

## Nexus Validation Test Phase 3.4

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## 1. Introduction

The Cisco Nexus line of data center product hardware and software must pass Cisco's comprehensive quality assurance process, which includes a multistage approach comprising extensive unit test, feature test, and system-level test. Each successive stage in the process adds increasingly higher levels of complexity in a multidimensional mix of features and topologies.

This document describes the NVT Phase 3.4 network topologies, hardware and software configurations, test procedures and findings.

NVT Phase 3.4 testing is performed on the following networks:

- Data Center 1 (DC1): This network focuses on building and operating a data center with the Nexus 7000 Sup1 as the core routing and switching component. It also covers interoperability with the Nexus 5000, Nexus 3000, Nexus 2000, Catalyst 6500/4500 switches. This network uses virtual PortChannel (vPC) and FabricPath to deliver highly available unicast and multicast services.
- Data Center 2 (DC2): This network focuses on building and operating a data center with the Nexus 7000 and 7700 Sup2E as the core routing and switching component. It also covers interoperability with the Nexus 6000, Nexus 5000, Nexus 3548, Nexus 2000 and Catalyst 6500/4500 switches. This network uses virtual PortChannel (vPC) and FabricPath to deliver highly available unicast and multicast services.

## 2. NVT Topology Design Overview

### 2.1 DC1

#### 2.1.1 Network Logical Topology Design Overview

The topologies and test cases validate highly-available data center networks in order to provide unified fabric and computing services. This is achieved by using the Nexus 7010, Nexus 5548 with features such as vPC and FabricPath.

##### 2.1.1.1 Description of the Test Network

The data center site is built around the Nexus 7000 with Sup 1. This data center site is split into two halves:

- Nexus 7000 with back-to-back vPC to Nexus 5000 with Nexus 2000 FEX, Nexus 7000 with vPC to Nexus 5000 for access, Nexus 7000 with Nexus 2000 FEX.
- Nexus 7000 with FabricPath to Nexus 5000, Nexus 5000 FabricPath leaf with Nexus 2000 FEX,

While the majority of test cases focus on integrated solutions using Nexus switching and modular Catalyst switches are also included for interoperability between NX-OS and IOS.

### 2.1.1.2 Hardware and Software Overview

	<b>Model No.</b>	<b>NVT 3.2</b>
<b>N7K</b>	<b>N7K SUP1</b>	6.2.10
<b>N5K</b>	<b>N5K-C5548UP-SUP</b>	7.0.1.N1.1
<b>N3048</b>	<b>N3K-C3048TP-1GE-SUP</b>	5.0.3.U3.2b
<b>C6K</b>	<b>VS-SUP2T-10G</b>	150-1.SY3
	<b>VS-SUP720-10G</b>	122-33.SXJ4
	<b>WS-SUP720</b>	122-33.SXJ4
	<b>WS-SUP32-GE</b>	122-33.SXJ
<b>C4K</b>	<b>WS-X45-SUP7-E</b>	03.03.02.SG.151-1.SG2
	<b>WS-C4948</b>	150-2.SG6-6.9

### 2.1.1.3 Test Network Configuration

The following configurations are applied to the test network:

- Common system control, management and accounting: Common system features like SSH, TACACS+, Syslog, SNMP, NTP, SPAN, DNS and Management VRF are configured.
- BGP: eBGP is configured between the core switches and the public cloud.
- OSPF: OSPF is the IGP running across the network. Each aggregation-access block is configured as a unique area with the core switches playing the role of the ABR.
- PIM-SM: PIM Sparse Mode/PIM Any Source Multicast is deployed across the network to support multicast. Each aggregation-access block is configured with the RP for the locally sourced groups.
- MSDP Anycast RP: MSDP is deployed to exchange source information between Anycast RPs.
- vPC: vPC technology is deployed in the aggregation-access block DC1-Dist-N7k-101 as shown in Figure 1. In addition, dual-sided vPC is configured between the Nexus 7000 and Nexus 5000 switches
- FP: FabricPath is deployed in the aggregation block DC1-Dist-N7k-102. The spine layer is comprised of Nexus 7000 switches and the leaf switches are deployed using Nexus 5000 switches.
- VLAN trunking: VLAN trunking is used in the aggregation-access blocks to maintain segregation and security.
- STP: Rapid Spanning Tree Protocol is used to prevent Layer 2 loops in the aggregation-access blocks. The spanning tree root is placed on the aggregation level. Root Guard is configured on the aggregation level to enforce root placement. BPDU Filter, BPDU Guard and PortFast Edge are configured on the access ports towards hosts.
- HSRP: HSRP is used as the first hop gateway protocol for hosts.
- FEX: Multiple types of Fabric Extenders are deployed on Nexus 7000 and Nexus 5000 parent switches.
- IGMP: IGMP is used by hosts to join multicast groups of interest. IGMP snooping is enabled on all switches in the aggregation-access blocks to prevent flooding of multicast data traffic.
- LACP: LACP is used for link aggregation to form port-channels across the network.
- UDLD: UDLD aggressive mode is configured across the network to detect and prevent unidirectional links.



## 2.2 DC2

### 2.2.1 Network Logical Topology Design Overview

The topologies and test cases validate highly-available data center networks in order to provide unified fabric and computing services. This is achieved by using the Nexus 7000, Nexus 7700, Nexus 6000, Nexus 5000, Nexus 2000 and Nexus 3500 switches.

#### 2.2.1.1 Description of the Test Network

Figure 2 illustrates the test network topology of DC2 data center, which is built around Nexus 7000 with Sup 2E. This data center site is split into two halves:

- Nexus 7000 with vPC to Nexus 5000 for access.
- Nexus 7000 with FabricPath to Nexus 5000, Nexus 6000 and Nexus 7700. Nexus 2000 is connected to Nexus 7000 FabricPath spine and to FabricPath leaf's: Nexus 5000 and Nexus 6000.

While the majority of test cases focus on integrated solutions using Nexus switching, modular Catalyst switches are also included for interoperability between NX-OS and IOS.

#### 2.2.1.2 Hardware and Software Overview

	<b>Model No.</b>	<b>NVT 3.2</b>
<b>N7K</b>	<b>N7K SUP2</b>	6.2.10
<b>N7700</b>	<b>N7K SUP2</b>	6.2.10
<b>N6000</b>	<b>N6K-C6001-64P-SUP</b>	7.0(3)N1(1)
<b>N5K</b>	<b>N5K-C5548UP-SUP</b>	7.0.1.N1.1
<b>N3548</b>	<b>N3K-C3548P-10G-SUP</b>	6.0.2.A1.1e
<b>C6K</b>	<b>VS-SUP2T-10G</b>	150-1.SY3
	<b>VS-SUP720-10G</b>	122-33.SXJ4
	<b>WS-SUP720</b>	122-33.SXJ4
	<b>WS-SUP32-GE</b>	122-33.SXJ
<b>C4K</b>	<b>WS-X45-SUP7-E</b>	03.03.02.SG.151-1.SG2
	<b>WS-C4948</b>	150-2.SG6-6.9

#### 2.2.1.3 Test Network Configuration

The following configurations are applied to the test network:

- Common system control, management and accounting: Common system features like SSH, TACACS+, Syslog, SNMP, NTP, SPAN, DNS and Management VRF are configured.
- BGP: eBGP is configured between the core switches and the public cloud.
- OSPF: OSPF is the IGP running across the network. Each aggregation-access block is configured as a unique area with the core switches playing the role of the ABR.
- PIM-SM: PIM Sparse Mode/PIM Any Source Multicast is deployed across the network to support multicast. Each aggregation-access block is configured with the RP for the locally sourced groups.

- MSDP Anycast RP: MSDP is deployed to exchange source information between Anycast RPs.
- vPC: vPC technology is deployed in the aggregation-access block DC2-Dist-N7k-201. In addition, dual-sided vPC is configured between the Nexus 7000 and Nexus 5000 switches.
- FP: FabricPath is deployed in the aggregation blocks DC2-Dist-N7k-202. The spine layer is comprised of Nexus 7000 switches and the leaf switches are deployed using Nexus 5000, Nexus 6000 and Nexus 7700 switches.
- VLAN trunking: VLAN trunking is used in the aggregation-access blocks to maintain segregation and security.
- FP VLANs: On DC2-Dist-N7k-202, 2000 VLANs are deployed in mode FabricPath on all the spines and leaf's.
- STP: Rapid Spanning Tree Protocol is used to prevent Layer 2 loops in the aggregation-access block DC-Dist-N7K-201. MSTP is enabled on DC-Dist-N7K-202 for the same purpose wherever applicable. The spanning tree root is placed on the aggregation level. Root Guard is configured on the aggregation level to enforce root placement. BPDU Filter, BPDU Guard and PortFast Edge are configured on the access ports towards hosts.
- SNMP: SNMP traps are enabled and SNMP scripts are used to collect system information and to monitor potential memory leaks.
- HSRP: HSRP is used as the first hop gateway protocol for hosts.
- FEX: Multiple types of Fabric Extenders are deployed on Nexus 5000 parent switches.
- IGMP: IGMP is used by hosts to join multicast groups of interest. IGMP snooping is enabled on all switches in the aggregation-access blocks to prevent flooding of multicast data traffic.
- LACP: LACP is used for link aggregation to form port-channels across the network.
- UDLD: UDLD aggressive mode is configured across the network to detect and prevent unidirectional links.

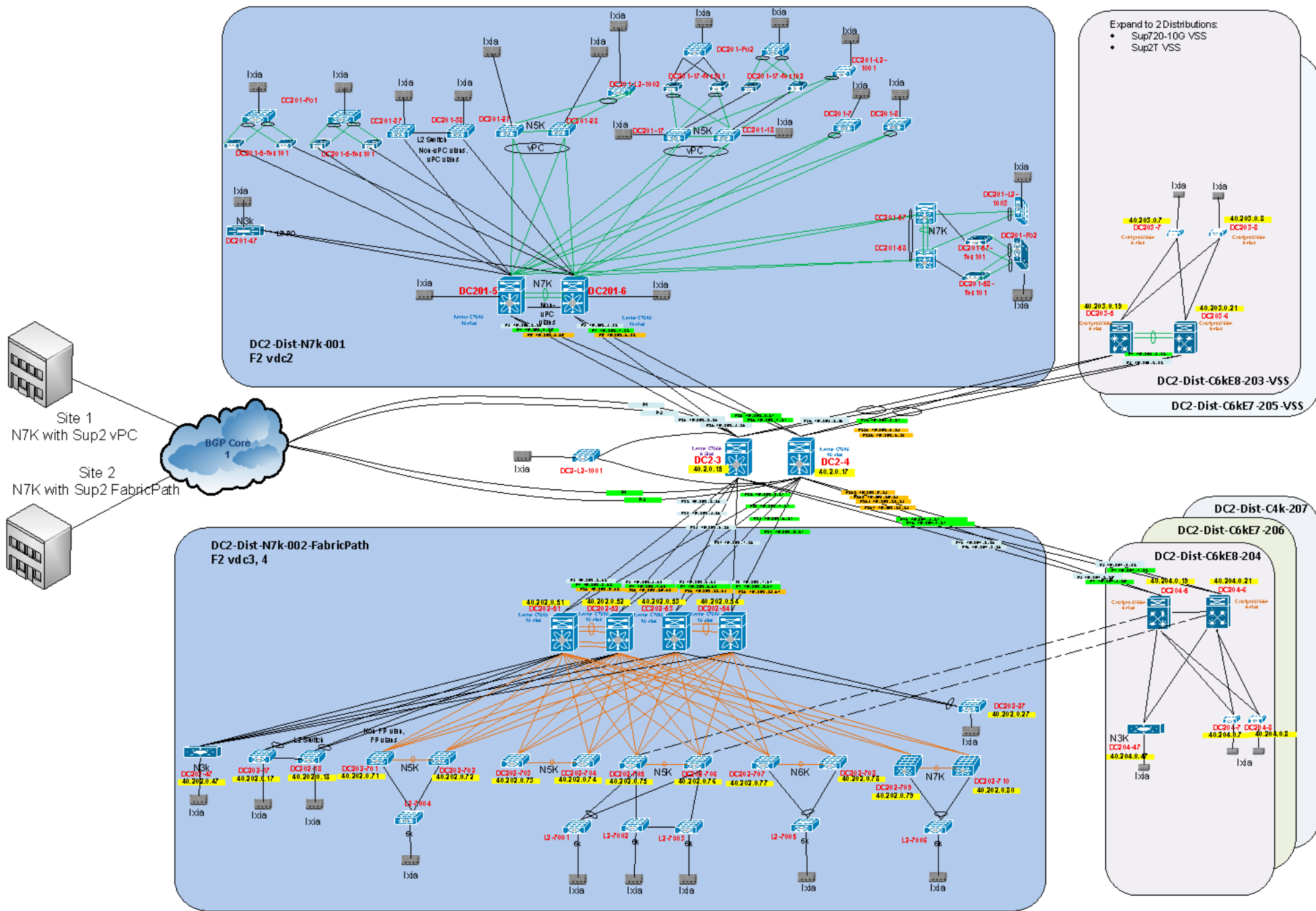


Figure 2: DC2 Topology

### 3. Scale Numbers tested by NVT

Feature/Parameter	DC1	DC2
VLAN	200	200
Fabric Extender	3	
VLAN per FEX	10	
MAC	7K	2K
VPC	101	100
VLANS per VPC	20	20
Fabric Path IS-IS adjacencies	50	50
Fabric Path Number of Switch ID's	50	50
HSRP V2	80	150
VRF	5	
OSPF Peers	70	70
OSPF Routes	10K	10K
eBGP Sessions	3	2
eBGP Paths	350K	350K

### 4. NVT Findings/Conclusion/Recommendations

<u>Assigned/New</u>	➔	<i>Still working on fixes and may be seen in CCO image</i>
<u>Unreproducible</u>	➔	<i>Not seen in CCO image may have fixed by other code fixes.</i>
<u>Verified/Resolved</u>	➔	<i>Fixed in CCO image</i>
<u>Closed</u>	➔	<i>System limitation and behavior will remain the same</i>

#### CSCui02797

**Symptom:** When trying to show a specific prefix-list the entire prefix-list configuration is shown:

```
Nexus# show ip prefix-list TEST
ip prefix-list Lisa-A: 10 entries
seq 300 permit 10.46.1.0/24
seq 400 permit 10.47.1.0/24
ip prefix-list List-B: 4 entries
seq 100 permit 10.25.0.0/16 le 32
seq 200 permit 10.26.0.0/16 le 32
seq 300 permit 172.132.132.100/32
seq 400 permit 172.132.132.200/32
ip prefix-list TEST: 6 entries
seq 100 permit 10.25.0.0/16 le 32
seq 200 permit 10.26.0.0/16 le 32
seq 300 permit 10.20.20.205/32
seq 400 permit 10.20.20.206/32
seq 500 permit 10.21.21.205/32
```



seq 600 permit 10.21.21.206/32

**Conditions:** Issuing "show ip prefix-list" with a specific prefix-list name

**Workaround:** None

**Severity:** Cosmetic

**Status:** Assigned

**Platform Seen:** N7000

**Resolved Releases:** NA

**Applicable Releases:** 6.2(10), 6.2(8)a, 6.2(6), 6.2(6a), 6.2(2), 6.2(2a)

### **CSCuo79063**

**Symptom:** N7K M2 module hardware FIB install times are much slower than C6K.

**Conditions:** Route convergence time is slower on scaled setup for N7K with M2 modules, as compared to Cat6k devices. The HW install time on N7K is measured by 'show forwarding ipv4 route summary' displaying the correct # of routes.

**Workaround:** NA

**Severity:** Moderate

**Status:** Assigned

**Platform Seen:** N7000

**Resolved Releases:** NA

**Applicable Releases:** 6.2(10), 6.2(8)a

### **CSCuq05259**

**Symptom:** Multicast packet drops on FP leaf

**Conditions:** Shallow buffers on egress due to Virtual-Lane marking (QoS policy) is causing the multicast packet drops

**Workaround:** NA

**Severity:** Moderate

**Status:** Closed

**Platform Seen:** N7700

**Resolved Releases:** NA

**Applicable Releases:** 6.2(8)a, 6.2(10)

### **CSCuq47581**

**Symptom:** Unicast traffic drop on ISSU

**Conditions:** Around 6 seconds of traffic loss seen on N7K SUP1 scaled setup during ISSU from 6.2(8)a to 6.2(10)

**Workaround:** NA

**Severity:** Severe

**Status:** Assigned

**Platform Seen:** N7000

**Resolved Releases:** 6.2(10)

**Applicable Releases:** 6.2(10)

### **CSCuh57942**

**Symptom:** FEX HIF (host interfaces) configuration cannot be preserved during upgrade/downgrade via traditional reload

**Conditions:** On a scaled N7K SUP1 FEX setup upgrade/downgrade will lose the FEX HIF configuration.

**Workaround:** Copy of startup configuration to be saved on disk/bootflash and re-apply the configuration after upgrade/downgrade will restore the HIF configuration.

**Severity:** Enhancement

**Status:** New

**Platform Seen:** N7000

**Resolved Releases:** NA

**Applicable Releases:** 6.2(2), 6.2(6), 6.2(8)a, 6.2(10)

### **CSCur29786**

**Symptom:** After issuing the "default interface" command on an interface, the interface's VRF membership configuration is not removed.

**Conditions:** Apply non-default VRF configuration to an interface, then invoke the 'default interface' command on that interface.

**Workaround:** Remove the non-default VRF membership of the interface via the "no vrf member" command (invoked from within that interface's configuration context) either before or after the "default interface" command.

**Severity:** Severe

**Status:** Assigned

**Platform Seen:** N7000

**Resolved Releases:** 6.2(10)

**Applicable Releases:** 6.2(10)

### **CSCur28450**

**Symptom:** Rollback fails the verification phase, saying "flowcontrol send on" is present in the running-config on the port-channel.

**Conditions:** When trying to rollback to a checkpoint where a current HifPC (a port-channel with FEX host interfaces as its members) becomes a simple port-channel (no FEX host interfaces as its members), rollback will fail the verification phase.

**Workaround:** Rollback running checkpoint checkpoint\_name best-effort So that it won't do verification and won't revert back to original running config. And then do "no flowcontrol send on" on the affected interfaces

**Severity:** Severe

**Status:** Assigned

**Platform Seen:** N7000

**Resolved Releases:** 6.2(10)

**Applicable Releases:** 6.2(10)

### **CSCuq45657**

**Symptom:** IPFIB process crashes while trying to recover routes during ISSU

**Conditions:** The problem occurs when there is a HW failure on an ASIC instance on which the routes existed before the ISSU.

**Workaround:** Line card reload

**Severity:** Severe

**Status:** Assigned  
**Platform Seen:** N7000  
**Resolved Releases:** NA  
**Applicable Releases:** 6.2(10)

#### 4.1 Frontend Report Summary

	Folders	Total # of test cases	Total # of Pass	Total # of Pass w/Exception	Total # of Fail	Total # of Iteration	Defect(s)
1	NVT 3.2	1332	1328	0	2	2291	
1.1	DC2	752	752	0	0	1023	
1.1.1	Core to Distribution Setup	1	1	0	0	2	
1.1.1.1	Setup interfaces from Core to Distribution blocks	1	1	0	0	2	
1.1.2	Distribution to Core Setup	1	1	0	0	21	
1.1.2.1	Setup interfaces from Distribution N7K-201 to the core switches	1	1	0	0	21	
1.1.3	L2 Link Failure/Recovery	60	60	0	0	70	
1.1.3.1	vPC leg failure/recovery between Distribution and ToR devices	16	16	0	0	16	
1.1.3.2	vPC peer-link failure/recovery between Distribution vPC peer switches	4	4	0	0	13	
1.1.3.3	vPC peer-link member failure/recovery between Distribution vPC peer switches	8	8	0	0	8	
1.1.3.4	vPC leg member failure/recovery between Distribution and ToR devices	32	32	0	0	33	
1.1.4	L3 Link Failure/Recovery	258	258	0	0	496	
1.1.4.1	L3 port-channel Failure/Recovery between Core and Distribution Layers	76	76	0	0	248	
1.1.4.2	L3 port-channel member failure/recovery	112	112	0	0	177	
1.1.4.3	L3 member link Failure/Recovery between Core and Distribution Layers	48	48	0	0	49	
1.1.4.4	L3 Port-channel Failure/Recovery between Distribution and ToR N3K Layer 3	8	8	0	0	8	
1.1.4.5	L3 Port-channel member Failure/Recovery between Distribution and ToR N3K Layer 3	14	14	0	0	14	
1.1.5	FabricPath - Link Failure/Recovery	338	338	0	0	340	
1.1.5.1	Fabricpath - Core Link member failure/recovery	242	242	0	0	244	
1.1.5.2	FabricPath - Core Link Failure/Recovery	72	72	0	0	72	
1.1.5.3	Fabricpath - vPC+ peer-link failure/recovery (spine/leaf)	8	8	0	0	8	
1.1.5.4	Fabricpath - vPC+ peer-link member failure/recovery (spine/leaf)	16	16	0	0	16	
1.1.6	Supervisor and Fabric HA	4	4	0	0	4	
1.1.6.1	Supervisor HA on the edge/core layer	2	2	0	0	2	
1.1.6.2	Supervisor HA on the Distribution layer	2	2	0	0	2	
1.1.7	Configuration Change	6	6	0	0	6	
1.1.7.1	Perform VPC Vlan add and delete	6	6	0	0	6	
1.1.8	Linecard OIR/Reset	20	20	0	0	20	
1.1.8.1	L3 port-channel member failure/recovery, on OIR/reset line card	20	20	0	0	20	
1.1.9	FabricPath - Linecard OIR/Reset	20	20	0	0	20	
1.1.9.1	OIR/reset line card on spine nodes	20	20	0	0	20	CSCuo81124
1.1.10	Reload and Power Cycle Switch	6	6	0	0	6	
1.1.10.1	Reload and Power Cycle Edge/Core Switch	6	6	0	0	6	CSCuq53095

1.1.11	FabricPath - Reload	4	4	0	0	4	
1.1.11.1	FabricPath - Spine Node failure/recovery	4	4	0	0	4	
1.1.12	Clear OSPF Neighbors/Process/Routes	16	16	0	0	16	
1.1.12.1	Clear OSPF Neighbors/Process/Routes	16	16	0	0	16	CSCuq53095
1.1.13	Clear IPv4/IPv6 Multicast Routes	16	16	0	0	16	
1.1.13.1	Clear Pim Routes	8	8	0	0	8	
1.1.13.2	Clear IPv4/IPv6 Multicast Routes	8	8	0	0	8	
1.1.14	ISSU/ISSD	2	2	0	0	2	
1.1.14.1	6.2.x/6.2.8	2	2	0	0	2	CSCuq45657
1.2	DC1	580	578	0	2	1268	
1.2.1	Core to Distribution Setup	1	1	0	0	8	
1.2.1.1	Setup interfaces from Core to Distribution blocks	1	1	0	0	8	
1.2.1.1.1	DC1-4-none-none					8	
1.2.2	Distribution to Core Setup	2	2	0	0	41	
1.2.2.1	Setup interfaces from Distribution N7K-101 to the core switches	2	2	0	0	41	
1.2.3	L2 Link Failure/Recovery	92	92	0	0	262	
1.2.3.1	vPC leg failure/recovery between Distribution and ToR devices	28	28	0	0	185	
1.2.3.2	vPC peer-link failure/recovery between Distribution vPC peer switches	8	8	0	0	17	
1.2.3.3	vPC peer-link member failure/recovery between Distribution vPC peer switches	8	8	0	0	8	
1.2.3.4	vPC leg member failure/recovery between Distribution and ToR devices	28	28	0	0	28	
1.2.3.5	L2 port-channel member failure/recovery between Distribution and ToR devices	16	16	0	0	20	
1.2.3.6	L2 port-channel Failure/Recovery between Distribution and ToR devices	4	4	0	0	4	
1.2.4	L3 Link Failure/Recovery	279	278	0	1	450	
1.2.4.1	L3 port-channel Failure/Recovery between Core and Distribution Layers	80	80	0	0	153	
1.2.4.2	L3 port-channel member failure/recovery	127	126	0	1	140	
1.2.4.3	L3 member link Failure/Recovery between Core and Distribution Layers	48	48	0	0	54	
1.2.4.4	L3 Port-channel Failure/Recovery between Distribution and ToR N3K Layer 3	16	16	0	0	89	
1.2.4.5	L3 Port-channel member Failure/Recovery between Distribution and ToR N3K Layer 3	8	8	0	0	14	
1.2.5	FabricPath - Link Failure/Recovery	144	144	0	0	374	
1.2.5.1	FabricPath - Core Link Failure/Recovery	48	48	0	0	226	
1.2.5.2	Fabricpath - Core Link member failure/recovery	72	72	0	0	86	
1.2.5.3	Fabricpath - vPC+ peer-link failure/recovery (spine/leaf)	8	8	0	0	30	
1.2.5.4	Fabricpath - vPC+ peer-link member failure/recovery (spine/leaf)	16	16	0	0	32	
1.2.6	Supervisor and Fabric HA	4	3	0	1	24	
1.2.6.1	Supervisor HA on the edge/core layer	2	2	0	0	2	
1.2.6.2	Supervisor HA on the Distribution layer	2	1	0	1	22	CSCuq53116
1.2.7	Configuration Change	6	6	0	0	12	
1.2.7.1	Perform VPC Vlan add and delete	6	6	0	0	12	CSCuq53321
1.2.8	Linecard OIR/Reset	20	20	0	0	55	
1.2.8.1	L3 port-channel member failure/recovery, on OIR/reset line card	16	16	0	0	47	CSCuq87745
1.2.8.2	vPC leg failure/recovery, on OIR/reset line card	4	4	0	0	8	
1.2.9	FabricPath - Linecard OIR/Reset	4	4	0	0	12	

1.2.9.1	OIR/reset line card on spine nodes	4	4	0	0	12	CSCuq87745
1.2.10	Reload and Power Cycle Switch	6	6	0	0	7	
1.2.10.1	Reload and Power Cycle Edge/Core Switch	6	6	0	0	7	CSCuq53321
1.2.11	FabricPath - Reload	4	4	0	0	4	
1.2.11.1	FabricPath - Spine Node failure/recovery	4	4	0	0	4	
1.2.12	Clear IPv4/IPv6 Multicast Routes	16	16	0	0	17	
1.2.12.1	Clear Pim Routes	8	8	0	0	9	
1.2.12.2	Clear IPv4/IPv6 Multicast Routes	8	8	0	0	8	
1.2.13	ISSU/ISSD	2	2	0	0	2	
1.1.13.1	6.2.x/6.2.8	2	2	0	0	2	

## 4.2 DC1 and DC2 Results

	Folders	Verification	Total # of test cases	Total # of Pass	Total # of Pass w/Exception	Total # of Fail	Total # of Iteration	Defect(s)
1	NVT 3.2		1332	1330	0	2	2291	
1.1	DC2		752	752	0	0	1023	
1.1.1	Core to Distribution Setup		1	1	0	0	2	
1.1.1.1	Setup interfaces from Core to Distribution blocks		1	1	0	0	2	
		Verify SSH works through the management network on a dedicated vrf						
		Verify startup and running config						
		Verify TB, error, crash						
		Verify any core dumps						
		Verify RSA key does not change on device						
		Verify ssh on device is functional						
		Verify Tacacs+ (tacacs.interop.cisco.com) and primary/backup servers						
		Verify NTP/PTP and Time Zone : ntp.interop.cisco.com						
		Verify Syslog to syslog.interop.cisco.com						
		Verify DNS domain : interop.cisco.com and server : 172.28.92.9-10						
		Verify DNS search list: interop.cisco.com, cisco.com						
		Verify CMP port connections to the management network.						
		Verify CDP neighbors						
		Verify SNMP agent (read community): public + interop; (private community): private + cisco						
		Verify SNMP traps to monitor network events						
		Verify UDLD neighbors and UDLD aggressive mode						
		Verify LACP for link aggregation						
		Verify BFD peering for all possible clients with default protocol timers for the clients						
		Verify SSO/NSF and GR						
		Verify CoPP function						
		Verify CoPP counters						
		Verify hardware rate limiter						

		Verify SPAN ensuring cross-module SPAN.						
		Configure Authentication for: OSPF/OSPFv3, HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV)						
		Verify DHCP IP helper and primary/backup server						
		Verify interfaces in error						
		OSPF: Verify OSPFv2/OSPFv3 peering.						
		PIM: Verify PIM peering.						
		MSDP: Verify MSDP peering and SA-cache						
		Verify that there are no dead flows						
		Verify error vlans						
		Verify frames delta does not increase.						
1.1.2	Distribution to Core Setup		1	1	0	0	21	
1.1.2.1	Setup interfaces from Distribution N7K-201 to the core switches		1	1	0	0	21	
		Verify SSH works through the management network on a dedicated vrf						
		Verify startup and running config						
		Verify TB, error, crash						
		Verify any core dumps						
		Verify RSA key does not change on device						
		Verify ssh on device is functional						
		Verify Tacacs+ (tacacs.interop.cisco.com) and primary/backup servers						
		Verify NTP/PTP and Time Zone : ntp.interop.cisco.com						
		Verify Syslog to syslog.interop.cisco.com						
		Verify DNS domain : interop.cisco.com and server : 172.28.92.9-10						
		Verify DNS search list: interop.cisco.com, cisco.com						
		Verify CMP port connections to the management network.						
		Verify CDP neighbors						
		Verify SNMP agent (read community): public + interop; (private community): private + cisco						
		Verify SNMP traps to monitor network events						
		Verify UDLD neighbors and UDLD aggressive mode						
		Verify LACP for link aggregation						
		Verify BFD peering for all possible clients with default protocol timers for the clients						
		Verify SSO/NSF and GR						
		Verify CoPP function						
		Verify CoPP counters						
		Verify hardware rate limiter						
		Verify SPAN ensuring cross-module SPAN.						
		Configure Authentication for: OSPF/OSPFv3, HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV)						
		Verify DHCP IP helper and primary/backup server						
		Verify interfaces in error						
		OSPF: Verify OSPFv2/OSPFv3 peering.						
		PIM: Verify PIM peering.						

		OTV: Verify OTV ISIS adjacencies are properly established and OTV routing table. Verify the primary AS is being used. On the primary AS, verify all edge devices show up in the unicast replication list						
		Verify that there are no dead flows						
		Verify error vlans						
		Verify frames delta does not increase.						
1.1.3	L2 Link Failure/Recovery		60	60	0	0	70	
1.1.3.1	vPC leg failure/recovery between Distribution and ToR devices		16	16	0	0	16	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		The maximum traffic disruption for unicast will be half for both upstream and downstream traffic.						
		The maximum traffic loss for multicast upstream will be half and for downstream will be either 100% disrupted or no loss depending on which vPC leg is shut.						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify mac move and any missing mac address.						
		Verify mac table is empty after link shut.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify traffic drop based on interface counters.						
		Verify that no flooding happens after traffic convergence.						
		Verify STP port states after link disruption are in the expected forwarding mode. Verify that the STP root does not change.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						
		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP)						

		before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are same after link shut (vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link shut						
		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						
		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						
		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.1.3.2	vPC peer-link failure/recovery between Distribution vPC peer switches		4	4	0	0	13	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						



		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that the operational secondary vPC peer will bring down the vPC member ports.						
		Verify that secondary peer will suspend the vpc vlan svi's.						
		Verify that on recovery, the original states will be re-established.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.3.3	vPC peer-link member failure/recovery between Distribution vPC peer switches		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that the operational secondary vPC peer will bring down the vPC member ports.						
		Verify that secondary peer will suspend the vpc vlan svi's.						
		Verify that on recovery, the original states will be re-established.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.3.4	vPC leg member failure/recovery between Distribution and ToR devices		32	32	0	0	33	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		The maximum traffic disruption for unicast should be in sub-second range for both upstream and downstream traffic.						

		The maximum traffic loss for member failure multicast upstream will drop proportionate and for downstream will be either 50% disrupted or no loss depending on which vPC leg member is shut (assuming th						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify port-channel load balancing and rbh assignment.						
		Verify that IGMP/MLD membership is not affected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						
		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are same after link shut (vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link shut						

		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						
		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						
		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.1.4	L3 Link Failure/Recovery		258	258	0	0	496	
1.1.4.1	L3 port-channel Failure/Recovery between Core and Distribution Layers		76	76	0	0	248	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify the L2 forwarding table should remove entries of the affected link.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify OTV traffic reconverges and optimize OSPF as needed.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with proportionate packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						

		Verify OSPF routes and forwarding table consistency..						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify BFD peer detection and client notifications.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.4.2	L3 port-channel member failure/recovery		112	112	0	0	177	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and rbh assignment						
		Verify traffic switches to high Bandwidth port-channels for both unicast and multicast when member failure and traffic will switch back when member recovers.						
		Verify LACP rebundle for port-channel after member recover.						
		The traffic should be able to re-converge within acceptable time.						
		Verify the convergence pattern is as expected.						
		Verify the route tables for both unicast and multicast are updated correctly.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						

		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.4.3	L3 member link Failure/Recovery between Core and Distribution Layers		48	48	0	0	49	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and rbh assignment						
		Verify traffic switches to high Bandwidth port-channels for both unicast and multicast when member failure and traffic will switch back when member recovers.						
		Verify LACP rebundle for port-channel after member recover.						
		The traffic should be able to re-converge within acceptable time.						
		Verify the convergence pattern is as expected.						
		Verify the route tables for both unicast and multicast are updated correctly.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.4.4	L3 Port-channel Failure/Recovery between Distribution and ToR N3K Layer 3		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify the L2 forwarding table should remove entries of the affected link.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify OTV traffic reconverges and optimize OSPF as needed.						

		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with proportionate packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify BFD peer detection and client notifications.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.4.5	L3 Port-channel member Failure/Recovery between Distribution and ToR N3K Layer 3		14	14	0	0	14	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify the L2 forwarding table should remove entries of the affected link.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify OTV traffic reconverges and optimize OSPF as needed.						
		Verify SNMP traps are sent to SNMP collector.						

		All unicast and multicast traffic should re-converge with proportionate packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify BFD peer detection and client notifications.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.5	FabricPath - Link Failure/Recovery		338	338	0	0	340	
1.1.5.1	Fabricpath - Core Link member failure/recovery		242	242	0	0	244	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and RBH assignment.						
		Verify IS-IS database, topology and route distribution for metric change.						
		Verify that IGMP/MLD membership is not affected.						
		Verify that IGMP snooping entries change based on multi-destination tree topology change.						
		The maximum traffic disruption for unicast/multicast should be in sub-second range for both upstream and downstream traffic.						
		Multicast DR should not change.						
		Verify that there is no protocol flapping.						

		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.5.2	FabricPath - Core Link Failure/Recovery		72	72	0	0	72	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify FabricPath route and mac-table are built as expected.						
		Verify IS-IS database, topology and route distribution.						
		Verify multi-destination trees for broadcast and multicast.						
		Verify fabricpath load-balance works as expected.						
		Verify FHRP peers status does not change.						
		Verify FHRP MAC in ARP/ND table.						
		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		On the aggregation switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify IGMP/MLD snooping entries are deleted for the affected link and re-learnt correctly on the alternative link after query from the IGMP snooping router.						
		Verify that IGMP/MLD membership is not affected on the routers.						
		Verify SPAN is mirroring packets correctly.						
		DHCP relay configured on the aggregation switches should remain unaffected.						
		Verify that secondary addresses provide the same capability and services to nodes through DHCP relay, FHRP services, ARP, proxy arp and IGMP.						
		Verify that IPv6 global HSRP is functional.						
		Verify that packets only traverse the fabric for known unicast/multicast destinations and flood through the fabric for unknown unicast, multicast when IGMP snooping is disabled, and broadcast.						



		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.1.5.3	Fabricpath - vPC+ peer-link failure/recovery (spine/leaf)		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that the operational secondary vPC+ peer will bring down the vPC+ member ports.						
		Verify that secondary peer will not suspend the vPC+ vlan SVI's if "dual-active exclude vlans" is configured						
		Verify on recovery that the operational secondary vPC+ peer will bring up the vPC+ member ports after the configured "delay restore" timer						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
1.1.5.4	Fabricpath - vPC+ peer-link member failure/recovery (spine/leaf)		16	16	0	0	16	
1.1.6	Supervisor and Fabric HA		4	4	0	0	4	
1.1.6.1	Supervisor HA on the edge/core layer		2	2	0	0	2	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Compare startup/running configuration on Active Sup and Standby Sup before and after SSO.						
		Verify BGP neighbors status and authentication.						
		Verify BGP table and routing table consistency in accordance to the NEXT-HOP attribute settings.						
		Verify proper BGP policy routing and filtering based on prefix, AS-PATH, LOCAL_PREFERENCE attributes.						
		Verify the conditional injection of the default route from BGP into the IGP.						

		Verify BGP recursive lookup scenario.						
		Verify BGP reconvergence (control-plane & data-plane).						
		Verify OSPF interface status.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify HW and SW entries are properly programmed and synchronized after SSO.						
		Verify PIM neighbor status.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized after SSO.						
		Verify BFD peer should not flap during and after SSO.						
		No traffic loss is expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.6.2	Supervisor HA on the Distribution layer		2	2	0	0	2	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Compare startup/running configuration on Active Sup and Standby Sup before and after SSO.						
		Verify STP port states during and after SSO.						
		Verify FHRP peers status during and after SSO.						
		Verify CDP/LLDP status after SSO.						
		Verify ARP/ND tables remain unaffected						
		Verify FHRP MAC in ARP/ND table.						
		Verify OTV ARP optimization/ARP caching works as expected after SSO.						
		Verify head-end replication for multicast traffic on unicast-only transport works as expected, check the data-group mapping table for receiver information.						
		Verify automated mapping of OTV sites multicast groups to transport multicast group.						
		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		On the aggregation switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding after SSO.						
		Verify IGMP snooping entries remain unaffected.						

		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly during and after SSO.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF interface status.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify HW and SW entries are properly programmed and synchronized after SSO.						
		Verify PIM neighbor status.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized after SSO.						
		Verify BFD peer should not flap during and after SSO.						
		Verify vPC peer status (role, peer link, keepalive link and consistency parameters) before and after SSO						
		No traffic loss is expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.7	Configuration Change		6	6	0	0	6	
1.1.7.1	Perform VPC Vlan add and delete		6	6	0	0	6	
		Verify STP port states after each change are in the expected forwarding mode.						
1.1.8	Linecard OIR/Reset		20	20	0	0	20	
1.1.8.1	L3 port-channel member failure/recovery, on OIR/reset line card		20	20	0	0	20	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify hitless operation for non-affected ports						
		Verify traffic load-balancing for distributed port-channels before and after OIR/reset						
		Verify BGP/ IGP/ PIM reconvergence (control-plane & data plane)						
		Verify BFD peer detection and client notifications						
		Verify LACP interoperability for distributed port-channels						
		Verify that CDP/LLDP does not lose peer information for non-affected line card. Verify that CDP/LLDP peer is removed for disrupted line						

		cards.						
		Verify the L2 forwarding table should be re-learned correctly after OIR/reset.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.9	FabricPath - Linecard OIR/Reset		20	20	0	0	20	
1.1.9.1	OIR/reset line card on spine nodes		20	20	0	0	20	CSCuo81124
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify hitless operation for non-affected ports						
		Verify traffic load-balancing for distributed port-channels before and after OIR/reset						
		Verify BGP/ IGP/ PIM reconvergence (control-plane & data plane)						
		Verify BFD peer detection and client notifications						
		Verify LACP interoperability for distributed port-channels						
		Verify that CDP/LLDP does not lose peer information for non-affected line card. Verify that CDP/LLDP peer is removed for disrupted line cards.						
		Verify the L2 forwarding table should be re-learned correctly after OIR/reset.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
1.1.10	Reload and Power Cycle Switch		6	6	0	0	6	
1.1.10.1	Reload and Power Cycle Edge/Core Switch		6	6	0	0	6	CSCuq53095

		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify BGP neighbors status and authentication.						
		Verify BGP table and routing table consistency in accordance to the NEXT-HOP attribute settings.						
		Verify BGP multi-path load-balancing.						
		Verify proper BGP policy routing and filtering based on prefix, AS-PATH, LOCAL PREFERENCE attributes.						
		Verify the conditional injection of the default route from BGP into the IGP.						
		Verify BGP recursive lookup scenario.						
		Verify BGP reconvergence (control-plane & data-plane).						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping and boundaries.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.11	FabricPath - Reload		4	4	0	0	4	
1.1.11.1	FabricPath - Spine Node failure/recovery		4	4	0	0	4	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify Fabricpath multi-destination trees reconverge after root change on node failure.						
		Verify FabricPath route and mac-table are built as expected.						
		Verify IS-IS database, topology and route distribution.						

		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that MAC's for SVT's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		On the distribution switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines on the other spine routers						
		Verify IGMP/MLD snooping entries are deleted for the affected link for non-vpc setup and re-learned correctly on the alternative link after query from the IGMP snooping router.						
		Verify that IGMP/MLD membership is not affected on the other spine routers.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		DHCP relay configured on the aggregation switches should remain unaffected.						
		Verify that secondary addresses provide the same capability and services to nodes through DHCP relay, FHRP services, ARP, proxy arp and IGMP.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify that the MAC table, FP ISIS route table, ARP/ND table, IP routing table, IGMP membership table, IGMP snooping table, Multicast routing table return to original state on recovery						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines on recovery						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
1.1.12	Clear OSPF Neighbors/Process/Routes		16	16	0	0	16	
1.1.12.1	Clear OSPF Neighbors/Process/Routes		16	16	0	0	16	CSCuq53095
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		All unicast and multicast traffic should re-converge.						
		Verify OSPF IPv4/IPv6 neighbors will restart and come back correctly.						
		Verify that the hardware entries are properly removed and re-installed during the neighbor/process flapping.						
		Verify that CDP/LLDP does not lose peer information.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding						

		engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency.						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		Verify BFD peer detection and client notifications.						
		Verify the route tables for both unicast and multicast are updated correctly.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.13	Clear IPv4/IPv6 Multicast Routes		16	16	0	0	16	
1.1.13.1	Clear Pim Routes		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		All multicast traffic should re-converge.						
		Verify periodic PIM joins are received and sent upstream after clearing.						
		Verify that the multicast hardware entries are properly removed and re-installed during the mroute flaps						
		Verify that CDP/LLDP does not lose peer information.						
		Verify that no flooding happens after traffic convergence.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify IGMP/MLD snooping entries are deleted and re-learned correctly after query from the IGMP snooping router.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						

		Verify traffic destined for CoPP classes is policed as expected.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.13.2	Clear IPv4/IPv6 Multicast Routes		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		All multicast traffic should re-converge.						
		Verify periodic PIM joins are received and sent upstream after clearing.						
		Verify that the multicast hardware entries are properly removed and re-installed during the mroute flaps						
		Verify that CDP/LLDP does not lose peer information.						
		Verify that no flooding happens after traffic convergence.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify IGMP/MLD snooping entries are deleted and re-learned correctly after query from the IGMP snooping router.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.14	ISSU/ISSD		2	2	0	0	2	
1.1.14.1	6.2.x/6.2.8		2	2	0	0	2	CSCuq45657
		Verify if ISSU image compatibility for non-disruptive upgrade/downgrade						
		Verify ISSU/ISSD happens as expected. OSPF graceful restart, PIM triggered Joins should work as expected.						
		Compare startup/running configuration on Active Sup and Standby Sup before and after ISSU/ISSD.						



		Verify STP port states during and after ISSU/ISSD.						
		Verify FHRP peers status during and after ISSU/ISSD.						
		Verify CDP/LLDP status after ISSU/ISSD.						
		Verify FHRP MAC in ARP/ND table.						
		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		On the distribution switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding after ISSU/ISSD.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly during and after ISSU/ISSD.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify BGP neighbors status and authentication.						
		Verify BGP table and routing table consistency in accordance to the NEXT-HOP attribute settings.						
		Verify proper BGP policy routing and filtering based on prefix, AS-PATH, LOCAL_PREFERENCE attributes.						
		Verify the conditional injection of the default route from BGP into the IGP.						
		Verify BGP recursive lookup scenario.						
		Verify BGP reconvergence for control-plane.						
		Verify OSPF interface status.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency.						
		Verify HW and SW entries are properly programmed and synchronized after ISSU/ISSD.						
		Verify PIM neighbor status.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized after ISSU/ISSD.						
		Verify BFD peer should not flap during and after ISSU/ISSD.						
		No traffic loss is expected.						
		If ISSU is disruptive, verify that all unicast/multicast traffic reconverges.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.2	DC1		580	578	0	2	1268	
1.2.1	Core to Distribution Setup		1	1	0	0	8	
1.2.1.1	Setup interfaces from Core to Distribution blocks		1	1	0	0	8	

		Verify SSH works through the management network on a dedicated vrf						
		Verify startup and running config						
		Verify TB, error, crash						
		Verify any core dumps						
		Verify RSA key does not change on device						
		Verify ssh on device is functional						
		Verify Tacacs+ (tacacs.interop.cisco.com) and primary/backup servers						
		Verify NTP/PTP and Time Zone : ntp.interop.cisco.com						
		Verify Syslog to syslog.interop.cisco.com						
		Verify DNS domain : interop.cisco.com and server : 172.28.92.9-10						
		Verify DNS search list: interop.cisco.com, cisco.com						
		Verify CMP port connections to the management network.						
		Verify CDP neighbors						
		Verify SNMP agent (read community): public + interop; (private community): private + cisco						
		Verify SNMP traps to monitor network events						
		Verify UDLD neighbors and UDLD aggressive mode						
		Verify LACP for link aggregation						
		Verify BFD peering for all possible clients with default protocol timers for the clients						
		Verify SSO/NSF and GR						
		Verify CoPP function						
		Verify CoPP counters						
		Verify hardware rate limiter						
		Verify SPAN ensuring cross-module SPAN.						
		Configure Authentication for: OSPF/OSPFv3, HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV)						
		Verify DHCP IP helper and primary/backup server						
		Verify interfaces in error						
		OSPF: Verify OSPFv2/OSPFv3 peering.						
		PIM: Verify PIM peering.						
		MSDP: Verify MSDP peering and SA-cache						
		Verify that there are no dead flows						
		Verify error vlans						
		Verify frames delta does not increase.						
1.2.1.1.1	DC1-4-none-none						8	
1.2.2	Distribution to Core Setup		2	2	0	0	41	
1.2.2.1	Setup interfaces from Distribution N7K-101 to the core switches		2	2	0	0	41	
		Verify SSH works through the management network on a dedicated vrf						
		Verify startup and running config						
		Verify TB, error, crash						
		Verify any core dumps						
		Verify RSA key does not change on device						

		Verify ssh on device is functional						
		Verify Tacacs+ (tacacs.interop.cisco.com) and primary/backup servers						
		Verify NTP/PTP and Time Zone : ntp.interop.cisco.com						
		Verify Syslog to syslog.interop.cisco.com						
		Verify DNS domain : interop.cisco.com and server : 172.28.92.9-10						
		Verify DNS search list: interop.cisco.com, cisco.com						
		Verify CMP port connections to the management network.						
		Verify CDP neighbors						
		Verify SNMP agent (read community): public + interop; (private community): private + cisco						
		Verify SNMP traps to monitor network events						
		Verify UDLD neighbors and UDLD aggressive mode						
		Verify LACP for link aggregation						
		Verify BFD peering for all possible clients with default protocol timers for the clients						
		Verify SSO/NSF and GR						
		Verify CoPP function						
		Verify CoPP counters						
		Verify hardware rate limiter						
		Verify SPAN ensuring cross-module SPAN.						
		Configure Authentication for: OSPF/OSPFv3, HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV)						
		Verify DHCP IP helper and primary/backup server						
		Verify interfaces in error						
		OSPF: Verify OSPFv2/OSPFv3 peering.						
		PIM: Verify PIM peering.						
		OTV: Verify OTV ISIS adjacencies are properly established and OTV routing table. Verify the primary AS is being used. On the primary AS, verify all edge devices show up in the unicast replication list						
		Verify that there are no dead flows						
		Verify error vlans						
		Verify frames delta does not increase.						
1.2.3	L2 Link Failure/Recovery		92	92	0	0	262	
1.2.3.1	vPC leg failure/recovery between Distribution and ToR devices		28	28	0	0	185	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		The maximum traffic disruption for unicast will be half for both upstream and downstream traffic.						
		The maximum traffic loss for multicast upstream will be half and for downstream will be either 100% disrupted or no loss depending on which vPC leg is shut.						

		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify mac move and any missing mac address.						
		Verify mac table is empty after link shut.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify traffic drop based on interface counters.						
		Verify that no flooding happens after traffic convergence.						
		Verify STP port states after link disruption are in the expected forwarding mode. Verify that the STP root does not change.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						
		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are same after link shut (vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link						

		shut						
		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						
		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						
		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.2.3.2	vPC peer-link failure/recovery between Distribution vPC peer switches		8	8	0	0	17	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		The maximum traffic disruption for unicast should be in sub-second range for both upstream and downstream traffic.						
		The maximum traffic loss for member failure multicast upstream will drop proportionate and for downstream will be either 50% disrupted or no loss depending on which vPC leg member is shut (assuming th						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify port-channel load balancing and rbh assignment.						
		Verify that IGMP/MLD membership is not affected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						

		Verify that the operational secondary vPC peer will bring down the vPC member ports.						
		Verify that secondary peer will suspend the vpc vlan svi's.						
		Verify that on recovery, the original states will be re-established.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						
		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are same after link shut (vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link shut						
		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						
		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						

		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.2.3.3	vPC peer-link member failure/recovery between Distribution vPC peer switches		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		The maximum traffic disruption for unicast should be in sub-second range for both upstream and downstream traffic.						
		The maximum traffic loss for member failure multicast upstream will drop proportionate and for downstream will be either 50% disrupted or no loss depending on which vPC leg member is shut (assuming th						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify port-channel load balancing and rbh assignment.						
		Verify that IGMP/MLD membership is not affected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.3.4	vPC leg member failure/recovery between Distribution and ToR devices		28	28	0	0	28	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		The maximum traffic disruption for unicast should be in sub-second range for both upstream and downstream traffic.						
		The maximum traffic loss for member failure multicast upstream will drop proportionate and for downstream will be either 50% disrupted or no loss depending on which vPC leg member is shut						

		(assuming th						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify port-channel load balancing and rbh assignment.						
		Verify that IGMP/MLD membership is not affected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						
		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are same after link shut (vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link shut						



		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						
		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						
		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.2.3.5	L2 port-channel member failure/recovery between Distribution and ToR devices		16	16	0	0	20	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and rbh assignment						
		Verify that IGMP/MLD membership is not affected.						
		The maximum traffic disruption for unicast should be in sub-second range for both upstream and downstream traffic.						
		The maximum traffic loss for member failure multicast will be proportionate to number of members failed						
		Multicast DR should not change.						
		Verify that there is no protocol flapping.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						

		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are deleted after link shut (non-vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link shut						
		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						
		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						
		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						

		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.2.3.6	L2 port-channel Failure/Recovery between Distribution and ToR devices		4	4	0	0	4	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify FHRP peers status does not change. Verify FHRP MAC in ARP/ND table. Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify the L2 forwarding table should remove entries of the affected link at the access switch and re-learned correctly on the alternative link.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		Verify that the L2 forwarding entries on all switches for nodes connected to the access layer are associated with the corresponding STP forwarding ports.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify IGMP/MLD snooping entries are deleted for the affected link for non-vpc setup and re-learned correctly on the alternative link after query from the IGMP snooping router.						
		Verify that IGMP/MLD membership is not affected on the routers.						
		Verify ACL TCAM is programmed correctly to share for ACL's and features that allow for sharing and verify ACL's are not sharing when not expected.						
		Verify SPAN is mirroring packets correctly.						
		Verify isolated vlans remain to have complete separation from other ports within the same PVLAN but not from the promiscuous ports using proxy-arp.						
		DHCP relay configured on the aggregation switches should remain unaffected.						
		Verify that secondary addresses provide the same capability and services to nodes through DHCP relay, FHRP services, ARP, proxy arp and IGMP.						
		Verify that IPv6 global HSRP is functional.						
		Verify that packets only traverse the fabric for known unicast/multicast destinations and flood through the fabric for unknown unicast, multicast when IGMP snooping is disabled, and broadcast.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify SNMP traps are sent to SNMP collector						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						

		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify mac move and any missing mac address.						
		Verify mac table is empty after link shut.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify traffic drop based on interface counters.						
		Verify that no flooding happens after traffic convergence.						
		Verify STP port states after link disruption are in the expected forwarding mode. Verify that the STP root does not change.						
		Verify frames delta does not increase before link shut						
		Verify error vlans						
		Verify mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		Verify mac addresses are not learned via vPC Peer-Link before primary link shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,Before Shut.						
		Verify CDP is enabled globally						
		Verify LLDP is enabled globally.						
		Verify cdp status are appropriate before failure						
		verify lldp status are appropriate before Failure						
		Verify IGMP is enabled globally						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) before shut						
		Verify if the STP interfaces are in FWD state (MST) before shut						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
		Verify flooding by checking Rx rate in all ixia ports after Shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After Shut.						
		Verify mac addresses are removed from the link after link shut						
		Verify mac addresses are moved from primary link to vPc peer-link after primary link is shut						
		Verify cdp peer entries are lost for affected links						
		Verify cdp entries does not lose peer information for unaffected links						
		Verify lldp peer entries are lost for affected links						
		Verify lldp entries does not lose peer information for unaffected links						
		Verify all IGMP snooping entries are deleted after link shut (non-vpc link)						
		verify ARP entries after link shut are same as before link shut						
		verify IGMP group membership after link shut is same as before link shut						
		Verify that SVIs static MAC entries remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link shut						
		Verify traffic drop by checking Rx rate in all ixia ports after No Shut						
		Verify flooding by checking Rx rate in all ixia ports after No Shut						

		Verify frames delta does not increase after link no shut						
		Verify 30 sec Load Interval Input and output rate of the interfaces to be greater than user Specified rate,After No Shut.						
		Verify there are no missing MAC addresses after no shut						
		Verify vPc Peer-Link no longer has MAC addresses from initial capture of the primary link						
		Verify that cdp entries after No Shut are same as entries taken before						
		Verify that lldp entries after No Shut are same as entries taken before						
		Verify all IGMP snooping entries after link no shut are same as before the link shut						
		Verify that the STP state of all Vlans are in same state that of corresponding STP interface (RSTP) after no shut						
		Verify if the STP interfaces are in FWD state (MST) after no shut						
		verify ARP entries after link no shut are same as before link shut						
		verify IGMP group membership after link no shut is same as before link shut						
		Verify that SVIs static MAC entries after Links No Shut remains same as Before Links Shut						
		Verify all DHCP Relay entries are same after link no shut						
		Verify VPC information after link no shut is same as before link shut						
1.2.4	L3 Link Failure/Recovery		279	278	0	1	450	
1.2.4.1	L3 port-channel Failure/Recovery between Core and Distribution Layers		80	80	0	0	153	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify the L2 forwarding table should remove entries of the affected link.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify OTV traffic reconverges and optimize OSPF as needed.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with proportionate packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify OSPF multi-path load-balancing.						

		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify BFD peer detection and client notifications.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.4.2	L3 port-channel member failure/recovery		127	126	0	1	140	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and rbh assignment						
		Verify traffic switches to high Bandwidth port-channels for both unicast and multicast when member failure and traffic will switch back when member recovers.						
		Verify LACP rebundle for port-channel after member recover.						
		The traffic should be able to re-converge within acceptable time.						
		Verify the convergence pattern is as expected.						
		Verify the route tables for both unicast and multicast are updated correctly.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						

1.2.4.3	L3 member link Failure/Recovery between Core and Distribution Layers		48	48	0	0	54	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and rbh assignment						
		Verify traffic switches to high Bandwidth port-channels for both unicast and multicast when member failure and traffic will switch back when member recovers.						
		Verify LACP rebundle for port-channel after member recover.						
		The traffic should be able to re-converge within acceptable time.						
		Verify the convergence pattern is as expected.						
		Verify the route tables for both unicast and multicast are updated correctly.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.4.4	L3 Port-channel Failure/Recovery between Distribution and ToR N3K Layer 3		16	16	0	0	89	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify the L2 forwarding table should remove entries of the affected link.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify OTV traffic reconverges and optimize OSPF as needed.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with proportionate packet loss.						

		Verify traffic destined for CoPP classes is policed as expected.						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify BFD peer detection and client notifications.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.4.5	L3 Port-channel member Failure/Recovery between Distribution and ToR N3K Layer 3		8	8	0	0	14	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and rbh assignment						
		Verify traffic switches to high Bandwidth port-channels for both unicast and multicast when member failure and traffic will switch back when member recovers.						
		Verify LACP rebundle for port-channel after member recover.						
		The traffic should be able to re-converge within acceptable time.						
		Verify the convergence pattern is as expected.						
		Verify the route tables for both unicast and multicast are updated correctly.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						



		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.5	FabricPath - Link Failure/Recovery		144	144	0	0	374	
1.2.5.1	FabricPath - Core Link Failure/Recovery		48	48	0	0	226	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify FabricPath route and mac-table are built as expected.						
		Verify IS-IS database, topology and route distribution.						
		Verify multi-destination trees for broadcast and multicast.						
		Verify fabricpath load-balance works as expected.						
		Verify FHRP peers status does not change.						
		Verify FHRP MAC in ARP/ND table.						
		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that CDP/LLDP does not lose peer information for non-affected links. Verify that CDP/LLDP peer is removed for disrupted link.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		On the aggregation switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify IGMP/MLD snooping entries are deleted for the affected link and re-learned correctly on the alternative link after query from the IGMP snooping router.						
		Verify that IGMP/MLD membership is not affected on the routers.						
		Verify SPAN is mirroring packets correctly.						
		DHCP relay configured on the aggregation switches should remain unaffected.						
		Verify that secondary addresses provide the same capability and services to nodes through DHCP relay, FHRP services, ARP, proxy arp and IGMP.						
		Verify that IPv6 global HSRP is functional.						

		Verify that packets only traverse the fabric for known unicast/multicast destinations and flood through the fabric for unknown unicast, multicast when IGMP snooping is disabled, and broadcast.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.5.2	Fabricpath - Core Link member failure/recovery		72	72	0	0	86	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify port-channel load balancing and RBH assignment.						
		Verify IS-IS database, topology and route distribution for metric change.						
		Verify that IGMP/MLD membership is not affected.						
		Verify that IGMP snooping entries change based on multi-destination tree topology change.						
		The maximum traffic disruption for unicast/multicast should be in sub-second range for both upstream and downstream traffic.						
		Multicast DR should not change.						
		Verify that there is no protocol flapping.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.5.3	Fabricpath - vPC+ peer-link failure/recovery (spine/leaf)		8	0	8	0	30	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify that the operational secondary vPC+ peer will bring down the vPC+ member ports.						

		Verify that secondary peer will not suspend the vPC+ vlan SVI's if "dual-active exclude vlans" is configured						
		Verify on recovery that the operational secondary vPC+ peer will bring up the vPC+ member ports after the configured "delay restore" timer						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.5.4	Fabricpath - vPC+ peer-link member failure/recovery (spine/leaf)		16	16	0	0	32	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		The maximum traffic disruption for unicast should be in sub-second range for both upstream and downstream traffic.						
		The maximum traffic loss for member failure multicast upstream will drop proportionate and for downstream will be either 50% disrupted or no loss depending on which vPC+ leg member is shut (assuming t						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify port-channel load balancing and rbh assignment.						
		Verify that IGMP/MLD membership is not affected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
1.2.6	Supervisor and Fabric HA		4	2	1	1	24	
1.2.6.1	Supervisor HA on the edge/core layer		2	2	0	0	2	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						

		Compare startup/running configuration on Active Sup and Standby Sup before and after SSO.						
		Verify BGP neighbors status and authentication.						
		Verify BGP table and routing table consistency in accordance to the NEXT-HOP attribute settings.						
		Verify proper BGP policy routing and filtering based on prefix, AS-PATH, LOCAL_PREFERENCE attributes.						
		Verify the conditional injection of the default route from BGP into the IGP.						
		Verify BGP recursive lookup scenario.						
		Verify BGP reconvergence (control-plane & data-plane).						
		Verify OSPF interface status.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency..						
		Verify HW and SW entries are properly programmed and synchronized after SSO.						
		Verify PIM neighbor status.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized after SSO.						
		Verify BFD peer should not flap during and after SSO.						
		No traffic loss is expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
1.2.6.2	Supervisor HA on the Distribution layer		2	1	0	1	22	CSCuq53116
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Compare startup/running configuration on Active Sup and Standby Sup before and after SSO.						
		Verify STP port states during and after SSO.						
		Verify FHRP peers status during and after SSO.						
		Verify CDP/LLDP status after SSO.						
		Verify ARP/ND tables remain unaffected						
		Verify FHRP MAC in ARP/ND table.						
		Verify OTV ARP optimization/ARP caching works as expected after SSO.						
		Verify head-end replication for multicast traffic on unicast-only transport works as expected, check the data-group mapping table for receiver information.						
		Verify automated mapping of OTV sites multicast groups to transport multicast group.						

		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.							
		Verify that MAC's for SVT's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.							
		On the aggregation switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding after SSO.							
		Verify IGMP snooping entries remain unaffected.							
		Verify that no flooding happens after traffic convergence.							
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.							
		Verify SPAN is mirroring packets correctly during and after SSO.							
		Verify SNMP traps are sent to SNMP collector.							
		Verify traffic destined for CoPP classes is policed as expected.							
		Verify OSPF interface status.							
		Verify OSPF neighbor changes and authentication.							
		Verify OSPF DB/Topology consistency.							
		Verify OSPF routes and forwarding table consistency..							
		Verify HW and SW entries are properly programmed and synchronized after SSO.							
		Verify PIM neighbor status.							
		Verify static RP mapping as the backup of auto RP.							
		Verify MSDP neighbors and SA cache consistency.							
		Verify multicast HW and SW entries are properly programmed and synchronized after SSO.							
		Verify BFD peer should not flap during and after SSO.							
		Verify vPC peer status (role, peer link, keepalive link and consistency parameters) before and after SSO							
		No traffic loss is expected.							
		Verify frames delta does not increase.							
		Verify rx rate for all ixia ports are as expected (compared to baseline).							
		Verify packet loss duration is within expected range.							
		Verify traffic drop by checking Rx rate in all ixia ports after Shut							
1.2.7	Configuration Change		6	0	6	0	12		
1.2.7.1	Perform VPC Vlan add and delete		6	0	6	0	12	CSCuq53321	
		Verify STP port states after each change are in the expected forwarding mode.							
1.2.8	Linecard OIR/Reset		20	20	0	0	55		
1.2.8.1	L3 port-channel member failure/recovery, on OIR/reset line card		16	16	0	0	47	CSCuq87745	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.							
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.							
		Verify that there are no dead flows							
		Verify TB, error, crash							
		Verify interfaces in error							

		Verify any core dumps						
		Verify hitless operation for non-affected ports						
		Verify traffic load-balancing for distributed port-channels before and after OIR/reset						
		Verify BGP/ IGP/ PIM reconvergence (control-plane & data plane)						
		Verify BFD peer detection and client notifications						
		Verify LACP interoperability for distributed port-channels						
		Verify that CDP/LLDP does not lose peer information for non-affected line card. Verify that CDP/LLDP peer is removed for disrupted line cards.						
		Verify the L2 forwarding table should be re-learned correctly after OIR/reset.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
		Verify traffic drop by checking Rx rate in all ixia ports after Shut						
1.2.8.2	vPC leg failure/recovery, on OIR/reset line card		4	4	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		The maximum traffic disruption for unicast will be half for both upstream and downstream traffic.						
		The maximum traffic loss for multicast upstream will be half and for downstream will be either 100% disrupted or no loss depending on which vPC leg is shut.						
		Multicast forwarder should not change.						
		Verify that there is no protocol flapping.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.2.9	FabricPath - Linecard OIR/Reset		4	4	0	0	12	
1.2.9.1	OIR/reset line card on spine nodes		4	4	0	0	12	CSCuq87745
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						

		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify hitless operation for non-affected ports						
		Verify traffic load-balancing for distributed port-channels before and after OIR/reset						
		Verify BGP/ IGP/ PIM reconvergence (control-plane & data plane)						
		Verify BFD peer detection and client notifications						
		Verify LACP interoperability for distributed port-channels						
		Verify that CDP/LLDP does not lose peer information for non-affected line card. Verify that CDP/LLDP peer is removed for disrupted line cards.						
		Verify the L2 forwarding table should be re-learned correctly after OIR/reset.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
1.2.10	Reload and Power Cycle Switch		6	6	0	0	7	
1.2.10.1	Reload and Power Cycle Edge/Core Switch		6	6	0	0	7	CSCuq53321
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify BGP neighbors status and authentication.						
		Verify BGP table and routing table consistency in accordance to the NEXT-HOP attribute settings.						
		Verify BGP multi-path load-balancing.						
		Verify proper BGP policy routing and filtering based on prefix, AS-PATH, LOCAL_PREFERENCE attributes.						
		Verify the conditional injection of the default route from BGP into the IGP.						
		Verify BGP recursive lookup scenario.						
		Verify BGP reconvergence (control-plane & data-plane).						
		Verify OSPF interface status for the affected links.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table						

		consistency..						
		Verify OSPF multi-path load-balancing.						
		Verify HW and SW entries are properly programmed and synchronized.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping and boundaries.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.2.11	FabricPath - Reload		4	4	0	0	4	
1.2.11.1	FabricPath - Spine Node failure/recovery		4	4	0	0	4	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		Verify Fabricpath multi-destination trees reconverge after root change on node failure.						
		Verify FabricPath route and mac-table are built as expected.						
		Verify IS-IS database, topology and route distribution.						
		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						
		On the distribution switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines on the other spine routers						
		Verify IGMP/MLD snooping entries are deleted for the affected link for non-vpc setup.and re-learned correctly on the alternative link after query from the IGMP snooping router.						
		Verify that IGMP/MLD membership is not affected on the other spine routers.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		DHCP relay configured on the aggregation switches should remain unaffected.						
		Verify that secondary addresses provide the same capability and services to nodes through DHCP relay, FHRP services, ARP, proxy arp and IGMP.						



		All unicast and multicast traffic should re-converge with minimal packet loss.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify that the MAC table, FP ISIS route table, ARP/ND table, IP routing table, IGMP membership table, IGMP snooping table, Multicast routing table return to original state on recovery						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines on recovery						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
1.2.12	Clear IPv4/IPv6 Multicast Routes		16	16	0	0	17	
1.2.12.1	Clear Pim Routes		8	8	0	0	9	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						
		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		All multicast traffic should re-converge.						
		Verify periodic PIM joins are received and sent upstream after clearing.						
		Verify that the multicast hardware entries are properly removed and re-installed during the mroute flaps						
		Verify that CDP/LLDP does not lose peer information.						
		Verify that no flooding happens after traffic convergence.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify IGMP/MLD snooping entries are deleted and re-learned correctly after query from the IGMP snooping router.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.2.12.2	Clear IPv4/IPv6 Multicast Routes		8	8	0	0	8	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.						

		Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		All multicast traffic should re-converge.						
		Verify periodic PIM joins are received and sent upstream after clearing.						
		Verify that the multicast hardware entries are properly removed and re-installed during the mroute flaps						
		Verify that CDP/LLDP does not lose peer information.						
		Verify that no flooding happens after traffic convergence.						
		Verify PIM neighbor status.						
		Verify PIM both multipath and non-multipath functionalities.						
		Verify AutoRP mapping.						
		On the multicast LHR, verify (*,G) and (S,G) creation based on SPT-threshold settings.						
		Verify PIM source register and register stop.						
		Verify IGMP/MLD snooping entries are deleted and re-learned correctly after query from the IGMP snooping router.						
		Verify SPAN is mirroring packets correctly.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify the hardware entries, LC programming, fabric programming, outgoing interface, forwarding engine entries, for both unicast and multicast are updated correctly.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						
1.1.13	ISSU/ISSD		2	2	0	0	2	
1.1.13.1	6.2.x/6.2.8		2	2	0	0	2	
		Verify if ISSU image compatibility for non-disruptive upgrade/downgrade						
		Verify ISSU/ISSD happens as expected. OSPF graceful restart, PIM triggered Joins should work as expected.						
		Compare startup/running configuration on Active Sup and Standby Sup before and after ISSU/ISSD.						
		Verify STP port states during and after ISSU/ISSD.						
		Verify FHRP peers status during and after ISSU/ISSD.						
		Verify CDP/LLDP status after ISSU/ISSD.						
		Verify FHRP MAC in ARP/ND table.						
		Verify FHRP MAC address is programmed as a router/static MAC on the active switch and a dynamic entry on the standby switch.						
		Verify that MAC's for SVI's are programmed as router/static entries on the switches where they are configured and learned as dynamic entries on the L2 peers.						

		On the distribution switches, verify that the ARP/ND are programmed as adjacencies for L3 next hop forwarding after ISSU/ISSD.						
		Verify that no flooding happens after traffic convergence.						
		Verify the L2/L3 forwarding entries are synchronized among the hardware forwarding engines.						
		Verify SPAN is mirroring packets correctly during and after ISSU/ISSD.						
		Verify SNMP traps are sent to SNMP collector.						
		Verify traffic destined for CoPP classes is policed as expected.						
		Verify BGP neighbors status and authentication.						
		Verify BGP table and routing table consistency in accordance to the NEXT-HOP attribute settings.						
		Verify proper BGP policy routing and filtering based on prefix, AS-PATH, LOCAL_PREFERENCE attributes.						
		Verify the conditional injection of the default route from BGP into the IGP.						
		Verify BGP recursive lookup scenario.						
		Verify BGP reconvergence for control-plane.						
		Verify OSPF interface status.						
		Verify OSPF neighbor changes and authentication.						
		Verify OSPF DB/Topology consistency.						
		Verify OSPF routes and forwarding table consistency.						
		Verify HW and SW entries are properly programmed and synchronized after ISSU/ISSD.						
		Verify PIM neighbor status.						
		Verify static RP mapping as the backup of auto RP.						
		Verify MSDP neighbors and SA cache consistency.						
		Verify multicast HW and SW entries are properly programmed and synchronized after ISSU/ISSD.						
		Verify BFD peer should not flap during and after ISSU/ISSD.						
		No traffic loss is expected.						
		If ISSU is disruptive, verify that all unicast/multicast traffic reconverges.						
		Verify frames delta does not increase.						
		Verify rx rate for all ixia ports are as expected (compared to baseline).						
		Verify packet loss duration is within expected range.						