Nexus Validation Test Phase 3.4

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

	Model No.	NVT 3.2
N7K	N7K SUP1	6.2.10
N5K	N5K-C5548UP-SUP	7.0.1.N1.1
N3048	N3K-C3048TP-1GE-SUP	5.0.3.U3.2b
С6К	VS-SUP2T-10G	150-1.SY3
	VS-SUP720-10G	122-33.SXJ4
	WS-SUP720	122-33.SXJ4
	WS-SUP32-GE	122-33.SXJ
C4K	WS-X45-SUP7-E	03.03.02.SG.151-1.SG2
	WS-C4948	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 aggregationaccess 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.

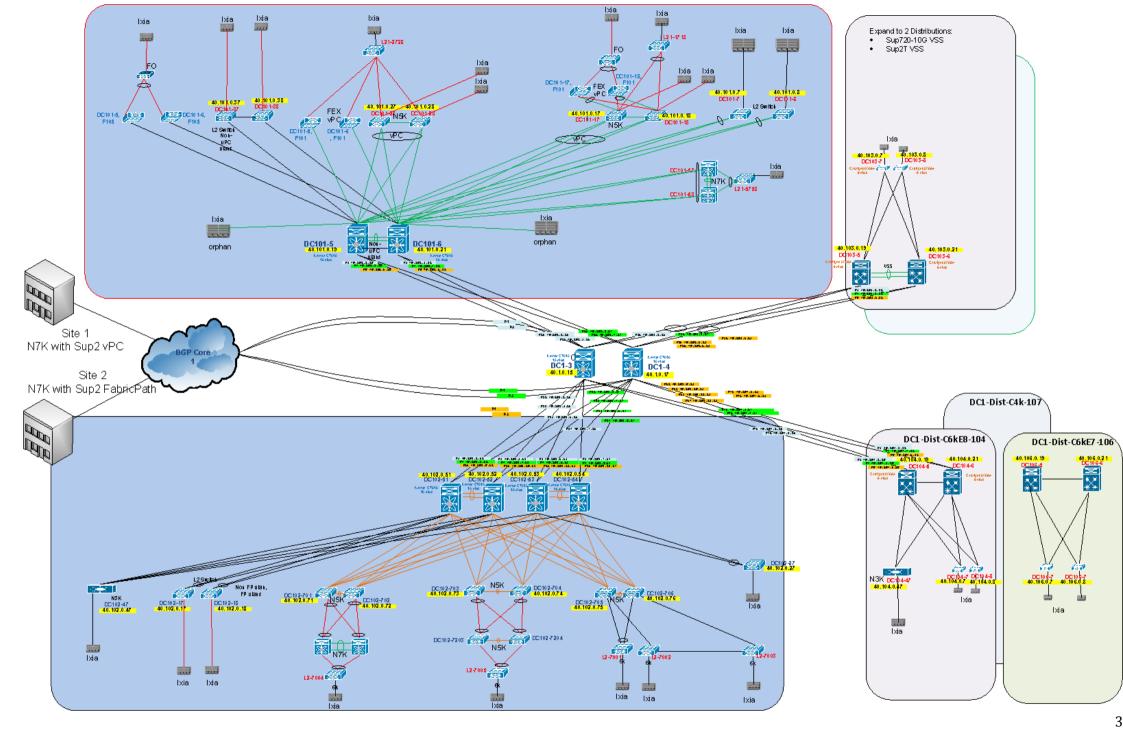


Figure 1: DC1 Topology

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 Sof	tware (Overview
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	Model No.	NVT 3.2
N7K	N7K SUP2	6.2.10
N7700	N7K SUP2	6.2.10
N6000	N6K-C6001-64P-SUP	7.0(3)N1(1)
N5K	N5K-C5548UP-SUP	7.0.1.N1.1
N3548	N3K-C3548P-10G-SUP	6.0.2.A1.1e
С6К	VS-SUP2T-10G	150-1.SY3
	VS-SUP720-10G	122-33.SXJ4
	WS-SUP720	122-33.SXJ4
	WS-SUP32-GE	122-33.SXJ
C4K	WS-X45-SUP7-E	03.03.02.SG.151-1.SG2
	WS-C4948	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.

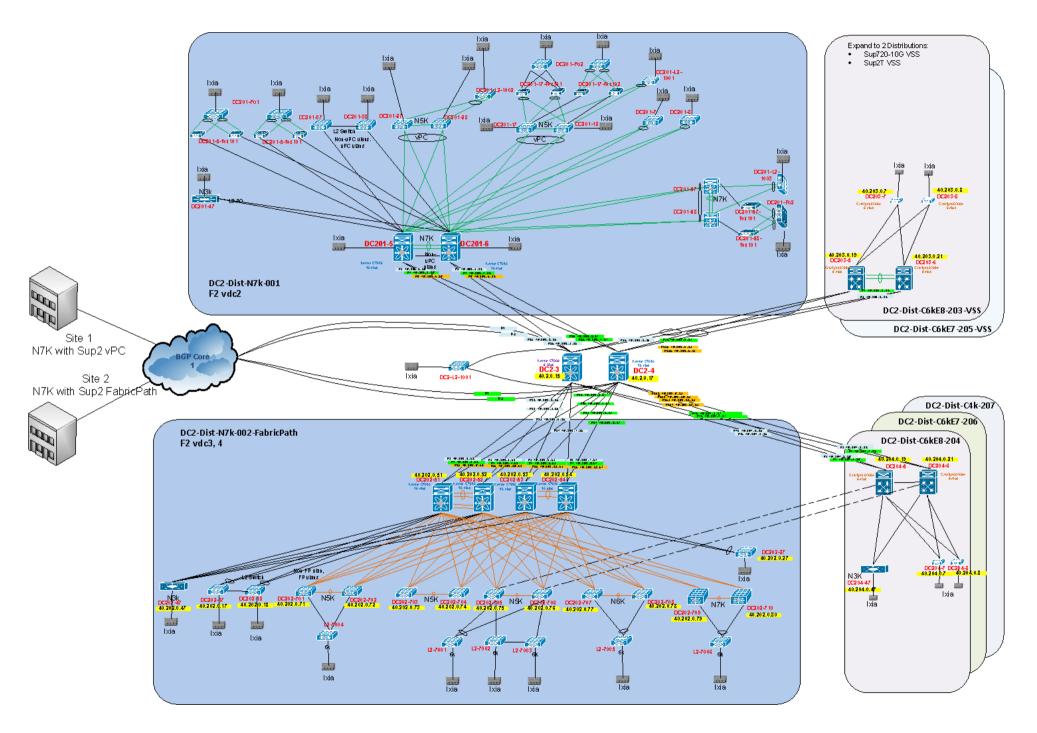


Figure 2: DC2 Topology

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	50	50
adjacencies		
Fabric Path Number of	50	50
Switch ID's		
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

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

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 loose 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 wont 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						

Configure Anthonologistic CORPFOSDPS (SINS) (Instance SINS) (I			Varify SDAN ansuring areas module SDAN						
OPTO Verify DEP helper and primary heekup server Verify interfaces in error Verify interfaces in error Verify Pible Perify Pible Pib			Verify SPAN ensuring cross-module SPAN. Configure Authentication for: OSPF/OSPFv3,						
Verify SSI work in the case in cerear									
OSPF: Verify OSPT-y 20SPFv3 peering. PPH: Verify PIM peering. MSDP: Verify MSDP peering and SA-cache Verify that there are no dead flows Verify error vlams Verify that there are no dead flows Verify error vlams Verify frames delta does not increase. 1			Verify DHCP IP helper and primary/backup server						
PM: Verify PM peoring.			Verify interfaces in error						
MSDP-Verify Matther are no dead flows Verify that there are no dead flows Verify flamme delta dees not increase Verify flamme delta dees not increase Verify flamme delta dees not increase 1 1 0 0 21 Stup interflaces from Distribution VR. 201 to the core switches Verify SST werks through the management network can a dedicated vir Verify starting and maning config Verify starting and maning config Verify starting and maning config Verify RSA key does not change on device Verify RSA key does not change on device Verify RSA key does not change on device Verify NTP-TFF and Time Zone: In planting verification Verify SSN perification Verify SSN perification or verification or verificati			OSPF: Verify OSPFv2/OSPFv3 peering.						
Verify that there are no dead flows Verify crare vitans Verify crare vitans Verify frames delta does not morease. I I I 0 0 0 21			PIM: Verify PIM peering.						
Verify rames deha does not increase. 1			MSDP: Verify MSDP peering and SA-cache						
Verify frames deha does not increase.			Verify that there are no dead flows						
1.1.2.1 Distribution to Core Setup Setup interfaces from Setup interfa			Verify error vlans						
Setup interfaces from Distribution NTK-201 to the core switches 1			Verify frames delta does not increase.						
Distribution NYR-201 to the core switches Verify SSH works through the management network on a dedicated vrf Verify startup and running config Verify TB, error, crash Verify startup and running config Verify RSA key does not change on device Verify startup and running config Verify RSA key does not change on device Verify startup and running config Verify RSA key does not change on device Verify SSH on device is functional Verify start on the starter of cisco com and primary backup servers Verify NTPPTP and Time Zone: np interop cisco com Verify SSN domain - interop cisco com Verify SSN domain - interop cisco com Verify DNS acarch list: interop cisco com Verify DNS acarch list: interop cisco com, Verify CMP port connections to the management network. Verify CMP prot connections to the management network. Verify SNMP agent (read community): public + interop, (private community): private + cisco Verify SNMP agent (read community): public + interop, (private community): private + cisco Verify LACP for lisk aggregation Verify LACP for lisk aggregation Verify DPP peering for all possible clients with default protood times for the clients Verify COPP counters Verify SPNAP casuring cross-module SPAN Configure Authentication for: OSPFOSPFV3, ISSPR/PISRP, MSDP. Layer 2 ISIS (FabricPath, OTV) Verify DNCP Pe helper and primary/backup server Verify LACP for lish pelper and primary/backup server Verify LACP for lish cerver Verify DNCP Pe helper and primary/backup server Verify DNCP Pelper and primary/backup server Verify DNCP Pelper and primary/backup server Verify LACP for lish cerver Verify DNCP Pelper and primary/backup server Verify DNCP Pelper and primary/backup server Verify DNCP Pelper and primary/backup server	1.1.2	Distribution to Core Setup		1	1	0	0	21	
Verify SSII works through the management network on a dedicated orf	1121	Distribution N7K-201 to the		1	1	0	0	21	
Verify TB, error, crash Verify any core dumps Verify RSA key does not change on device Verify Ss on device is functional Verify Tacaes: (facaes interop cisco com) and primary/backup servers Verify Tareas: (facaes interop cisco com) and primary/backup servers Verify NFPFTP and Time Zone: ntp interop cisco com Verify DNS domain: interop.cisco.com Verify DNS domain: interop.cisco.com and server 172 28 92 9-10 Verify DNS carch list: interop.cisco.com and server 172 28 92 9-10 Verify CMP port connections to the management network. Verify CMP port connections to the management network. Verify CMP perighbors Verify SNMP agent (read community): public + interop. (private community): private + isson private - interop. (private community): private - interop. (private -	1.1.2.1	core switches		1	1	0	0	21	
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Verify any core dumps Verify RSA key does not change on device Nerify RSA key does not change on device Verify Sach on device is functional Verify Tacaes** (faces interop. cisco.com) and primary/backup servers Verify NTPPTP and Time Zone: inp.interop.cisco.com Verify Syslog to syslog.interop.cisco.com Verify DNS domain: intertop.cisco.com Verify DNS domain: intertop.cisco.com and server 172.28.92-10 Verify DNS earth list: interop.cisco.com, cisco.com, cisco.com Verify CMP port connections to the management network. Verify CMP port connections to the management network. Verify SNMP agent (read community): public + interop. (private community): private + cisco Verify SNMP agent (read community): private + cisco Verify SNMP traps to monitor network events Verify UDLD neighbors and UDLD aggressive mode Verify LACP for link aggregation Verify BPD peering for all possible clients with default protocol timers for the chemis Verify SSO/NSF and GR Verify COPP counters Verify SSO/NSF and GR Verify SAPA ensuring cross-module SPAN. Configure Authentication for: OSPE/OSPFV3, ISRR/HSRP/6, MSDP, Layer 2 ISIS (Fabric Path, OTV) Verify Interfaces in error OSPE: Verify OSPFV2/OSPFV3 peering.									
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Primary-backup servers Verify NTPP PP and Time Zone: Intp. interop.cisco.com Verify Syslog to syslog, interop.cisco.com Verify DNS domain: interop.cisco.com Verify DNS domain: interop.cisco.com Verify DNS search list: interop.cisco.com, Interop.			Verify ssh on device is functional						
Verify Syslog to syslog interop.cisco.com Verify Syslog to syslog interop.cisco.com Verify DNS domain : interop.cisco.com Verify DNS domain : interop.cisco.com Verify DNS domain : interop.cisco.com Verify DNS search list: interop.cisco.com Verify DNP port connections to the management Verify DNP port connections to the management Verify SNMP agent (read community): public + interop. (private community): private + cisco Verify SNMP traps to monitor network events Verify SNMP traps to monitor network events Verify SNMP traps to monitor network events Verify UDLD neighbors and UDLD aggressive Verify UDLD neighbors and UDLD aggressive Verify UDLD neighbors and UDLD aggressive Verify Depening for all possible clients with default protocol times for the clients Verify SPNMP and GR Verify COPP function Verify COPP function Verify COPP function Verify COPP function Verify SPNM ensuring cross-module SPAM Verify DHCP IP helper and primary/backup server			Verify Tacacs+ (tacacs.interop.cisco.com) and						
Verify DNS domain : interop.cisco.com Verify DNS domain : interop.cisco.com and server : 172.28.92.910 Verify DNS search list: interop.cisco.com, 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 USMP traps to monitor network events Verify UACP for link aggregation Verify LACP for link aggregation Verify BTO pering for all possible clients with default protocol timers for the clients Verify SO/NSF and GR Verify COPP function Verify COPP function Verify COPP cunters Verify SPAN ensuring cross-module SPAN. Configure Authentication for: OSPE/OSPEv3, HSRPHISRPv6, MSDP, Layer 2 ISIS (fabricPath, OTV) Verify Interfaces in error OSPF: Verify OSPFv2/OSPEv3 peering.			Verify NTP/PTP and Time Zone :						
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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 CoPP counters 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.									
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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.			Verify BFD peering for all possible clients with			_			
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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.			Verify CoPP counters						
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.			Verify hardware rate limiter						
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Verify DHCP IP helper and primary/backup server Verify interfaces in error OSPF: Verify OSPFv2/OSPFv3 peering.			HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath,						
Verify interfaces in error OSPF: Verify OSPFv2/OSPFv3 peering.			Verify DHCP IP helper and primary/backup server						
PIM: Verify PIM peering.			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						
<u> </u>		Verify error vlans	_ 					
		Verify frames delta does not increase.						
1.1.3	L2 Link Failure/Recovery		60	60	0	0	70	
	vPC leg failure/recovery between Distribution and ToR							
1.1.3.1	devices	V 'S d ANEM LODILLIA See Surveying	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)	L				<u> </u>	<u>1</u>

		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						
	p.c. r.i	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.						

ı	I	V	I	ı	I	ı	i	1 1
		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						
	vPC peer-link member	Silut						
1.1.3.3	failure/recovery between Distribution vPC peer switches]	8	8	0	0	8	
	1	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						
	vPC leg member failure/recovery between							
1.1.3.4	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						
	<u> </u>	downstream traffic.	<u> </u>					

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.		T	
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 Ildp 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 L3 port-channel		258	258	0	0	496	
1.1.4.1	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 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						
	L3 port-channel member	Situt						
1.1.4.2	failure/recovery	Variety days MEM and CDIVIDE and Earliest and	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						
1		acceptable time.						
		acceptable time. Verify the convergence pattern is as expected. Verify the route tables for both unicast and						
		verify the convergence pattern is as expected. Verify the route tables for both unicast and multicast are updated correctly.						
		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,						
		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						
		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.						
		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						
		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).						
		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.						
		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						

		Verify frames delta does not increase before link shut						
		Verify frames delta does not increase after link no shut						
	L3 member link							
1.1.4.3	Failure/Recovery between Core and Distribution Layers		48	48	0	0	49	
111.110	and Distribution English	Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.			v		.,	
		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						
	L3 Port-channel Failure/Recovery between Distribution and ToR N3K							
1.1.4.4	Layer 3	Verify that MEM and CPU Usage for Supervisors	8	8	0	0	8	
		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.						

		v is one						
		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						
		j						
		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						
	L3 Port-channel member Failure/Recovery between							
	Distribution and ToR N3K							
1.1.4.5	Layer 3	Verify that MEM and CPU Usage for Supervisors	14	14	0	0	14	
		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.						
	L	and the service of the concept.						

		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	Situ	338	338	0	0	340	
	Fabricpath - Core Link				·			
1.1.5.1	member failure/recovery	Verify that MEM and CPU Usage for Supervisors	242	242	0	0	244	
		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.						

I	1	1	I	I I		I	I	1 1
		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	O. W.	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	
1.1.0.1		Verify that MEM and CPU Usage for Supervisors				J	-	
		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 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	
1.1.0.2	Distribution layer	Verify that MEM and CPU Usage for Supervisors	2	2	U	U	2	
		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	
1101	L3 port-channel member failure/recovery, on OIR/reset		20	20	0		20	
1.1.8.1	line card	Verify that MEM and CPU Usage for Supervisors	20	20	0	0	20	
		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)						
		Verfiy 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-learnt 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	
	OIR/reset line card on							CCC 01124
1.1.9.1	spine nodes	Verify that MEM and CPU Usage for Supervisors	20	20	0	0	20	CSCuo81124
		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)						
		Verfiy 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-learnt 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						
1.1.10	Reload and Power Cycle Switch	(compared to baseline).	6	6	0	0	6	
	Reload and Power Cycle							
1.1.10.1	Edge/Core Switch	1	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	
	j	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.						

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16	0	0	16	
16	0	0	16	CSCuq53095
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		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						
		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-learnt 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 12 2	Clear IPv4/IPv6 Multicast		0	0	0		0	
1.1.13.2	Routes	Verify that MEM and CPU Usage for Supervisors	8	8	0	0	8	
		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-learnt 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						
1.1.14	ICCI I/ICCD	range.	2	_	0		2	
1.1.14	ISSU/ISSD		2	2	0	0	2	
1.1.14.1	6.2.x/6.2.8	Vouify if ICCI impart 4:LiV	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	
1.2.1.1.1	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	
1.2.2.1	core switches	Verify SSH works through the management network on a dedicated vrf	<u> </u>	L	Ū.	U	71	
		Verify startup and running config						
		Verify TB, error, crash						
		Verify any core dumps						
		Verify RSA key does not change on device						
		verify Northey does not change on device						

Verify Traces - (Iuguesa, Intercop cases comm) and primary photopacevers					l 1		I	1	
prinarybackup servers Verify NEPPE and Time Cone: https://www.interpe.cisco.com Verify DSS domain: niterup cisco.com Verify DSS domain: niterup cisco.com Verify DSS search list: interept cisco.com and server : 172.58 vt.9-10 Verify DSS search list: interept cisco.com, and server : 172.58 vt.9-10 Verify DSS search list: interept cisco.com, and server : 172.58 vt.9-10 Verify DSS search list: interept cisco.com, and server : 172.58 vt.9-10 Verify DSS search list: interept cisco.com, and server : 172.58 vt.9-10 Verify DSS search list: interept cisco.com, and server : 172.58 vt.9-10 Verify DSS search list: interept cisco.com, and server : 172.58 vt.9-10 Verify SSMS geatt red community; public r interegt; forwire cisco. Verify SSMS and ITM agazerosive verify standard protect interegt; for the cleans with default protect interes Verify SSMS and GR Verify CoPP counters Verify SSMS and GR Verify CoPP counters Verify SSMS and GR Verify SSMS and GR Verify DGP counters Verify SSMS and GR Verify DGP counters Verify DGP count			Verify Tacacs+ (tacacs interon cisco com) and						
up_nintexpo_tiseo.com Verify DNS drownsis interrup ciseo.com Verify DNS drownsis interrup ciseo.com verify CNP search is interrup ciseo.com, ciseo.com verify CMP port connections to the management network. verify CMP port connections to the management network. verify CMP port connections to the management network. verify SNMP agent (read commanaty): public - intercop; (private commanaty): private - eicen verify LDLD neighbors and UDLD aggressive mode Verify LDLD neighbors and UDLD aggressive mode Verify LACP for link aggregation Verify CoPP position for all positions with default proteool timers for the clients Verify SSONSE and GR Verify CoPP function Verify CoPP function Verify CoPP neutron Verify CoPP neutron Verify LACP positions Verify LACP positions Verify LACP positions Verify advance rate limiter Verify and very neutron positions of the clients Verify and very neutron positions of the clients Verify and very neutron positions of the clients Verify LaCP positions of the clients Verify Interfaces in error OSPE: Verify OSPE/COSPEV-3, ISIS (Fabrica), OTV) Verify Interfaces in error OSPE: Verify OSPE/COSPEV-3 peering, PMV verify OSPE/COSPEV-3 peering, PMV verify OSPE/COSPEV-3 peering, PMV verify OSPE/COSPEV-3 peering, Verify the three are not dead flows Verify that there are not dead flows Verify that there are not dead flows Verify that dead and try contain public Verify the primary AS is being used. On the primary AS, verify at ladge devices show up in the unicast replication list Verify that there are not dead flows Verify that dream are not			primary/backup servers						
Verify DNS domain: interrop essoc own and server 1772.289.9-10									
1722 89 59-10			Verify Syslog to syslog.interop.cisco.com						
Verify DNS search list: instructops cises comp.			Verify DNS domain: interop.cisco.com and server						
Nerrify CDP neighbors			Verify DNS search list: interop.cisco.com,						
Verify CDP neighbors									
Interopy, (private community) private ~ cisco									
Verify SNMP traps to monitor network events									
Verify Unify Depring for all possible clients with default protected images for the clients with default protected images for supervisors and line cards are comparable to previous releases. Verify that at microstrumiticast ratific convergence is comparable to previous releases. Verify that microstrumiticast ratific convergence is comparable to previous releases. Verify that error of Verify that error of Verify unterfaces in error Verify unterfaces in error Verify unterfaces in error Verify and core process for the process in error Verify and core process for the process in error Verify and core process for the process in error Verify and core process in error Verify and core process in error Verify and core process for the process in error Verify and core process for the process in error Verify and core process Verify interfaces in error Verify and core process Verify and core									
Verify BPD peering for all possible clients with default protocol timers for the clients			Verify UDLD neighbors and UDLD aggressive						
default protocol timers for the clients Verify SSONSF and GR Verify CoPP function Verify CoPP counters Verify hardware rate limiter Verify SPAN ensuring cross-module SPAN. Configure Authentication for: OSPF/OSPFV3, IRSRP/ISRP/6, 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, verify all edge devices show up in the unicast replication list Verify that there are no dead flows Verify frames delta does not increase. 1.2.3			Verify LACP for link aggregation						
Verify CoPP function Verify CoPP counters Verify SPAN ensuring cross-module SPAN. Configure Authentication for: OSPF/OSPPv3, HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV) Verify DHCP IP helper and primary/backup server Verify ospFv2/OSPFv3 pering. PIM: Verify PIM peering. PIM: Verify ISIS adjacencies are properly established and OTV routing table. Verify the primary AS, verify all sdee devices show up in the uncast replication list Verify that there are no dead flows Verify affactore overy between Distribution and ToR devices Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases. Verify that there are no dead flows Verify that there are no dead flows the provious releases. Verify that there are no dead flows Verify that previous releases. Verify that there are no dead flows Verify that flows are traffic convergence is comparable to previous releases. Verify that previous releases.									
Verify CoPP counters			Verify SSO/NSF and GR						
Verify hardware rate limiter			Verify CoPP function						
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 IM 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 that there are no dead flows Verify Grames delta does not increase. 12.3 1.2 Link Failure/Recovery vPC leg failure/recovery between Distribution and ToR devices Verify that AIEM and CPU Usage for Supervisors and line cards are comparable to previous releases. Verify that there are no dead flows Verify that Il unicast/multicast traffic convergence is comparable to previous releases. Verify that there are no dead flows Verify any core dumps			Verify CoPP counters						
Configure Authentication for: OSPF/OSPFv3, HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV) Verify DHCP IP helper and primary/backup server 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 that there are no dead flows Verify error vlans Verify frames delta does not increase. 1.2.3			Verify hardware rate limiter						
IISRP/IISRPv6, MSDP, Layer 2 ISIS (FabricPath, OTV)			Verify SPAN ensuring cross-module SPAN.						
Verify interfaces in error			HSRP/HSRPv6, MSDP, Layer 2 ISIS (FabricPath,						
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, 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			Verify DHCP IP helper and primary/backup server						
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			Verify interfaces in error						
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 VPC leg failure/recovery between Distribution and ToR devices Verify that MEM and CPU Usage for Supervisors and line eards 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 that there are no dead flows Verify that perior, crash Verify any core dumps			OSPF: Verify OSPFv2/OSPFv3 peering.						
Verify error vlans Verify frames delta does not increase. 1.2.3 L2 Link Failure/Recovery VPC leg failure/recovery between Distribution and ToR 1.2.3.1 devices 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 any core dumps			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						
Verify frames delta does not increase. 1.2.3 L2 Link Failure/Recovery vPC leg failure/recovery between Distribution and ToR devices 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 any core dumps			Verify that there are no dead flows						
1.2.3 L2 Link Failure/Recovery 92 92 0 0 262			Verify error vlans						
vPC leg failure/recovery between Distribution and ToR devices 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 frames delta does not increase.						
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	1.2.3			92	92	0	0	262	
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	1.00.	between Distribution and ToR		20	20	0		105	
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	1.2.3.1	devices		28	28	0	U	185	
Verify that there are no dead flows Verify TB, error, crash Verify interfaces in error Verify any core dumps			Verify that all unicast/multicast traffic						
Verify TB, error, crash Verify interfaces in error Verify any core dumps									
Verify interfaces in error Verify any core dumps									
Verify any core dumps									
half for both upstream and downstream traffic.			The maximum traffic disruption for unicast will be						
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.			The maximum traffic loss for multicast upstream will be half and for downstream will be either 100% disrupted or no loss depending on which						

M IC a Company of the		
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						
	vPC peer-link							
1.2.3.2	failure/recovery between		8	8	0	0	17	
1.2.3.2		Verify that MEM and CPU Usage for Supervisors	8	8	0	0	17	
1.2.3.2	failure/recovery between	and line cards are comparable to previous releases.	8	8	0	0	17	
1.2.3.2	failure/recovery between	and line cards are comparable to previous releases. Verify that all unicast/multicast traffic	8	8	0	0	17	
1.2.3.2	failure/recovery between	and line cards are comparable to previous releases. Verify that all unicast/multicast traffic convergence is comparable to previous releases.	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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.	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
1.2.3.2	failure/recovery between	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.	8	8	0	0	17	
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1.2.3.2	failure/recovery between	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.	8	8	0		17	
1.2.3.2	failure/recovery between	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	8	8	0	0	17	
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1.2.3.2	failure/recovery between	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 trames 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.	8	8	0		17	
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1.2.3.2	failure/recovery between	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.	8	8	0		17	
1.2.3.2	failure/recovery between	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 tranes 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 TB, error, crash	8	8	0		17	

Variety that the constituted and arranged arranged			
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.			
V-sife CDD is social stability			
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	<u> </u>		<u> </u>
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		T	
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	1	T	
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		T	
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		i i			İ	l I
		entries taken before						
		Verify that Ildp 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						
	vPC peer-link member							
1.2.3.3	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						
	vPC leg member							
1.2.3.4	failure/recovery between Distribution and ToR devices	V. is dealers and the second	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	1		l	
(assuming th				
Multi-cat Command on the cold and the con-				
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 Ildp 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						
	L2 port-channel member	as before link shut						
1.2.3.5	failure/recovery between Distribution and ToR devices		16	16	0	0	20	
							20	
		Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.				·	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.					20	
		and line cards are comparable to previous releases. Verify that all unicast/multicast traffic					20	
		and line cards are comparable to previous releases. Verify that all unicast/multicast traffic convergence is comparable to previous releases.						
		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						
		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						
		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						
		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.						
		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						
		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						
		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						
		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.						
		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						
		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 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						
		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 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 mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						
		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 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 mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut) Verify mac addresses are not learned via vPC						
		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 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 mac sync for VPC setup (Compare mac entries are same in both VPC peers before shut)						

Verify CDP is enabled globally			
Verify LLDP is enabled globally.			
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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 Ildp 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-learnt 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 relearnt 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)	<u></u>		ı
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 Ildp 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	
	L3 port-channel Failure/Recovery between Core							
1.2.4.1	and Distribution Layers	Verify that MEM and CPU Usage for Supervisors	80	80	0	0	153	
		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 reconverge 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						
		Varify OSPE multi path load balancing						
		Verify OSPF multi-path load-balancing.						

İ		Verify HW and SW entries are properly	İ			1	İ	1
		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						
	12 4 1 1	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						
		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 interface status is UP/DOWN state after						

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	
1.2.4.4	Layer 3	Verify that MEM and CPU Usage for Supervisors	10	10	U	U	69	
		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	Situt	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 ry rate for all ivia ports are as expected						
		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-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.						

l		Verify that packets only traverse the fabric for	ì	ĺ		1	1	İ
		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	
1.2.0.2	memoer randre receivery	Verify that MEM and CPU Usage for Supervisors	,,2	, 2	- U			
		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 on recovery that the operational secondary VPC+per will bring up the VPC+ member ports after the configured "delay restors" interess.			Verify that secondary peer will not suspend the vPC+ vlan SVI's if "dual-active exclude vlans" is configured						
Verify rate for all isia ports are as expected (compared to basefund).			vPC+ peer will bring up the vPC+ member ports						
Compared to baseline) Verify packet loss duration is within expected range. Verify interface status is UP/DOWN state after link/NoShur/link/Shut respectively. Verify frames delta does not increase before link shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases. Verify that flame and line cards are comparable to previous releases. Verify that flame and line cards are comparable to previous releases. Verify that flame are no dead flows Verify Tage from cards flows Verify Interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify interfaces in error Verify fort channel loss depending on which vPC+ leg member is shut (assuming to the proportionate and for downstream will be titled some interfaces Verify that IGMP/MLD membership is not affected. Verify frames delta does not increase Verify interface status is UP/DOWN state after Inik NoShur/link/Shut respectively. Verify frames delta does not increase after link Verify frames delta does not increase after link Verify frames delta does not increase after link Verify frames delta does not incr			Verify frames delta does not increase.						
Verify packet loss duration is within expected range. Verify interface status is UP/DOWN state after link Noshbart/inskNbat/respectively. Verify frames delta does not increase before link shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase Verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta does not increase after link no verify frames delta do									
Ilink NoShurlink Shut respectively. Verify frames delta does not increase before link shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify frames delta does not increase after link no shut Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases. Verify that all unicast/multicast traffic Verify that all unicast/multicast traffic Verify that all unicast/multicast traffic Verify that there are no dead flows Verify that there are no dead flows Verify that there are no dead flows Verify that proceed the previous releases. Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that proceed the previous releases Verify that previous releases Verify that there are no dead flows Verify port-chammel took proceed the previous releases Verify that there is no protocol flapping. Verify port-chammel load balancing and rbh assignment. Verify that there is no protocol flapping. Verify port-chammel load balancing and rbh assignment. Verify frames delta does not increase. Verify market load duration is within expected range. Verify market load does not increase Verify market load does not increase Verify market does not increase before link shut Verify frames delta does not increase after link no Verify frames delta does not increase after link no Verify frames delta does not increase after link no Verify frames delta does not increase after link no Verify frames delta does not increase after link no Verify frames delta does not increase after link no Verify frames delta does not increase after link no Verify			Verify packet loss duration is within expected						
Shut Verify frames delta does not increase after link no shut Fabricpath - vPC+ pear-link member failurc/recovery (spine/leaf) Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases. Verify that all unicast/multicast raffic convergence is comparable to previous releases. Verify that there are no dead flows 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 wait flow for unicast should be in sub-second range for both upstream and downstream wait like either 50% disrupted or no loses depending on which vPC+ leg member is shut (assuming t Multicast forwarder should not change. Verify that there is no protocol flapping. Verify that there is no protocol flapping. Verify frames delta does not increase. Verify frames delta does not increase. Verify interface status is UP/DOWN state after link Noshut link Shut everify frames delta does not increase before link shut Verify frames delta does not increase before link shut Verify frames delta does not increase before link shut Verify frames delta does not increase before link shut			linkNoShut/linkShut respectively.						
Verify frames delta does not increase after link no shut									
Link member failure/recovery			Verify frames delta does not increase after link no						
12.5.4 (spine/leaf)									
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 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 that there is no protocol flapping. Verify that IGMP/MLD membership is not affected. Verify frames delta does not increase. Verify packet loss duration is within expected range. Verify interface status is UP/DOWN state after link NoShut/link Shut respectively. Verify frames delta does not increase before link shut	1.2.5.4			16	16	0	0	32	
convergence is comparable to previous releases. Verify that there are no dead flows Verify TB, error, crash 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 pracket loss duration is within expected range. Verify interface status is UP/DOWN state after link NSbMultinkShut respectively. Verify frames delta does not increase before link shut Verify frames delta does not increase before link shut Verify frames delta does not increase before link shut Verify frames delta does not increase before link shut Verify frames delta does not increase after link no			and line cards are comparable to previous releases.						
Verify TB, error, crash 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 nated to subscince). 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 before link shut Verify frames delta does not increase before link shut									
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 pracket loss duration is within 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			Verify that there are no dead flows						
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 vill 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 rarate 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 TB, error, crash						
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 interfaces in error						
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downstream will be either 50% disrupted or no loss depending on which vPC+ leg member is shut (assuming t			The maximum traffic loss for member failure						
(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			downstream will be either 50% disrupted or no						
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									
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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			Verify port-channel load balancing and rbh						
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									
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linkNoShut/linkShut respectively. Verify frames delta does not increase before link shut Verify frames delta does not increase after link no			Verify packet loss duration is within expected						
Verify frames delta does not increase before link shut Verify frames delta does not increase after link no			Verify interface status is UP/DOWN state after linkNoShut/linkShut respectively.						
Verify frames delta does not increase after link no			Verify frames delta does not increase before link						
			Verify frames delta does not increase after link no						
1.2.6 Supervisor and Fabric HA 4 2 1 1 24	1.2.6			4	2	1	1	24	
Supervisor HA on the	1261			2	2	0	0	2	
Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.	1.2.0.1	cago, core rayer		L	L	U	U	2	
Verify that all unicast/multicast traffic convergence is comparable to previous releases.			Verify that all unicast/multicast traffic						
Verify that there are no dead flows									
Verify TB, error, crash			Verify TB, error, crash						
Verify interfaces in error			Verify interfaces in error						
Verify any core dumps			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.					<u> </u>	
		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 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.						
		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.	•	-	-	-		T
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
1.2.0.1	nne card	Verify that MEM and CPU Usage for Supervisors and line cards are comparable to previous releases.	10	10	U	U	+/	CSCuqo / /43
		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)						
		Verfiy 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-learnt 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						
	vPC leg failure/recovery,							
1.2.8.2	on OIR/reset line card		4	4	0	0	8	
1.2.8.2		Verify that MEM and CPU Usage for Supervisors	4	4	0	0	8	
1.2.8.2		and line cards are comparable to previous releases. Verify that all unicast/multicast traffic	4	4	0	0	8	
1.2.8.2		and line cards are comparable to previous releases.	4	4	0	0	8	
1.2.8.2		and line cards are comparable to previous releases. Verify that all unicast/multicast traffic convergence is comparable to previous releases.	4	4	0	0	8	
1.2.8.2		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	4	4	0	0	8	
1.2.8.2		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	4	4	0	0	8	
1.2.8.2		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	4	4	0	0	8	
1.2.8.2		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.	4	4	0	0	8	
1.2.8.2		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	4	4	0	0	8	
1.2.8.2		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.	4	4	0	0	8	
1.2.8.2		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.	4	4	0	0	8	
1.2.8.2		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 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	4	4		0	8	
1.2.8.2	on OIR/reset line card	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 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).	4	4		0	8	
1.2.8.2	FabricPath - Linecard	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 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	4	4	0	0	12	
	on OIR/reset line card FabricPath - Linecard	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 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.						CSCuq87745
1.2.9	FabricPath - Linecard OIR/reset line card oil/reset line card on	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 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	4	4	0	0	12	CSCuq87745

		Verify that there are no dead flows						
		Verify TB, error, crash						
		Verify interfaces in error						
		Verify any core dumps						
		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)						
		Verfiy 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-learnt 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	W. S. A. AMENA LODNIN C. G.	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 neighbor sharges and outbortisation						
		Verify OSPF DP/Tanalogy consistency						
		Verify OSPF DB/Topology consistency.						
1		Verify OSPF routes and forwarding table	l	1	1	1		1

		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- learnt 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 am 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-learnt 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						
	Clear IPv4/IPv6 Multicast	range.						
1.2.12.2	Routes Routes	Verification MEM and CDVIVI	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-learnt 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	·····go.	2	2	0	0	2	
1.1.13.1	6.2.x/6.2.8	Verify if ISSU image compatibility for non-	2	2	0	0	2	
		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 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.			
Wift DCD in the interest of th			
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.			
consistency.			
Verify HW and SW entries are properly			
programmed and synchronized after ISSU/ISSD.			
Varify DIM naighbor status			
consistency.			
programmed and synchronized after ISSU/ISSD.			
ISSU/ISSD.			
No traffic loss is expected			
unicast/multicast traffic reconverges.			
Verify packet loss duration is within expected			
range.			
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 neighbor changes and authentication. 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 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 trate for all ixia ports are as expected (compared to baseline). Verify packet loss duration is within expected			