



SBA
FOR
GOVT

LARGE

BORDERLESS
NETWORKS

LAN Configuration Guide

● ● ● SBA FOR GOVERNMENT

Who Should Read This Guide

This document is for the reader who:

- Has in total 2000 to 10,000 connected employees
- Has one or more Local Area Networks that support up to 5000 connected employees each
- Needs wired and wireless network access for employees
- Requires wireless guest access
- Requires solutions for wired and wireless voice access
- Has IT workers with a CCNA® certification or equivalent experience
- Wants to deploy their network infrastructure efficiently
- Wants the assurance of a tested solution
- Requires a migration path for growth

Related Documents

Before reading this guide

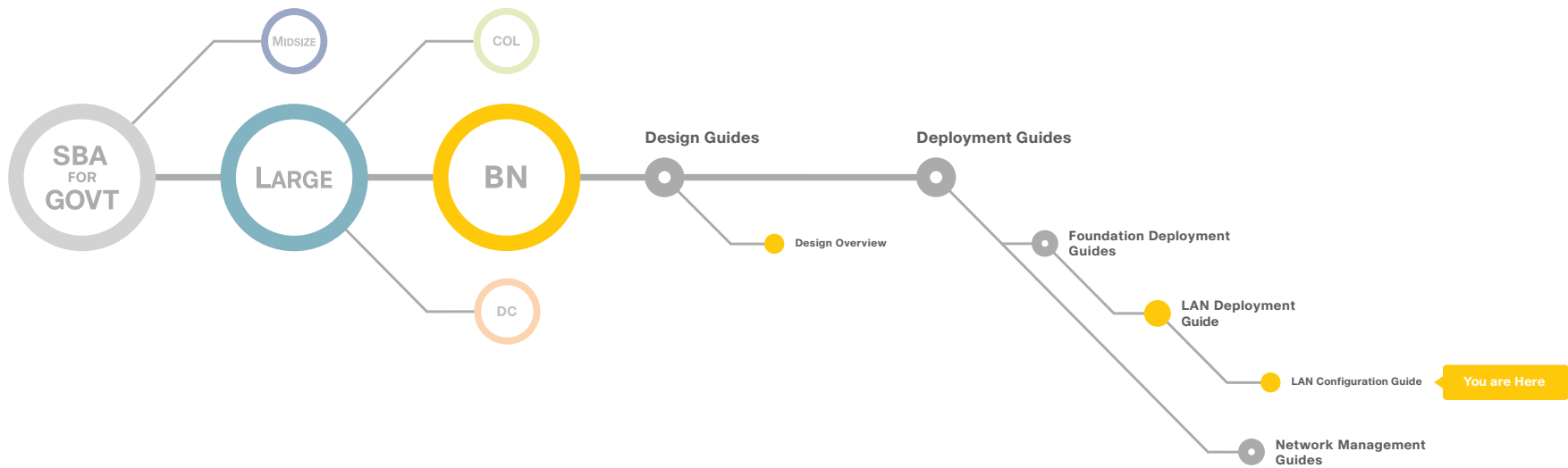
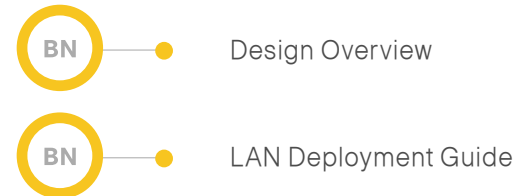


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Introduction

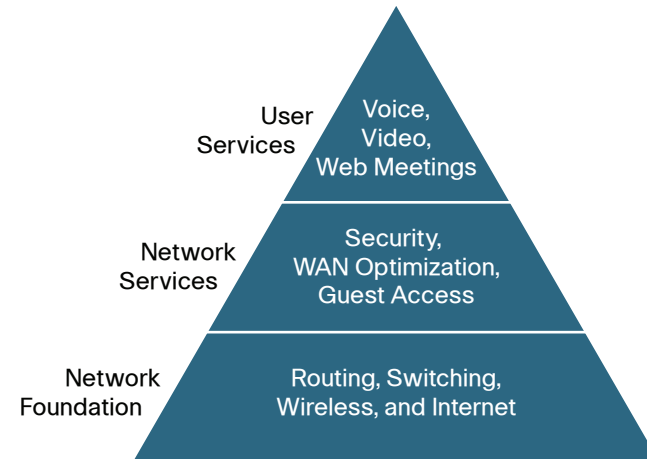
For Cisco partners and customers with 2000–10,000 connected users, we have created an “out-of-the-box” deployment that is simple, fast, affordable, scalable, and flexible. We have designed it to be easy—easy to configure, deploy, and manage.

The simplicity of this deployment, though, belies the depth and breadth of the architecture. Based on feedback from many customers and partners, Cisco has developed a solid network foundation with a flexible platform that does not require re-engineering to support additional Network or User services.

The Smart Business Architecture (SBA) for Government Large Agencies—Borderless Networks (BN) architecture is comprised of a single design guide, and deployment guides and configuration guides for each of the three sections: LAN, WAN, and Internet Edge.

The SBA for Large Agencies—Borderless Networks deployment guides are a prescriptive reference design that provides step-by-step instructions for the deployment of the products in the design. It is based on best practice principles. Based on feedback from customers and partners, Cisco has developed a solid network foundation as a flexible platform that does not require reengineering to include additional Network or User services.

Figure 1. SBA Model



This deployment guide has been architected to make your life a little bit—maybe even a lot—smoother. This architecture:

- Provides a solid foundation
- Makes deployment fast and easy
- Accelerates ability to easily deploy additional services
- Avoids the need for re-engineering of the core network

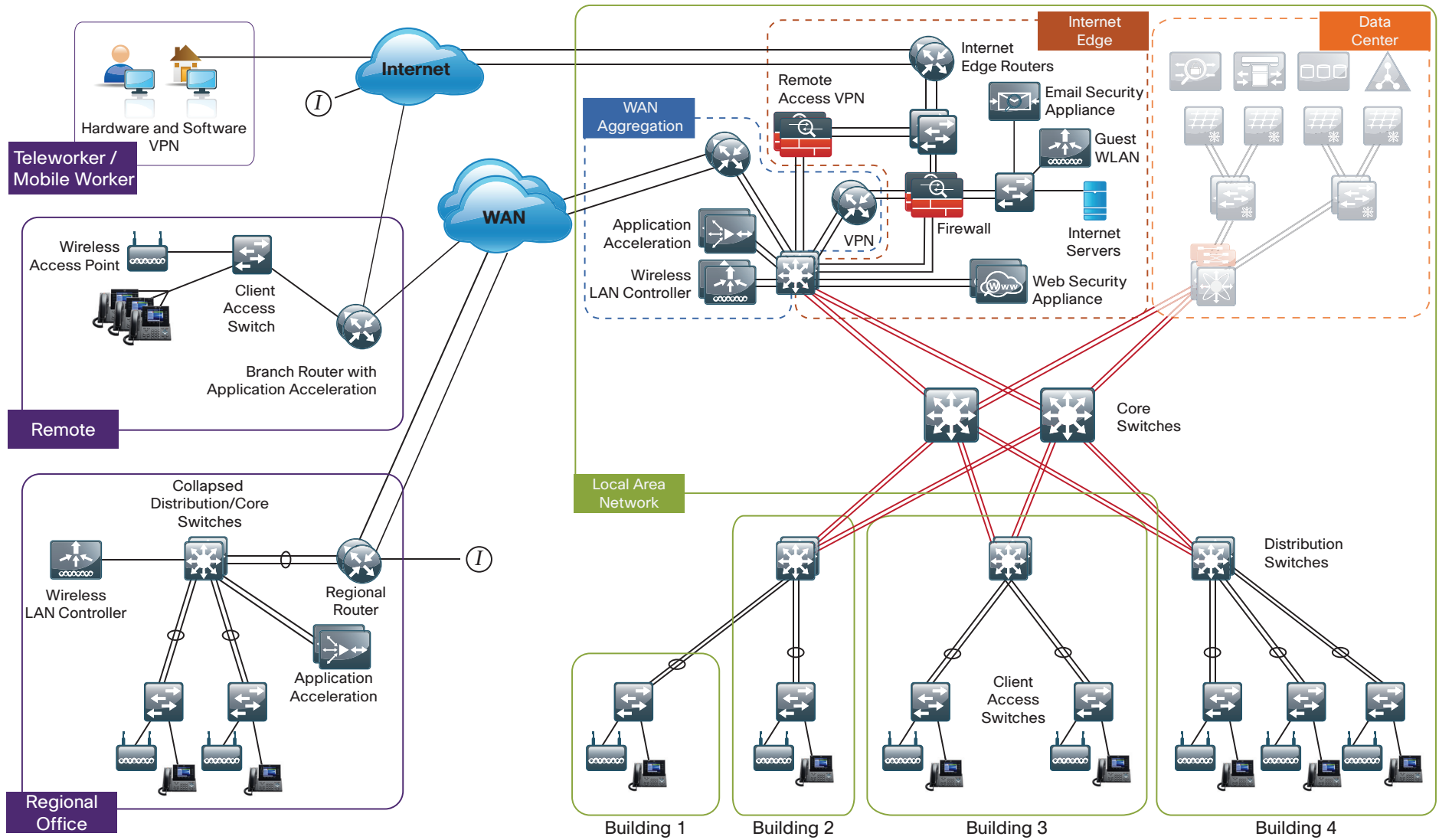
The Purpose of This Document

This document provides the available configuration files for the products used in the LAN Deployment Guide. It is a companion document to the deployment guide as a reference for engineers who are evaluating or deploying the SBA.

Graphical Interface Management

There are products in this design where we have omitted the configuration file. Those products have browser-based graphical configuration tools. Please refer to the companion *LAN Deployment Guide* at <https://www.cisco.com/go/sba> for step-by-step instructions on configuring those products.

SBA for Large Agencies—Borderless Networks



Large Agency Deployment Product List

Functional Area	Product	Part Numbers	Software Version
Access Layer for PC, phones, APs, other devices	Catalyst 2960S Stackable Ethernet 10/100/1000 port with PoE+ and Stack Module	WS-C2960S-24PD-L Catalyst 2960S 24 GigE PoE+, 2 x 10G SFP+ LAN Base WS-C2960S-48FPD-L Catalyst 2960S 48 GigE PoE +, 2 x 10G SFP+ LAN Base WS-C2960S-24PS-L Catalyst 2960S 24 GigE PoE+, 4 x SFP LAN Base WS-C2960S-48FPS-L Catalyst 2960S 48 GigE PoE+, 4 x SFP LAN Base C2960S-STACK= Catalyst 2960S Flexstack Stack Module	12.2-53.SE2
Access Layer for PC, phones, APs, other devices	Catalyst 3560X Ethernet 10/100/1000 ports with PoE+ and Uplink Module	WS-C3560X-24P-S Catalyst 3750 24 10/100/1000T PoE + and IPB Image WS-C3560X-48PF-S Catalyst 3750 48 10/100/1000T Full PoE + and IPB Image C3KX-NM-1G Catalyst 3750X 1Gig SFP Uplink Module C3KX-NM-10G Catalyst 3750X 10Gig SFP+ Uplink Module	12.2-53.SE2
Access Layer for PC, phones, APs, other devices	Catalyst 3750X Stackable Ethernet 10/100/1000 ports with PoE+ and Uplink Module	WS-C3750X-24P-S Catalyst 3750 24 10/100/1000T PoE + and IPB Image WS-C3750X-48PF-S Catalyst 3750 48 10/100/1000T Full PoE + and IPB Image C3KX-NM-1G Catalyst 3750X 1Gig SFP Uplink Module C3KX-NM-10G Catalyst 3750X 10Gig SFP+ Uplink Module	12.2-53.SE2

Functional Area	Product	Part Numbers	Software Version
Access Layer for PC, phones, APs, other devices	Catalyst 4507RE Dual Supervisors Dual Power Supplies	WS-C4507R-E Catalyst 4500 E-Series 7-Slot Chassis WS-X45-SUP6L-E Catalyst 4500 E-Series Sup 6L-E, 2x10GE(X2) with Twin Gig WS-X4648-RJ45V+E 4500 E-Series 48-Port PoE+ Ready 10/100/1000(RJ45)	12.2-53.SG1
Distribution Layer	Catalyst 3750G Stackable 12 Port SFP	WS-C3750G-12S-S Catalyst 3750 12 SFP + IPS Image	12.2-53.SE1
Distribution Layer	Catalyst 4507RE Dual Supervisors Dual Power Supplies	WS-C4507R-E Catalyst 4500 E-Series 7-Slot Chassis WS-X45-SUP6-E Catalyst 4500 E-Series Sup 6-E, 2x10GE(X2) with Twin Gig WS-X4624-SFP-E Catalyst 4500 E-Series 24-Port GE (SFP) WS-X4606-X2-E Catalyst 4500 E-Series 6-Port 10GbE (X2)	12.2-53.SG1
Distribution Layer	Catalyst 6500 VSS	WS-C6506-E Catalyst 6500 E-Series 6-Slot Chassis VS-S720-10G-3C Catalyst 6500 VSS Supervisor 720 with 2 ports 10GbE WS-X6724-SFP Catalyst 6500 24-port GigE Mod (SFP) WS-X6716-10G-3C Catalyst 6500 16 port 10 Gigabit Ethernet w/ DFC3C (X2)	12.2(33) SXI3 with the IP Services Feature Set
Core Layer	Catalyst 6500	WS-C6506-E Catalyst 6500 E-Series 6-Slot Chassis VS-S720-10G-3C Catalyst 6500 VSS Supervisor 720 with 2 ports 10GbE WS-X6724-SFP Catalyst 6500 24-port GigE Mod (SFP) WS-X6716-10G-3C Catalyst 6500 16 port 10 Gigabit Ethernet w/ DFC3C (X2)	12.2(33) SXI3 with the IP Services Feature Set
Wireless LAN	5508 Wireless LAN Controller	AIR-CT5508-100-K9 5508 Wireless LAN Controller with 100 AP license	6.0.196.0
Wireless LAN	1142 Wireless AP	AIR-LAP1142N-A-K9 802.11a/g/n Fixed Unified AP	6.0.196.0

LAN Access Layer Configurations

Catalyst 2960-S Series Switch

```
version 12.2
no service pad
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
!
hostname A2960S
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$3Cgj$S8sOrRk5lzoImWhTLOkZC1
!
username admin password 7 094F1F1A1A0A464058
!
!
aaa new-model
!
!
aaa authentication login default group radius local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
switch 1 provision ws-c2960s-48fps-1
switch 2 provision ws-c2960s-48lpd-1
switch 3 provision ws-c2960s-48fps-1
stack-mac persistent timer 0
authentication mac-move permit
ip subnet-zero
!
!
ip dhcp snooping vlan 104-105
no ip dhcp snooping information option
```

```
ip dhcp snooping
ip domain-name cisco.local
ip arp inspection vlan 104-105
vtp mode transparent
udld aggressive
```

```
!
mls qos map policed-dscp 24 26 46 to 0
mls qos map cos-dscp 0 8 16 24 32 46 48 56
mls qos srr-queue output cos-map queue 1 threshold 3 5
mls qos srr-queue output cos-map queue 2 threshold 3 3 6 7
mls qos srr-queue output cos-map queue 3 threshold 3 2 4
mls qos srr-queue output cos-map queue 4 threshold 2 1
mls qos srr-queue output cos-map queue 4 threshold 3 0
mls qos srr-queue output dscp-map queue 1 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output dscp-map queue 2 threshold 3 24 25 26 27 28 29 30 31
mls qos srr-queue output dscp-map queue 2 threshold 3 48 49 50 51 52 53 54 55
mls qos srr-queue output dscp-map queue 2 threshold 3 56 57 58 59 60 61 62 63
mls qos srr-queue output dscp-map queue 3 threshold 3 16 17 18 19 20 21 22 23
mls qos srr-queue output dscp-map queue 3 threshold 3 32 33 34 35 36 37 38 39
mls qos srr-queue output dscp-map queue 4 threshold 1 8
mls qos srr-queue output dscp-map queue 4 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue output dscp-map queue 4 threshold 3 0 1 2 3 4 5 6 7
mls qos queue-set output 1 threshold 1 138 138 92 138
mls qos queue-set output 1 threshold 2 138 138 92 400
mls qos queue-set output 1 threshold 3 36 77 100 318
mls qos queue-set output 1 threshold 4 20 50 67 400
mls qos queue-set output 2 threshold 1 149 149 100 149
mls qos queue-set output 2 threshold 2 118 118 100 235
mls qos queue-set output 2 threshold 3 41 68 100 272
mls qos queue-set output 2 threshold 4 42 72 100 242
mls qos queue-set output 1 buffers 10 10 26 54
mls qos queue-set output 2 buffers 16 6 17 61
mls qos
!
crypto pki trustpoint TP-self-signed-180400256
enrollment selfsigned
subject-name cn=IOS-Self-Signed-Certificate-180400256
revocation-check none
rsa-keypair TP-self-signed-180400256
!
!
crypto pki certificate chain TP-self-signed-180400256
certificate self-signed 01 nvram:IOS-Self-Sig#3636.cer
spanning-tree mode rapid-pvst
spanning-tree etherchannel guard misconfig
spanning-tree extend system-id
!
```

```

!
!
port-channel load-balance src-dst-ip
!
vlan internal allocation policy ascending
!
vlan 104
    name data
!
vlan 105
    name voice
!
vlan 900
    name management
!
ip ssh version 2
!
class-map match-all AutoQoS-VoIP-RTP-Trust
    match ip dscp ef
class-map match-all AutoQoS-VoIP-Control-Trust
    match ip dscp cs3  af31
!
!
policy-map AutoQoS-Police-CiscoPhone
    class AutoQoS-VoIP-RTP-Trust
        set dscp ef
        police 320000 8000 exceed-action policed-dscp-transmit
    class AutoQoS-VoIP-Control-Trust
        set dscp cs3
        police 32000 8000 exceed-action policed-dscp-transmit
!
!
!
interface Port-channel3
    description Trunk to 6500 VSS Distribution
    switchport trunk allowed vlan 104,105,900
    switchport mode trunk
    ip arp inspection trust
    ip dhcp snooping trust
!
interface FastEthernet0
    no ip address
    shutdown
!
interface GigabitEthernet1/0/1
    switchport access vlan 104
    switchport mode access

```

```

switchport voice vlan 105
switchport port-security maximum 11
switchport port-security
switchport port-security aging time 2
switchport port-security violation restrict
switchport port-security aging type inactivity
ip arp inspection limit rate 100
srr-queue bandwidth share 10 10 60 20
queue-set 2
priority-queue out
mls qos trust device cisco-phone
mls qos trust cos
auto qos voip cisco-phone
spanning-tree portfast
spanning-tree bpduguard enable
service-policy input AutoQoS-Police-CiscoPhone
ip verify source
ip dhcp snooping limit rate 100
!
interface GigabitEthernet1/0/2
    switchport access vlan 104
    switchport mode access
    switchport voice vlan 105
    switchport port-security maximum 11
    switchport port-security
    switchport port-security aging time 2
    switchport port-security violation restrict
    switchport port-security aging type inactivity
    ip arp inspection limit rate 100
    srr-queue bandwidth share 10 10 60 20
    queue-set 2
    priority-queue out
    mls qos trust device cisco-phone
    mls qos trust cos
    auto qos voip cisco-phone
    spanning-tree portfast
    spanning-tree bpduguard enable
    service-policy input AutoQoS-Police-CiscoPhone
    ip verify source
    ip dhcp snooping limit rate 100
!
! *****
! Interface GigabitEthernet 1/0/3 - 3/0/48 are all configured the same
! as 1/0/1 and 1/0/2 and have been removed for conciseness
! *****
!
interface GigabitEthernet1/0/48

```

```

description Wireless AP Port
switchport access vlan 104
switchport mode access
switchport voice vlan 105
switchport port-security maximum 11
switchport port-security
switchport port-security aging time 2
switchport port-security violation restrict
switchport port-security aging type inactivity
ip arp inspection limit rate 100
srr-queue bandwidth share 10 10 60 20
queue-set 2
priority-queue out
mls qos trust device cisco-phone
mls qos trust dscp
auto qos voip cisco-phone
spanning-tree portfast
spanning-tree bpduguard enable
service-policy input AutoQoS-Police-CiscoPhone
ip verify source
ip dhcp snooping limit rate 100
!
interface GigabitEthernet1/0/49
!
interface GigabitEthernet1/0/50
!
interface GigabitEthernet1/0/51
!
interface GigabitEthernet1/0/52
switchport trunk allowed vlan 104,105,900
switchport mode trunk
ip arp inspection trust
srr-queue bandwidth share 10 10 60 20
queue-set 2
priority-queue out
mls qos trust dscp
channel-protocol lacp
channel-group 3 mode active
ip dhcp snooping trust
!
interface GigabitEthernet3/0/49
!
interface GigabitEthernet3/0/50
!
interface GigabitEthernet3/0/51
!
interface GigabitEthernet3/0/52

```

```

switchport trunk allowed vlan 104,105,900
switchport mode trunk
ip arp inspection trust
logging event trunk-status
logging event bundle-status
srr-queue bandwidth share 10 10 60 20
queue-set 2
priority-queue out
mls qos trust dscp
channel-protocol lacp
channel-group 3 mode active
ip dhcp snooping trust
!
interface Vlan1
no ip address
shutdown
!
interface Vlan900
description In-Band Management Interface
ip address 10.4.15.6 255.255.255.128
!
ip default-gateway 10.4.15.1
no ip http server
ip http secure-server
ip sla enable reaction-alerts
snmp-server community cisco RO
snmp-server community cisco123 RW
radius-server host 10.4.200.15 auth-port 1645 acct-port 1646 key 7
107D0C1A17120620091D
!
!
line con 0
line vty 0 4
transport input ssh
line vty 5 15
length 0
transport input ssh
!
ntp clock-period 22518578
ntp server 10.4.200.17
end

```

Catalyst 3750-X Series Switch

```
version 12.2
no service pad
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
!
hostname A3750X
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$pthq$yU30IF01CMO61Wy03fCP40
!
username admin password 7 141443180F0B7B7977
!
!
aaa new-model
!
!
aaa authentication login default group radius local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
switch 1 provision ws-c3750x-48p
switch 2 provision ws-c3750x-48p
stack-mac persistent timer 0
system mtu routing 1500
authentication mac-move permit
ip subnet-zero
!
!
ip dhcp snooping vlan 136-137
no ip dhcp snooping information option
ip dhcp snooping
ip domain-name cisco.local
ip arp inspection vlan 136-137
vtp mode transparent
udld aggressive

!
mls qos map policed-dscp 24 26 46 to 0
mls qos map cos-dscp 0 8 16 24 32 46 48 56
mls qos srr-queue input bandwidth 90 10
mls qos srr-queue input threshold 1 8 16
```

```
mls qos srr-queue input threshold 2 34 66
mls qos srr-queue input buffers 67 33
mls qos srr-queue input cos-map queue 1 threshold 2 1
mls qos srr-queue input cos-map queue 1 threshold 3 0
mls qos srr-queue input cos-map queue 2 threshold 1 2
mls qos srr-queue input cos-map queue 2 threshold 2 4 6 7
mls qos srr-queue input cos-map queue 2 threshold 3 3 5
mls qos srr-queue input dscp-map queue 1 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue input dscp-map queue 1 threshold 3 0 1 2 3 4 5 6 7
mls qos srr-queue input dscp-map queue 1 threshold 3 32
mls qos srr-queue input dscp-map queue 2 threshold 1 16 17 18 19 20 21 22 23
mls qos srr-queue input dscp-map queue 2 threshold 2 33 34 35 36 37 38 39 48
mls qos srr-queue input dscp-map queue 2 threshold 2 49 50 51 52 53 54 55 56
mls qos srr-queue input dscp-map queue 2 threshold 2 57 58 59 60 61 62 63
mls qos srr-queue input dscp-map queue 2 threshold 3 24 25 26 27 28 29 30 31
mls qos srr-queue input dscp-map queue 2 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output cos-map queue 1 threshold 3 5
mls qos srr-queue output cos-map queue 2 threshold 3 3 6 7
mls qos srr-queue output cos-map queue 3 threshold 3 2 4
mls qos srr-queue output cos-map queue 4 threshold 2 1
mls qos srr-queue output cos-map queue 4 threshold 3 0
mls qos srr-queue output dscp-map queue 1 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output dscp-map queue 2 threshold 3 24 25 26 27 28 29 30 31
mls qos srr-queue output dscp-map queue 2 threshold 3 48 49 50 51 52 53 54 55
mls qos srr-queue output dscp-map queue 2 threshold 3 56 57 58 59 60 61 62 63
mls qos srr-queue output dscp-map queue 3 threshold 3 16 17 18 19 20 21 22 23
mls qos srr-queue output dscp-map queue 3 threshold 3 32 33 34 35 36 37 38 39
mls qos srr-queue output dscp-map queue 4 threshold 1 8
mls qos srr-queue output dscp-map queue 4 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue output dscp-map queue 4 threshold 3 0 1 2 3 4 5 6 7
mls qos queue-set output 1 threshold 1 138 138 92 138
mls qos queue-set output 1 threshold 2 138 138 92 400
mls qos queue-set output 1 threshold 3 36 77 100 318
mls qos queue-set output 1 threshold 4 20 50 67 400
mls qos queue-set output 2 threshold 1 149 149 100 149
mls qos queue-set output 2 threshold 2 118 118 100 235
mls qos queue-set output 2 threshold 3 41 68 100 272
mls qos queue-set output 2 threshold 4 42 72 100 242
mls qos queue-set output 1 buffers 10 10 26 54
mls qos queue-set output 2 buffers 16 6 17 61
mls qos
!
crypto pki trustpoint TP-self-signed-3184549632
  enrollment selfsigned
  subject-name cn=IOS-Self-Signed-Certificate-3184549632
  revocation-check none
  rsakeypair TP-self-signed-3184549632
!
```

```

!
crypto pki certificate chain TP-self-signed-3184549632
certificate self-signed 01
 3082024A 308201B3 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274
69666963 6174652D 33313834 35343936 3332301E 170D3933 30333031 30303032
33375A17 0D323030 31303130 30303030 305A3031 312F302D 06035504 03132649
4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D33 31383435
34393633 3230819F 300D0609 2A864886 F70D0101 01050003 818D0030 81890281
8100C3C3 3464D85B 5625B17C 9C17D988 A25F9788 00277DB2 960D6E60 2266C013
3968D2AE B2AFA75C 0B851A25 45FD6687 ADBD1DC8 4A6F73DD C60B3549 20038E8D
69708278 68BAD2B2 CB42DC55 FC89B2D6 9D81CF91 D7FD9A82 94BF0CD9 A0E4CF87
56ADCB9A 35848C00 10696E34 B34A624D 31988879 F17FED14 A71E3A56 01331395
48EB0203 010001A3 72307030 0F060355 1D130101 FF040530 030101FF 301D0603
551D1104 16301482 12413337 3530582E 63697363 6F2E6C6F 63616C30 1F060355
1D230418 30168014 0A81FC13 8F534808 2C65511C 03070C35 C9310CB7 301D0603
551D0E04 1604140A 81FC138F 5348082C 65511C03 070C35C9 310CB730 0D06092A
864886F7 0D010104 05000381 810024BF 44204E10 81DE7238 1B3AD4FC 26FFDB21
53305EE7 23988913 1747C51E 8CAD25AB E34852C0 F363B8C0 237B8A95 F505C417
D283E110 11885A2D 99751617 07EA517C A981F0A9 9A289548 FBB4D648 13BEF141
05DB1EC1 97D0EB08 100DA09A 163578DA B07F7586 F83D34FA C0D07A87 F5C9C95C
FDEDC923 C195E82C EBA443D8 863E
quit
!
spanning-tree mode rapid-pvst
spanning-tree etherchannel guard misconfig
spanning-tree extend system-id
!
!
!
port-channel load-balance src-dst-ip
!
vlan internal allocation policy ascending
vlan dot1q tag native
!
vlan 136
 name data
!
vlan 137
 name voice
!
vlan 902
 name management
!
ip ssh version 2
!
class-map match-all AutoQoS-VoIP-RTP-Trust
 match ip dscp ef

```

```

class-map match-all AutoQoS-VoIP-Control-Trust
 match ip dscp cs3 af31
!
!
policy-map AutoQoS-Police-CiscoPhone
 class AutoQoS-VoIP-RTP-Trust
   set dscp ef
   police 320000 8000 exceed-action policed-dscp-transmit
 class AutoQoS-VoIP-Control-Trust
   set dscp cs3
   police 32000 8000 exceed-action policed-dscp-transmit
!
!
!
interface Port-channel1
 description Trunk to 3750G-12S Distribution
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 136,137,902
 switchport mode trunk
 ip arp inspection trust
 ip dhcp snooping trust
!
interface FastEthernet0
 no ip address
 shutdown
!
interface GigabitEthernet1/0/1
 switchport access vlan 136
 switchport mode access
 switchport voice vlan 137
 switchport port-security maximum 11
 switchport port-security
 switchport port-security aging time 2
 switchport port-security violation restrict
 switchport port-security aging type inactivity
 ip arp inspection limit rate 100
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust device cisco-phone
 mls qos trust cos
 auto qos voip cisco-phone
 spanning-tree portfast
 spanning-tree bpduguard enable
 service-policy input AutoQoS-Police-CiscoPhone
 ip verify source
 ip dhcp snooping limit rate 100
!

```

```

interface GigabitEthernet1/0/2
 switchport access vlan 136
 switchport mode access
 switchport voice vlan 137
 switchport port-security maximum 11
 switchport port-security
 switchport port-security aging time 2
 switchport port-security violation restrict
 switchport port-security aging type inactivity
 ip arp inspection limit rate 100
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust device cisco-phone
 mls qos trust cos
 auto qos voip cisco-phone
 spanning-tree portfast
 spanning-tree bpduguard enable
 service-policy input AutoQoS-Police-CiscoPhone
 ip verify source
 ip dhcp snooping limit rate 100
!
!
! *****
! Interface GigabitEthernet 1/0/3 - 2/0/48 are all configured the same
! as 1/0/1 and 1/0/2 and have been removed for conciseness
! *****
!
interface GigabitEthernet1/0/48
 description Wireless AP Port
 switchport access vlan 136
 switchport mode access
 switchport voice vlan 137
 switchport port-security maximum 11
 switchport port-security
 switchport port-security aging time 2
 switchport port-security violation restrict
 switchport port-security aging type inactivity
 ip arp inspection limit rate 100
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust device cisco-phone
 mls qos trust dscp
 auto qos voip cisco-phone
 spanning-tree portfast
 spanning-tree bpduguard enable
 service-policy input AutoQoS-Police-CiscoPhone

```

```

 ip verify source
 ip dhcp snooping limit rate 100
!
interface GigabitEthernet1/1/1
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 136,137,902
 switchport mode trunk
 ip arp inspection trust
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 1 mode active
 ip dhcp snooping trust
!
interface GigabitEthernet1/1/2
!
interface GigabitEthernet1/1/3
!
interface GigabitEthernet1/1/4
!
interface TenGigabitEthernet1/1/1
!
interface TenGigabitEthernet1/1/2
!
interface GigabitEthernet2/1/1
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 136,137,902
 switchport mode trunk
 ip arp inspection trust
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 1 mode active
 ip dhcp snooping trust
!
interface GigabitEthernet2/1/2
!
interface GigabitEthernet2/1/3
!
interface GigabitEthernet2/1/4
!
interface TenGigabitEthernet2/1/1
!
interface TenGigabitEthernet2/1/2

```

```

!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan902
 description In-Band Management Interface
 ip address 10.4.47.4 255.255.255.128
!
ip default-gateway 10.4.47.1
ip classless
no ip http server
ip http secure-server
!
ip sla enable reaction-alerts
snmp-server community cisco RO
snmp-server community cisco123 RW
radius-server host 10.4.200.15 auth-port 1645 acct-port 1646 key 7
0235015819031B0A4957
!
!
line con 0
line vty 0 4
transport input ssh
 length 0
line vty 5 15
transport input ssh
!
ntp clock-period 36026916
ntp server 10.4.200.17
end

```

Catalyst 4500-E Series Switch

```

version 12.2
no service pad
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
service compress-config
!
hostname A4507
!
boot-start-marker
boot system flash bootflash:cat4500e-ipbasek9-mz.122-53.SG1.bin
boot-end-marker
!
enable secret 5 $1$d3D4$JvREzFWmY0aMTyEoiRN/81
!
username admin password 7 06055E324F41584B56
aaa new-model
!
!
aaa authentication login default group radius local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
hw-module module 3 port-group 1 select gigabitethernet
hw-module module 3 port-group 2 select gigabitethernet
udld aggressive

ip subnet-zero
ip arp inspection vlan 106-107
ip domain-name cisco.local
!
!
ip dhcp snooping vlan 106-107
no ip dhcp snooping information option
ip dhcp snooping
ip vrf mgmtVrf
!
vtp mode transparent
!
!
crypto pki trustpoint TP-self-signed-122739
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-122739
 revocation-check none

```

```

rsakeypair TP-self-signed-122739
!
!
crypto pki certificate chain TP-self-signed-122739
certificate self-signed 01
 30820241 308201AA A0030201 02020101 300D0609 2A864886 F70D0101 04050030
 2D312B30 29060355 04031322 494F532D 53656C66 2D536967 6E65642D 43657274
 69666963 6174652D 31323237 3339301E 170D3130 30323233 32313438 30345A17
 0D323030 31303130 30303030 305A302D 312B3029 06035504 03132249 4F532D53
 656C662D 5369676E 65642D43 65727469 66696361 74652D31 32323733 3930819F
 300D0609 2A864886 F70D0101 01050003 818D0030 81890281 8100B6D8 F9610349
 3CA3F878 0BCC0189 EC6F322B C81C566E C9A12DDE D90D2EEA 7D42F2A9 1DF42D6E
 8FB5C7DD 0EDB4F9A F1FC452C D4E1608E 2D63C40C 37F86797 9EAEF026 3897E082
 37D4C43B F3F1B886 66CF455E 871A348C AFFE1F7F 77C12B76 4DDA2BC5 8FB4F8F4
 0402B75C 71A99798 DC526A02 E6C22B01 C733076A B79EA394 39770203 010001A3
 71306F30 0F060355 1D130101 FF040530 030101FF 301C0603 551D1104 15301382
 11413435 30372E63 6973636F 2E6C6F63 616C301F 0603551D 23041830 16801481
 258D0B03 9F2CBC56 7DB9D2F7 EF099984 98B51F30 1D060355 1D0E0416 04148125
 8D0B039F 2CBC567D B9D2F7EF 09998498 B51F300D 06092A86 4886F70D 01010405
 00038181 00199A19 D9BB980B 5D0457CB EE4A8633 CC999C9B 840723F1 6D74AA95
 B0A5EA29 3FC97CBA 6E9C0216 90F932EC 4FE94485 94F8235B 90E41973 47DA4698
 02371B2B 1F26ADE8 95C46610 527FE1AD 4B457C93 384B999F 14B15816 ACB7FF3D
 209EC01F 7DAE705F 11C5AD3C E68CE9D8 0C179AF5 D31316CC 9BC8615B 98E6AA00
 5A52CD18 29
quit
power redundancy-mode redundant
!
!
!
!
!
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
!
redundancy
mode sso
!
vlan internal allocation policy ascending
vlan dot1q tag native
!
vlan 106-107,900
!
ip ssh version 2
!
class-map match-all AutoQos-VoIP-Control-Dscp26
match dscp af31
class-map match-all AutoQos-VoIP-Control-Dscp24

```

```

match dscp cs3
class-map match-all AutoQos-VoIP-Bearer-Cos
match cos 5
class-map match-all AutoQos-VoIP-Control-QosGroup24
match qos-group 24
class-map match-all AutoQos-VoIP-Control-QosGroup26
match qos-group 26
class-map match-all AutoQos-VoIP-Bearer-QosGroup
match qos-group 46
class-map match-all AutoQos-VoIP-Bearer-Dscp
match dscp ef
class-map match-all AutoQos-VoIP-Control-Cos
match cos 3
!
!
policy-map AutoQos-VoIP-Input-Dscp-Policy
class AutoQos-VoIP-Bearer-Dscp
set qos-group 46
class AutoQos-VoIP-Control-Dscp26
set qos-group 26
class AutoQos-VoIP-Control-Dscp24
set qos-group 24
policy-map EC-non-queue
class AutoQos-VoIP-Bearer-QosGroup
set dscp ef
set cos 5
police cir 33000000
class AutoQos-VoIP-Control-QosGroup26
set dscp af31
set cos 3
class AutoQos-VoIP-Control-QosGroup24
set dscp cs3
set cos 3
policy-map queue-only
class AutoQos-VoIP-Bearer-QosGroup
priority
class AutoQos-VoIP-Control-QosGroup26
bandwidth remaining percent 5
class AutoQos-VoIP-Control-QosGroup24
bandwidth remaining percent 5
class class-default
dbl
policy-map AutoQos-VoIP-Input-Cos-Policy
class AutoQos-VoIP-Bearer-Cos
set qos-group 46
class AutoQos-VoIP-Control-Cos
set qos-group 24
policy-map AutoQos-VoIP-Output-Policy

```

```

class AutoQos-VoIP-Bearer-QosGroup
  set dscp ef
  set cos 5
    priority
    police cir percent 33
class AutoQos-VoIP-Control-QosGroup26
  set dscp af31
  set cos 3
    bandwidth remaining percent 5
class AutoQos-VoIP-Control-QosGroup24
  set dscp cs3
  set cos 3
    bandwidth remaining percent 5
class class-default
  dbl
!
!
!
interface Port-channel1
  description Trunk to 6500 VSS Distribution
  switchport
  switchport trunk allowed vlan 106,107,900
  switchport mode trunk
  ip arp inspection trust
  logging event link-status
  logging event trunk-status
  service-policy input AutoQos-VoIP-Input-Dscp-Policy
  service-policy output EC-non-queue
  ip dhcp snooping trust
!
interface FastEthernet1
  ip vrf forwarding mgmtVrf
  no ip address
  speed auto
  duplex auto
!
interface GigabitEthernet1/1
  switchport access vlan 106
  switchport mode access
  switchport voice vlan 107
  switchport port-security maximum 11
  switchport port-security
  switchport port-security aging time 2
  switchport port-security violation restrict
  switchport port-security aging type inactivity
  ip arp inspection limit rate 100
  load-interval 30
  auto qos voip cisco-phone

```

```

qos trust device cisco-phone
spanning-tree portfast
spanning-tree bpduguard enable
service-policy input AutoQos-VoIP-Input-Cos-Policy
service-policy output AutoQos-VoIP-Output-Policy
ip verify source vlan dhcp-snooping
ip dhcp snooping limit rate 100
!
interface GigabitEthernet1/2
  switchport access vlan 106
  switchport mode access
  switchport voice vlan 107
  switchport port-security maximum 11
  switchport port-security
  switchport port-security aging time 2
  switchport port-security violation restrict
  switchport port-security aging type inactivity
  ip arp inspection limit rate 100
  auto qos voip cisco-phone
  qos trust device cisco-phone
  spanning-tree portfast
  spanning-tree bpduguard enable
!
! *****
! Interface GigabitEthernet 1/3 - 2/48 are all configured the same as
1/1
! and 1/2 and have been removed for conciseness
! *****
!
interface GigabitEthernet1/48
  description Wireless AP Port
  switchport access vlan 106
  switchport mode access
  switchport voice vlan 107
  switchport port-security maximum 11
  switchport port-security
  switchport port-security aging time 2
  switchport port-security violation restrict
  switchport port-security aging type inactivity
  ip arp inspection limit rate 100
  auto qos voip cisco-phone
  qos trust device cisco-phone
  spanning-tree portfast
  spanning-tree bpduguard enable

```

```

service-policy input AutoQos-VoIP-Input-Cos-Policy
service-policy output AutoQos-VoIP-Output-Policy
ip verify source vlan dhcp-snooping
ip dhcp snooping limit rate 100
!
interface TenGigabitEthernet3/1
!
interface TenGigabitEthernet3/2
!
interface GigabitEthernet3/3
shutdown
!
interface GigabitEthernet3/4
shutdown
!
interface GigabitEthernet3/5
switchport trunk allowed vlan 106,107,900
switchport mode trunk
ip arp inspection trust
channel-protocol lacp
channel-group 1 mode active
service-policy output queue-only
ip dhcp snooping trust
!
interface GigabitEthernet3/6
switchport trunk allowed vlan 106,107,900
switchport mode trunk
ip arp inspection trust
channel-protocol lacp
channel-group 1 mode active
service-policy output queue-only
ip dhcp snooping trust
!
interface Vlan1
no ip address
!
interface Vlan900
description In-Band Management Interface
ip address 10.4.15.5 255.255.255.128
!
ip default-gateway 10.4.15.1
ip route 0.0.0.0 0.0.0.0 10.4.15.1
no ip http server
ip http secure-server
!
!
!
snmp-server engineID local 8000000903000024144768AF

```

```

snmp-server community cisco RO
snmp-server community cisco123 RW
radius-server host 10.4.200.15 auth-port 1645 acct-port 1646 key 7
073C244F5C0C0D2E120B
!
line con 0
stopbits 1
line vty 0 4
length 0
transport input ssh
line vty 5 15
transport input ssh
!
ntp clock-period 17180257
ntp server 10.4.200.17
end

```

Distribution Layer Configuration

Catalyst 3760G-12S Switch

```
version 12.2
no service pad
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
!
hostname D3750G
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$z4U9$6XKbrVfZpjIXmZrYIyrSJ1
!
username admin password 7 070C705F4D06485744
!
!
aaa new-model
!
!
aaa authentication login default group radius local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
switch 1 provision ws-c3750g-12s
switch 2 provision ws-c3750g-12s
switch 3 provision ws-c3750g-12s
stack-mac persistent timer 0
system mtu routing 1500
vtp mode transparent
authentication mac-move permit
udld aggressive

ip subnet-zero
ip routing
```

```
ip domain-name cisco.local
!
!
ip multicast-routing distributed
!
mls qos map policed-dscp 24 26 46 to 0
mls qos map cos-dscp 0 8 16 24 32 46 48 56
mls qos srr-queue input bandwidth 90 10
mls qos srr-queue input threshold 1 8 16
mls qos srr-queue input threshold 2 34 66
mls qos srr-queue input buffers 67 33
mls qos srr-queue input cos-map queue 1 threshold 2 1
mls qos srr-queue input cos-map queue 1 threshold 3 0
mls qos srr-queue input cos-map queue 2 threshold 1 2
mls qos srr-queue input cos-map queue 2 threshold 2 4 6 7
mls qos srr-queue input cos-map queue 2 threshold 3 3 5
mls qos srr-queue input dscp-map queue 1 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue input dscp-map queue 1 threshold 3 0 1 2 3 4 5 6 7
mls qos srr-queue input dscp-map queue 1 threshold 3 32
mls qos srr-queue input dscp-map queue 2 threshold 1 16 17 18 19 20 21 22 23
mls qos srr-queue input dscp-map queue 2 threshold 2 33 34 35 36 37 38 39 48
mls qos srr-queue input dscp-map queue 2 threshold 2 49 50 51 52 53 54 55 56
mls qos srr-queue input dscp-map queue 2 threshold 2 57 58 59 60 61 62 63
mls qos srr-queue input dscp-map queue 2 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output cos-map queue 1 threshold 3 5
mls qos srr-queue output cos-map queue 2 threshold 3 3 6 7
mls qos srr-queue output cos-map queue 3 threshold 3 2 4
mls qos srr-queue output cos-map queue 4 threshold 2 1
mls qos srr-queue output cos-map queue 4 threshold 3 0
mls qos srr-queue output dscp-map queue 1 threshold 3 40 41 42 43 44 45 46 47
mls qos srr-queue output dscp-map queue 2 threshold 3 24 25 26 27 28 29 30 31
mls qos srr-queue output dscp-map queue 2 threshold 3 48 49 50 51 52 53 54 55
mls qos srr-queue output dscp-map queue 2 threshold 3 56 57 58 59 60 61 62 63
mls qos srr-queue output dscp-map queue 3 threshold 3 16 17 18 19 20 21 22 23
mls qos srr-queue output dscp-map queue 3 threshold 3 32 33 34 35 36 37 38 39
mls qos srr-queue output dscp-map queue 4 threshold 1 8
mls qos srr-queue output dscp-map queue 4 threshold 2 9 10 11 12 13 14 15
mls qos srr-queue output dscp-map queue 4 threshold 3 0 1 2 3 4 5 6 7
mls qos queue-set output 1 threshold 1 138 138 92 138
mls qos queue-set output 1 threshold 2 138 138 92 400
mls qos queue-set output 1 threshold 3 36 77 100 318
mls qos queue-set output 1 threshold 4 20 50 67 400
mls qos queue-set output 2 threshold 1 149 149 100 149
mls qos queue-set output 2 threshold 2 118 118 100 235
mls qos queue-set output 2 threshold 3 41 68 100 272
mls qos queue-set output 2 threshold 4 42 72 100 242
mls qos queue-set output 1 buffers 10 10 26 54
mls qos queue-set output 2 buffers 16 6 17 61
```

```

mls qos
!
crypto pki trustpoint TP-self-signed-3390787840
  enrollment selfsigned
  subject-name cn=IOS-Self-Signed-Certificate-3390787840
  revocation-check none
  rsa-keypair TP-self-signed-3390787840
!
!
crypto pki certificate chain TP-self-signed-3390787840
  certificate self-signed 01
    3082024A 308201B3 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
    31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274
    69666963 6174652D 33333930 37383738 3430301E 170D3933 30333031 30303039
    30375A17 0D323030 31303130 30303030 305A3031 312F302D 06035504 03132649
    4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D33 33393037
    38373834 3030819F 300D0609 2A864886 F70D0101 01050003 818D0030 81890281
    8100BDD5 B1CBE9F6 92513415 3206B9EE F2B29238 4C020216 27B70856 81BBE47C
    2B41B60F 9DAF576F AD298588 0BC097F4 F988A395 38EC9D33 976EEBE9 98C693F1
    BD324F55 E0C72224 784B56DD 2F0F4418 B588167F B415C656 700BB2EC 08513C94
    50F242B3 F09AA16A 8B4E3197 D853C5A5 98F84151 9BA8BC6E FB6E335F CE672B33
    7A790203 010001A3 72307030 0F060355 1D130101 FF040530 030101FF 301D0603
    551D1104 16301482 12443337 3530472E 63697363 6F2E6C6F 63616C30 1F060355
    1D230418 30168014 9756E223 B165E2FA 0354B2E6 FDA039D9 87677F64 301D0603
    551D0E04 16041497 56E223B1 65E2FA03 54B2E6FD A039D987 677F6430 0D06092A
    864886F7 0D010104 05000381 81002289 1D1F1369 D5EB50CE DABB3D9F ABDEC7C2
    D5F5A757 9ABC0C7E FE8C6484 493EF328 13478F84 43B949CA 19CEE830 7E5FD912
    C37FEF27 8801E661 B913BC7C ACD28D07 944F3B91 57E8A0A2 1EFF1261 F7A96711
    2BD122BA A105271B B6C9C0F3 225AC1A0 3609EF9B 34D5F247 BCFF5579 707207C4
    9F4DEB93 4E14850F 38AD65C9 45E9
  quit
!
!
!
port-channel load-balance src-dst-ip
!
spanning-tree mode rapid-pvst
spanning-tree etherchannel guard misconfig
spanning-tree extend system-id
spanning-tree vlan 132-139,902 priority 24576
!
vlan internal allocation policy ascending
vlan dot1q tag native
!
vlan 132-139,902
!
ip ssh source-interface Loopback1
ip ssh version 2

```

```

!
!
!
interface Loopback1
  ip address 10.4.47.254 255.255.255.255
  ip pim sparse-mode
!
interface Port-channel1
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 132,133,902
  switchport mode trunk
  logging event trunk-status
  logging event bundle-status
!
interface Port-channel2
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 134,135,902
  switchport mode trunk
  logging event trunk-status
  logging event bundle-status
!
interface Port-channel3
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 136,137,902
  switchport mode trunk
  logging event trunk-status
  logging event bundle-status
!
interface Port-channel4
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 138,139,902
  switchport mode trunk
  logging event trunk-status
  logging event bundle-status
!
interface Port-channel31
  no switchport
  ip address 10.4.60.14 255.255.255.252
  ip pim sparse-mode
  ip summary-address eigrp 100 10.4.32.0 255.255.240.0
  logging event trunk-status
  logging event bundle-status
!
interface Port-channel36
  no switchport
  ip address 10.4.60.26 255.255.255.252
  ip pim sparse-mode
  ip summary-address eigrp 100 10.4.32.0 255.255.240.0

```

```

logging event trunk-status
logging event bundle-status
!
interface GigabitEthernet1/0/1
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 132,133,902
 switchport mode trunk
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 1 mode active
!
interface GigabitEthernet1/0/2
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 134,135,902
 switchport mode trunk
 channel-protocol lacp
 channel-group 2 mode active
!
interface GigabitEthernet1/0/3
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 136,137,902
 switchport mode trunk
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 3 mode active
!
interface GigabitEthernet1/0/4
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 138,139,902
 switchport mode trunk
 channel-protocol lacp
 channel-group 4 mode active
!
interface GigabitEthernet1/0/5
!
interface GigabitEthernet1/0/6
!
interface GigabitEthernet1/0/7
!
interface GigabitEthernet1/0/8
!
interface GigabitEthernet1/0/9

```

```

no switchport
no ip address
shutdown
!
interface GigabitEthernet1/0/10
!
interface GigabitEthernet1/0/11
 no switchport
 no ip address
 carrier-delay msec 0
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 31 mode active
!
interface GigabitEthernet1/0/12
 no switchport
 no ip address
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 36 mode active
!
interface GigabitEthernet2/0/1
!
interface GigabitEthernet2/0/2
!
interface GigabitEthernet2/0/3
!
interface GigabitEthernet2/0/4
!
interface GigabitEthernet2/0/5
!
interface GigabitEthernet2/0/6
!
interface GigabitEthernet2/0/7
!
interface GigabitEthernet2/0/8
!
interface GigabitEthernet2/0/9
!
interface GigabitEthernet2/0/10
!
interface GigabitEthernet2/0/11

```

```

!
interface GigabitEthernet2/0/12
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
!
interface GigabitEthernet3/0/1
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 132,133,902
 switchport mode trunk
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 1 mode active
!
interface GigabitEthernet3/0/2
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 134,135,902
 switchport mode trunk
 channel-protocol lacp
 channel-group 2 mode active
!
interface GigabitEthernet3/0/3
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 136,137,902
 switchport mode trunk
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 3 mode active
!
interface GigabitEthernet3/0/4
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 138,139,902
 switchport mode trunk
 channel-protocol lacp
 channel-group 4 mode active
!
interface GigabitEthernet3/0/5
!
interface GigabitEthernet3/0/6
!

```

```

interface GigabitEthernet3/0/7
!
interface GigabitEthernet3/0/8
!
interface GigabitEthernet3/0/9
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet3/0/10
!
interface GigabitEthernet3/0/11
 no switchport
 no ip address
 carrier-delay msec 0
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 31 mode active
!
interface GigabitEthernet3/0/12
 no switchport
 no ip address
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust dscp
 channel-protocol lacp
 channel-group 36 mode active
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan132
 ip address 10.4.32.1 255.255.255.0
 ip helper-address 10.4.200.10
 ip pim sparse-mode
!
interface Vlan133
 ip address 10.4.33.1 255.255.255.0
 ip helper-address 10.4.200.10
 ip pim sparse-mode
!
interface Vlan134

```

```

ip address 10.4.34.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan135
ip address 10.4.35.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan136
ip address 10.4.36.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan137
ip address 10.4.37.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan138
ip address 10.4.38.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan139
ip address 10.4.39.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan902
ip address 10.4.47.1 255.255.255.128
!
!
router eigrp 100
network 10.4.0.0 0.0.255.255
passive-interface default
no passive-interface Port-channel31
no passive-interface Port-channel36
eigrp router-id 10.4.47.254
nsf
!
ip classless
no ip http server
ip http secure-server
!
ip pim rp-address 10.4.60.252 10
!

```

```

ip sla enable reaction-alerts
access-list 10 permit 239.1.0.0 0.0.255.255
!
snmp-server community cisco RO
snmp-server community cisco123 RW
snmp-server trap-source Loopback1
radius-server host 10.4.200.15 auth-port 1645 acct-port 1646 key 7
01200307490E12242455
!
!
line con 0
line vty 0 4
exec-timeout 0 0
transport input ssh
line vty 5 15
exec-timeout 0 0
transport input ssh
!
ntp clock-period 36029234
ntp server 10.4.200.17
end

```

Catalyst 4507R-E Switch

```
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
service compress-config
!
hostname D4507R
!
boot-start-marker
boot system bootflash:cat4500e-entservicesk9-mz.122-53.SG1.bin
boot system flash bootflash:cat4500e-ipbasek9-mz.122-53.SG1.bin
boot-end-marker
!
enable secret 5 $1$v4Xi$1/d0iJYWqkYVKe4ujo/2W1
!
username admin password 7 104D580A061843595F
aaa new-model
!
!
aaa authentication login default local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
udld aggressive

ip subnet-zero
ip domain-name cisco.local
!
!
ip vrf mgmtVrf
!
ip multicast-routing
vtp mode transparent
!
!
crypto pki trustpoint TP-self-signed-1242
  enrollment selfsigned
  subject-name cn=IOS-Self-Signed-Certificate-1242
  revocation-check none
  rsakeypair TP-self-signed-1242
!
!
crypto pki certificate chain TP-self-signed-1242
```

```
certificate self-signed 01
3082023E 308201A7 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
2B312930 27060355 04031320 494F532D 53656C66 2D536967 6E65642D 43657274
69666963 6174652D 31323432 301E170D 31303032 31333233 31303335 5A170D32
30303130 31303030 3030305A 302B3129 30270603 55040313 20494F53 2D53656C
662D5369 676E6564 2D436572 74696669 63617465 2D313234 3230819F 300D0609
2A864886 F70D0101 01050003 818D0030 81890281 8100BFF6 A5635150 3DE66CE9
1618C66B A868F4FA 40CF2710 A4A2AB73 FC78CBBB 0F52AD0B DFE35758 44754F12
F60F3A31 A9262FE8 F9AC079E D92D271E 11DF2E5C D0C2B88C 6FF04B3E AD81DD47
28710EBE 97FFA57E 7A05189E F5C3535F 41DC3728 D8AD7BA6 E90F4D87 A9615FD2
C03F5A00 1EBE8887 1371E3D9 B730936A 7A6DFA54 86510203 010001A3 72307030
0F060355 1D130101 FF040530 030101FF 301D0603 551D1104 16301482 12443435
3037522E 63697363 6F2E6C6F 63616C30 1F060355 1D230418 30168014 50F11B95
4EC5ACC0 BBAC059E F00622D0 F255D4DC 301D0603 551D0E04 16041450 F11B954E
C5ACC0BB AC059EF0 0622D0F2 55D4DC30 0D06092A 864886F7 0D010104 05000381
810095C5 B76A1131 4EB54F35 0BFA6371 1865B366 3E423BDE 5AF03EF8 B1F17A5F
D57312BC F117A752 C9FECFEF A0219743 19DB12DC 5298A0DD 65654B60 FCF4C303
6A8D44AA D9883D4B 0B5FFC53 507F582A A11BB85B 5AFB0EB0 4CC6ED51 C167D977
0A9CA9EF 9C9AD528 EE5E1ADF 29F47B93 B6271217 9F8C7360 55A3F208 D6B15E93
0647
quit
power redundancy-mode redundant
!
!
!
!
!
!
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
spanning-tree vlan 100-107,900 priority 24576
!
redundancy
  mode sso
!
vlan internal allocation policy ascending
vlan dot1q tag native
!
vlan 100-107,116-123,600,900-901
!
ip ssh version 2
!
class-map match-all AutoQos-VoIP-Control-Dscp26
  match dscp af31
class-map match-all AutoQos-VoIP-Control-Dscp24
  match dscp cs3
class-map match-all AutoQos-VoIP-Bearer-Cos
  match cos 5
```

```

class-map match-all AutoQos-VoIP-Control-QosGroup24
  match qos-group 24
class-map match-all AutoQos-VoIP-Control-QosGroup26
  match qos-group 26
class-map match-all AutoQos-VoIP-Bearer-QosGroup
  match qos-group 46
class-map match-all AutoQos-VoIP-Bearer-Dscp
  match dscp ef
class-map match-all AutoQos-VoIP-Control-Cos
  match cos 3
!
!
policy-map AutoQos-VoIP-Input-Dscp-Policy
  class AutoQos-VoIP-Bearer-Dscp
    set qos-group 46
  class AutoQos-VoIP-Control-Dscp26
    set qos-group 26
  class AutoQos-VoIP-Control-Dscp24
    set qos-group 24
policy-map EC-non-queue
  class AutoQos-VoIP-Bearer-QosGroup
    set dscp ef
    set cos 5
    police cir 33000000
  class AutoQos-VoIP-Control-QosGroup26
    set dscp af31
    set cos 3
  class AutoQos-VoIP-Control-QosGroup24
    set dscp cs3
    set cos 3
policy-map queue-only
  class AutoQos-VoIP-Bearer-QosGroup
    priority
  class AutoQos-VoIP-Control-QosGroup26
    bandwidth remaining percent 5
  class AutoQos-VoIP-Control-QosGroup24
    bandwidth remaining percent 5
  class class-default
    dbl
policy-map AutoQos-VoIP-Input-Cos-Policy
  class AutoQos-VoIP-Bearer-Cos
    set qos-group 46
  class AutoQos-VoIP-Control-Cos
    set qos-group 24
policy-map AutoQos-VoIP-Output-Policy
  class AutoQos-VoIP-Bearer-QosGroup
    set dscp ef
    set cos 5

```

```

    priority
    police cir percent 33
class AutoQos-VoIP-Control-QosGroup26
  set dscp af31
  set cos 3
  bandwidth remaining percent 5
class AutoQos-VoIP-Control-QosGroup24
  set dscp cs3
  set cos 3
  bandwidth remaining percent 5
class class-default
  dbl
!
!
!
interface Loopback1
  ip address 10.4.31.254 255.255.255.255
  ip pim sparse-mode
!
interface Port-channel1
  switchport
  switchport trunk allowed vlan 116,117,901
  switchport mode trunk
!
interface Port-channel2
  switchport
  switchport trunk allowed vlan 118,119,901
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  service-policy output EC-non-queue
!
interface Port-channel3
  switchport
  switchport trunk allowed vlan 120,121,901
  switchport mode trunk
  shutdown
!
interface Port-channel4
  switchport
  switchport trunk allowed vlan 122,123,901
  switchport mode trunk
!
interface Port-channel5
  switchport
  switchport trunk allowed vlan 120,121,901
  switchport mode trunk
  service-policy output EC-non-queue

```

```

!
interface Port-channel24
  switchport
  switchport trunk allowed vlan 600
  switchport mode trunk
!
interface FastEthernet1
  ip vrf forwarding mgmtVrf
  no ip address
  speed auto
  duplex auto
!
interface GigabitEthernet1/1
  switchport trunk allowed vlan 116,117,901
  switchport mode trunk
  channel-protocol lacp
  channel-group 1 mode active
!
interface GigabitEthernet1/2
  switchport trunk allowed vlan 118,119,901
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  channel-protocol lacp
  channel-group 2 mode active
  service-policy output queue-only
!
interface GigabitEthernet1/3
  switchport trunk allowed vlan 120,121,901
  switchport mode trunk
  shutdown
  channel-protocol lacp
  channel-group 3 mode active
!
interface GigabitEthernet1/4
  switchport trunk allowed vlan 122,123,901
  switchport mode trunk
  channel-protocol lacp
  channel-group 4 mode active
!
interface GigabitEthernet1/5
!
interface GigabitEthernet1/6
!
interface GigabitEthernet1/7
!
interface GigabitEthernet1/8
!

```

```

interface GigabitEthernet1/9
!
interface GigabitEthernet1/10
!
interface GigabitEthernet1/11
!
interface GigabitEthernet1/12
!
interface GigabitEthernet1/13
!
interface GigabitEthernet1/14
!
interface GigabitEthernet1/15
!
interface GigabitEthernet1/16
!
interface GigabitEthernet1/17
!
interface GigabitEthernet1/18
!
interface GigabitEthernet1/19
!
interface GigabitEthernet1/20
!
interface GigabitEthernet1/21
!
interface GigabitEthernet1/22
!
interface GigabitEthernet1/23
!
interface GigabitEthernet1/24
  switchport trunk allowed vlan 600
  switchport mode trunk
  channel-protocol lacp
  channel-group 24 mode active
!
interface GigabitEthernet2/1
  switchport trunk allowed vlan 116,117,901
  switchport mode trunk
  channel-protocol lacp
  channel-group 1 mode active
!
interface GigabitEthernet2/2
  switchport trunk allowed vlan 118,119,901
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  channel-protocol lacp

```

```

channel-group 2 mode active
service-policy output queue-only
!
interface GigabitEthernet2/3
switchport trunk allowed vlan 120,121,901
switchport mode trunk
shutdown
channel-protocol lacp
channel-group 3 mode active
!
interface GigabitEthernet2/4
switchport trunk allowed vlan 122,123,901
switchport mode trunk
channel-protocol lacp
channel-group 4 mode active
!
interface GigabitEthernet2/5
!
interface GigabitEthernet2/6
!
interface GigabitEthernet2/7
!
interface GigabitEthernet2/8
!
interface GigabitEthernet2/9
!
interface GigabitEthernet2/10
!
interface GigabitEthernet2/11
!
interface GigabitEthernet2/12
!
interface GigabitEthernet2/13
!
interface GigabitEthernet2/14
!
interface GigabitEthernet2/15
!
interface GigabitEthernet2/16
!
interface GigabitEthernet2/17
!
interface GigabitEthernet2/18
!
interface GigabitEthernet2/19
!
interface GigabitEthernet2/20

```

```

!
interface GigabitEthernet2/21
!
interface GigabitEthernet2/22
!
interface GigabitEthernet2/23
!
interface GigabitEthernet2/24
switchport trunk allowed vlan 600
switchport mode trunk
channel-protocol lacp
channel-group 24 mode active
!
interface TenGigabitEthernet3/1
no switchport
ip address 10.4.60.18 255.255.255.252
ip pim sparse-mode
ip summary-address eigrp 100 10.4.16.0 255.255.240.0 5
carrier-delay msec 0
auto qos voip trust
service-policy input AutoQos-VoIP-Input-Dscp-Policy
service-policy output AutoQos-VoIP-Output-Policy
!
interface TenGigabitEthernet3/2
!
interface GigabitEthernet3/3
!
interface GigabitEthernet3/4
!
interface GigabitEthernet3/5
!
interface GigabitEthernet3/6
!
interface TenGigabitEthernet4/1
no switchport
ip address 10.4.60.30 255.255.255.252
ip pim sparse-mode
ip summary-address eigrp 100 10.4.16.0 255.255.240.0 5
carrier-delay msec 0
auto qos voip trust
service-policy input AutoQos-VoIP-Input-Dscp-Policy
service-policy output AutoQos-VoIP-Output-Policy
!
interface TenGigabitEthernet4/2
!
interface GigabitEthernet4/3
!

```

```

interface GigabitEthernet4/4
!
interface GigabitEthernet4/5
!
interface GigabitEthernet4/6
!
interface TenGigabitEthernet5/1
    switchport trunk allowed vlan 120,121,901
    switchport mode trunk
    channel-protocol lacp
    channel-group 5 mode active
    service-policy output queue-only
!
interface TenGigabitEthernet5/2
!
interface TenGigabitEthernet5/3
!
interface TenGigabitEthernet5/4
!
interface TenGigabitEthernet5/5
!
interface TenGigabitEthernet5/6
!
interface GigabitEthernet5/7
!
interface GigabitEthernet5/8
!
interface GigabitEthernet5/9
!
interface GigabitEthernet5/10
!
interface GigabitEthernet5/11
!
interface GigabitEthernet5/12
!
interface GigabitEthernet5/13
!
interface GigabitEthernet5/14
!
interface GigabitEthernet5/15
!
interface GigabitEthernet5/16
!
interface GigabitEthernet5/17
!
interface GigabitEthernet5/18
!

```

```

interface TenGigabitEthernet6/1
    switchport trunk allowed vlan 120,121,901
    switchport mode trunk
    channel-protocol lacp
    channel-group 5 mode active
    service-policy output queue-only
!
interface TenGigabitEthernet6/2
!
interface TenGigabitEthernet6/3
!
interface TenGigabitEthernet6/4
!
interface TenGigabitEthernet6/5
!
interface TenGigabitEthernet6/6
!
interface GigabitEthernet6/7
!
interface GigabitEthernet6/8
!
interface GigabitEthernet6/9
!
interface GigabitEthernet6/10
!
interface GigabitEthernet6/11
!
interface GigabitEthernet6/12
!
interface GigabitEthernet6/13
!
interface GigabitEthernet6/14
!
interface GigabitEthernet6/15
!
interface GigabitEthernet6/16
!
interface GigabitEthernet6/17
!
interface GigabitEthernet6/18
!
interface Vlan1
    no ip address
!
interface Vlan100
    description Access Closet 1 Data
    ip address 10.4.0.1 255.255.255.0

```

```

ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan101
description Access Closet 1 Voice
ip address 10.4.1.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan102
description Access Closet 2 Data
ip address 10.4.2.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan103
description Access Closet 2 Voice
ip address 10.4.3.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan104
description Access Closet 3 Data
ip address 10.4.4.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan105
description Access Closet 3 Voice
ip address 10.4.5.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan106
description Access Closet 4 Data

```

```

ip address 10.4.6.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan107
description Access Closet 4 Voice
ip address 10.4.7.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan116
ip address 10.4.16.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan117
ip address 10.4.17.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan118
ip address 10.4.18.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan119
ip address 10.4.19.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan120
ip address 10.4.20.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan121
ip address 10.4.21.1 255.255.255.0
ip helper-address 192.168.28.10

```

```

ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan122
ip address 10.4.22.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan123
ip address 10.4.23.1 255.255.255.0
ip helper-address 192.168.28.10
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan600
ip address 10.4.60.1 255.255.255.252
ip pim sparse-mode
!
interface Vlan900
description Managment
ip address 10.4.15.1 255.255.255.128
shutdown
!
interface Vlan901
ip address 10.4.31.1 255.255.255.128
!
!
router eigrp 100
passive-interface default
no passive-interface Vlan600
no passive-interface TenGigabitEthernet3/1
no passive-interface TenGigabitEthernet4/1
no auto-summary
eigrp router-id 10.4.31.254
network 10.4.0.0 0.0.255.255
nsf
!
no ip http server
ip http secure-server
!
ip pim rp-address 10.4.60.252 10
!
!
access-list 10 permit 239.1.0.0 0.0.255.255
!
!

```

```

snmp-server engineID local 8000000903000025841DCBAB
snmp-server community cisco RO
snmp-server community cisco123 RW
snmp-server trap-source Loopback1
!
line con 0
stopbits 1
line vty 0 4
length 0
transport input ssh
line vty 5 15
transport input ssh
!
ntp clock-period 17181841
ntp server 192.168.28.240
ntp server 10.4.200.17
end

```

```

upgrade fpd auto
version 12.2
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
service counters max age 5
!
hostname D6500VSS
!
boot-start-marker
boot-end-marker
!
security passwords min-length 1
logging buffered 8192
enable secret 5 $1$dNtk$diqeOGb3H0brvUHL2Gwox1
!
username admin password 7 0007421507545A545C
aaa new-model
!
!
aaa authentication login default group radius local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
ip subnet-zero
!
!
!
ip multicast-routing
ip ssh source-interface Loopback1
ip ssh version 2
ip domain-name cisco.local
udld aggressive

vtp mode transparent
!
switch virtual domain 100
  switch mode virtual
  mac-address use-virtual
!
mls netflow interface
mls qos map cos-dscp 0 8 16 24 32 46 48 56
mls qos
mls cef error action reset

```

Distribution Layer Configuration

```

vlan internal allocation policy ascending
vlan dot1q tag native
vlan access-log ratelimit 2000
!
vlan 100
  name 3560data
!
vlan 101
  name 3560voice
!
vlan 102
  name 3750data
!
vlan 103
  name 3750voice
!
vlan 104
  name 3750xdata
!
vlan 105
  name 3750xvoice
!
vlan 106
  name 4500data
!
vlan 107
  name 4500voice
!
vlan 600
!
vlan 900
  name mgmt
!
!
!
interface Loopback1
  ip address 10.4.15.254 255.255.255.255
  ip pim sparse-mode
!
interface Port-channel1
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 100,101,900
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  logging event bundle-status
  shutdown

```

```

!
interface Port-channel2
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 102,103,900
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  logging event bundle-status
  shutdown
!
interface Port-channel3
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 104,105,900
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  logging event bundle-status
  mls qos trust dscp
!
interface Port-channel4
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 106,107,900
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  logging event bundle-status
  mls qos trust dscp
!
interface Port-channel20
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 600
  switchport mode trunk
  logging event link-status
  logging event trunk-status
  logging event bundle-status
  shutdown
!
interface Port-channel30
  no switchport
  ip address 10.4.60.10 255.255.255.252
  ip pim sparse-mode
  ip summary-address eigrp 100 10.4.0.0 255.255.240.0 5
  logging event link-status
  logging event bundle-status

```

```

mls qos trust dscp
!
interface Port-channel35
no switchport
ip address 10.4.60.22 255.255.255.252
ip pim sparse-mode
ip summary-address eigrp 100 10.4.0.0 255.255.240.0 5
logging event link-status
logging event bundle-status
mls qos trust dscp
!
interface Port-channel101
no switchport
no ip address
switch virtual link 1
mls qos trust cos
no mls qos channel-consistency
!
interface Port-channel102
no switchport
no ip address
switch virtual link 2
mls qos trust cos
no mls qos channel-consistency
!
interface GigabitEthernet1/1/1
switchport
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 100,101,900
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
shutdown
channel-protocol lacp
channel-group 1 mode active
!
interface GigabitEthernet1/1/2
switchport
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 102,103,900
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
shutdown
channel-protocol lacp
channel-group 2 mode active

```

```

!
interface GigabitEthernet1/1/3
switchport
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 104,105,900
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
mls qos trust dscp
channel-protocol lacp
channel-group 3 mode active
!
interface GigabitEthernet1/1/4
switchport
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 106,107,900
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
mls qos trust dscp
channel-protocol lacp
channel-group 4 mode active
!
interface GigabitEthernet1/1/5
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/6
switchport
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 600
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
shutdown
channel-protocol lacp
channel-group 20 mode active
!
interface GigabitEthernet1/1/7
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/8

```

```

no switchport
no ip address
dual-active fast-hello
!
interface GigabitEthernet1/1/9
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/10
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/11
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/12
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/13
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/14
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/15
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/16
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/17
no switchport
no ip address
shutdown

```

```

!
interface GigabitEthernet1/1/18
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/19
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/20
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/21
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/22
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/23
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/24
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/25
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/26
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/27
no switchport

```

```

no ip address
shutdown
!
interface GigabitEthernet1/1/28
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/29
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/30
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/31
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/32
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/33
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/34
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/35
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/36
no switchport
no ip address
shutdown
!

```

```

interface GigabitEthernet1/1/37
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/38
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/39
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/40
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/41
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/42
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/43
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/44
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/45
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/46
no switchport
no ip address

```

```

shutdown
!
interface GigabitEthernet1/1/47
no switchport
no ip address
shutdown
!
interface GigabitEthernet1/1/48
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/1
no switchport
no ip address
logging event link-status
logging event bundle-status
mls qos trust dscp
channel-protocol lacp
channel-group 30 mode active
!
interface TenGigabitEthernet1/4/2
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/3
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/4
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/5
no switchport
no ip address
logging event link-status
logging event bundle-status
mls qos trust dscp
channel-protocol lacp
channel-group 35 mode active
!
interface TenGigabitEthernet1/4/6
no switchport

```

```

no ip address
shutdown
!
interface TenGigabitEthernet1/4/7
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/8
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/9
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/10
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/11
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/12
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/13
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/14
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet1/4/15
no switchport
no ip address
shutdown

```

```

!
interface TenGigabitEthernet1/4/16
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet1/5/1
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet1/5/2
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet1/5/3
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet1/5/4
 no switchport
 no ip address
 mls qos trust cos
 channel-group 101 mode on
!
interface TenGigabitEthernet1/5/5
 no switchport
 no ip address
 mls qos trust cos
 channel-group 101 mode on
!
interface GigabitEthernet2/1/1
 switchport
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 100,101,900
 switchport mode trunk
 logging event link-status
 logging event trunk-status
 logging event bundle-status
 shutdown
 channel-protocol lacp
 channel-group 1 mode active
!
interface GigabitEthernet2/1/2
 switchport

```

```

 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 102,103,900
 switchport mode trunk
 logging event link-status
 logging event trunk-status
 logging event bundle-status
 shutdown
 channel-protocol lacp
 channel-group 2 mode active
!
interface GigabitEthernet2/1/3
 switchport
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 104,105,900
 switchport mode trunk
 logging event link-status
 logging event trunk-status
 logging event bundle-status
 mls qos trust dscp
 channel-protocol lacp
 channel-group 3 mode active
!
interface GigabitEthernet2/1/4
 switchport
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 106,107,900
 switchport mode trunk
 logging event link-status
 logging event trunk-status
 logging event bundle-status
 mls qos trust dscp
 channel-protocol lacp
 channel-group 4 mode active
!
interface GigabitEthernet2/1/5
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet2/1/6
 switchport
 switchport trunk encapsulation dot1q
 switchport trunk allowed vlan 600
 switchport mode trunk
 logging event link-status
 logging event trunk-status
 logging event bundle-status

```

```

shutdown
channel-protocol lacp
channel-group 20 mode active
!
interface GigabitEthernet2/1/7
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/8
no switchport
no ip address
dual-active fast-hello
!
interface GigabitEthernet2/1/9
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/10
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/11
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/12
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/13
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/14
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/15
no switchport
no ip address

```

```

shutdown
!
interface GigabitEthernet2/1/16
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/17
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/18
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/19
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/20
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/21
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/22
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/23
no switchport
no ip address
shutdown
!
interface GigabitEthernet2/1/24
no switchport
no ip address
shutdown
!

```

```

interface TenGigabitEthernet2/4/1
 no switchport
 no ip address
 logging event link-status
 logging event bundle-status
 mls qos trust dscp
 channel-protocol lacp
 channel-group 35 mode active
!
interface TenGigabitEthernet2/4/2
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/3
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/4
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/5
 no switchport
 no ip address
 logging event link-status
 logging event bundle-status
 mls qos trust dscp
 channel-protocol lacp
 channel-group 30 mode active
!
interface TenGigabitEthernet2/4/6
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/7
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/8
 no switchport
 no ip address
 shutdown

```

```

!
interface TenGigabitEthernet2/4/9
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/10
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/11
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/12
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/13
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/14
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/15
 no switchport
 no ip address
 shutdown
!
interface TenGigabitEthernet2/4/16
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet2/5/1
 no switchport
 no ip address
 shutdown
!
interface GigabitEthernet2/5/2

```

```

no switchport
no ip address
shutdown
!
interface GigabitEthernet2/5/3
no switchport
no ip address
shutdown
!
interface TenGigabitEthernet2/5/4
no switchport
no ip address
mls qos trust cos
channel-group 102 mode on
!
interface TenGigabitEthernet2/5/5
no switchport
no ip address
mls qos trust cos
channel-group 102 mode on
!
interface Vlan1
no ip address
shutdown
!
interface Vlan100
ip address 10.4.0.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan101
ip address 10.4.1.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan102
ip address 10.4.2.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan103
ip address 10.4.3.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode

```

```

shutdown
!
interface Vlan104
ip address 10.4.4.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan105
ip address 10.4.5.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
shutdown
!
interface Vlan106
ip address 10.4.6.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan107
ip address 10.4.7.1 255.255.255.0
ip helper-address 10.4.200.10
ip pim sparse-mode
!
interface Vlan600
description Temporary link to Services Switch when in collapsed Core/Dist
ip address 10.4.60.1 255.255.255.252
ip pim sparse-mode
shutdown
!
interface Vlan900
ip address 10.4.15.1 255.255.255.128
!
router eigrp 100
network 10.4.0.0 0.0.255.255
eigrp router-id 10.4.15.254
no auto-summary
passive-interface default
no passive-interface Vlan600
no passive-interface Port-channel30
no passive-interface Port-channel35
nsf
!
ip classless
!
no ip http server

```

```

ip http secure-server
ip pim rp-address 10.4.60.252 10
!
!
snmp-server engineID local 8000000903000008E3FFFD90
snmp-server community cisco RO
snmp-server community cisco123 RW
snmp-server trap-source Loopback1
!
radius-server host 10.4.200.15 auth-port 1645 acct-port 1646 key 7
15210E0F162F3F0F2D2A
!
control-plane
!
!
dial-peer cor custom
!
!
!
!
line con 0
line vty 0 4
    transport input ssh
line vty 5 15
    transport input ssh
!
ntp clock-period 17180017
ntp server 10.4.200.17
!
!
module provision switch 1
    slot 1 slot-type 152 port-type 31 number 48 virtual-slot 17
    slot 4 slot-type 284 port-type 60 number 16 virtual-slot 20
    slot 5 slot-type 254 port-type 31 number 2 port-type 61 number 1 port-
type 60 number 2 virtual-slot 21
!
module provision switch 2
    slot 1 slot-type 156 port-type 31 number 24 virtual-slot 33
    slot 4 slot-type 284 port-type 60 number 16 virtual-slot 36
    slot 5 slot-type 254 port-type 31 number 2 port-type 61 number 1 port-
type 60 number 2 virtual-slot 37
!
end

```

Core Layer Configurations

Catalyst 6500 Series Switch

```
upgrade fpd auto
version 12.2
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
service counters max age 5
!
hostname c6509L
!
boot-start-marker
boot-end-marker
!
security passwords min-length 1
enable secret 5 $1$v2Va$mIzjVfHUldYrngCWzAqCW1
!
username admin password 7 04585A150C2E1D1C5A
aaa new-model
!
!
aaa authentication login default group radius local
!
!
!
aaa session-id common
clock timezone PST -8
clock summer-time UTC recurring
ip subnet-zero
!
!
!
ip multicast-routing
ip ssh source-interface Loopback1
ip ssh version 2
ip domain-name cisco.local
udld aggressive

vtp mode transparent
mls netflow interface
mls cef error action reset
```

```
!
crypto pki trustpoint TP-self-signed-1233
  enrollment selfsigned
  subject-name cn=IOS-Self-Signed-Certificate-1233
  revocation-check none
  rsa-keypair TP-self-signed-1233
!
!
crypto pki certificate chain TP-self-signed-1233
  certificate self-signed 01
    3082023E 308201A7 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
    2B312930 27060355 04031320 494F532D 53656C66 2D536967 6E65642D 43657274
    69666963 6174652D 31323333 301E170D 31303033 30333133 35383535 5A170D32
    30303130 31303030 3030305A 302B3129 30270603 55040313 20494F53 2D53656C
    662D5369 676E6564 2D436572 74696669 63617465 2D313233 3330819F 300D0609
    2A864886 F70D0101 01050003 818D0030 81890281 8100B36A 76A6512C 5102C148
    5393DB68 2130D870 5971B836 5473967C 6DAD9A47 8F072DDC 967636E3 67454473
    F48F169C 5C5BD8FD 9E5BE449 C6F67AF4 AACF956C 6904ADA4 909432BB 8AC13E4E
    8E2F02BA 400392D3 F19A7172 4EB9FF8B EF113375 C86369C5 AF306D1D 1EC21726
    76CA7D6E BA982DA0 B0785116 E75AA36A 20A96C28 513B0203 010001A3 72307030
    0F060355 1D130101 FF040530 030101FF 301D0603 551D1104 16301482 12633635
    30394C2E 63697363 6F2E6C6F 63616C30 1F060355 1D230418 30168014 DB0F90DD
    C69DFF48 927868C9 756C8E6F 73703684 301D0603 551D0E04 160414DB 0F90DDC6
    9DFF4892 7868C975 6C8E6F73 70368430 0D06092A 864886F7 0D010104 05000381
    810003C6 8B77951B 33F2FF6E 96DB9993 BBB18409 DE49A079 4C6C7DC6 DDBD79AD
    8A1522B5 2C8302CC E53AB68C A72CE935 50A1D0F2 D574D106 F2D74503 B36ABB46
    B9F4B920 3028B65E DC3CA863 6F8042A3 71A58768 42F28841 CF63A04B C0E2DC14
    53828282 CD794186 4CD67501 B528C1DC 53D08051 A2A34B4A E00D4335 FF603CDE
4D0B
quit
!
!
!
!
!
!
!
!
!
!
spanning-tree mode rapid-pvst
diagnostic bootup level minimal
access-list 10 permit 239.1.0.0 0.0.255.255
!
redundancy
  main-cpu
    auto-sync running-config
  mode sso
!
```

```

vlan internal allocation policy ascending
vlan dot1q tag native
vlan access-log ratelimit 2000
!
!
!
interface Loopback1
 ip address 10.4.60.254 255.255.255.255
 ip pim sparse-mode
!
interface Loopback2
 ip address 10.4.60.252 255.255.255.255
 ip pim sparse-mode
!
interface Port-channel30
 ip address 10.4.60.9 255.255.255.252
 ip pim sparse-mode
 logging event link-status
 logging event bundle-status
!
interface Port-channel31
 ip address 10.4.60.13 255.255.255.252
 ip pim sparse-mode
 logging event link-status
 logging event bundle-status
!
interface Port-channel32
 ip address 10.4.60.33 255.255.255.252
 ip pim sparse-mode
 logging event link-status
 logging event bundle-status
!
interface GigabitEthernet1/1
 no ip address
 logging event link-status
 logging event bundle-status
 channel-protocol lacp
 channel-group 31 mode active
!
interface GigabitEthernet1/2
 no ip address
 logging event link-status
 logging event bundle-status
 channel-protocol lacp
 channel-group 31 mode active
!
interface GigabitEthernet1/3

```

```

 no ip address
 logging event link-status
 logging event bundle-status
 channel-protocol lacp
 channel-group 32 mode active
!
interface GigabitEthernet1/4
 no ip address
 logging event link-status
 logging event bundle-status
 channel-protocol lacp
 channel-group 32 mode active
!
! *****
! Interface GigabitEthernet 1/5 - 1/48 are have been removed for
! conciseness
! *****
!
interface TenGigabitEthernet4/1
 no ip address
 logging event link-status
 logging event bundle-status
 channel-protocol lacp
 channel-group 30 mode active
!
interface TenGigabitEthernet4/2
 no ip address
 logging event link-status
 logging event bundle-status
 channel-protocol lacp
 channel-group 30 mode active
!
interface TenGigabitEthernet4/3
 no ip address
 shutdown
!
interface TenGigabitEthernet4/4
 no ip address
 shutdown
!
interface TenGigabitEthernet4/5
 ip address 10.4.60.17 255.255.255.252
 ip pim sparse-mode
 logging event link-status
!
interface TenGigabitEthernet4/6
 ip address 10.4.60.41 255.255.255.252

```

```

ip pim sparse-mode
logging event link-status
!
interface TenGigabitEthernet4/7
no ip address
shutdown
!
interface TenGigabitEthernet4/8
no ip address
shutdown
!
interface GigabitEthernet5/1
no ip address
shutdown
!
interface GigabitEthernet5/2
no ip address
shutdown
!
interface GigabitEthernet5/3
no ip address
shutdown
!
interface TenGigabitEthernet5/4
no ip address
shutdown
!
interface TenGigabitEthernet5/5
no ip address
shutdown
!
interface Vlan1
no ip address
shutdown
!
router eigrp 100
network 10.4.0.0 0.0.255.255
eigrp router-id 10.4.60.254
no auto-summary
passive-interface default
no passive-interface TenGigabitEthernet4/5
no passive-interface TenGigabitEthernet4/6
no passive-interface Port-channel30
no passive-interface Port-channel31
no passive-interface Port-channel32
!
ip classless

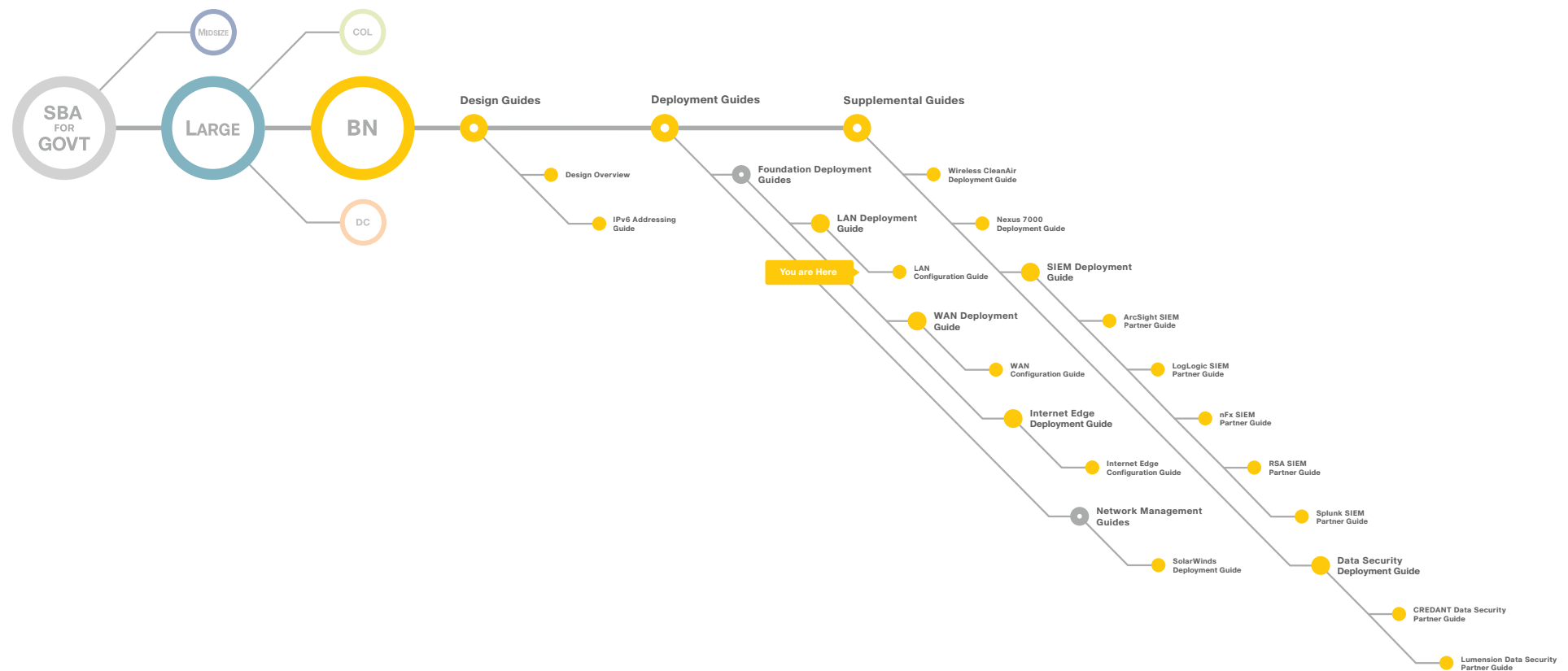
```

```

!
!
no ip http server
ip http secure-server
ip pim rp-address 10.4.60.252 10
ip msdp peer 10.4.60.253 connect-source Loopback1
ip msdp cache-sa-state
ip msdp originator-id Loopback1
!
!
snmp-server engineID local 8000000903000022BE736C00
snmp-server community cisco RO
snmp-server community cisco123 RW
snmp-server trap-source Loopback1
!
radius-server host 10.4.200.15 auth-port 1645 acct-port 1646 key 7
06350A225E4B1D32000E
!
control-plane
!
!
dial-peer cor custom
!
!
!
!
line con 0
line vty 0 4
transport input ssh
line vty 5 15
transport input ssh
!
ntp clock-period 17179966
ntp server 10.4.200.17
mac-address-table aging-time 480
!
end

```

Appendix A: SBA for Large Agency Document System





SMART BUSINESS ARCHITECTURE



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

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C07-640808-00 12/10