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Cisco Validated Designs (CVDs) provide the framework for systems design based on common use cases or current engineering system priorities. They incorporate a broad set of technologies, features, and applications to address customer needs. Cisco engineers have comprehensively tested and documented each CVD in order to ensure faster, more reliable, and fully predictable deployment.

This guide provides, as a comprehensive reference, the complete network device configurations that are implemented in a CVD design guide.

How to Read Commands

Many CVD guides tell you how to use a command-line interface (CLI) to configure network devices. This section describes the conventions used to specify commands that you must enter.

Commands to enter at a CLI appear as follows:

```
configure terminal
```

Commands that specify a value for a variable appear as follows:

```
ntp server 10.10.48.17
```

Commands with variables that you must define appear as follows:

```
class-map [highest class name]
```

Commands at a CLI or script prompt appear as follows:

```
Router# enable
```

Long commands that line wrap are underlined. Enter them as one command:

```
police rate 10000 pps burst 10000 packets conform-action set-discard-class-transmit 48 exceed-action transmit
```

Noteworthy parts of system output or device configuration files appear highlighted, as follows:

```
interface Vlan64
ip address 10.5.204.5 255.255.255.0
```

Comments and Questions

If you would like to comment on a guide or ask questions, please use the feedback form.

For the most recent CVD guides, see the following site:

http://www.cisco.com/go/cvd
Introduction

This guide contains the configuration files corresponding to the validation of the Data Center Design Guide. The following configuration files are provided:

- Ethernet and Fibre Channel Infrastructure
- Network Security

The following figure shows the complete CVD data center design buildout including the Cisco UCS Servers, tested storage arrays, and services.

*Figure 1 - Complete CVD data center design*
## Data Center Core

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Product Description</th>
<th>Part Numbers</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Switch</td>
<td>Cisco Nexus 5596 up to 96-port 10GbE, FCoE, and Fibre Channel SFP+</td>
<td>N5K-C5596UP-FA</td>
<td>NX-OS 5.2(1)N1(3) Layer 3 License</td>
</tr>
<tr>
<td></td>
<td>Cisco Nexus 5596 Layer 3 Switching Module</td>
<td>N55-M160L30V2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco Nexus 5548 up to 48-port 10GbE, FCoE, and Fibre Channel SFP+</td>
<td>N5K-C5548UP-FA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco Nexus 5548 Layer 3 Switching Module</td>
<td>N55-D160L3</td>
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<tr>
<td></td>
<td>Cisco Nexus 5500 Layer 3 Enterprise Software License</td>
<td>N55-LANTK9</td>
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</tr>
<tr>
<td></td>
<td>Cisco Nexus 5500 Storage Protocols Services License, 8 ports</td>
<td>N55-8P-SSK9</td>
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<tr>
<td>Ethernet Extension</td>
<td>Cisco Nexus 2000 Series 48 Ethernet 100/1000BASE-T (enhanced) Fabric Extender</td>
<td>N2K-C2248TP-E</td>
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<tr>
<td></td>
<td>Cisco Nexus 2000 Series 48 Ethernet 100/1000BASE-T Fabric Extender</td>
<td>N2K-C2248TP-1GE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco Nexus 2000 Series 32 1/10 GbE SFP+, FCoE capable Fabric Extender</td>
<td>N2K-C2232PP-10GE</td>
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</tr>
</tbody>
</table>

## Data Center Services

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Product Description</th>
<th>Part Numbers</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cisco ASA 5585-X Security Plus IPS Edition SSP-10 and IPS SSP-10 bundle</td>
<td>ASA5585-S10P10XK9</td>
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</tbody>
</table>

## Storage Network Extension

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Product Description</th>
<th>Part Numbers</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibre-channel Switch</td>
<td>Cisco MDS 9148 Multilayer Fibre Channel Switch</td>
<td>DS-C9148D-8G16P-K9</td>
<td>NX-OS 5.0(8)</td>
</tr>
<tr>
<td></td>
<td>Cisco MDS 9124 Multilayer Fibre Channel Switch</td>
<td>DS-C9124-K9</td>
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</tr>
</tbody>
</table>
# Computing Resources

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Product Description</th>
<th>Part Numbers</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UCS Fabric Interconnect</strong></td>
<td>Cisco UCS up to 96-port Fabric Interconnect</td>
<td>UCS-FI-6296UP</td>
<td>2.1(1b) Cisco UCS Release</td>
</tr>
<tr>
<td></td>
<td>Cisco UCS up to 48-port Fabric Interconnect</td>
<td>UCS-FI-6248UP</td>
<td></td>
</tr>
<tr>
<td><strong>UCS B-Series Blade Servers</strong></td>
<td>Cisco UCS Blade Server Chassis</td>
<td>N20-C6508</td>
<td>2.1(1b) Cisco UCS Release</td>
</tr>
<tr>
<td></td>
<td>Cisco UCS 8-port 10GbE Fabric Extender</td>
<td>UCS-IOM2208XP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco UCS 4-port 10GbE Fabric Extender</td>
<td>UCS-IOM2204XP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco UCS B200 M3 Blade Server</td>
<td>UCSB-B200-M3</td>
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<tr>
<td></td>
<td>Cisco UCS B250 M2 Blade Server</td>
<td>N20-B6625-2</td>
<td></td>
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<tr>
<td></td>
<td>Cisco UCS 1280 Virtual Interface Card</td>
<td>UCS-VIC-M82-8P</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco UCS M81KR Virtual Interface Card</td>
<td>N20-AC0002</td>
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</tr>
<tr>
<td><strong>UCS C-Series Rack-mount Servers</strong></td>
<td>Cisco UCS C220 M3 Rack Mount Server</td>
<td>UCSC-C220-M3S</td>
<td>1.5.1f Cisco UCS CIMC Release</td>
</tr>
<tr>
<td></td>
<td>Cisco UCS C240 M3 Rack Mount Server</td>
<td>UCSC-C240-M3S</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco UCS C460 M2 Rack Mount Server</td>
<td>UCSC-BASE-M2-C460</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco UCS 1225 Virtual Interface Card Dual Port 10Gb SFP+</td>
<td>UCSC-PCIE-CSC-02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cisco UCS P81E Virtual Interface Card Dual Port 10Gb SFP+</td>
<td>N2XX-ACPCi01</td>
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</tbody>
</table>
This section includes the Cisco Nexus 5500UP Series switches, used to build out the data center core Ethernet and Fibre Channel switching foundation, and the Cisco MDS 9100 Multilayer Fabric switches, used to extend your Fibre Channel networks for larger density requirements.

**Cisco Nexus 5500UPa**

The Cisco Nexus 5500UP switches operate as a pair to provide a resilient data center core for both Ethernet and Fibre Channel network transport. This switch is also the Fibre Channel SAN-A switch.

```bash
version 5.2(1)N1(3)
feature fcoe
logging level feature-mgr 0
hostname DC5548UPa
feature npiv
feature fport-channel-trunk
no feature telnet
feature tacacs+
cfs eth distribute
feature pim
feature elgrp
feature udld
feature interface-vlan
feature hsrp
feature lacp
feature vpc
feature lldp
feature fex
username admin password 5 ***** role network-admin
banner motd #Nexus 5000 Switch
#
ssh key rsa 2048
ip domain-lookup
ip name-server 10.4.48.1
tacacs-server host 10.4.48.15 key 7 *****
aaa group server tacacs+ tacacs
  server 10.4.48.15
  source-interface loopback0
logging event link-status default
ip access-list ISCSI
  10 permit tcp any eq 860 any
  20 permit tcp any eq 3260 any
```
30 permit tcp any any eq 860
40 permit tcp any any eq 3260
class-map type qos class-fcoe
class-map type qos match-any BULK-COS
  match cos 1
class-map type qos match-any BULK-QUEUE
  match dscp 10,12,14
  match cos 1
class-map type qos match-any CONTROL-COS
  match cos 4
class-map type qos match-all ISCSI-QUEUE
  match access-group name ISCSI
class-map type qos match-any PRIORITY-COS
  match cos 5
class-map type qos match-any CONTROL-QUEUE
  match dscp 24
  match cos 4
class-map type qos match-any PRIORITY-QUEUE
  match dscp 32,34,40,46
  match cos 5
class-map type qos match-any TRANSACTIONAL-COS
  match cos 2
class-map type qos match-any TRANSACTIONAL-QUEUE
  match dscp 18,20,22
  match cos 2
class-map type queuing BULK-GROUP
  match qos-group 3
class-map type queuing class-fcoe
  match qos-group 1
class-map type queuing CONTROL-GROUP
  match qos-group 4
class-map type queuing PRIORITY-GROUP
  match qos-group 5
class-map type queuing class-all-flood
  match qos-group 2
class-map type queuing class-ip-multicast
  match qos-group 2
class-map type queuing TRANSACTIONAL-GROUP
  match qos-group 2
policy-map type qos DC-FCOE+1P4Q_GLOBAL-COS-QOS
class PRIORITY-COS
  set qos-group 5
class CONTROL-COS
  set qos-group 4
class class-fcoe
  set qos-group 1
class TRANSACTIONAL-COS
set qos-group 2
class BULK-COS
set qos-group 3
class class-default

policy-map type qos DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
class PRIORITY-QUEUE
set qos-group 5
class CONTROL-QUEUE
set qos-group 4
class TRANSACTIONAL-QUEUE
set qos-group 2
class BULK-QUEUE
set qos-group 3
class ISCSI-QUEUE
set qos-group 3
class class-default

policy-map type queuing DC-FCOE+1P4Q_GLOBAL-GROUP-QUEUING
class type queuing PRIORITY-GROUP
  priority
class type queuing CONTROL-GROUP
  bandwidth percent 10
class type queuing class-fcoe
  bandwidth percent 20
class type queuing TRANSACTIONAL-GROUP
  bandwidth percent 25
class type queuing BULK-GROUP
  bandwidth percent 20
class type queuing class-default
  bandwidth percent 25

class-map type network-qos class-fcoe
  match qos-group 1

class-map type network-qos BULK-SYSTEM
  match qos-group 3

class-map type network-qos CONTROL-SYSTEM
  match qos-group 4

class-map type network-qos PRIORITY-SYSTEM
  match qos-group 5

class-map type network-qos class-all-flood
  match qos-group 2

class-map type network-qos class-ip-multicast
  match qos-group 2

class-map type network-qos TRANSACTIONAL-SYSTEM
  match qos-group 2

policy-map type network-qos DC-FCOE+1P4Q_GLOBAL-SYSTEM-NETWORK-QOS
  class type network-qos PRIORITY-SYSTEM
    set cos 5
  class type network-qos CONTROL-SYSTEM
set cos 4
class type network-qos class-fcoe
    pause no-drop
    mtu 2158
class type network-qos TRANSACTIONAL-SYSTEM
    set cos 2
class type network-qos BULK-SYSTEM
    mtu 9216
    queue-limit 128000 bytes
    set cos 1
class type network-qos class-default
    multicast-optimize
    set cos 0

system qos
    service-policy type qos input DC-FCOE+1P4Q_GLOBAL-COS-QOS
    service-policy type queuing input DC-FCOE+1P4Q_GLOBAL-GROUP-QUEUING
    service-policy type queuing output DC-FCOE+1P4Q_GLOBAL-GROUP-QUEUING
    service-policy type network-qos DC-FCOE+1P4Q_GLOBAL-SYSTEM-NETWORK-QOS
fex 103
    pinning max-links 1
    description “FEX0103”
fex 104
    pinning max-links 1
    description “FEX0104”
fex 106
    pinning max-links 1
    description “FEX0106”
fex 107
    pinning max-links 1
    description “FEX0107”
slot 1
    port 28-32 type fc
slot 2
    snmp-server user admin network-admin auth md5 ***** localizedkey
    snmp-server community ***** group network-operator
    snmp-server community ***** group network-admin
    ntp server 10.4.48.17
    aaa authentication login default group tacacs
    vrf context management
        ip route 0.0.0.0/0 10.4.63.1
    track 1 interface port-channel10 line-protocol
    track 2 interface Ethernet1/19 line-protocol
    track 3 interface Ethernet1/20 line-protocol
    track 10 list boolean or
        object 1
        object 2
        object 3
vlan 1
vlan 148
    name Servers_1
vlan 149
    name Servers_2
vlan 150
    name Servers_3
vlan 153
    name FW_Outside
vlan 154
    name FW_Inside_1
vlan 155
    name FW_Inside_2
vlan 156
    name PEERING_VLAN
vlan 160
    name N1kv_Control
vlan 161
    name vMotion
vlan 162
    name iSCSI
vlan 163
    name DC-Management
vlan 304
    fcoe vsan 4
    name FCoE-VLAN_304
spanning-tree port type edge bpduguard default
spanning-tree vlan 1-1000 priority 8192
route-map static-to-eigrp permit 10
    match ip address 10.4.54.0/24
route-map static-to-eigrp permit 20
    match ip address 10.4.55.0/24
port-channel load-balance ethernet source-dest-port
vpc domain 10
    peer-switch
        role priority 16000
        peer-keepalive destination 10.4.63.11 source 10.4.63.10
delay restore 360
        peer-gateway
        auto-recovery
        ip arp synchronize
port-profile default max-ports 512
vsan database
    vsan 4 name "General-Storage"
device-alias database
    device-alias name emc-a2-p0 pwn 50:06:01:64:3c:e0:60:e2
device-alias name emc-b2-p0 pwn 50:06:01:6c:3c:e0:60:e2
device-alias commit

fcdomain fcid database
    vsan 4 wwn 20:1f:54:7f:ee:23:55:00 fcid 0x130000 dynamic
    vsan 4 wwn 20:20:54:7f:ee:23:55:00 fcid 0x130020 dynamic
    vsan 4 wwn 24:1d:54:7f:ee:23:55:00 fcid 0x130040 dynamic
    vsan 4 wwn 50:06:01:64:3c:e0:60:e2 fcid 0x1300a0 dynamic
    [emc-a2-p0]
    vsan 4 wwn 50:06:01:6c:3c:e0:60:e2 fcid 0x1300c0 dynamic
    [emc-b2-p0]
    vsan 4 wwn 20:ff:00:25:b5:0a:00:5f fcid 0x130041 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:5d fcid 0x130081 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:3f fcid 0x130082 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:1f fcid 0x130083 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:7e fcid 0x130084 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:3e fcid 0x130085 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:3d fcid 0x130086 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:1d fcid 0x130087 dynamic
    vsan 4 wwn 20:ff:00:25:b5:0a:00:5e fcid 0x130088 dynamic

interface Vlan1

interface Vlan148
    no shutdown
    description Servers_1
    no ip redirects
    ip address 10.4.48.2/24
    ip router eigrp 100
    ip passive-interface eigrp 100
    ip pim sparse-mode
    hsrp 148
        priority 110
        ip 10.4.48.1

interface Vlan149
    no shutdown
    description Servers_2
    no ip redirects
    ip address 10.4.49.2/24
    ip router eigrp 100
    ip passive-interface eigrp 100
    ip pim sparse-mode
    hsrp 149
        priority 110
ip 10.4.49.1

interface Vlan150
    no shutdown
description Servers_3	no ip redirects
ip address 10.4.50.2/24
ip router eigrp 100
ip passive-interface eigrp 100
ip pim sparse-mode
hsrp 150
    priority 110
ip 10.4.50.1

interface Vlan153
    no shutdown
description FW_Outside
no ip redirects
ip address 10.4.53.2/25
ip router eigrp 100
ip passive-interface eigrp 100
ip pim sparse-mode
hsrp 153
    priority 110
ip 10.4.53.1

interface Vlan156
    no shutdown
ip address 10.4.56.1/30
ip router eigrp 100
ip pim sparse-mode

interface Vlan162
    no shutdown
description iSCSI VLAN
no ip redirects
ip address 10.4.62.2/24
hsrp 162
    priority 110
ip 10.4.62.1

interface Vlan163
    no shutdown
description DC-Management
no ip redirects
ip address 10.4.63.2/24
ip router eigrp 100
ip passive-interface eigrp 100
hsrp 163
    priority 110
    ip 10.4.63.1

interface san-port-channel 29
    channel mode active
    switchport trunk allowed vsan 1
    switchport trunk allowed vsan add 4

interface san-port-channel 31
    switchport mode E
    switchport trunk allowed vsan 1
    switchport trunk allowed vsan add 4

interface port-channel10
    switchport mode trunk
    spanning-tree port type network
    service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
    vpc peer-link

interface port-channel21
    description Link to Management Switch for VLAN 163
    switchport mode trunk
    switchport trunk allowed vlan 163
    speed 1000
    service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
    vpc 21

interface port-channel33
    description FCoE Link to FI-A
    switchport mode trunk
    switchport trunk allowed vlan 304
    spanning-tree port type edge trunk
    speed 10000

interface port-channel40
    description EtherChannel link to VSS Core Switch
    no switchport
    service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
    ip address 10.4.40.50/30
    ip router eigrp 100
    ip pim sparse-mode

interface port-channel50
    switchport mode trunk
    switchport trunk allowed vlan 148-163
spanning-tree port type edge trunk
service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
speed 10000
vpc 50

interface port-channel51
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  speed 10000
  vpc 51

interface port-channel53
  switchport mode trunk
  switchport trunk allowed vlan 153-155
  speed 10000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  vpc 53

interface port-channel54
  switchport mode trunk
  switchport trunk allowed vlan 153-155
  speed 10000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  vpc 54

interface port-channel103
  description Dual-Homed 2232PP
  switchport mode fex-fabric
  fex associate 103
  vpc 103

interface port-channel104
  description Dual-Homed 2232PP
  switchport mode fex-fabric
  fex associate 104
  vpc 104

interface port-channel106
  description Dual-Homed 2248 (eVPC)
  switchport mode fex-fabric
  fex associate 106
  vpc 106
interface port-channel107
  description Dual-Homed 2248 (eVPC)
  switchport mode fex-fabric
  fex associate 107
  vpc 107

interface vfc33
  bind interface port-channel133
  switchport trunk allowed vsan 4
  no shutdown

interface vfc34
  bind interface Ethernet2/3
  no shutdown

interface vfc35
  bind interface Ethernet2/4
  no shutdown

vsan database
  vsan 4 interface vfc34
  vsan 4 interface vfc35
  vsan 4 interface san-port-channel 29
  vsan 4 interface san-port-channel 31

interface fc1/28

interface fc1/29
  channel-group 29 force
  no shutdown

interface fc1/30
  channel-group 29 force
  no shutdown

interface fc1/31
  switchport description Link to MDS9124a port fc1/13
  channel-group 31 force
  no shutdown

interface fc1/32
  switchport description Link to MDS9124a port fc1/14
  channel-group 31 force
  no shutdown
interface Ethernet1/1
   description DC5585a Ten0/8
   switchport mode trunk
   switchport trunk allowed vlan 153-155
   channel-group 53 mode active
   no shutdown

interface Ethernet1/2
   description DC5585b Ten0/8
   switchport mode trunk
   switchport trunk allowed vlan 153-155
   channel-group 54 mode active
   no shutdown

interface Ethernet1/3

interface Ethernet1/4

interface Ethernet1/5
   switchport mode fex-fabric
   fex associate 106
   channel-group 106
   no shutdown

interface Ethernet1/6
   switchport mode fex-fabric
   fex associate 106
   channel-group 106
   no shutdown

interface Ethernet1/7
   switchport mode fex-fabric
   fex associate 107
   channel-group 107
   no shutdown

interface Ethernet1/8
   switchport mode fex-fabric
   fex associate 107
   channel-group 107
   no shutdown

interface Ethernet1/9
   description Link to FI-A Eth 1/17
   switchport mode trunk
   switchport trunk allowed vlan 148-163
   channel-group 50 mode active
   no shutdown
interface Ethernet1/10
  description Link to FI-A Eth 1/18
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 50 mode active
  no shutdown

interface Ethernet1/11
  description Link to FI-B Eth 1/17
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 51 mode active
  no shutdown

interface Ethernet1/12
  description Link to FI-B Eth 1/18
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 51 mode active
  no shutdown

interface Ethernet1/13
  no shutdown

interface Ethernet1/14
  no shutdown

interface Ethernet1/15
  no shutdown

interface Ethernet1/16
  no shutdown

interface Ethernet1/17
  description vpc peer link
  switchport mode trunk
  channel-group 10 mode active
  no shutdown

interface Ethernet1/18
  description vPC Peer-Link
  switchport mode trunk
  channel-group 10 mode active
  no shutdown
interface Ethernet1/19
    description EtherChannel link to VSS Core Switch Te1/4/7
    no switchport
    channel-group 40 mode active

interface Ethernet1/20
    description EtherChannel link to VSS Core Switch Te2/4/7
    no switchport
    channel-group 40 mode active

interface Ethernet1/21
    description Link to Management Switch for VLAN 163
    switchport mode trunk
    switchport trunk allowed vlan 163
    speed 1000
    channel-group 21 mode active
    no shutdown

interface Ethernet1/22
    no shutdown

interface Ethernet1/23
    switchport mode fex-fabric
    fex associate 103
    channel-group 103
    no shutdown

interface Ethernet1/24
    switchport mode fex-fabric
    fex associate 103
    channel-group 103
    no shutdown

interface Ethernet1/25
    switchport mode fex-fabric
    fex associate 104
    channel-group 104
    no shutdown

interface Ethernet1/26
    switchport mode fex-fabric
    fex associate 104
    channel-group 104
    no shutdown

interface Ethernet1/27
    no shutdown
interface Ethernet2/1
  description FCoE Link to FI-A eth1/29
  switchport mode trunk
  switchport trunk allowed vlan 304
  channel-group 33 mode active
  no shutdown

interface Ethernet2/2
  description FCoE Link to FI-A eth1/30
  switchport mode trunk
  switchport trunk allowed vlan 304
  channel-group 33 mode active
  no shutdown

interface Ethernet2/3
  description Link to EMC CX4-120 {A2-P0}
  switchport mode trunk
  switchport trunk allowed vlan 304
  spanning-tree port type edge trunk
  no shutdown

interface Ethernet2/4
  description Link to EMC CX4-120 {B2-P0}
  switchport mode trunk
  switchport trunk allowed vlan 304
  spanning-tree port type edge trunk
  no shutdown

interface Ethernet2/5
  description Link to EMC SPA (iSCSI P0)
  switchport access vlan 162
  spanning-tree port type edge
  speed 1000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown

interface Ethernet2/6
  description Link to EMC SPB (iSCSI P0)
  switchport access vlan 162
  spanning-tree port type edge
  speed 1000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown
interface Ethernet2/7

interface Ethernet2/8

interface Ethernet2/9

interface Ethernet2/10

interface Ethernet2/11

interface Ethernet2/12

interface Ethernet2/13

interface Ethernet2/14

interface Ethernet2/15

interface Ethernet2/16

interface mgmt0
  ip address 10.4.63.10/24

interface loopback0
  ip address 10.4.56.254/32
  ip router eigrp 100
  ip pim sparse-mode

interface Ethernet103/1/1

interface Ethernet103/1/2

interface Ethernet103/1/3

!*****************************************************************
! interfaces Ethernet103/1/4 to 103/1/22 are not
! configured and have been removed for brevity
!*****************************************************************

interface Ethernet103/1/23
  switchport mode trunk
  switchport trunk allowed vlan 148-163,304
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown
interface Ethernet103/1/24
  switchport mode trunk
  switchport trunk allowed vlan 148-162,304
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS

interface Ethernet103/1/25

interface Ethernet103/1/26

interface Ethernet103/1/27

interface Ethernet103/1/28

interface Ethernet103/1/29

interface Ethernet103/1/30

interface Ethernet103/1/31

interface Ethernet103/1/32

interface Ethernet104/1/1

interface Ethernet104/1/2

interface Ethernet104/1/3

!***********************************************************************
! interfaces Ethernet104/1/4 to 104/1/22 are not configured and have been removed for brevity
!***********************************************************************

interface Ethernet104/1/23
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown

interface Ethernet104/1/24
  switchport mode trunk
  switchport trunk allowed vlan 148-162
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
interface Ethernet104/1/25

interface Ethernet104/1/26

interface Ethernet104/1/27

interface Ethernet104/1/28

interface Ethernet104/1/29

interface Ethernet104/1/30

interface Ethernet104/1/31

interface Ethernet104/1/32

interface Ethernet106/1/1
  description Links to WLC5508-1 (Gig0/0/1)

interface Ethernet106/1/2
  description Links to WLC5508-1 (Gig0/0/2)

interface Ethernet106/1/3
  description Links to VCS-1

interface Ethernet106/1/4
  description Links to Codian MCU

interface Ethernet106/1/5
  description HQ-3945-VG1 Gig0/0

interface Ethernet106/1/6
  description HQ-3945-VG2 Gig0/0

interface Ethernet106/1/7
  description Lancope

interface Ethernet106/1/8
  description Lancope

interface Ethernet106/1/9

interface Ethernet106/1/10

interface Ethernet106/1/11

interface Ethernet106/1/12
interface Ethernet106/1/13
  switchport access vlan 148
  spanning-tree port type edge

interface Ethernet106/1/14

!*****************************************************************************
! interfaces Ethernet106/1/15 to 106/1/46 are not
! configured and have been removed for brevity
!*****************************************************************************

interface Ethernet106/1/47
  description LAB VPN Access
  switchport access vlan 148
  no shutdown

interface Ethernet106/1/48
  description Connected to Backend ESX Server
  switchport mode trunk
  switchport trunk native vlan 148
  switchport trunk allowed vlan 148-163
  spanning-tree port type edge trunk
  no shutdown

interface Ethernet107/1/1
  description Links to WLC5508-2 (Gig0/0/1)

interface Ethernet107/1/2
  description Links to WLC5508-2 (Gig0/0/2)

interface Ethernet107/1/3
  description Links to VCS-2
  switchport access vlan 148
  spanning-tree port type edge
  no shutdown

interface Ethernet107/1/4

interface Ethernet107/1/5
  description HQ-3935-VG1 Gig0/1

interface Ethernet107/1/6
  description HQ-3945-VG2 Gig0/1

interface Ethernet107/1/7
interface Ethernet107/1/8
  description Lancope

interface Ethernet107/1/9

interface Ethernet107/1/10

interface Ethernet107/1/11

interface Ethernet107/1/12

interface Ethernet107/1/13

interface Ethernet107/1/14

!***********************************************************************
! interfaces Ethernet107/1/15 to 107/1/46 are not
! configured and have been removed for brevity
!***********************************************************************

interface Ethernet107/1/47
  description NTP Server
  switchport access vlan 148
  no shutdown

interface Ethernet107/1/48

clock timezone PST -8 0
clock summer-time PDT 2 Sunday march 02:00 1 Sunday nov 02:00 60
line console
line vty
boot kickstart bootflash:/n5000-uk9-kickstart.5.2.1.N1.3.bin
boot system bootflash:/n5000-uk9.5.2.1.N1.3.bin
router eigrp 100
  router-id 10.4.56.254
  redistribute static route-map static-to-eigrp
ip route 10.4.54.0/24 Vlan153 10.4.53.126
ip route 10.4.55.0/24 Vlan153 10.4.53.126
ip pim asm range 232.0.0.0/8
ip pim auto-rp forward listen
no ip igmp snooping mrouter vpc-peer-link
system default switchport shutdown
vpc bind-vrf default vlan 900
interface fc1/29
interface fc1/30
interface fc1/31
interface fc1/32
interface fc1/28
interface fc1/29
interface fc1/30
interface fc1/31
  switchport mode E
interface fc1/32
  switchport mode E
zoneset distribute full vsan 4
!Full Zone Database Section for vsan 4
zone name p30-ucs-b-fc0-shared_emc-cx vsan 4
  member pwnn 50:06:01:64:3c:e0:60:e2
!       [emc-a2-p0]
  member pwnn 20:ff:00:25:b5:0a:00:3d

zone name p30-ucs-b-fc0-clis4_emc-cx vsan 4
  member pwnn 50:06:01:64:3c:e0:60:e2
!       [emc-a2-p0]
  member pwnn 20:ff:00:25:b5:0a:00:5d

zone name Test-c210m2-1-vhba2_netapp_fc-e1a vsan 4
  member pwnn 50:0a:09:81:8d:60:dc:42
  member pwnn 20:00:cc:ef:48:ce:f1:97

zone name Test-c210m2-2-vhba2_netapp_fc-e1a vsan 4
  member pwnn 50:0a:09:81:8d:60:dc:42
  member pwnn 20:00:cc:ef:48:ce:fc:a4

zone name p30-ucscB-TestSAN_netapp-e1a vsan 4
  member pwnn 50:0a:09:81:8d:60:dc:42
  member pwnn 20:00:00:25:b5:99:99:3d

zone name Test-c200m2-2-vhba2_netapp_fc-e1a vsan 4
  member pwnn 50:0a:09:81:8d:60:dc:42
  member pwnn 20:00:cc:ef:48:ce:cl:f9

zone name Test-c2_netapp_shared-e1a vsan 4
  member pwnn 50:0a:09:81:8d:60:dc:42
  member pwnn 20:00:cc:ef:48:ce:fc:a4
  member pwnn 20:00:cc:ef:48:ce:fc:97

zoneset name SAN_4 vsan 4
  member p30-ucs-b-fc0-shared_emc-cx
  member p30-ucs-b-fc0-clis4_emc-cx
zoneset name FCOE_4 vsan 4
    member Test-c210m2-1-vhba2_netapp_fc-e1a
    member Test-c210m2-2-vhba2_netapp_fc-e1a
    member p30-ucscB-TestSAN_netapp-e1a
    member Test-c200m2-2-vhba2_netapp_fc-e1a
    member Test-c2_netapp_shared-e1a

zoneset activate name SAN_4 vsan 4

Cisco Nexus 5500UPb

The Cisco Nexus 5500UP switches operate as a pair to provide a resilient data center core for both Ethernet and Fibre Channel network transport. This switch is also the Fibre Channel SAN-B switch.

version 5.2(1)N1(3)
feature fcoe
hostname DC5548UPb
feature npiv
feature fport-channel-trunk
no feature telnet
feature tacacs+
cfs eth distribute
feature pim
feature eigrp
feature udld
feature interface-vlan
feature harp
feature lacp
feature vpc
feature lldp
feature fex
username admin password 5 ***** role network-admin
banner motd #Nexus 5000 Switch
#
ssh key rsa 2048
ip domain-lookup
ip name-server 10.4.48.10
tacacs-server host 10.4.48.15 key 7 *****
aaa group server tacacs+ tacacs
server 10.4.48.15
    source-interface loopback0
logging event link-status default
ip access-list ISCSI
    10 permit tcp any eq 860 any
    20 permit tcp any eq 3260 any
    30 permit tcp any any eq 860
    40 permit tcp any any eq 3260
class-map type qos class-fcoe
class-map type qos match-any BULK-COS
  match cos 1
class-map type qos match-any BULK-QUEUE
  match dscp 10,12,14
  match cos 1
class-map type qos match-any CONTROL-COS
  match cos 4
class-map type qos match-all ISCSI-QUEUE
  match access-group name ISCSI
class-map type qos match-any PRIORITY-COS
  match cos 5
class-map type qos match-any CONTROL-QUEUE
  match dscp 24
  match cos 4
class-map type qos match-any PRIORITY-QUEUE
  match dscp 32,34,40,46
  match cos 5
class-map type qos match-any TRANSACTIONAL-COS
  match cos 2
class-map type qos match-any TRANSACTIONAL-QUEUE
  match dscp 18,20,22
  match cos 2
class-map type queuing BULK-GROUP
  match qos-group 3
class-map type queuing class-fcoe
  match qos-group 1
class-map type queuing CONTROL-GROUP
  match qos-group 4
class-map type queuing PRIORITY-GROUP
  match qos-group 5
class-map type queuing class-all-flood
  match qos-group 2
class-map type queuing class-ip-multicast
  match qos-group 2
class-map type queuing TRANSACTIONAL-GROUP
  match qos-group 2
policy-map type qos DC-FCOE+1P4Q_GLOBAL-COS-QOS
  class PRIORITY-COS
    set qos-group 5
  class CONTROL-COS
    set qos-group 4
  class class-fcoe
    set qos-group 1
  class TRANSACTIONAL-COS
    set qos-group 2
  class BULK-COS
set qos-group 3
class class-default

policy-map type qos DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
class PRIORITY-QUEUE
  set qos-group 5
class CONTROL-QUEUE
  set qos-group 4
class TRANSACTIONAL-QUEUE
  set qos-group 2
class BULK-QUEUE
  set qos-group 3
class ISCSI-QUEUE
  set qos-group 3
class class-default

policy-map type queuing DC-FCOE+1P4Q_GLOBAL-GROUP-QUEUING
class type queuing PRIORITY-GROUP
  priority
class type queuing CONTROL-GROUP
  bandwidth percent 10
class type queuing class-fcoe
  bandwidth percent 20
class type queuing TRANSACTIONAL-GROUP
  bandwidth percent 25
class type queuing BULK-GROUP
  bandwidth percent 20
class type queuing class-default
  bandwidth percent 25

class-map type network-qos class-fcoe
  match qos-group 1
class-map type network-qos BULK-SYSTEM
  match qos-group 3
class-map type network-qos CONTROL-SYSTEM
  match qos-group 4
class-map type network-qos PRIORITY-SYSTEM
  match qos-group 5
class-map type network-qos class-all-flood
  match qos-group 2
class-map type network-qos class-ip-multicast
  match qos-group 2
class-map type network-qos TRANSACTIONAL-SYSTEM
  match qos-group 2

policy-map type network-qos DC-FCOE+1P4Q_GLOBAL-SYSTEM-NETWORK-QOS
  class type network-qos PRIORITY-SYSTEM
    set cos 5
  class type network-qos CONTROL-SYSTEM
    set cos 4
  class type network-qos class-fcoe
pause no-drop
mtu 2158
class type network-qos TRANSACTIONAL-SYSTEM
  set cos 2
class type network-qos BULK-SYSTEM
  mtu 9216
  queue-limit 128000 bytes
  set cos 1
class type network-qos class-default
  multicast-optimize
  set cos 0
system qos
  service-policy type qos input DC-FCOE+1P4Q_GLOBAL-COS-QOS
  service-policy type queuing input DC-FCOE+1P4Q_GLOBAL-GROUP-QUEUING
  service-policy type queuing output DC-FCOE+1P4Q_GLOBAL-GROUP-QUEUING
  service-policy type network-qos DC-FCOE+1P4Q_GLOBAL-SYSTEM-NETWORK-QOS
fex 103
  pinning max-links 1
  description “FEX0103”
fex 104
  pinning max-links 1
  description “FEX0104”
fex 106
  pinning max-links 1
  description “FEX0106”
fex 107
  pinning max-links 1
  description “FEX0107”
slot 1
  port 28-32 type fc
snmp-server user admin network-admin auth md5 ***** localizedkey
snmp-server community ***** group network-operator
snmp-server community ***** group network-admin
ntp server 10.4.48.17
aaa authentication login default group tacacs
vrf context management
  ip route 0.0.0.0/0 10.4.63.1
track 1 interface port-channel10 line-protocol
track 2 interface Ethernet1/19 line-protocol
track 3 interface Ethernet1/20 line-protocol
track 10 list boolean or
  object 1
  object 2
  object 3
vlan 1
vlan 148
  name Servers_1
vlan 149
  name Servers_2
vlan 150
  name Servers_3
vlan 153
  name FW_Outside
vlan 154
  name FW_Inside_1
vlan 155
  name FW_Inside_2
vlan 156
  name PEERING_VLAN
vlan 160
  name N1kv_Control
vlan 161
  name vMotion
vlan 162
  name iSCSI
vlan 163
  name DC-Management
vlan 305
  fcoe vsan 5
  name FCoE-VLAN_305
spanning-tree port type edge bpduguard default
spanning-tree vlan 1-1000 priority 8192
route-map static-to-eigrp permit 10
  match ip address 10.4.54.0/24
route-map static-to-eigrp permit 20
  match ip address 10.4.55.0/24
port-channel load-balance ethernet source-dest-port
vpc domain 10
  peer-switch
    peer-keepalive destination 10.4.63.10 source 10.4.63.11
  delay restore 360
  peer-gateway
  auto-recovery
  ip arp synchronize
port-profile default max-ports 512
vsan database
  vsan 5 name “General-Storage”
device-alias database
  device-alias name emc-a2-p1 pwnn 50:06:01:65:3c:e0:60:e2
  device-alias name emc-b2-p1 pwnn 50:06:01:6d:3c:e0:60:e2

device-alias commit
interface Vlan1

interface Vlan148
  no shutdown
  description Servers_1
  no ip redirects
  ip address 10.4.48.3/24
  ip router eigrp 100
  ip passive-interface eigrp 100
  ip pim sparse-mode
  hsrp 148
    ip 10.4.48.1

interface Vlan149
  no shutdown
  description Servers_2
  no ip redirects
  ip address 10.4.49.3/24
  ip router eigrp 100
  ip passive-interface eigrp 100
  ip pim sparse-mode
  hsrp 149
    ip 10.4.49.1
interface Vlan150
  no shutdown
  description Servers_3
  no ip redirects
  ip address 10.4.50.3/24
  ip router eigrp 100
  ip passive-interface eigrp 100
  ip pim sparse-mode
  hsrp 150
    ip 10.4.50.1

interface Vlan153
  no shutdown
  description FW_Outside
  no ip redirects
  ip address 10.4.53.3/25
  ip router eigrp 100
  ip passive-interface eigrp 100
  ip pim sparse-mode
  hsrp 153
    ip 10.4.53.1

interface Vlan156
  no shutdown
  ip address 10.4.56.2/30
  ip router eigrp 100
  ip pim sparse-mode

interface Vlan162
  no shutdown
  description iSCSI VLAN
  no ip redirects
  ip address 10.4.62.3/24
  ip router eigrp 100
  ip passive-interface eigrp 100
  hsrp 162
    ip 10.4.62.1

interface Vlan163
  no shutdown
  description DC-Management
  no ip redirects
  ip address 10.4.63.3/24
  ip router eigrp 100
  ip passive-interface eigrp 100
  hsrp 163
    ip 10.4.63.1
interface san-port-channel 29
    channel mode active
    switchport trunk allowed vsan 1
    switchport trunk allowed vsan add 5

interface san-port-channel 31
    switchport mode E
    switchport trunk allowed vsan 1
    switchport trunk allowed vsan add 5

interface port-channel110
    switchport mode trunk
    spanning-tree port type network
    service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
    vpc peer-link

interface port-channel121
    description Link to Management Switch for VLAN 163
    switchport mode trunk
    switchport trunk allowed vlan 163
    speed 1000
    vpc 21

interface port-channel133
    description FCoE Link to FI-B
    switchport mode trunk
    switchport trunk allowed vlan 305
    spanning-tree port type edge trunk
    speed 10000

interface port-channel141
    description EtherChannel link to VSS Core Switch
    no switchport
    service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
    ip address 10.4.40.54/30
    ip router eigrp 100
    ip pim sparse-mode

interface port-channel150
    switchport mode trunk
    switchport trunk allowed vlan 148-163
    spanning-tree port type edge trunk
    speed 10000
    service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
    vpc 50
interface port-channel51
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  spanning-tree port type edge trunk
  speed 10000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  vpc 51

interface port-channel53
  switchport mode trunk
  switchport trunk allowed vlan 153-155
  speed 10000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  vpc 53

interface port-channel54
  switchport mode trunk
  switchport trunk allowed vlan 153-155
  speed 10000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  vpc 54

interface port-channel103
  description Dual-Homed 2232PP
  switchport mode fex-fabric
  fex associate 103
  vpc 103

interface port-channel104
  description Dual-Homed 2232PP
  switchport mode fex-fabric
  fex associate 104
  vpc 104

interface port-channel106
  description Dual-Homed 2248 (eVPC)
  switchport mode fex-fabric
  fex associate 106
  vpc 106

interface port-channel107
  description Dual-Homed 2248 (eVPC)
  switchport mode fex-fabric
  fex associate 107
  vpc 107
interface vfc33
  bind interface port-channel33
  switchport trunk allowed vsan 5
  no shutdown

interface vfc34
  bind interface Ethernet2/3
  no shutdown

interface vfc35
  bind interface Ethernet2/4
  no shutdown

vsan database
  vsan 5 interface vfc34
  vsan 5 interface vfc35
  vsan 5 interface san-port-channel 29

interface fc1/28

interface fc1/29
  channel-group 29 force
  no shutdown

interface fc1/30
  channel-group 29 force
  no shutdown

interface fc1/31
  channel-group 31 force
  no shutdown

interface fc1/32
  channel-group 31 force
  no shutdown

interface Ethernet1/1
  description DC5585a Ten0/9
  switchport mode trunk
  switchport trunk allowed vlan 153-155
  channel-group 53 mode active
  no shutdown

interface Ethernet1/2
  description DC5585b Ten0/9
  switchport mode trunk
  switchport trunk allowed vlan 153-155
  channel-group 54 mode active
  no shutdown
interface Ethernet1/3
interface Ethernet1/4
interface Ethernet1/5
  switchport mode fex-fabric
  fex associate 106
  channel-group 106
  no shutdown
interface Ethernet1/6
  switchport mode fex-fabric
  fex associate 106
  channel-group 106
  no shutdown
interface Ethernet1/7
  switchport mode fex-fabric
  fex associate 107
  channel-group 107
  no shutdown
interface Ethernet1/8
  switchport mode fex-fabric
  fex associate 107
  channel-group 107
  no shutdown
interface Ethernet1/9
  description Link to FI-A Eth 1/19
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 50 mode active
  no shutdown
interface Ethernet1/10
  description Link to FI-A Eth 1/20
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 50 mode active
  no shutdown
interface Ethernet1/11
  description Link to FI-B Eth 1/19
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 51 mode active
  no shutdown

interface Ethernet1/12
  description Link to FI-B Eth 1/20
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  channel-group 51 mode active
  no shutdown

interface Ethernet1/13
  no shutdown

interface Ethernet1/14
  no shutdown

interface Ethernet1/15
  no shutdown

interface Ethernet1/16
  no shutdown

interface Ethernet1/17
  description vPC Peer-Link
  switchport mode trunk
  channel-group 10 mode active
  no shutdown

interface Ethernet1/18
  description vPC Peer-Link
  switchport mode trunk
  channel-group 10 mode active
  no shutdown

interface Ethernet1/19
  description EtherChannel link to VSS Core Switch Te1/4/8
  no switchport
  channel-group 41 mode active

interface Ethernet1/20
  description EtherChannel link to VSS Core Switch Te2/4/8
  no switchport
  channel-group 41 mode active
interface Ethernet1/21
    description Link to Management Switch for VLAN 163
    switchport mode trunk
    switchport trunk allowed vlan 163
    speed 1000
    channel-group 21 mode active
    no shutdown

interface Ethernet1/22
    no shutdown

interface Ethernet1/23
    switchport mode fex-fabric
    fex associate 103
    channel-group 103
    no shutdown

interface Ethernet1/24
    switchport mode fex-fabric
    fex associate 103
    channel-group 103
    no shutdown

interface Ethernet1/25
    switchport mode fex-fabric
    fex associate 104
    channel-group 104
    no shutdown

interface Ethernet1/26
    switchport mode fex-fabric
    fex associate 104
    channel-group 104
    no shutdown

interface Ethernet1/27
    no shutdown

interface Ethernet2/1
    description FCoE Link to FI-B eth1/29
    switchport mode trunk
    switchport trunk allowed vlan 305
    channel-group 33 mode active
    no shutdown
interface Ethernet2/2
  description FCoE Link to FI-B eth1/30
  switchport mode trunk
  switchport trunk allowed vlan 305
  channel-group 33 mode active
  no shutdown

interface Ethernet2/3
  switchport mode trunk
  switchport trunk allowed vlan 305
  spanning-tree port type edge trunk
  no shutdown

interface Ethernet2/4
  switchport mode trunk
  switchport trunk allowed vlan 305
  spanning-tree port type edge trunk
  no shutdown

interface Ethernet2/5
  description Link to EMC SPA (iSCSI P1)
  switchport access vlan 162
  spanning-tree port type edge
  speed 1000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown

interface Ethernet2/6
  description Link to EMC SPB (iSCSI P1)
  switchport access vlan 162
  spanning-tree port type edge
  speed 1000
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown

interface Ethernet2/7

interface Ethernet2/8

interface Ethernet2/9

interface Ethernet2/10

interface Ethernet2/11

interface Ethernet2/12
interface Ethernet2/13

interface Ethernet2/14

interface Ethernet2/15

interface Ethernet2/16

interface mgmt0
  ip address 10.4.63.11/24

interface loopback0
  ip address 10.4.56.253/32
  ip router eigrp 100
  ip pim sparse-mode

interface Ethernet103/1/1

interface Ethernet103/1/2

interface Ethernet103/1/3

!********************************************************************
! interfaces Ethernet103/1/4 to 103/1/22 are not configured and have been removed for brevity
!********************************************************************

interface Ethernet103/1/23
  switchport mode trunk
  switchport trunk allowed vlan 148-163
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
  no shutdown

interface Ethernet103/1/24
  switchport mode trunk
  switchport trunk allowed vlan 148-162
  spanning-tree port type edge trunk
  service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS

interface Ethernet103/1/25

interface Ethernet103/1/26

interface Ethernet103/1/27

interface Ethernet103/1/28
interface Ethernet103/1/29

interface Ethernet103/1/30

interface Ethernet103/1/31

interface Ethernet103/1/32

interface Ethernet104/1/1

interface Ethernet104/1/2

interface Ethernet104/1/3

!***************************************************
! interfaces Ethernet104/1/4 to 104/1/22 are not
! configured and have been removed for brevity
!***************************************************

interface Ethernet104/1/23
   switchport mode trunk
   switchport trunk allowed vlan 148-163,305
   spanning-tree port type edge trunk
   service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS
   no shutdown

interface Ethernet104/1/24
   switchport mode trunk
   switchport trunk allowed vlan 148-162,305
   spanning-tree port type edge trunk
   service-policy type qos input DC-FCOE+1P4Q_INTERFACE-DSCP-QOS

interface Ethernet104/1/25

interface Ethernet104/1/26

interface Ethernet104/1/27

interface Ethernet104/1/28

interface Ethernet104/1/29

interface Ethernet104/1/30

interface Ethernet104/1/31
interface Ethernet104/1/32

interface Ethernet106/1/1
description Links to WLC5508-1 {Gig0/0/1}

interface Ethernet106/1/2
description Links to WLC5508-1 {Gig0/0/2}

interface Ethernet106/1/3
description Links to VCS-1

interface Ethernet106/1/4
description Links to Codian MCU

interface Ethernet106/1/5
description HQ-3945-VG1 Gig0/0

interface Ethernet106/1/6
description HQ-3945-VG2 Gig0/0

interface Ethernet106/1/7
description Lancope

interface Ethernet106/1/8
description Lancope

interface Ethernet106/1/9

interface Ethernet106/1/10

interface Ethernet106/1/11

interface Ethernet106/1/12

interface Ethernet106/1/13
    switchport access vlan 148
    spanning-tree port type edge

interface Ethernet106/1/14

!*****************************************************************************
! interfaces Ethernet106/1/15 to 106/1/46 are not configured and have been removed for brevity
!*****************************************************************************
interface Ethernet106/1/47
  description LAB VPN Access
  switchport access vlan 148
  no shutdown

interface Ethernet106/1/48
  description Connected to Backend ESX Server
  switchport mode trunk
  switchport trunk native vlan 148
  switchport trunk allowed vlan 148-163
  spanning-tree port type edge trunk
  no shutdown

interface Ethernet107/1/1
  description Links to WLC5508-2 (Gig0/0/1)

interface Ethernet107/1/2
  description Links to WLC5508-2 (Gig0/0/2)

interface Ethernet107/1/3
  description Links to VCS-2
  switchport access vlan 148
  spanning-tree port type edge
  no shutdown

interface Ethernet107/1/4

interface Ethernet107/1/5
  description HQ-3935-VG1 Gig0/1

interface Ethernet107/1/6
  description HQ-3945-VG2 Gig0/1

interface Ethernet107/1/7

interface Ethernet107/1/8
  description Lancope

interface Ethernet107/1/9

interface Ethernet107/1/10

interface Ethernet107/1/11

interface Ethernet107/1/12

interface Ethernet107/1/13
interface Ethernet107/1/14

!**********************************************************************
! interfaces Ethernet107/1/15 to 107/1/46 are not
! configured and have been removed for brevity
!**********************************************************************

interface Ethernet107/1/47
  description NTP Server
  switchport access vlan 148
  no shutdown

interface Ethernet107/1/48
  clock timezone PST -8 0
  clock summer-time PDT 2 Sunday march 02:00 1 Sunday nov 02:00 60
  line console
  line vty
  boot kickstart bootflash:/n5000-uk9-kickstart.5.2.1.N1.3.bin
  boot system bootflash:/n5000-uk9.5.2.1.N1.3.bin
  router eigrp 100
    router-id 10.4.56.253
    redistribute static route-map static-to-eigrp
  ip route 10.4.54.0/24 Vlan153 10.4.53.126
  ip route 10.4.55.0/24 Vlan153 10.4.53.126
  ip pim ssm range 232.0.0.0/8
  ip pim auto-rp forward listen
  no ip igmp snooping mrouter vpc-peer-link
  system default switchport shutdown
  vpc bind-vrf default vlan 900
interface fc1/29
interface fc1/30
interface fc1/31
interface fc1/32
interface fc1/28
interface fc1/29
interface fc1/30
interface fc1/31
  switchport mode E
interface fc1/32
  switchport mode E
zoneset distribute full vsan 5
!Full Zone Database Section for vsan 5
zone name p30-ucs-b-fc1-cl54_emc-cx vsan 5
  member pwwn 50:06:01:65:3c:e0:60:e2
  [emc-a2-p1]
    member pwwn 20:ff:00:25:b5:0a:00:4d
zone name p30-ucs-b-fcl-shared_emc-cx vsan 5
    member pwwn 50:06:01:65:3c:e0:60:e2
!               [emc-a2-p1]
    member pwwn 20:ff:00:25:b5:0a:00:2d
zoneset name SAN_5 vsan 5
    member p30-ucs-b-fcl-c1s4_emc-cx
    member p30-ucs-b-fcl-shared_emc-cx
zoneset activate name SAN_5 vsan 5

Cisco MDS 9100a

The Cisco MDS 9100 Multilayer Fabric switches provide support for a higher density Fibre Channel SAN by extending Fibre Channel ports from the core Nexus 5500UP switches for larger environments. This Cisco MDS 9100 switch extends the Fibre Channel SAN-A network transport.

version 5.0(8)
feature tacacs+
role name default-role
    description This is a system defined role and applies to all users.
    rule 5 permit show feature environment
    rule 4 permit show feature hardware
    rule 3 permit show feature module
    rule 2 permit show feature snmp
    rule 1 permit show feature system
username admin password 5 ***** role network-admin
    ssh key rsa 2048
    ip domain-lookup cisco.local
    ip host MDS9148a 10.4.63.12
tacacs-server host 10.4.48.15 key 7 *****
aaa group server tacacs+ tacacs
    server 10.4.48.15
aaa group server radius radius
snmp-server user admin network-admin auth md5 ***** localizedkey
snmp-server host 10.4.48.30 traps version 2c public udp-port 2162
rmon event 1 log trap public description FATAL(1) owner PMON@FATAL
rmon event 2 log trap public description CRITICAL(2) owner PMON@CRITICAL
rmon event 3 log trap public description ERROR(3) owner PMON@ERROR
rmon event 4 log trap public description WARNING(4) owner PMON@WARNING
rmon event 5 log trap public description INFORMATION(5) owner PMON@INFO
snmp-server community ***** group network-admin
snmp-server community ***** group network-operator
ntp server 10.4.48.17
aaa authentication login default group tacacs
vsan database
vsan 4 name "General-Storage"

device-alias database
   device-alias name emc-a2-p0 pwnn 50:06:01:64:3c:e0:60:e2
   device-alias name emc-b2-p0 pwnn 50:06:01:6c:3c:e0:60:e2

device-alias commit

fcdomain fcid database
   vsan 1 wwn 10:00:00:00:c9:8d:a5:27 fcid 0x2a0000 dynamic
   vsan 1 wwn 10:00:00:00:c9:8d:a5:0b fcid 0x2a0100 dynamic
   vsan 1 wwn 10:00:00:00:c9:8d:cc:31 fcid 0x2a0200 dynamic
   vsan 1 wwn 20:02:00:24:e8:64:c5:6f fcid 0x2a0300 dynamic
   vsan 1 wwn 20:02:00:24:e8:64:c5:ca fcid 0x2a0400 dynamic
   vsan 1 wwn 20:02:00:24:e8:64:c5:d7 fcid 0x2a0500 dynamic

interface port-channel 1
   switchport mode E
   switchport trunk allowed vsan 1
   switchport trunk allowed vsan add 4
   switchport rate-mode dedicated

vsan database
   vsan 4 interface fc1/1
   vsan 4 interface fc1/2

clock timezone PST -8 0

clock summer-time PDT 2 Sunday march 02:00 1 Sunday nov 02:00 60

ip default-gateway 10.4.63.1

switchname MDS9124a

line console

boot kickstart bootflash:/m9100-s3ek9-kickstart-mz.5.0.8.bin

boot system bootflash:/m9100-s3ek9-mz.5.0.8.bin

interface fc1/1
interface fc1/2
interface fc1/3
interface fc1/4
interface fc1/5
interface fc1/6
interface fc1/7
interface fc1/8
interface fc1/9
interface fc1/10
interface fc1/11
interface fc1/12
interface fc1/13
   switchport mode E
interface fc1/14
   switchport mode E
interface fc1/15
interface fc1/16
de interface fc1/17
de interface fc1/18
de interface fc1/19
de interface fc1/20
de interface fc1/21
de interface fc1/22
de interface fc1/23
de interface fc1/24
de

d system default zone distribute full
d zoneset distribute full vsan 4

d!Full Zone Database Section for vsan 4
d zone name Test-c210m2-1-vhba2_netapp_fc-e1a vsan 4

dmember pwwn 50:0a:09:81:8d:60:dc:42
dmember pwwn 20:00:cc:ef:48:ce:fl:97
d

d zone name Test-c210m2-2-vhba2_netapp_fc-e1a vsan 4

dmember pwwn 50:0a:09:81:8d:60:dc:42
dmember pwwn 20:00:cc:ef:48:ce:fc:a4
d

d zone name p30-ucscB-TestSAN_netapp-e1a vsan 4

dmember pwwn 50:0a:09:81:8d:60:dc:42
dmember pwwn 20:00:00:25:b5:99:99:3d
d

d zone name Test-c200m2-2-vhba2_netapp_fc-e1a vsan 4

dmember pwwn 50:0a:09:81:8d:60:dc:42
dmember pwwn 20:00:cc:ef:48:ce:c1:f9
d

d zone name Test-c2_netapp_shared-ela vsan 4

dmember pwwn 50:0a:09:81:8d:60:dc:42
dmember pwwn 20:00:cc:ef:48:ce:c1:f9
dmember pwwn 20:00:cc:ef:48:ce:fc:a4
dmember pwwn 20:00:cc:ef:48:ce:fl:97
d

d zone name p30-ucs-b-fc0-shared_emc-cx vsan 4

dmember pwwn 50:06:01:64:3c:e0:60:e2
d! [emc-a2-p0]
dmember pwwn 20:ff:00:25:b5:0a:00:3d
d

d zone name p30-ucs-b-fc0-clis4_emc-cx vsan 4

dmember pwwn 50:06:01:64:3c:e0:60:e2
d! [emc-a2-p0]
dmember pwwn 20:ff:00:25:b5:0a:00:5d
zoneset name FCOE_4 vsan 4
   member Test-c210m2-1-vhba2_netapp_fc-e1a
   member Test-c210m2-2-vhba2_netapp_fc-e1a
   member p30-ucscB-TestSAN_netapp-el1a
   member Test-c200m2-2-vhba2_netapp_fc-e1a
   member Test-c2_netapp_shared-el1a

zoneset name SAN_4 vsan 4
   member p30-ucs-b-fc0-shared_emc-cx
   member p30-ucs-b-fc0-cl1s4_emc-cx

zoneset activate name SAN_4 vsan 4

interface fc1/1
   port-license acquire

interface fc1/2
   port-license acquire
   no shutdown

!************************************************************************************
! Interfaces fc 1/3 to 1/11 are not
! configured and have been removed for brevity
!***********************************************************************************

interface fc1/12
   port-license acquire

interface fc1/13
   port-license acquire
   channel-group 1 force
   no shutdown

interface fc1/14
   port-license acquire
   channel-group 1 force
   no shutdown

interface fc1/15
   port-license acquire

!***********************************************************************************
! Interfaces fc 1/16 to 1/23 are not
! configured and have been removed for brevity
!***********************************************************************************

interface fc1/24
interface mgmt0
  ip address 10.4.63.12 255.255.255.0
no system default switchport shutdown
end

Cisco MDS 9100b

The Cisco MDS 9100 Multilayer Fabric switches provide support for a higher density Fibre Channel SAN by extending Fibre Channel ports from the core Nexus 5500UP switches for larger environments. This Cisco MDS 9100 switch extends the Fibre Channel SAN-B network transport.

version 5.0(8)
feature tacacs+
role name default-role
  description This is a system defined role and applies to all users.
  rule 5 permit show feature environment
  rule 4 permit show feature hardware
  rule 3 permit show feature module
  rule 2 permit show feature snmp
  rule 1 permit show feature system
username admin password 5 ***** role network-admin
ssh key rsa 2048
ip domain-lookup
ip host MDS9124b 10.4.63.13
tacacs-server host 10.4.48.15 key 7 *****
aaa group server tacacs+ tacacs
  server 10.4.48.15
aaa group server radius radius
snmp-server user admin network-admin auth md5 ***** localizedkey
snmp-server host 10.4.48.30 traps version 2c public udp-port 2162
rmon event 1 log trap public description FATAL(1) owner PMON@FATAL
rmon event 2 log trap public description CRITICAL(2) owner PMON@CRITICAL
rmon event 3 log trap public description ERROR(3) owner PMON@ERROR
rmon event 4 log trap public description WARNING(4) owner PMON@WARNING
rmon event 5 log trap public description INFORMATION(5) owner PMON@INFO
snmp-server community ***** group network-operator
snmp-server community ***** group network-admin
ntp server 10.4.48.17
aaa authentication login default group tacacs
vsan database
  vsan 5 name “General-Storage”
device-alias database
  device-alias name emc-a2-p1 pwnn 50:06:01:65:3c:e0:60:e2
device-alias name emc-b2-p1 pwnn 50:06:01:6d:3c:e0:60:e2
fcdomain fcid database
  vsan 1 wwn 50:06:01:60:3c:e0:60:e2 fcid 0x7a0000 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:6f fcid 0x7a0100 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:62 fcid 0x7a0200 dynamic
  vsan 1 wwn 20:02:00:24:e8:64:c5:ca fcid 0x7a0300 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:d7 fcid 0x7a0400 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:7c fcid 0x7a0500 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:e2 fcid 0x7a0600 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:ca fcid 0x7a0700 dynamic
  vsan 1 wwn 10:00:00:00:c9:8d:a5:26 fcid 0x7a0800 dynamic
  vsan 1 wwn 10:00:00:00:c9:8d:a5:0a fcid 0x7a0900 dynamic
  vsan 1 wwn 10:00:00:00:c9:8d:cc:30 fcid 0x7a0a00 dynamic
  vsan 1 wwn 20:01:00:24:e8:64:c5:89 fcid 0x7a0b00 dynamic

interface port-channel 1
  switchport mode E
  switchport trunk allowed vsan 1
  switchport trunk allowed vsan add 5
  switchport rate-mode dedicated

vsan database
  vsan 5 interface fc1/1
  vsan 5 interface fc1/2

clock timezone PST -8 0
clock summer-time PDT 2 Sunday march 02:00 1 Sunday nov 02:00 60
ip default-gateway 10.4.63.1
switchname MDS9148b
line console
  boot kickstart bootflash:/m9100-s3ek9-kickstart-mz.5.0.8.bin
  boot system bootflash:/m9100-s3ek9-mz.5.0.8.bin
interface fc1/13
  switchport rate-mode dedicated
interface fc1/14
  switchport rate-mode dedicated
interface fc1/1
interface fc1/2
interface fc1/3
interface fc1/4
interface fc1/5
interface fc1/6
interface fc1/7
interface fc1/8
interface fc1/9
interface fc1/10
interface fc1/11
interface fc1/12
interface fc1/15
interface fc1/16
interface fc1/17
interface fc1/18
interface fc1/19
interface fc1/20
interface fc1/21
interface fc1/22
interface fc1/23
interface fc1/24
interface fc1/13
switchport mode E
interface fc1/14
switchport mode E
system default zone distribute full
zoneset distribute full vsan 5
!Full Zone Database Section for vsan 5
zone name p30-ucs-b-fcl-c1s4_emc-cx vsan 5
  member pwwn 50:06:01:65:3c:e0:60:e2
!               [emc-a2-p1]
  member pwwn 20:ff:00:25:b5:0a:00:4d

zone name p30-ucs-b-fcl-shared_emc-cx vsan 5
  member pwwn 50:06:01:65:3c:e0:60:e2
!               [emc-a2-p1]
  member pwwn 20:ff:00:25:b5:0a:00:2d

zoneset name SAN_5 vsan 5
  member p30-ucs-b-fcl-c1s4_emc-cx
  member p30-ucs-b-fcl-shared_emc-cx
zoneset activate name SAN_5 vsan 5

interface fc1/1
  port-license acquire

interface fc1/2
  port-license acquire

!**********************************************************************
! Interfaces fc 1/3 to 1/11 are not configured and have been removed for brevity
!**********************************************************************

interface fc1/12
  port-license acquire
interface fc1/13
  port-license acquire
  channel-group 1 force
  no shutdown

interface fc1/14
  port-license acquire
  channel-group 1 force
  no shutdown

interface fc1/15
  port-license acquire

!***************************************************
! Interfaces fc 1/16 to 1/23 are not
! configured and have been removed for brevity
!***************************************************

interface fc1/24

interface mgmt0
  ip address 10.4.63.13 255.255.255.0
  no system default switchport shutdown
end

Cisco Catalyst 2960s Management Switch

The Cisco Catalyst 2960-S provides the Ethernet out-of-band network for the data center switches, servers, and appliances. The Cisco Catalyst 3750X and 3560X series switches can be used to provide a more resilient Ethernet out-of-band network transport.

version 15.0
no service pad
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
service password-encryption
!
hostname DC-Mgmt2960S
!
boot-start-marker
boot-end-marker
!
enable secret 4 *****
!
username admin password 7 *****
aaa new-model
aaa group server tacacs+ TACACS-SERVERS
    server name TACACS-SERVER-1

aaa authentication login default group TACACS-SERVERS local
aaa authorization console
aaa authorization exec default group TACACS-SERVERS local

aaa session-id common
clock timezone PST -8 0
clock summer-time PDT recurring
switch 1 provision ws-c2960s-48fpd-1
authentication mac-move permit

ip name-server 10.4.48.10
vtp mode transparent
udld enable

mls qos map policed-dscp  0 10 18 24 46 to 8
mls qos map cos-dscp  0 16 24 32 46 48 56
mls qos srr-queue output cos-map queue 1 threshold 3 4 5
mls qos srr-queue output cos-map queue 2 threshold 1 2
mls qos srr-queue output cos-map queue 2 threshold 2 3
mls qos srr-queue output cos-map queue 2 threshold 3 6 7
mls qos srr-queue output cos-map queue 3 threshold 3 0
mls qos srr-queue output cos-map queue 4 threshold 3 1
mls qos srr-queue output dscp-map queue 1 threshold 3 32 33 40 41 42 43 44 45
mls qos srr-queue output dscp-map queue 1 threshold 3 46 47
mls qos srr-queue output dscp-map queue 2 threshold 1 16 17 18 19 20 21 22 23
mls qos srr-queue output dscp-map queue 2 threshold 1 26 27 28 29 30 31 34 35
mls qos srr-queue output dscp-map queue 2 threshold 1 36 37 38 39
mls qos srr-queue output dscp-map queue 2 threshold 2 24
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 0 1 2 3 4 5 6 7
mls qos srr-queue output dscp-map queue 4 threshold 1 8 9 11 13 15
mls qos srr-queue output dscp-map queue 4 threshold 2 10 12 14
mls qos queue-set output 1 threshold 1 100 100 50 200
mls qos queue-set output 1 threshold 2 125 125 100 400
mls qos queue-set output 1 threshold 3 100 100 100 400
mls qos queue-set output 1 threshold 4 60 150 50 200
mls qos queue-set output 1 buffers 15 25 40 20
mls qos
crypto pki trustpoint TP-self-signed-3972451072
  enrollment selfsigned
  subject-name cn=IOS-Self-Signed-Certificate-3972451072
  revocation-check none
  rsakeypair TP-self-signed-3972451072
!
!
crypto pki certificate chain TP-self-signed-3972451072
  certificate self-signed 02
    3082022B 30820194 A0030201 ...
  quit
!
spanning-tree mode rapid-pvst
spanning-tree portfast bpduguard default
spanning-tree extend system-id
!
port-channel load-balance src-dst-ip
!
vlan internal allocation policy ascending
!
vlan 163
  name DC_ManagementVLAN
!
macro name EgressQoS
mls qos trust dscp
queue-set 1
srr-queue bandwidth share 1 30 35 5
priority-queue out
@
!
interface Port-channel1
  description Etherchannel Link to DC Core for Layer 3
  switchport trunk allowed vlan 163
  switchport mode trunk
  logging event link-status
!
interface FastEthernet0
  no ip address
  shutdown
!
interface GigabitEthernet1/0/1
  switchport access vlan 163
  switchport mode access
  spanning-tree portfast
!
interface GigabitEthernet1/0/2
description Link to MDS9148 mgmt0
switchport access vlan 163
switchport mode access
duplex full
spanning-tree portfast
!
interface GigabitEthernet1/0/3
description Link to MDS9148 mgmt0
switchport access vlan 163
switchport mode access
duplex full
spanning-tree portfast
!
interface GigabitEthernet1/0/4
description Link to N5K-C5596 mgmt0
switchport access vlan 163
switchport mode access
spanning-tree portfast
!
interface GigabitEthernet1/0/5
description Link to N5K-C5596 mgmt0
switchport access vlan 163
switchport mode access
spanning-tree portfast
!
!*********************************************************************************************
! Interfaces GigabitEthernet 1/0/6 to 1/0/46 are
! configured the same way and have been removed for brevity
!*********************************************************************************************
!
interface GigabitEthernet1/0/47
description Link to DC5596a (Ethernet 1/21)
switchport trunk allowed vlan 163
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
channel-group 1 mode active
!
interface GigabitEthernet1/0/48
description Link to DC5596b (Ethernet 1/21)
switchport trunk allowed vlan 163
switchport mode trunk
logging event link-status
logging event trunk-status
logging event bundle-status
channel-group 1 mode active
interface GigabitEthernet1/0/49
interface GigabitEthernet1/0/50
interface TenGigabitEthernet1/0/1
interface TenGigabitEthernet1/0/2
interface Vlan1
  no ip address
  shutdown

interface Vlan163
  description in-band management
  ip address 10.4.63.5 255.255.255.0

  ip default-gateway 10.4.63.1
  no ip http server
  ip http authentication aaa
  ip http secure-server

  ip sla enable reaction-alerts
  logging 10.4.48.35
  logging 10.4.48.38
  logging 10.4.48.39
  snmp-server community ***** RO
  snmp-server community ***** RW
  snmp-server host 10.4.48.35 *****
  snmp-server host 10.4.48.38 *****
  snmp-server host 10.4.48.35 *****
  snmp-server host 10.4.48.39 *****
  tacacs server TACACS-SERVER-1
    address ipv4 10.4.48.15
    key 7 *****

  line con 0
  line vty 0 4
    transport preferred none
    transport input ssh
  line vty 5 15
    transport preferred none
    transport input ssh

  ntp server 10.4.48.17
end
Cisco ASA 5585—Primary

The Cisco ASA 5585 firewalls for the data center design are provisioned in pairs for resiliency. This is the primary firewall configuration.

ASA Version 9.0(1)
!
hostname DC5585ax
domain-name cisco.local
enable password ***** encrypted
xlate per-session deny tcp any4 any4
xlate per-session deny tcp any4 any6
xlate per-session deny tcp any6 any4
xlate per-session deny tcp any6 any6
xlate per-session deny udp any4 any4 eq domain
xlate per-session deny udp any4 any6 eq domain
xlate per-session deny udp any6 any4 eq domain
xlate per-session deny udp any6 any6 eq domain
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface GigabitEthernet0/0
shutdown
no nameif
no security-level
no ip address
!
interface GigabitEthernet0/1
description LAN/STATE Failover Interface
!
interface GigabitEthernet0/2
shutdown
no nameif
no security-level
no ip address
!
!***************************************************
! Interfaces GigabitEthernet 0/3 to 0/6 are
! unconfigured and have been removed for brevity
!***************************************************
!
interface GigabitEthernet0/7
  shutdown
  no nameif
  no security-level
  no ip address
!
interface Management0/0
  shutdown
  no nameif
  no security-level
  no ip address
!
interface Management0/1
  shutdown
  no nameif
  no security-level
  no ip address
!
interface TenGigabitEthernet0/8
  description Trunk to DC5548x eth1/1
  channel-group 10 mode passive
  no nameif
  no security-level
  no ip address
!
interface TenGigabitEthernet0/9
  description Trunk to DC5548x eth1/2
  channel-group 10 mode passive
  no nameif
  no security-level
  no ip address
!
interface GigabitEthernet1/0
  shutdown
  no nameif
  no security-level
  no ip address
!
******************************************************************************
! Interfaces GigabitEthernet 1/1 to 1/7
! are unconfigured and have been removed for brevity
******************************************************************************
!
interface TenGigabitEthernet1/8
  shutdown
  no nameif
  no security-level
  no ip address
! interface TenGigabitEthernet1/9
  shutdown
  no nameif
  no security-level
  no ip address
!
interface Port-channel10
  description ECLB Trunk to 5548 Switches
  no nameif
  no security-level
  no ip address
!
interface Port-channel10.153
  description DC VLAN Outside the FW
  vlan 153
  nameif outside
  security-level 0
  ip address 10.4.53.126 255.255.255.128 standby 10.4.53.125
!
interface Port-channel10.154
  description DC VLAN Inside the Firewall
  vlan 154
  nameif DC-InsideFW
  security-level 75
  ip address 10.4.54.1 255.255.255.0 standby 10.4.54.2
!
interface Port-channel10.155
  description DC VLAN Inside the FW w/ IPS
  vlan 155
  nameif DC-InsideIPS
  security-level 75
  ip address 10.4.55.1 255.255.255.0 standby 10.4.55.2
!
ftp mode passive
clock timezone PST -8
clock summer-time PDT recurring
dns server-group DefaultDNS
domain-name cisco.local
object network IT_Web_Server
  host 10.4.54.80
description IT Web Server
object network Finance_Web_Server
  host 10.4.54.81
description Finance Web Server
object network Hr_Web_Server
  host 10.4.55.80
description Hr Web Server
object network Research_Web_Server
  host 10.4.55.81
description Research Web Server
object network IT_Management_Host_Range
  range 10.4.48.224 10.4.48.254
description IT Management Systems Range
object-group network DM_INLINE_NETWORK_2
  network-object 10.4.54.0 255.255.255.0
  network-object 10.4.55.0 255.255.255.0
object-group service DM_INLINE_TCP_2 tcp
  port-object eq www
  port-object eq https
object-group service DM_INLINE_TCP_3 tcp
  port-object eq www
  port-object eq https
object-group service DM_INLINE_TCP_4 tcp
  port-object eq www
  port-object eq https
object-group network DM_INLINE_NETWORK_1
  network-object 10.4.54.0 255.255.255.0
  network-object 10.4.55.0 255.255.255.0
object-group service Mgmt_Traffic
description Management Traffic SSH and SNMP
  service-object tcp destination eq ssh
  service-object udp destination eq snmp
object-group service DM_INLINE_SERVICE_2
  service-object tcp destination eq domain
  service-object tcp destination eq www
  service-object tcp destination eq https
  service-object udp destination eq domain
object-group service DM_INLINE_TCP_1 tcp
  port-object eq www
  port-object eq https
access-list global_access remark HTTP and HTTPS to IT Web Server
  access-list global_access extended permit tcp any4 object IT_Web_Server object-group
  DM_INLINE_TCP_1
access-list global_access remark HTTP and HTTPS to Finance Web Server
  access-list global_access extended permit tcp any object Finance_Web_Server object-group
  DM_INLINE_TCP_2
access-list global_access remark HTTP and HTTPS to HR Web Server
  access-list global_access extended permit tcp any object Hr_Web_Server object-group
  DM_INLINE_TCP_3
access-list global_access remark HTTP and HTTPS to Research Web Server
  access-list global_access extended permit tcp any object Research_Web_Server object-group
  DM_INLINE_TCP_4
access-list global access extended permit object-group DM_INLINE_SERVICE_2 object-group DM_INLINE_NETWORK_2 any
access-list outside_access_in remark Permit Mgmt Traffic from Mgmt Range to DC Secure VLANs
access-list outside_access_in extended permit object-group Mgmt_Traffic object-group ITManagement_Host_Range object-group DM_INLINE_NETWORK_1
access-list DC-InsideIPS_mpc extended permit ip any4 any4
access-list global_mpc extended permit ip any4 any4
pager lines 24
logging enable
logging buffered informational
logging asdm informational
mtu outside 1500
mtu DC-InsideFW 1500
mtu DC-InsideIPS 1500
failover
failover lan unit primary
failover lan interface failover GigabitEthernet0/1
failover polltime unit msec 200 holdtime msec 800
failover polltime interface msec 500 holdtime 5
failover key *****
failover replication http
failover link failover GigabitEthernet0/1
failover interface ip failover 10.4.53.130 255.255.255.252 standby 10.4.53.129
monitor-interface outside
monitor-interface DC-InsideFW
monitor-interface DC-InsideIPS
icmp unreachable rate-limit 1 burst-size 1
asdm image disk0:/asdm-702.bin
no asdm history enable
arp timeout 14400
no arp permit-nonconnected
access-group outside_access_in in interface outside
access-group global_access global
route outside 0.0.0.0 0.0.0.0 10.4.53.1 1
timeout xlate 3:00:00
timeout pat-xlate 0:00:30
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00
timeout sip-provisional-media 0:02:00 uauth 0:05:00 absolute
timeout tcp-proxy-reassembly 0:01:00
timeout floating-conn 0:00:00
dynamic-access-policy-record DfltAccessPolicy
aaa-server AAA-SERVER protocol tacacs+
aaa-server AAA-SERVER (outside) host 10.4.48.15
key *****
user-identity default-domain LOCAL
aaa authentication enable console AAA-SERVER LOCAL
aaa authentication ssh console AAA-SERVER LOCAL
aaa authentication http console AAA-SERVER LOCAL
aaa authentication serial console AAA-SERVER LOCAL
aaa authorization exec authentication-server
http server enable
http 10.4.48.0 255.255.255.0 outside
snmp-server host outside 10.4.48.35 community *****
no snmp-server location
no snmp-server contact
snmp-server community *****
snmp-server enable traps snmp authentication linkup linkdown coldstart warmstart
crypto ipsec security-association pmtu-aging infinite
crypto ca trustpool policy
telnet timeout 5
ssh 10.4.48.0 255.255.255.0 outside
ssh timeout 5
ssh version 2
console timeout 0
!
tls-proxy maximum-session 1000
!
threat-detection basic-threat
threat-detection statistics access-list
no threat-detection statistics tcp-intercept
ntp server 10.4.48.17
ssl encryption aes256-sha1 aes128-sha1 3des-sha1
username admin password w2Y.6Op4j7clVDk2 encrypted
!
class-map DC-InsideIPS-class
match access-list DC-InsideIPS_mpc
class-map inspection_default
match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
  parameters
    message-length maximum client auto
    message-length maximum 512
policy-map global_policy
class inspection_default
  inspect dns preset_dns_map
  inspect ftp
  inspect h323 h225
  inspect h323 ras
  inspect ip-options
  inspect netbios
inspect rsh
inspect rtsp
inspect skinny
inspect esmtp
inspect sqlnet
inspect sunrpc
inspect tftp
inspect sip
inspect xdmcp

policy-map DC-InsideIPS-policy
   class DC-InsideIPS-class
      ips inline fail-close
!

service-policy global_policy global
service-policy DC-InsideIPS-policy interface DC-InsideIPS
prompt hostname context
no call-home reporting anonymous
call-home
profile CiscoTAC-1
   no active
   destination address http https://tools.cisco.com/its/service/oddce/services/DDCEService
destination address email callhome@cisco.com
destination transport-method http
subscribe-to-alert-group diagnostic
subscribe-to-alert-group environment
subscribe-to-alert-group inventory periodic monthly 9
subscribe-to-alert-group configuration periodic monthly 9
subscribe-to-alert-group telemetry periodic daily

Cisco ASA 5585 IPS SSP—Primary

The Cisco ASA 5585 firewall for the data center design is provisioned with an internal Intrusion Prevention System (IPS) security services processor (SSP). The combined Cisco ASA firewall and IPS operate in resilient pairs. This is the primary Cisco ASA 5585 IPS SSP.

! Version 7.1(7)
! Host:
!     Realm Keys          key1.0
! Signature Definition:
!     Signature Update    S691.0   2013-01-22
! ------------------------------
service interface
exit
! ------------------------------
service authentication
exit
! ------------------------------
service event-action-rules rules0
overrides deny-packet-inline
override-item-status Enabled
risk-rating-range 100-100
exit
exit
! ------------------------------
service host
network-settings
host-ip 10.4.63.21/24,10.4.63.1
host-name IPS-SSP20-A
telnet-option disabled
access-list 10.4.48.0/24
dns-primary-server enabled
address 10.4.48.10
exit
dns-secondary-server disabled
dns-tertiary-server disabled
exit
time-zone-settings
offset -480
standard-time-zone-name GMT-08:00
exit
ntp-option enabled-ntp-unauthenticated
ntp-server 10.4.48.17
exit
summertime-option recurring
summertime-zone-name UTC
exit
exit
! ------------------------------
service logger
exit
! ------------------------------
service network-access
exit
! ------------------------------
service notification
exit
! ------------------------------
service signature-definition sig0
exit
! ------------------------------
service ssh-known-hosts
exit
service trusted-certificates
exit
! ------------------------------

service web-server
exit
! ------------------------------

service anomaly-detection ad0
exit
! ------------------------------

service external-product-interface
exit
! ------------------------------

service health-monitor
exit
! ------------------------------

service global-correlation
network-participation partial
exit
! ------------------------------

service aaa
exit
! ------------------------------

service analysis-engine
virtual-sensor vs0
physical-interface PortChannel0/0
exit

---

Cisco ASA 5585—Secondary

The Cisco ASA 5585 Adaptive Security Appliances for the data center design are provisioned in pairs for resiliency. Although this is the secondary Cisco ASA 5585, the configuration is the same as the primary Cisco ASA 5585, with the exception of a few lines.

ASA Version 9.0(1)
!
hostname DC5585ax
domain-name cisco.local
enable password ***** encrypted
xlate per-session deny tcp any4 any4
xlate per-session deny tcp any4 any6
xlate per-session deny tcp any6 any4
xlate per-session deny tcp any6 any6
xlate per-session deny udp any4 any4 eq domain
xlate per-session deny udp any4 any6 eq domain
xlate per-session deny udp any6 any4 eq domain
xlate per-session deny udp any6 any6 eq domain
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface GigabitEthernet0/0
  shutdown
  no nameif
  no security-level
  no ip address
!
interface GigabitEthernet0/1
  description LAN/STATE Failover Interface
!
interface GigabitEthernet0/2
  shutdown
  no nameif
  no security-level
  no ip address
!
!***************************************************
! Interfaces GigabitEthernet 0/3 to 0/6 are
! unconfigured and have been removed for brevity
!***************************************************
!
interface GigabitEthernet0/7
  shutdown
  no nameif
  no security-level
  no ip address
!
interface Management0/0
  shutdown
  no nameif
  no security-level
  no ip address
!
interface Management0/1
  shutdown
  no nameif
  no security-level
  no ip address
!
interface TenGigabitEthernet0/8
  description Trunk to DC5548x eth1/1
  channel-group 10 mode passive
  no nameif
  no security-level
  no ip address
interface TenGigabitEthernet0/9
  description Trunk to DC5548x eth1/2
  channel-group 10 mode passive
  no nameif
  no security-level
  no ip address
!
interface GigabitEthernet1/0
  shutdown
  no nameif
  no security-level
  no ip address
!
!***************************************************
! Interfaces GigabitEthernet 1/1 to 1/7
! are unconfigured and have been removed for brevity
!***************************************************
!
interface TenGigabitEthernet1/8
  shutdown
  no nameif
  no security-level
  no ip address
!
interface TenGigabitEthernet1/9
  shutdown
  no nameif
  no security-level
  no ip address
!
interface Port-channel10
  description ECLB Trunk to 5548 Switches
  no nameif
  no security-level
  no ip address
!
interface Port-channel10.153
  description DC VLAN Outside the FW
  vlan 153
  nameif outside
  security-level 0
  ip address 10.4.53.126 255.255.255.128 standby 10.4.53.125
!
interface Port-channel10.154
  description DC VLAN Inside the Firewall
  vlan 154
nameif DC-InsideFW
security-level 75
ip address 10.4.54.1 255.255.255.0 standby 10.4.54.2
!
interface Port-channel10.155
description DC VLAN Inside the FW w/ IPS
vlan 155
nameif DC-InsideIPS
security-level 75
ip address 10.4.55.1 255.255.255.0 standby 10.4.55.2
!
ftp mode passive
clock timezone PST -8
clock summer-time PDT recurring
dns server-group DefaultDNS
domain-name cisco.local
object network IT_Web_Server
  host 10.4.54.80
description IT Web Server
object network Finance_Web_Server
  host 10.4.54.81
description Finance Web Server
object network Hr_Web_Server
  host 10.4.55.80
description Hr Web Server
object network Research_Web_Server
  host 10.4.55.81
description Research Web Server
object network IT_Management_Host_Range
  range 10.4.48.224 10.4.48.254
description IT Management Systems Range
object-group network DM_INLINE_NETWORK_2
  network-object 10.4.54.0 255.255.255.0
  network-object 10.4.55.0 255.255.255.0
object-group service DM_INLINE_TCP_2 tcp
  port-object eq www
  port-object eq https
object-group service DM_INLINE_TCP_3 tcp
  port-object eq www
  port-object eq https
object-group service DM_INLINE_TCP_4 tcp
  port-object eq www
  port-object eq https
object-group network DM_INLINE_NETWORK_1
  network-object 10.4.54.0 255.255.255.0
  network-object 10.4.55.0 255.255.255.0
object-group service Mgmt_Traffic
description Management Traffic SSH and SNMP
  service-object tcp destination eq ssh
  service-object udp destination eq snmp
object-group service DM_INLINE_SERVICE_2
  service-object tcp destination eq domain
  service-object tcp destination eq www
  service-object tcp destination eq https
  service-object udp destination eq domain
object-group service DM_INLINE_TCP_1 tcp
  port-object eq www
  port-object eq https
access-list global_access remark HTTP and HTTPS to IT Web Server
access-list global_access extended permit tcp any4 object IT_Web_Server object-group DM_INLINE_TCP_1
access-list global_access remark HTTP and HTTPS to Finance Web Server
access-list global_access extended permit tcp any object Finance_Web_Server object-group DM_INLINE_TCP_2
access-list global_access remark HTTP and HTTPS to HR Web Server
access-list global_access extended permit tcp any object Hr_Web_Server object-group DM_INLINE_TCP_3
access-list global_access remark HTTP and HTTPS to Research Web Server
access-list global_access extended permit tcp any object Research_Web_Server object-group DM_INLINE_TCP_4
access-list global_access extended permit object-group DM_INLINE_SERVICE_2 object-group DM_INLINE_NETWORK_2 any
access-list outside_access_in remark Permit Mgmt Traffic from Mgmt Range to DC Secure VLANs
access-list outside_access_in extended permit object-group Mgmt_Traffic any4
 access-list global_mpc extended permit ip any4 any4
pager lines 24
logging enable
logging buffered informational
logging aadm informational
mtu outside 1500
mtu DC-InsideFW 1500
mtu DC-InsideIPS 1500
failover
failover lan unit secondary
failover lan interface failover GigabitEthernet0/1
failover polltime unit msec 200 holdtime msec 800
failover polltime interface msec 500 holdtime 5
failover key *****
failover replication http
failover link failover GigabitEthernet0/1
failover interface ip failover 10.4.53.130 255.255.255.252 standby 10.4.53.129
monitor-interface outside
monitor-interface DC-InsideFW
monitor-interface DC-InsideIPS
icmp unreachable rate-limit 1 burst-size 1
asdm image disk0:/asdm-702.bin
no asdm history enable
arp timeout 14400
no arp permit-nonconnected
access-group outside_access_in in interface outside
access-group global_access global
route outside 0.0.0.0 0.0.0.0 10.4.53.1 1
timeout xlate 3:00:00
timeout pat-xlate 0:00:30
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00
timeout sip-provisional-media 0:02:00 uauth 0:05:00 absolute
timeout tcp-proxy-reassembly 0:01:00
timeout floating-conn 0:00:00
dynamic-access-policy-record DfltAccessPolicy
aaa-server AAA-SERVER protocol tacacs+
aaa-server AAA-SERVER (outside) host 10.4.48.15
  key *****
  user-identity default-domain LOCAL
  aaa authentication enable console AAA-SERVER LOCAL
  aaa authentication ssh console AAA-SERVER LOCAL
  aaa authentication http console AAA-SERVER LOCAL
  aaa authentication serial console AAA-SERVER LOCAL
  aaa authorization exec authentication-server
http server enable
http 10.4.48.0 255.255.255.0 outside
snmp-server host outside 10.4.48.35 community *****
no snmp-server location
no snmp-server contact
snmp-server community *****
  snmp-server enable traps snmp authentication linkup linkdown coldstart warmstart
crypto ipsec security-association pmtu-aging infinite
crypto ca trustpool policy
telnet timeout 5
ssh 10.4.48.0 255.255.255.0 outside
ssh timeout 5
ssh version 2
console timeout 0
!
tls-proxy maximum-session 1000
!
threat-detection basic-threat
threat-detection statistics access-list
no threat-detection statistics tcp-intercept
ntp server 10.4.48.17
ssl encryption aes256-sha1 aes128-sha1 3des-sha1
username admin password w2Y.6Op4j7c1VDk2 encrypted
!
class-map DC-InsideIPS-class
  match access-list DC-InsideIPS_mpc
class-map inspection_default
  match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
  parameters
    message-length maximum client auto
    message-length maximum 512
policy-map global_policy
  class inspection_default
    inspect dns preset_dns_map
    inspect ftp
    inspect h323 h225
    inspect h323 ras
    inspect ip-options
    inspect netbios
    inspect rsh
    inspect rtsp
    inspect skinny
    inspect esmtp
    inspect sqlnet
    inspect sunrpc
    inspect tftp
    inspect sip
    inspect xdmcp
policy-map DC-InsideIPS-policy
  class DC-InsideIPS-class
    ips inline fail-close
!
service-policy global_policy global
service-policy DC-InsideIPS-policy interface DC-InsideIPS
prompt hostname context
no call-home reporting anonymous
call-home
profile CiscoTAC-1
  no active
  destination address http https://tools.cisco.com/its/service/oddce/services/DDCEService
destination address email callhome@cisco.com
destination transport-method http
Cisco ASA 5585 IPS SSP—Secondary

The Cisco ASA 5585 Adaptive Security Appliance for the data center design is provisioned with an internal IPS SSP. The combined Cisco ASA and IPS operate in resilient pairs. Although this is the secondary Cisco ASA IPS SSP in the secondary Cisco ASA, the configuration is the same as the primary Cisco ASA IPS SSP in the primary Cisco ASA, with the exception of a few lines.

! Version 7.1(7)
! Host:
! Realm Keys key1.0
! Signature Definition:
! Signature Update S691.0 2013-01-22
! ------------------------------
service interface
exit
! ------------------------------
service authentication
exit
! ------------------------------
service event-action-rules rules0
overrides deny-packet-inline
override-item-status Enabled
risk-rating-range 100-100
exit
exit
! ------------------------------
service host
network-settings
host-ip 10.4.63.23/24,10.4.63.1
host-name IPS-SSP20-B
telnet-option disabled
access-list 10.4.48.0/24
dns-primary-server enabled
address 10.4.48.10
exit
dns-secondary-server disabled
dns-tertiary-server disabled
exit
time-zone-settings
offset -480
standard-time-zone-name GMT-08:00
exit
ntp-option enabled-ntp-unauthenticated
ntp-server 10.4.48.17
exit
summertime-option recurring
summertime-zone-name UTC
exit
exit
! ------------------------------
service logger
exit
! ------------------------------
service network-access
exit
! ------------------------------
service notification
exit
! ------------------------------
service signature-definition sig0
exit
! ------------------------------
service ssh-known-hosts
exit
! ------------------------------
service trusted-certificates
exit
! ------------------------------
service web-server
exit
! ------------------------------
service anomaly-detection ad0
exit
! ------------------------------
service external-product-interface
exit
! ------------------------------
service health-monitor
exit
! ------------------------------
service global-correlation
network-participation partial
exit
! ------------------------------
service aaa
exit
! ------------------------------

service analysis-engine
virtual_sensor vs0
physical-interface PortChannel0/0
exit
exit
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