889742208
!
!
crypto pki certificate chain TP-self-signed-889742208
 certificate self-signed 01
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/2
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/3
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport mode access
 spanning-tree portfast
!
```

```
interface FastEthernet0/6
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport mode access
```

```
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport mode trunk
!
interface FastEthernet0/24
 switchport mode trunk
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan102
 ip address 172.16.22.3 255.255.255.0
!
ip default-gateway 172.16.22.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.30.2. IP Interfaces

```
BR1_S3#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan102          172.16.22.3 YES manual down          down
FastEthernet0/1  unassigned  YES unset down           down
FastEthernet0/2  unassigned  YES unset down           down
FastEthernet0/3  unassigned  YES unset down           down
FastEthernet0/4  unassigned  YES unset down           down
FastEthernet0/5  unassigned  YES unset down           down
FastEthernet0/6  unassigned  YES unset down           down
FastEthernet0/7  unassigned  YES unset down           down
FastEthernet0/8  unassigned  YES unset down           down
FastEthernet0/9  unassigned  YES unset down           down
FastEthernet0/10 unassigned  YES unset down           down
FastEthernet0/11 unassigned  YES unset down           down
FastEthernet0/12 unassigned  YES unset down           down
FastEthernet0/13 unassigned  YES unset down           down
FastEthernet0/14 unassigned  YES unset down           down
```

```
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset up            up
FastEthernet0/24 unassigned  YES unset up            up
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.30.3. Interface Status

```
BR1_S3#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 notconnect 1       auto auto 10/100BaseTX
Fa0/2                 notconnect 1       auto auto 10/100BaseTX
Fa0/3                 notconnect 1       auto auto 10/100BaseTX
Fa0/4                 notconnect 1       auto auto 10/100BaseTX
Fa0/5                 notconnect 1       auto auto 10/100BaseTX
Fa0/6                 notconnect 1       auto auto 10/100BaseTX
Fa0/7                 notconnect 1       auto auto 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                connected trunk   a-full a-100 10/100BaseTX
Fa0/24                connected trunk   a-full a-100 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.30.4. Interface Trunk

```
BR1_S3#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/23   on           802.1q     trunking   1
Fa0/24   on           802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/23   1-4094
Fa0/24   1-4094
```

```
10
11 Port     Vlans allowed and active in management domain
12 Fa0/23   1
13 Fa0/24   1
14
15 Port     Vlans in spanning tree forwarding state and not pruned
16 Fa0/23   1
17 Fa0/24   none
```

B.30.5. Neighbors

```
1 BR1_S3#show cdp neighbors
2 Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
3              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
4              D - Remote, C - CVTA, M - Two-port Mac Relay
5
6 Device ID    Local Intrfce Holdtme Capability Platform Port ID
7 BR1_S1       Fas 0/24      171         R S I WS-C3560- Fas 0/5
8 BR1_S1       Fas 0/23      171         R S I WS-C3560- Fas 0/4
```

B.30.6. IP Route

```
1 BR1_S3#show ip route
2           ^
3 % Invalid input detected at '^' marker.
```

B.30.7. Spanning Tree

```
1  BR1_S3#show spanning
2
3  VLAN0001
4    Spanning tree enabled protocol ieee
5    Root ID Priority 32769
6            Address  001a.2fd4.2480
7            Cost     19
8            Port     23 (FastEthernet0/23)
9            Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
10
11   Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
12           Address  f025.72d1.8a80
13           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
14           Aging Time 300 sec
15
16 Interface      Role Sts Cost Prio.Nbr Type
17 ------------------ ---- --- --------- -------- --------------------------------
18 Fa0/23         Root FWD 19   128.23 P2p
19 Fa0/24         Altn BLK 19   128.24 P2p
```

B.30.8. VLAN

```
1 BR1_S3#show vlan
2
3 VLAN Name                   Status  Ports
```

```
---- -------------------------------- --------- -------------------------------
1   default                          active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                             Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                             Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                             Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                             Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                             Fa0/21, Fa0/22, Gi0/1, Gi0/2
1002 fddi-default                    act/unsup
1003 token-ring-default              act/unsup
1004 fddinet-default                 act/unsup
1005 trnet-default                   act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003  1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.31. BR1-S4

B.31.1. Running Configuration

```
BR1_S4#show run
Building configuration...

Current configuration : 2968 bytes
!
! Last configuration change at 07:24:26 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR1_S4
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$NF2.$38hwIO7bd5UD0zmPQVWni.
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
!
!
crypto pki trustpoint TP-self-signed-1915116160
 enrollment selfsigned
```

```
 subject-name cn=IOS-Self-Signed-Certificate-1915116160
 revocation-check none
 rsakeypair TP-self-signed-1915116160
!
!
crypto pki certificate chain TP-self-signed-1915116160
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/2
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/3
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport mode access
 spanning-tree portfast
```

```
92  !
93  interface FastEthernet0/11
94   switchport mode access
95   spanning-tree portfast
96  !
97  interface FastEthernet0/12
98   switchport mode access
99   spanning-tree portfast
100 !
101 interface FastEthernet0/13
102  switchport mode access
103  spanning-tree portfast
104 !
105 interface FastEthernet0/14
106  switchport mode access
107  spanning-tree portfast
108 !
109 interface FastEthernet0/15
110  switchport mode access
111  spanning-tree portfast
112 !
113 interface FastEthernet0/16
114  switchport mode access
115  spanning-tree portfast
116 !
117 interface FastEthernet0/17
118  switchport mode access
119  spanning-tree portfast
120 !
121 interface FastEthernet0/18
122  switchport mode access
123  spanning-tree portfast
124 !
125 interface FastEthernet0/19
126  switchport mode access
127  spanning-tree portfast
128 !
129 interface FastEthernet0/20
130  switchport mode access
131  spanning-tree portfast
132 !
133 interface FastEthernet0/21
134  switchport mode access
135  spanning-tree portfast
136 !
137 interface FastEthernet0/22
138  switchport mode access
139  spanning-tree portfast
140 !
141 interface FastEthernet0/23
142  switchport mode trunk
143 !
144 interface FastEthernet0/24
145  switchport mode trunk
146 !
147 interface GigabitEthernet0/1
148 !
149 interface GigabitEthernet0/2
150 !
151 interface Vlan1
152  no ip address
153  shutdown
```

```
!
interface Vlan102
 ip address 172.16.22.4 255.255.255.0
!
ip default-gateway 172.16.22.1
ip http server
ip http secure-server
snmp-server community public RO
snmp-server community private RW
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.31.2. IP Interfaces

```
BR1_S4#show ip interface brief
Interface        IP-Address  OK? Method Status       Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan102          172.16.22.4 YES manual down         down
FastEthernet0/1  unassigned  YES unset down          down
FastEthernet0/2  unassigned  YES unset down          down
FastEthernet0/3  unassigned  YES unset down          down
FastEthernet0/4  unassigned  YES unset down          down
FastEthernet0/5  unassigned  YES unset down          down
FastEthernet0/6  unassigned  YES unset down          down
FastEthernet0/7  unassigned  YES unset down          down
FastEthernet0/8  unassigned  YES unset down          down
FastEthernet0/9  unassigned  YES unset down          down
FastEthernet0/10 unassigned  YES unset down          down
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset up            up
FastEthernet0/24 unassigned  YES unset up            up
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.31.3. Interface Status

```
BR1_S4# show interface status

```

```
Port    Name               Status    Vlan    Duplex Speed Type
Fa0/1                      notconnect 1         auto auto 10/100BaseTX
Fa0/2                      notconnect 1         auto auto 10/100BaseTX
Fa0/3                      notconnect 1         auto auto 10/100BaseTX
Fa0/4                      notconnect 1         auto auto 10/100BaseTX
Fa0/5                      notconnect 1         auto auto 10/100BaseTX
Fa0/6                      notconnect 1         auto auto 10/100BaseTX
Fa0/7                      notconnect 1         auto auto 10/100BaseTX
Fa0/8                      notconnect 1         auto auto 10/100BaseTX
Fa0/9                      notconnect 1         auto auto 10/100BaseTX
Fa0/10                     notconnect 1         auto auto 10/100BaseTX
Fa0/11                     notconnect 1         auto auto 10/100BaseTX
Fa0/12                     notconnect 1         auto auto 10/100BaseTX
Fa0/13                     notconnect 1         auto auto 10/100BaseTX
Fa0/14                     notconnect 1         auto auto 10/100BaseTX
Fa0/15                     notconnect 1         auto auto 10/100BaseTX
Fa0/16                     notconnect 1         auto auto 10/100BaseTX
Fa0/17                     notconnect 1         auto auto 10/100BaseTX
Fa0/18                     notconnect 1         auto auto 10/100BaseTX
Fa0/19                     notconnect 1         auto auto 10/100BaseTX
Fa0/20                     notconnect 1         auto auto 10/100BaseTX
Fa0/21                     notconnect 1         auto auto 10/100BaseTX

Port    Name               Status    Vlan    Duplex Speed Type
Fa0/22                     notconnect 1         auto auto 10/100BaseTX
Fa0/23                     connected trunk    a-full a-100 10/100BaseTX
Fa0/24                     connected trunk    a-full a-100 10/100BaseTX
Gi0/1                      notconnect 1         auto auto Not Present
Gi0/2                      notconnect 1         auto auto Not Present
```

B.31.4. Interface Trunk

```
BR1_S4#show interface trunk

Port        Mode         Encapsulation Status  Native vlan
Fa0/23      on           802.1q     trunking   1
Fa0/24      on           802.1q     trunking   1

Port        Vlans allowed on trunk
Fa0/23      1-4094
Fa0/24      1-4094

Port        Vlans allowed and active in management domain
Fa0/23      1
Fa0/24      1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/23      1
Fa0/24      none
```

B.31.5. Neighbors

```
BR1_S4#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
```

```
BR1_S1       Fas 0/23      173         R S I WS-C3560- Fas 0/6
BR1_S1       Fas 0/24      173         R S I WS-C3560- Fas 0/7
```

B.31.6. IP Route

```
BR1_S4#show ip route
            ^
% Invalid input detected at '^' marker.
```

B.31.7. Spanning Tree

```
BR1_S4#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  001a.2fd4.2480
          Cost     19
          Port     23 (FastEthernet0/23)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  f025.72f7.fe00
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p
```

B.31.8. VLAN

```
BR1_S4#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- --------------------------------
1   default                  active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                     Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                     Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/21, Fa0/22, Gi0/1, Gi0/2
1002 fddi-default            act/unsup
1003 token-ring-default      act/unsup
1004 fddinet-default         act/unsup
1005 trnet-default           act/unsup

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 tr 101003   1500 -    -     -      -   -      0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trnet 101005 1500 -   -     -      ibm -      0    0

```

```
Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.32. BR2-S2

B.32.1. Running Configuration

```
BR2_S2#show run
Building configuration...

Current configuration : 3097 bytes
!
! Last configuration change at 13:11:20 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR2_S2
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$GtpN$haY30dKGDmWJMguQrdwfF.
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
vtp domain CCIE
vtp mode transparent
no ip domain-lookup
!
!
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
```

```
!
vlan 2-5
!
vlan 10
 name HR
!
vlan 11
 name IT
!
vlan 17,19,46,1006
!
!
!
!
!
!
!
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/2
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/3
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport mode access
```

```
112  spanning-tree portfast
113 !
114 interface FastEthernet0/11
115  switchport mode access
116  spanning-tree portfast
117 !
118 interface FastEthernet0/12
119  switchport mode access
120  spanning-tree portfast
121 !
122 interface FastEthernet0/13
123  switchport mode access
124  spanning-tree portfast
125 !
126 interface FastEthernet0/14
127  switchport mode access
128  spanning-tree portfast
129 !
130 interface FastEthernet0/15
131  switchport mode access
132  spanning-tree portfast
133 !
134 interface FastEthernet0/16
135  switchport mode access
136  spanning-tree portfast
137 !
138 interface FastEthernet0/17
139  switchport mode access
140  spanning-tree portfast
141 !
142 interface FastEthernet0/18
143  switchport mode access
144  spanning-tree portfast
145 !
146 interface FastEthernet0/19
147  switchport mode access
148  spanning-tree portfast
149 !
150 interface FastEthernet0/20
151  switchport mode access
152  spanning-tree portfast
153 !
154 interface FastEthernet0/21
155  switchport mode access
156  spanning-tree portfast
157 !
158 interface FastEthernet0/22
159  switchport mode access
160  spanning-tree portfast
161 !
162 interface FastEthernet0/23
163  switchport mode access
164  spanning-tree portfast
165 !
166 interface FastEthernet0/24
167 !
168 interface GigabitEthernet0/1
169 !
170 interface GigabitEthernet0/2
171 !
172 interface Vlan1
173  no ip address
```

```
 shutdown
!
interface Vlan103
 ip address 172.16.23.2 255.255.255.0
!
ip default-gateway 172.16.23.1
ip http server
ip http secure-server
!
!
ip sla enable reaction-alerts
snmp-server community private RW
snmp-server community public RO
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.32.2. IP Interfaces

```
BR2_S2#show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan103          172.16.23.2 YES manual down          down
FastEthernet0/1  unassigned  YES unset down           down
FastEthernet0/2  unassigned  YES unset down           down
FastEthernet0/3  unassigned  YES unset down           down
FastEthernet0/4  unassigned  YES unset down           down
FastEthernet0/5  unassigned  YES unset down           down
FastEthernet0/6  unassigned  YES unset up             up
FastEthernet0/7  unassigned  YES unset down           down
FastEthernet0/8  unassigned  YES unset down           down
FastEthernet0/9  unassigned  YES unset down           down
FastEthernet0/10 unassigned  YES unset down           down
FastEthernet0/11 unassigned  YES unset down           down
FastEthernet0/12 unassigned  YES unset down           down
FastEthernet0/13 unassigned  YES unset down           down
FastEthernet0/14 unassigned  YES unset down           down
FastEthernet0/15 unassigned  YES unset down           down
FastEthernet0/16 unassigned  YES unset down           down
FastEthernet0/17 unassigned  YES unset down           down
FastEthernet0/18 unassigned  YES unset down           down
FastEthernet0/19 unassigned  YES unset down           down
FastEthernet0/20 unassigned  YES unset down           down
FastEthernet0/21 unassigned  YES unset down           down
FastEthernet0/22 unassigned  YES unset down           down
FastEthernet0/23 unassigned  YES unset up             up
FastEthernet0/24 unassigned  YES unset up             up
GigabitEthernet0/1 unassigned YES unset down          down
GigabitEthernet0/2 unassigned YES unset down          down
```

B.32.3. Interface Status

```
BR2_S2#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 notconnect 1       auto auto 10/100BaseTX
Fa0/2                 notconnect 1       auto auto 10/100BaseTX
Fa0/3                 notconnect 1       auto auto 10/100BaseTX
Fa0/4                 notconnect 1       auto auto 10/100BaseTX
Fa0/5                 notconnect 1       auto auto 10/100BaseTX
Fa0/6                 connected 1       a-full a-100 10/100BaseTX
Fa0/7                 notconnect 1       auto auto 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                connected 1       a-full a-100 10/100BaseTX
Fa0/24                connected trunk   a-full a-100 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.32.4. Interface Trunk

```
BR2_S2#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/24   auto         n-802.1q   trunking   1

Port     Vlans allowed on trunk
Fa0/24   1-4094

Port     Vlans allowed and active in management domain
Fa0/24   1-5,10-11,17,19,46,1006

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/24   1-5,10-11,17,19,46,1006
```

B.32.5. Neighbors

```
BR2_S2#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

```

```
Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR2_S1       Fas 0/24      170         R S I WS-C3560V Fas 0/3
BR2_S1       Fas 0/23      169         R S I WS-C3560V Fas 0/2
```

B.32.6. IP Route

```
BR2_S2#show ip route
Default gateway is 172.16.23.1

Host          Gateway      Last Use Total Uses Interface
ICMP redirect cache is empty
```

B.32.7. Spanning Tree

```
BR2_S2#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/6          Desg FWD 19   128.8  P2p Edge
Fa0/23         Desg FWD 19   128.25 P2p
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0002
  Spanning tree enabled protocol ieee
  Root ID Priority 32770
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32770 (priority 32768 sys-id-ext 2)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0003
  Spanning tree enabled protocol ieee
  Root ID Priority 32771
          Address  24b6.5725.d180
```

```
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32771 (priority 32768 sys-id-ext 3)
         Address  24b6.5725.d180
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0004
  Spanning tree enabled protocol ieee
  Root ID Priority 32772
         Address  24b6.5725.d180
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32772 (priority 32768 sys-id-ext 4)
         Address  24b6.5725.d180
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0005
  Spanning tree enabled protocol ieee
  Root ID Priority 32773
         Address  24b6.5725.d180
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32773 (priority 32768 sys-id-ext 5)
         Address  24b6.5725.d180
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
         Address  24b6.5725.d180
         This bridge is the root
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
         Address  24b6.5725.d180
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

```

```
Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0011
  Spanning tree enabled protocol ieee
  Root ID Priority 32779
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32779 (priority 32768 sys-id-ext 11)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0017
  Spanning tree enabled protocol ieee
  Root ID Priority 32785
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32785 (priority 32768 sys-id-ext 17)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0019
  Spanning tree enabled protocol ieee
  Root ID Priority 32787
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32787 (priority 32768 sys-id-ext 19)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19   128.26 P2p



VLAN0046
  Spanning tree enabled protocol ieee
```

```
  Root ID Priority 32814
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32814 (priority 32768 sys-id-ext 46)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------ ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19    128.26 P2p



VLAN1006
  Spanning tree enabled protocol ieee
  Root ID Priority 33774
          Address  24b6.5725.d180
          This bridge is the root
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 33774 (priority 32768 sys-id-ext 1006)
          Address  24b6.5725.d180
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost  Prio.Nbr Type
------------------ ---- --- --------- -------- --------------------------------
Fa0/24         Desg FWD 19    128.26 P2p
```

B.32.8. VLAN

```
BR2_S2#show vlan

VLAN Name                    Status  Ports
---- ------------------------------- --------- -------------------------------
1   default                  active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                     Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                     Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                     Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                     Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                     Fa0/21, Fa0/22, Fa0/23, Gi0/1
                                     Gi0/2
2   VLAN0002                 active
3   VLAN0003                 active
4   VLAN0004                 active
5   VLAN0005                 active
10  HR                       active
11  IT                       active
17  VLAN0017                 active
19  VLAN0019                 active
46  VLAN0046                 active
1002 fddi-default            act/unsup
1003 trcrf-default           act/unsup
1004 fddinet-default         act/unsup
1005 trbrf-default           act/unsup

VLAN Name                    Status  Ports
```

```
---- -------------------------------- --------- -------------------------------
1006 VLAN1006                active

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
2   enet 100002  1500 -    -     -      -   -      0    0
3   enet 100003  1500 -    -     -      -   -      0    0
4   enet 100004  1500 -    -     -      -   -      0    0
5   enet 100005  1500 -    -     -      -   -      0    0
10  enet 100010  1500 -    -     -      -   -      0    0
11  enet 100011  1500 -    -     -      -   -      0    0
17  enet 100017  1500 -    -     -      -   -      0    0
19  enet 100019  1500 -    -     -      -   -      0    0
46  enet 100046  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trbrf 101005 4472 -   -     15     ibm -      0    0
1006 enet 101006 1500 -    -     -      -   -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ------------------------------------------
```

B.33. BR2-S3

B.33.1. Running Configuration

```
BR2_S3#show run
Building configuration...

Current configuration : 3046 bytes
!
! Last configuration change at 13:12:02 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR2_S3
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$nqEC$NxCxIG6gZVime6v0dVtCx.
```

```
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
vtp domain CCIE
vtp mode transparent
!
!
no ip domain-lookup
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
      quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
vlan 2-5
!
vlan 10
 name HR
!
vlan 11
 name IT
!
vlan 17,19,46,1006
!
!
!
!
!
!
interface FastEthernet0/1
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/2
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/3
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport mode access
 spanning-tree portfast
!
```

```
interface FastEthernet0/5
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/17
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport mode access
```

```
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan103
 ip address 172.16.23.3 255.255.255.0
!
ip default-gateway 172.16.23.1
ip http server
ip http secure-server
snmp-server community private RW
snmp-server community public RO
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.33.2. IP Interfaces

```
BR2_S3#     show ip interface brief
Interface        IP-Address  OK? Method Status        Protocol
Vlan1            unassigned  YES unset administratively down down
Vlan103          172.16.23.3 YES manual down          down
FastEthernet0/1  unassigned  YES unset down           down
FastEthernet0/2  unassigned  YES unset down           down
FastEthernet0/3  unassigned  YES unset down           down
FastEthernet0/4  unassigned  YES unset down           down
FastEthernet0/5  unassigned  YES unset down           down
FastEthernet0/6  unassigned  YES unset down           down
FastEthernet0/7  unassigned  YES unset down           down
FastEthernet0/8  unassigned  YES unset down           down
FastEthernet0/9  unassigned  YES unset down           down
FastEthernet0/10 unassigned  YES unset down           down
```

```
FastEthernet0/11 unassigned  YES unset down          down
FastEthernet0/12 unassigned  YES unset down          down
FastEthernet0/13 unassigned  YES unset down          down
FastEthernet0/14 unassigned  YES unset down          down
FastEthernet0/15 unassigned  YES unset down          down
FastEthernet0/16 unassigned  YES unset down          down
FastEthernet0/17 unassigned  YES unset down          down
FastEthernet0/18 unassigned  YES unset down          down
FastEthernet0/19 unassigned  YES unset down          down
FastEthernet0/20 unassigned  YES unset down          down
FastEthernet0/21 unassigned  YES unset down          down
FastEthernet0/22 unassigned  YES unset down          down
FastEthernet0/23 unassigned  YES unset up            up
FastEthernet0/24 unassigned  YES unset up            up
GigabitEthernet0/1 unassigned YES unset down         down
GigabitEthernet0/2 unassigned YES unset down         down
```

B.33.3. Interface Status

```
BR2_S3#show interface status

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/1                 notconnect 1       auto auto 10/100BaseTX
Fa0/2                 notconnect 1       auto auto 10/100BaseTX
Fa0/3                 notconnect 1       auto auto 10/100BaseTX
Fa0/4                 notconnect 1       auto auto 10/100BaseTX
Fa0/5                 notconnect 1       auto auto 10/100BaseTX
Fa0/6                 notconnect 1       auto auto 10/100BaseTX
Fa0/7                 notconnect 1       auto auto 10/100BaseTX
Fa0/8                 notconnect 1       auto auto 10/100BaseTX
Fa0/9                 notconnect 1       auto auto 10/100BaseTX
Fa0/10                notconnect 1       auto auto 10/100BaseTX
Fa0/11                notconnect 1       auto auto 10/100BaseTX
Fa0/12                notconnect 1       auto auto 10/100BaseTX
Fa0/13                notconnect 1       auto auto 10/100BaseTX
Fa0/14                notconnect 1       auto auto 10/100BaseTX
Fa0/15                notconnect 1       auto auto 10/100BaseTX
Fa0/16                notconnect 1       auto auto 10/100BaseTX
Fa0/17                notconnect 1       auto auto 10/100BaseTX
Fa0/18                notconnect 1       auto auto 10/100BaseTX
Fa0/19                notconnect 1       auto auto 10/100BaseTX
Fa0/20                notconnect 1       auto auto 10/100BaseTX
Fa0/21                notconnect 1       auto auto 10/100BaseTX

Port    Name          Status    Vlan    Duplex Speed Type
Fa0/22                notconnect 1       auto auto 10/100BaseTX
Fa0/23                connected 1       a-full a-100 10/100BaseTX
Fa0/24                connected trunk   a-full a-100 10/100BaseTX
Gi0/1                 notconnect 1       auto auto Not Present
Gi0/2                 notconnect 1       auto auto Not Present
```

B.33.4. Interface Trunk

```
BR2_S3#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/24   auto         802.1q     trunking   1

```

```
Port      Vlans allowed on trunk
Fa0/24    1-4094

Port      Vlans allowed and active in management domain
Fa0/24    1-5,10-11,17,19,46,1006

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/24    1-5,10-11,17,19,46,1006
```

B.33.5. Neighbors

```
BR2_S3#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR2_S1       Fas 0/24      176         R S I WS-C3560V Fas 0/5
BR2_S1       Fas 0/23      176         R S I WS-C3560V Fas 0/4
```

B.33.6. IP Route

```
BR2_S3# show ip route
              ^
% Invalid input detected at '^' marker.
```

B.33.7. Spanning Tree

```
2_S3#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  24b6.5725.d180
          Cost     38
          Port     24 (FastEthernet0/24)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
          Address  f025.72f7.e680
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Desg BKN*19   128.23 P2p Edge *TYPE_Inc
Fa0/24         Root FWD 19   128.24 P2p



VLAN0002
  Spanning tree enabled protocol ieee
  Root ID Priority 32770
          Address  24b6.5725.d180
          Cost     38
          Port     24 (FastEthernet0/24)
```

```
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32770 (priority 32768 sys-id-ext 2)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p



VLAN0003
  Spanning tree enabled protocol ieee
  Root ID Priority 32771
         Address  24b6.5725.d180
         Cost     38
         Port     24 (FastEthernet0/24)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32771 (priority 32768 sys-id-ext 3)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p



VLAN0004
  Spanning tree enabled protocol ieee
  Root ID Priority 32772
         Address  24b6.5725.d180
         Cost     38
         Port     24 (FastEthernet0/24)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32772 (priority 32768 sys-id-ext 4)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p



VLAN0005
  Spanning tree enabled protocol ieee
  Root ID Priority 32773
         Address  24b6.5725.d180
         Cost     38
         Port     24 (FastEthernet0/24)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32773 (priority 32768 sys-id-ext 5)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p



VLAN0010
  Spanning tree enabled protocol ieee
  Root ID Priority 32778
         Address  24b6.5725.d180
         Cost     38
         Port     24 (FastEthernet0/24)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p



VLAN0011
  Spanning tree enabled protocol ieee
  Root ID Priority 32779
         Address  24b6.5725.d180
         Cost     38
         Port     24 (FastEthernet0/24)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32779 (priority 32768 sys-id-ext 11)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p



VLAN0017
  Spanning tree enabled protocol ieee
  Root ID Priority 32785
         Address  24b6.5725.d180
         Cost     38
         Port     24 (FastEthernet0/24)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32785 (priority 32768 sys-id-ext 17)
         Address  f025.72f7.e680
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/24         Root FWD 19   128.24 P2p
```

```
153
154
155
156 VLAN0019
157   Spanning tree enabled protocol ieee
158   Root ID Priority 32787
159           Address  24b6.5725.d180
160           Cost     38
161           Port     24 (FastEthernet0/24)
162           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
163
164   Bridge ID Priority 32787 (priority 32768 sys-id-ext 19)
165           Address  f025.72f7.e680
166           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
167           Aging Time 300 sec
168
169 Interface      Role Sts Cost Prio.Nbr Type
170 ------------------- ---- --- --------- -------- --------------------------------
171 Fa0/24         Root FWD 19   128.24 P2p
172
173
174
175 VLAN0046
176   Spanning tree enabled protocol ieee
177   Root ID Priority 32814
178           Address  24b6.5725.d180
179           Cost     38
180           Port     24 (FastEthernet0/24)
181           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
182
183   Bridge ID Priority 32814 (priority 32768 sys-id-ext 46)
184           Address  f025.72f7.e680
185           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
186           Aging Time 300 sec
187
188 Interface      Role Sts Cost Prio.Nbr Type
189 ------------------- ---- --- --------- -------- --------------------------------
190 Fa0/24         Root FWD 19   128.24 P2p
191
192
193
194 VLAN1006
195   Spanning tree enabled protocol ieee
196   Root ID Priority 33774
197           Address  24b6.5725.d180
198           Cost     38
199           Port     24 (FastEthernet0/24)
200           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
201
202   Bridge ID Priority 33774 (priority 32768 sys-id-ext 1006)
203           Address  f025.72f7.e680
204           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
205           Aging Time 300 sec
206
207 Interface      Role Sts Cost Prio.Nbr Type
208 ------------------- ---- --- --------- -------- --------------------------------
209 Fa0/24         Root FWD 19   128.24 P2p
```

B.33.8. VLAN

```
BR2_S3#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Gi0/1
                                                 Gi0/2
2    VLAN0002                          active
3    VLAN0003                          active
4    VLAN0004                          active
5    VLAN0005                          active
10   HR                                active
11   IT                                active
17   VLAN0017                          active
19   VLAN0019                          active
46   VLAN0046                          active
1002 fddi-default                      act/unsup
1003 trcrf-default                     act/unsup
1004 fddinet-default                   act/unsup
1005 trbrf-default                     act/unsup

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1006 VLAN1006                          active

VLAN Type SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
2    enet  100002     1500  -      -      -        -    -        0      0
3    enet  100003     1500  -      -      -        -    -        0      0
4    enet  100004     1500  -      -      -        -    -        0      0
5    enet  100005     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
11   enet  100011     1500  -      -      -        -    -        0      0
17   enet  100017     1500  -      -      -        -    -        0      0
19   enet  100019     1500  -      -      -        -    -        0      0
46   enet  100046     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
1003 trcrf 101003     4472  1005   3276   -        -    srb      0      0
1004 fdnet 101004     1500  -      -      -        ieee -        0      0
1005 trbrf 101005     4472  -      -      15       ibm  -        0      0
1006 enet  101006     1500  -      -      -        -    -        0      0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7       7       off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type              Ports
------- --------- ----------------- ------------------------------------------
```

B.34. BR2-S4

B.34.1. Running Configuration

```
BR2_S4#show run
Building configuration...

Current configuration : 2879 bytes
!
! Last configuration change at 13:12:38 UTC Mon Mar 1 1993
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname BR2_S4
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$4Bgw$1NJwpzYWCd7Jsk7qFRO68.
!
username ins password 0 ins@lab
no aaa new-model
system mtu routing 1500
!
!
no ip domain-lookup
!
!
crypto pki trustpoint HTTPS_SS_CERT_KEYPAIR
 enrollment selfsigned
 serial-number
 revocation-check none
 rsakeypair HTTPS_SS_CERT_KEYPAIR
!
!
crypto pki certificate chain HTTPS_SS_CERT_KEYPAIR
 certificate self-signed 01
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface FastEthernet0/1
```

```
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/2
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/3
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/4
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/5
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/6
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/7
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/11
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/12
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/13
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/14
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/15
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/16
 switchport mode access
 spanning-tree portfast
```

```
!
interface FastEthernet0/17
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/18
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/19
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/20
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/21
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/22
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
!
interface Vlan103
 ip address 172.16.23.4 255.255.255.0
!
ip default-gateway 172.16.23.1
ip http server
ip http secure-server
snmp-server community private RW
snmp-server community public RO
!
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

B.34.2. IP Interfaces

```
BR2_S4#show ip interface brief
Interface        IP-Address  OK? Method Status       Protocol
```

```
Vlan1              unassigned      YES unset up                    up
Vlan103            172.16.23.4     YES manual down                 down
FastEthernet0/1    unassigned      YES unset down                  down
FastEthernet0/2    unassigned      YES unset down                  down
FastEthernet0/3    unassigned      YES unset down                  down
FastEthernet0/4    unassigned      YES unset down                  down
FastEthernet0/5    unassigned      YES unset down                  down
FastEthernet0/6    unassigned      YES unset down                  down
FastEthernet0/7    unassigned      YES unset down                  down
FastEthernet0/8    unassigned      YES unset down                  down
FastEthernet0/9    unassigned      YES unset down                  down
FastEthernet0/10   unassigned      YES unset down                  down
FastEthernet0/11   unassigned      YES unset down                  down
FastEthernet0/12   unassigned      YES unset down                  down
FastEthernet0/13   unassigned      YES unset down                  down
FastEthernet0/14   unassigned      YES unset down                  down
FastEthernet0/15   unassigned      YES unset down                  down
FastEthernet0/16   unassigned      YES unset down                  down
FastEthernet0/17   unassigned      YES unset down                  down
FastEthernet0/18   unassigned      YES unset down                  down
FastEthernet0/19   unassigned      YES unset down                  down
FastEthernet0/20   unassigned      YES unset down                  down
FastEthernet0/21   unassigned      YES unset down                  down
FastEthernet0/22   unassigned      YES unset down                  down
FastEthernet0/23   unassigned      YES unset up                    up
FastEthernet0/24   unassigned      YES unset up                    up
GigabitEthernet0/1 unassigned YES unset down                       down
GigabitEthernet0/2 unassigned YES unset down                       down
```

B.34.3. Interface Status

```
BR2_S4#show interface status

Port      Name               Status       Vlan       Duplex Speed Type
Fa0/1                        notconnect   1            auto auto 10/100BaseTX
Fa0/2                        notconnect   1            auto auto 10/100BaseTX
Fa0/3                        notconnect   1            auto auto 10/100BaseTX
Fa0/4                        notconnect   1            auto auto 10/100BaseTX
Fa0/5                        notconnect   1            auto auto 10/100BaseTX
Fa0/6                        notconnect   1            auto auto 10/100BaseTX
Fa0/7                        notconnect   1            auto auto 10/100BaseTX
Fa0/8                        notconnect   1            auto auto 10/100BaseTX
Fa0/9                        notconnect   1            auto auto 10/100BaseTX
Fa0/10                       notconnect   1            auto auto 10/100BaseTX
Fa0/11                       notconnect   1            auto auto 10/100BaseTX
Fa0/12                       notconnect   1            auto auto 10/100BaseTX
Fa0/13                       notconnect   1            auto auto 10/100BaseTX
Fa0/14                       notconnect   1            auto auto 10/100BaseTX
Fa0/15                       notconnect   1            auto auto 10/100BaseTX
Fa0/16                       notconnect   1            auto auto 10/100BaseTX
Fa0/17                       notconnect   1            auto auto 10/100BaseTX
Fa0/18                       notconnect   1            auto auto 10/100BaseTX
Fa0/19                       notconnect   1            auto auto 10/100BaseTX
Fa0/20                       notconnect   1            auto auto 10/100BaseTX
Fa0/21                       notconnect   1            auto auto 10/100BaseTX

Port      Name               Status       Vlan       Duplex Speed Type
Fa0/22                       notconnect   1            auto auto 10/100BaseTX
Fa0/23                       connected    trunk      a-full a-100 10/100BaseTX
Fa0/24                       connected    trunk      a-full a-100 10/100BaseTX
```

```
Gi0/1                notconnect 1       auto auto Not Present
Gi0/2                notconnect 1       auto auto Not Present
```

B.34.4. Interface Trunk

```
BR2_S4#show interface trunk

Port     Mode         Encapsulation Status  Native vlan
Fa0/23   auto         802.1q     trunking   1
Fa0/24   auto         802.1q     trunking   1

Port     Vlans allowed on trunk
Fa0/23   1-4094
Fa0/24   1-4094

Port     Vlans allowed and active in management domain
Fa0/23   1-5,17,19,46,1006
Fa0/24   1-5,17,19,46,1006

Port     Vlans in spanning tree forwarding state and not pruned
Fa0/23   1-5,17,19,46,1006
Fa0/24   none
```

B.34.5. Neighbors

```
BR2_S4#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
              S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
              D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID    Local Intrfce Holdtme Capability Platform Port ID
BR2_S1       Fas 0/24      151         R S I WS-C3560V Fas 0/7
BR2_S1       Fas 0/23      151         R S I WS-C3560V Fas 0/6
```

B.34.6. IP Route

```
BR2_S4#show ip route
             ^
% Invalid input detected at '^' marker.
```

B.34.7. Spanning Tree

```
BR2_S4#show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID Priority 32769
          Address  24b6.5725.d180
          Cost     38
          Port     23 (FastEthernet0/23)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)
```

```
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0002
  Spanning tree enabled protocol ieee
  Root ID Priority 32770
         Address  24b6.5725.d180
         Cost     38
         Port     23 (FastEthernet0/23)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32770 (priority 32768 sys-id-ext 2)
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0003
  Spanning tree enabled protocol ieee
  Root ID Priority 32771
         Address  24b6.5725.d180
         Cost     38
         Port     23 (FastEthernet0/23)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32771 (priority 32768 sys-id-ext 3)
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0004
  Spanning tree enabled protocol ieee
  Root ID Priority 32772
         Address  24b6.5725.d180
         Cost     38
         Port     23 (FastEthernet0/23)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32772 (priority 32768 sys-id-ext 4)
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0005
  Spanning tree enabled protocol ieee
  Root ID Priority 32773
         Address  24b6.5725.d180
         Cost     38
         Port     23 (FastEthernet0/23)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32773 (priority 32768 sys-id-ext 5)
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0017
  Spanning tree enabled protocol ieee
  Root ID Priority 32785
         Address  24b6.5725.d180
         Cost     38
         Port     23 (FastEthernet0/23)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32785 (priority 32768 sys-id-ext 17)
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0019
  Spanning tree enabled protocol ieee
  Root ID Priority 32787
         Address  24b6.5725.d180
         Cost     38
         Port     23 (FastEthernet0/23)
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32787 (priority 32768 sys-id-ext 19)
         Address  f025.72f9.bf80
         Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
         Aging Time 300 sec

```

```
Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN0046
  Spanning tree enabled protocol ieee
  Root ID Priority 32814
          Address  24b6.5725.d180
          Cost     38
          Port     23 (FastEthernet0/23)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 32814 (priority 32768 sys-id-ext 46)
          Address  f025.72f9.bf80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p



VLAN1006
  Spanning tree enabled protocol ieee
  Root ID Priority 33774
          Address  24b6.5725.d180
          Cost     38
          Port     23 (FastEthernet0/23)
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID Priority 33774 (priority 32768 sys-id-ext 1006)
          Address  f025.72f9.bf80
          Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time 300 sec

Interface      Role Sts Cost Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Fa0/23         Root FWD 19   128.23 P2p
Fa0/24         Altn BLK 19   128.24 P2p
```

B.34.8. VLAN

```
BR2_S4#show vlan

VLAN Name                              Status  Ports
---- --------------------------------- --------- -------------------------------
1   default                            active  Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                               Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                               Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                               Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                               Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                               Fa0/21, Fa0/22, Gi0/1, Gi0/2
2   VLAN0002                           active
3   VLAN0003                           active
4   VLAN0004                           active
```

```
5   VLAN0005                active
17  VLAN0017                active
19  VLAN0019                active
46  VLAN0046                active
1002 fddi-default           act/unsup
1003 trcrf-default          act/unsup
1004 fddinet-default        act/unsup
1005 trbrf-default          act/unsup
1006 VLAN1006               active

VLAN Type SAID   MTU  Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1   enet 100001  1500 -    -     -      -   -      0    0
2   enet 100002  1500 -    -     -      -   -      0    0
3   enet 100003  1500 -    -     -      -   -      0    0
4   enet 100004  1500 -    -     -      -   -      0    0
5   enet 100005  1500 -    -     -      -   -      0    0
17  enet 100017  1500 -    -     -      -   -      0    0
19  enet 100019  1500 -    -     -      -   -      0    0
46  enet 100046  1500 -    -     -      -   -      0    0
1002 fddi 101002 1500 -    -     -      -   -      0    0
1003 trcrf 101003 4472 1005 3276 -     -   srb    0    0
1004 fdnet 101004 1500 -   -     -      ieee -     0    0
1005 trbrf 101005 4472 -   -     15     ibm -      0    0
1006 enet 101006 1500 -    -     -      -   -      0    0


VLAN AREHops STEHops Backup CRF
---- ------- ------- ----------
1003 7    7     off

Remote SPAN VLANs
------------------------------------------------------------------------------


Primary Secondary Type     Ports
------- --------- ----------------- ----------------------------------------
```