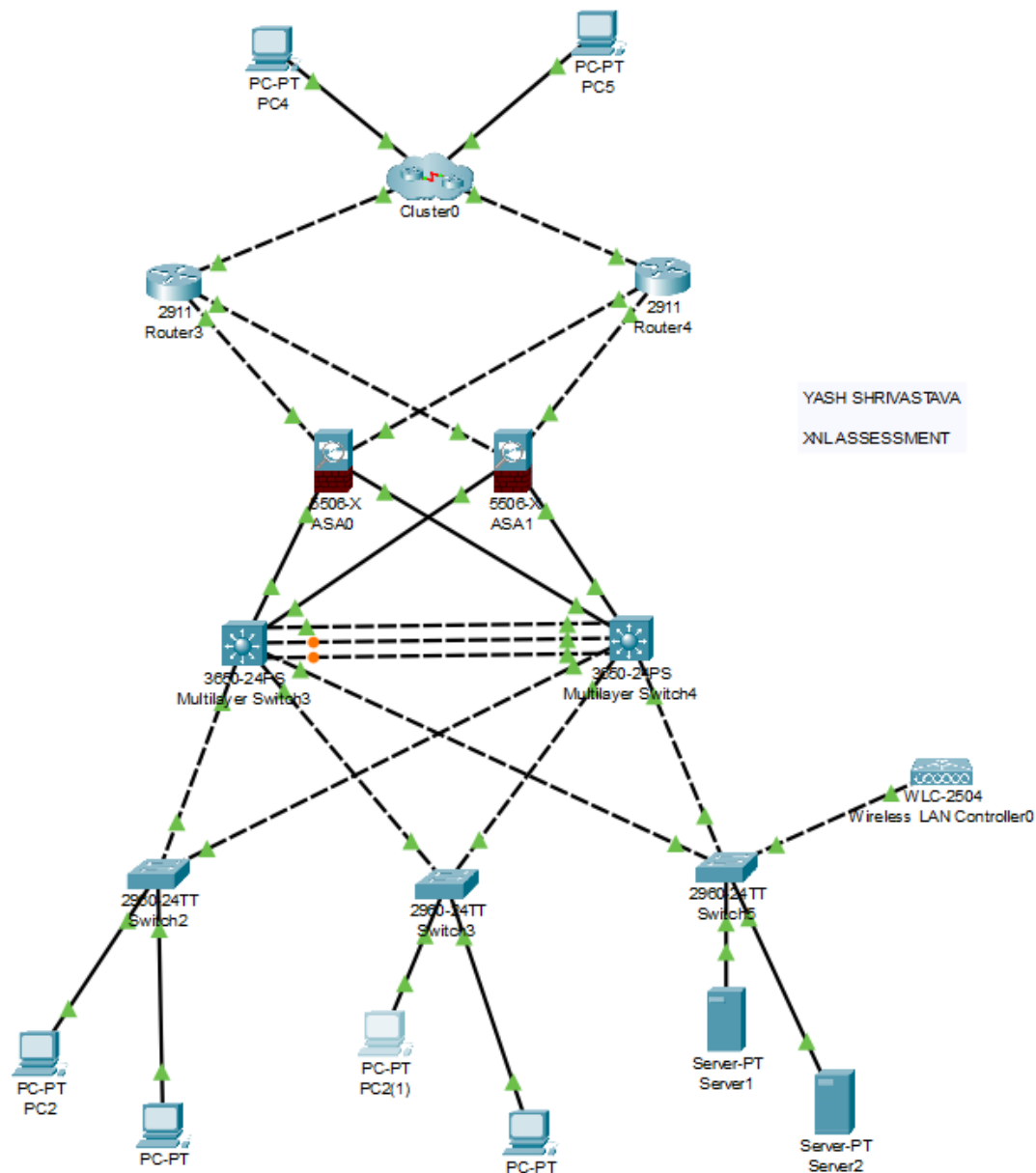# ADVANCED SYSTEM ADMINISTRATION & NETWORK ENGINEERING CHALLENGE: SELF-HEALING, ZERO-DOWNTIME ENTERPRISE NETWORK

Explaination

Detailed Explanation of Your Network Setup
Your network is designed with **high availability, security, and scalability** in mind. Below is a structured explanation of each component and how they work together.

---

1. Network Design Overview
Your network follows a **three-layer architecture**, including:
1. **Core Layer:**
    - Two **Cisco 2911 routers** for **external connectivity and redundancy**

- o Connected using a **cluster link** for failover
  2. **Firewall Layer:**
     - o Two **ASA 5506-X firewalls**
     - o Firewalls separate **internal, DMZ, and external networks**
     - o Security levels are assigned to protect different network zones
  3. **Distribution Layer:**
     - o Two **Cisco 3650 multilayer switches**
     - o They handle **VLAN segmentation, InterVLAN routing, and redundancy (HSRP)**
     - o Also responsible for **connecting to firewalls and core routers**
  4. **Access Layer:**
     - o Three **Cisco 2960 switches**
     - o Connect end devices such as **PCs, servers, and Wireless LAN Controller (WLC-2504)**
     - o Implement **Spanning Tree Protocol (STP) to prevent loops**

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2. Device Security & Management
- **All devices have a hostname set for identification**
- **SSH is configured for secure remote access instead of Telnet**
- **ACLs (Access Control Lists) restrict unauthorized access to management interfaces**
- **Banner messages warn unauthorized users**

---

3. VLANs and Segmentation
The network uses **VLANs (Virtual LANs) to separate traffic** for security and efficiency:
- **VLAN - Management** (For network administrators and device management)
- **VLAN - Users** (For employees and workstation traffic)
- **VLAN - Servers** (For internal applications, database, and storage)

VLANs prevent **unnecessary traffic flow** between departments and improve security.

---

4. Redundancy & High Availability
- **HSRP (Hot Standby Router Protocol) is implemented** on the **two multilayer switches** to provide a **virtual IP address** for gateway redundancy
- If one switch fails, the **other automatically takes over as the default gateway**
- **EtherChannel is used** to bundle multiple links between switches, improving bandwidth and failover

---

5. Spanning Tree Protocol (STP) Implementation
- STP is enabled to **prevent network loops**, ensuring a stable network
- **PortFast and BPDU Guard** are configured on **end-device ports** to protect against accidental loops

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6. DHCP Server & IP Addressing
- The **DHCP server dynamically assigns IP addresses** to devices in the user VLAN
- **DHCP Relay is configured** so that requests from other VLANs are forwarded to the DHCP server
- **DMZ and Server VLANs use static IP addressing** for stability and security

---

7. OSPF Routing Protocol
- **OSPF (Open Shortest Path First) is implemented** across routers, firewalls, and switches to enable **dynamic routing**

- This ensures automatic route adjustments in case of **link failures**
- The **firewall redistributes static routes** to OSPF to provide **external connectivity**

---

8. Firewall Security & ACLs
- The **firewall assigns different security levels** to interfaces:
    - **Inside (Highest Security)** → Used for internal users
    - **DMZ (Medium Security)** → Hosts publicly accessible servers
    - **Outside (Lowest Security)** → Connects to the internet
- **ACLs are used** to control traffic between these zones:
    - **Restricting unauthorized external access**
    - **Allowing specific inbound connections** (e.g., web and mail servers)
    - **Blocking unnecessary internal-to-DMZ access**

---

9. Internet & External Connectivity
- The **firewall acts as the main security gateway** to filter and inspect traffic
- A **static default route is configured** on the firewall to send all internet-bound traffic to the ISP router
- **NAT (Network Address Translation) is enabled** to allow internal devices to access the internet securely

---

10. Final Testing & Troubleshooting
To ensure the network is working properly:
- **Ping between VLANs to test InterVLAN communication**
- **Check HSRP status to confirm failover is active**
- **Verify OSPF neighbor relationships to ensure proper routing**
- **Review firewall logs to ensure correct security policies are applied**
- **Test redundancy by shutting down one switch or router and observing failover behavior**

Conclusion
This setup provides:
High availability with HSRP, OSPF, and EtherChannel
Strong security with VLAN segmentation, ACLs, and Firewalls
Efficient traffic management using STP, DHCP, and OSPF

Network Devices

Firewall 1
Rom image verified correctly

Cisco Systems ROMMON, Version 1.1.8, RELEASE SOFTWARE
Copyright (c) 1994-2015 by Cisco Systems, Inc.
Compiled Thu 06/18/2015 12:15:56.43 by builders

Current image running: Boot ROM0

Last reset cause: PowerCycleRequest
DIMM Slot 0 : Present

Platform ASA5506 with 4096 Mbytes of main memory
MAC Address: 00D0.58D1.7A01

Use BREAK or ESC to interrupt boot.
Use SPACE to begin boot immediately.

LFBFF signature verified.
INIT: version 2.88 booting
Starting udev
Configuring network interfaces... done.
Populating dev cache
dosfsck 2.11, 12 Mar 2005, FAT32, LFN
There are differences between boot sector and its backup.
Differences: (offset:original/backup)
65:01/00
Not automatically fixing this.
Starting check/repair pass.
Starting verification pass.
/dev/sdb1: 110 files, 814352/1798211 clusters
dosfsck(/dev/sdb1) returned 0
IO Memory Nodes: 1
IO Memory Per Node: 205520896 bytes

Global Reserve Memory Per Node: 314572800 bytes Nodes=1

LCMB: got 205520896 bytes on numa-id=0, phys=0x10dc00000, virt=0x2aaaab000000
LCMB: HEAP-CACHE POOL got 314572800 bytes on numa-id=0, virt=0x7fea63e00000
Processor memory: 1502519902

Compiled on Fri 18-Mar-16 14:04 PDT by builders

Total NICs found: 13
i354 rev03 Gigabit Ethernet @ irq255 dev 20 index 08 MAC: 0060.2F99.4C01
ivshmem rev03 Backplane Data Interface @ index 09 MAC: 0000.0001.0002
en_vtun rev00 Backplane Control Interface @ index 10 MAC: 0000.0001.0001
en_vtun rev00 Backplane Int-Mgmt Interface @ index 11 MAC: 0000.0001.0003
en_vtun rev00 Backplane Ext-Mgmt Interface @ index 12 MAC: 0000.0000.0000
Verify the activation-key, it might take a while...
Running Permanent Activation Key: 0x8AAB4013 0xB23A93B2 0x8C87269C 0x9627792A 0xE283604C

Licensed features for this platform:
Maximum Physical Interfaces : 8 perpetual
Maximum VLANs : 30 perpetual

Inside Hosts : Unlimited perpetual
Failover : Active/Standby perpetual
Encryption-DES : Enabled perpetual
Encryption-3DES-AES : Enabled perpetual
Carrier : Disabled perpetual
AnyConnect Premium Peers : 4 perpetual
AnyConnect Essentials : Disabled perpetual
Other VPN Peers : 50 perpetual
Total VPN Peers : 50 perpetual
AnyConnect for Mobile : Disabled perpetual
AnyConnect for Cisco VPN Phone : Disabled perpetual
Advanced Endpoint Assessment : Disabled perpetual
Shared License : Disabled perpetual
Total UC Proxy Sessions : 160 perpetual
Botnet Traffic Filter : Disabled perpetual
Cluster : Disabled perpetual

This platform has an ASA 5506 Security Plus license.

Encryption hardware device : Cisco ASA Crypto on-board accelerator (revision 0x1)

Cisco Adaptive Security Appliance Software Version 9.6(1)

***************************** Warning *****************************
This product contains cryptographic features and is
subject to United States and local country laws
governing, import, export, transfer, and use.
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imply third-party authority to import, export,
distribute, or use encryption. Importers, exporters,
distributors and users are responsible for compliance
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regulations. If you are unable to comply with U.S.
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A summary of U.S. laws governing Cisco cryptographic
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by
sending email to export@cisco.com.
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http://www.cisco.com/go/asa-opensource

Reading from flash...
!.

Cryptochecksum (unchanged): 53e564fb 7d6f3ddf 585849fd 748c6e59

INFO: Power-On Self-Test in process.
....
INFO: Power-On Self-Test complete.

INFO: Starting HW-DRBG health test...
INFO: HW-DRBG health test passed.

INFO: Starting SW-DRBG health test...
INFO: SW-DRBG health test passed.

Type help or '?' for a list of available commands.

FWL1>
00:00:40: %OSPF-5-ADJCHG: Process 35, Nbr 1.1.3.3 on GigabitEthernet1/1 from LOADING to FULL,
Loading Done

00:00:45: %OSPF-5-ADJCHG: Process 35, Nbr 1.1.4.4 on GigabitEthernet1/2 from LOADING to FULL,
Loading Done

Firewall 2
Rom image verified correctly

Cisco Systems ROMMON, Version 1.1.8, RELEASE SOFTWARE

Compiled Thu 06/18/2015 12:15:56.43 by builders

Current image running: Boot ROM0
Last reset cause: PowerCycleRequest
DIMM Slot 0 : Present

Platform ASA5506 with 4096 Mbytes of main memory
MAC Address: 0001.631A.1901

Use BREAK or ESC to interrupt boot.
Use SPACE to begin boot immediately.

LFBFF signature verified.
INIT: version 2.88 booting
Starting udev
Configuring network interfaces... done.
Populating dev cache
dosfsck 2.11, 12 Mar 2005, FAT32, LFN
There are differences between boot sector and its backup.
Differences: (offset:original/backup)
65:01/00
Not automatically fixing this.
Starting check/repair pass.
Starting verification pass.
/dev/sdb1: 110 files, 814352/1798211 clusters
dosfsck(/dev/sdb1) returned 0
IO Memory Nodes: 1
IO Memory Per Node: 205520896 bytes

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LCMB: got 205520896 bytes on numa-id=0, phys=0x10dc00000, virt=0x2aaaab000000
LCMB: HEAP-CACHE POOL got 314572800 bytes on numa-id=0, virt=0x7fea63e00000
Processor memory: 1502519902

Compiled on Fri 18-Mar-16 14:04 PDT by builders

Total NICs found: 13
i354 rev03 Gigabit Ethernet @ irq255 dev 20 index 08 MAC: 00E0.F9D5.0701
ivshmem rev03 Backplane Data Interface @ index 09 MAC: 0000.0001.0002
en_vtun rev00 Backplane Control Interface @ index 10 MAC: 0000.0001.0001
en_vtun rev00 Backplane Int-Mgmt Interface @ index 11 MAC: 0000.0001.0003
en_vtun rev00 Backplane Ext-Mgmt Interface @ index 12 MAC: 0000.0000.0000
Verify the activation-key, it might take a while...

Running Permanent Activation Key: 0xE2E1C47B 0x594A9B77 0x34354936 0xEC5EDE66 0x06493C57

Licensed features for this platform:
Maximum Physical Interfaces : 8 perpetual
Maximum VLANs : 30 perpetual
Inside Hosts : Unlimited perpetual
Failover : Active/Standby perpetual
Encryption-DES : Enabled perpetual
Encryption-3DES-AES : Enabled perpetual
Carrier : Disabled perpetual
AnyConnect Premium Peers : 4 perpetual
AnyConnect Essentials : Disabled perpetual
Other VPN Peers : 50 perpetual
Total VPN Peers : 50 perpetual
AnyConnect for Mobile : Disabled perpetual
AnyConnect for Cisco VPN Phone : Disabled perpetual
Advanced Endpoint Assessment : Disabled perpetual
Shared License : Disabled perpetual
Total UC Proxy Sessions : 160 perpetual
Botnet Traffic Filter : Disabled perpetual
Cluster : Disabled perpetual

This platform has an ASA 5506 Security Plus license.

Encryption hardware device : Cisco ASA Crypto on-board accelerator (revision 0x1)

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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

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sending email to export@cisco.com.

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Software clause at DFARS sec. 252.227-7013.

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

Reading from flash...
!.

Cryptochecksum (unchanged): 317f4cbd 7f631b85 27502e07 7b8d0e2d

INFO: Power-On Self-Test in process.
....
INFO: Power-On Self-Test complete.

INFO: Starting HW-DRBG health test...
INFO: HW-DRBG health test passed.

INFO: Starting SW-DRBG health test...
INFO: SW-DRBG health test passed.

Type help or '?' for a list of available commands.

Multilayer Switch 3
Booting...
Interface GE 0 link down***ERROR: PHY link is down
Reading full image into memory
done
Bundle Image

Kernel Address : 0x5342e350
Kernel Size : 0x418a9b / 4295323
Initramfs Address : 0x53846dec
Initramfs Size : 0xe780c3 / 15171779
Compression Format : .mzip

Bootable image at @ ram : 0x5342e350
Bootable image segment 0 address range[0x81100000, 0x82140000] is in range[0x80180000, 0x90000000].
@@
@@@@@@@@@@@@@@@@@@@@@@@@@@@
File flash:/cat3k_caa-universalk9.16.03.02.SPA.bin uncompressed and installed, entry point :
0x81690280
Loading Linux kernel with entry point 0x8166a600 ...
Bootloader: Done loading app on core_mask : 0xf

Launching Linux Kernel (flags = 0x5)

%IOSXEBOOT-7474e1d3392fed124a6b809c1b351b29-new_cksum: (rp/0): 4
%IOSXEBOOT - 7474e1d3392fed124a6b809c1b351b29 - saved_cksum: (rp / 0) : 4
% IOSXEBOOT - Sat - ### : (rp / 0) : Feb 4 22 : 18 : 09 Universal 2017 PLEASE DO NOT POWER CYCLE
BOOT LOADER UPGRADING 4
% IOSXEBOOT - loader - boot: (rp / 0) : upgrade successful 4

Front - end Microcode IMG MGR : found 1 microcode images for 1 device.
Image for front - end 0 : / tmp / microcode_update / front_end / fe_type_8_1

--More-- Front - end Microcode IMG MGR : Preparing to program device microcode...
Front - end Microcode IMG MGR : Preparing to program device[0]...85504 bytes.
Front - end Microcode IMG MGR : Programming device
0...wRr0%..............10%.............20%.............30%..............40%.............50%..............60%.............70%....
.........80%..............90%.............!
Front - end Microcode IMG MGR : Microcode programming complete for device 0.
Front - end Microcode IMG MGR : Microcode programming complete in 43 seconds
1
Both links down, not waiting for other switches
Switch number is 1

Restricted Rights Legend

cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

Cisco IOS Software [Denali], Catalyst L3 Switch Software (CAT3K_CAA-UNIVERSALK9-M), Version
16.3.2, RELEASE SOFTWARE (fc4)
Technical Support : http://www.cisco.com/techsupport
Copyright(c) 1986 - 2016 by Cisco Systems, Inc.
Compiled Tue 08 - Nov - 16 17:31 by pt_team

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or the applicable URL provided on the flyer accompanying the IOS - XE
software.

FIPS: Flash Key Check : Begin
FIPS: Flash Key Check : End, Not Found, FIPS Mode Not Enabled

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States and local country laws governing import, export, transfer and
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco WS-C3650-24PS (MIPS) processor (revision N0) with 865815K/6147K bytes of memory.
Processor board ID FDO2031E1Q6
2048K bytes of non - volatile configuration memory.

4194304K bytes of physical memory.
250456K bytes of Crash Files at crashinfo : .
1609272K bytes of Flash at flash : .
0K bytes of at webui : .

Base ethernet MAC Address : 00:D0:BA:9C:5B:50
Motherboard assembly number : 73-15899-06
Motherboard serial number : FDO20311WHP
Model revision number : N0
Motherboard revision number : A0
Model number : WS-C3650-24PS
System serial number : FDO2031Q0TD

Press RETURN to get started!

%LINK-3-UPDOWN: Interface Vlan10, changed state to down

%LINK-3-UPDOWN: Interface Vlan20, changed state to down

%LINK-3-UPDOWN: Interface Vlan50, changed state to down

%LINK-3-UPDOWN: Interface Vlan90, changed state to down

%LINK-5-CHANGED: Interface Vlan10, changed state to up

%LINK-5-CHANGED: Interface Vlan20, changed state to up

%LINK-5-CHANGED: Interface Vlan50, changed state to up

%LINK-5-CHANGED: Interface Vlan90, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/2, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan50, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan90, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/4, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/6, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/6, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/7, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/7, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/8, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/8, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/9, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/9, changed state to up

%HSRP-6-STATECHANGE: Vlan10 Grp 10 state Speak -> Standby

%HSRP-6-STATECHANGE: Vlan10 Grp 10 state Standby -> Active

%HSRP-6-STATECHANGE: Vlan90 Grp 90 state Speak -> Standby

%HSRP-6-STATECHANGE: Vlan90 Grp 90 state Standby -> Active

%HSRP-6-STATECHANGE: Vlan20 Grp 20 state Speak -> Standby

%HSRP-6-STATECHANGE: Vlan20 Grp 20 state Standby -> Active

%HSRP-6-STATECHANGE: Vlan50 Grp 50 state Speak -> Standby

%HSRP-6-STATECHANGE: Vlan50 Grp 50 state Standby -> Active

Multilayer Switch 4

Booting...

Interface GE 0 link down***ERROR: PHY link is down

Reading full image into memory

done

Bundle Image

Kernel Address : 0x5342e350

Kernel Size : 0x418a9b / 4295323

Initramfs Address : 0x53846dec

Initramfs Size : 0xe780c3 / 15171779

Compression Format : .mzip

Bootable image at @ ram : 0x5342e350

Bootable image segment 0 address range[0x81100000, 0x82140000] is in range[0x80180000, 0x90000000].

@@@
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@

File flash:/cat3k_caa-universalk9.16.03.02.SPA.bin uncompressed and installed, entry point : 0x81690280

Loading Linux kernel with entry point 0x8166a600 ...

Bootloader: Done loading app on core_mask : 0xf

Launching Linux Kernel (flags = 0x5)

%IOSXEBOOT-7474e1d3392fed124a6b809c1b351b29-new_cksum: (rp/0): 4

%IOSXEBOOT - 7474e1d3392fed124a6b809c1b351b29 - saved_cksum: (rp / 0) : 4

% IOSXEBOOT - Sat - ### : (rp / 0) : Feb 4 22 : 18 : 09 Universal 2017 PLEASE DO NOT POWER CYCLE

BOOT LOADER UPGRADING 4

% IOSXEBOOT - loader - boot: (rp / 0) : upgrade successful 4

Front - end Microcode IMG MGR : found 1 microcode images for 1 device.

Image for front - end 0 : / tmp / microcode_update / front_end / fe_type_8_1

--More-- Front - end Microcode IMG MGR : Preparing to program device microcode...

Front - end Microcode IMG MGR : Preparing to program device[0]...85504 bytes.

Front - end Microcode IMG MGR : Programming device

0...wRr0%.............10%............20%............30%.............40%............50%.............60%............70%....
.........80%.............90%.............!

Front - end Microcode IMG MGR : Microcode programming complete for device 0.

Front - end Microcode IMG MGR : Microcode programming complete in 43 seconds

1

Both links down, not waiting for other switches

Switch number is 1

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Cisco IOS Software [Denali], Catalyst L3 Switch Software (CAT3K_CAA-UNIVERSALK9-M), Version
16.3.2, RELEASE SOFTWARE (fc4)
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FIPS: Flash Key Check : End, Not Found, FIPS Mode Not Enabled

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cisco WS-C3650-24PS (MIPS) processor (revision N0) with 865815K/6147K bytes of memory.
Processor board ID FDO2031E1Q6
2048K bytes of non - volatile configuration memory.
4194304K bytes of physical memory.
250456K bytes of Crash Files at crashinfo : .
1609272K bytes of Flash at flash : .
0K bytes of at webui : .

Base ethernet MAC Address : 00:00:0C:17:40:04
Motherboard assembly number : 73-15899-06
Motherboard serial number : FDO20311WHP
Model revision number : N0
Motherboard revision number : A0
Model number : WS-C3650-24PS
System serial number : FDO2031Q0TD

Press RETURN to get started!

%LINK-3-UPDOWN: Interface Vlan10, changed state to down

%LINK-3-UPDOWN: Interface Vlan20, changed state to down

%LINK-3-UPDOWN: Interface Vlan50, changed state to down

%LINK-3-UPDOWN: Interface Vlan90, changed state to down

%LINK-5-CHANGED: Interface Vlan10, changed state to up

%LINK-5-CHANGED: Interface Vlan20, changed state to up

%LINK-5-CHANGED: Interface Vlan50, changed state to up

%LINK-5-CHANGED: Interface Vlan90, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/2, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan50, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan90, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/4, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/6, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/6, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/7, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/7, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/8, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/8, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet1/0/9, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/9, changed state to up

%HSRP-6-STATECHANGE: Vlan50 Grp 50 state Speak -> Standby
%HSRP-6-STATECHANGE: Vlan50 Grp 50 state Standby -> Active

%HSRP-6-STATECHANGE: Vlan20 Grp 20 state Speak -> Standby
%HSRP-6-STATECHANGE: Vlan20 Grp 20 state Standby -> Active

%HSRP-6-STATECHANGE: Vlan10 Grp 10 state Speak -> Standby
%HSRP-6-STATECHANGE: Vlan10 Grp 10 state Standby -> Active

%HSRP-6-STATECHANGE: Vlan90 Grp 90 state Speak -> Standby
%HSRP-6-STATECHANGE: Vlan90 Grp 90 state Standby -> Active