

Nexus 9236C 스파인 스위치 교체 - vEPC

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소개

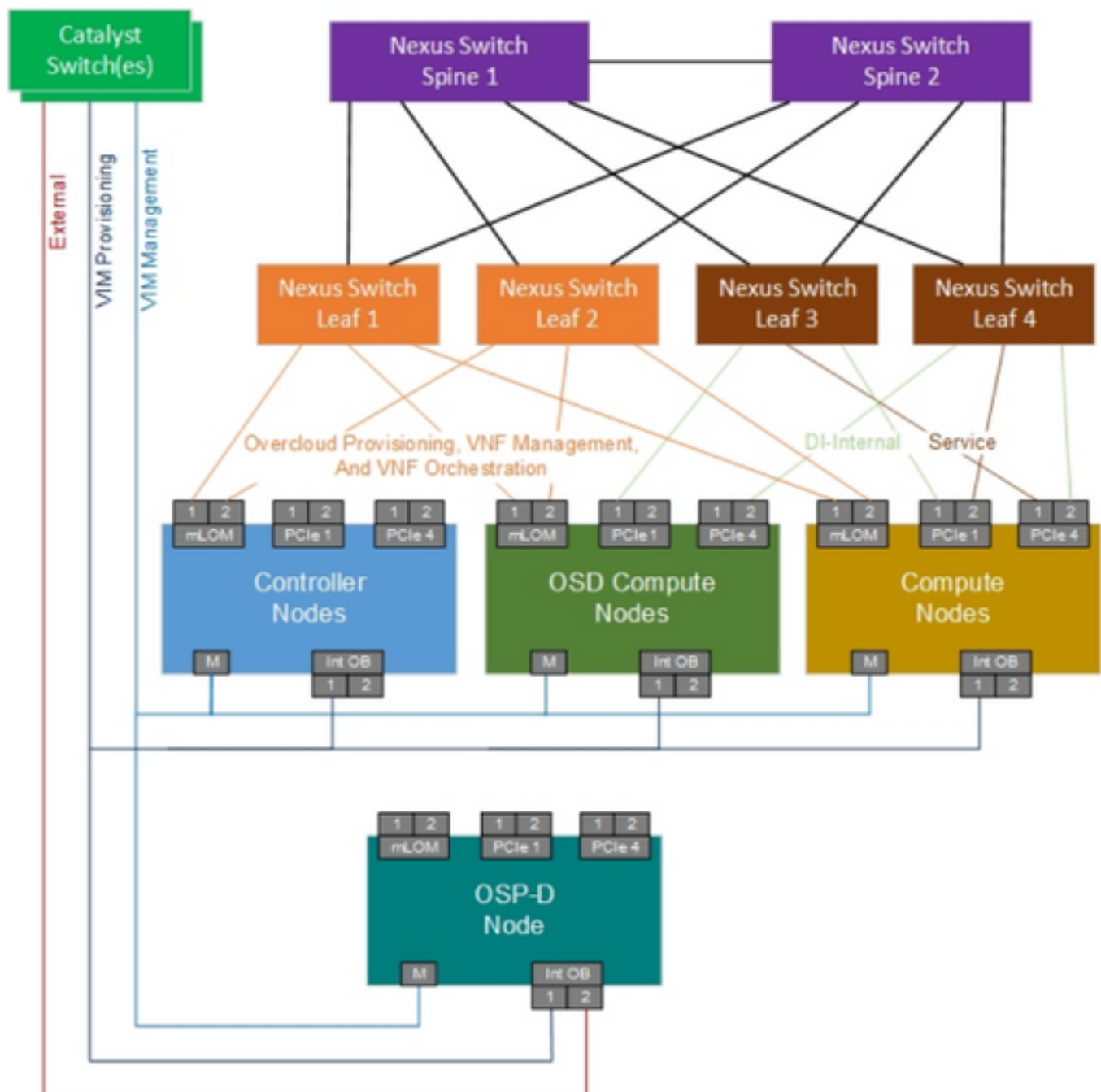
이 문서에서는 StarOS VNF(Virtual Network Functions)를 호스팅하는 Ultra-M 설정에서 결함 있는 스파인 스위치(Nexus 9236C)를 교체하는 데 필요한 단계에 대해 설명합니다.

배경 정보

Ultra-M은 VNF 구축을 간소화하도록 설계된 사전 패키지 및 검증된 가상 모바일 패킷 코어 솔루션입니다. Ultra-M 설정의 일부인 서버는 세 가지 유형의 스위치에 연결됩니다.

- Catalyst 스위치
- 리프 스위치
- 스파인 스위치

Ultra-M 설정의 네트워크 토폴로지:



UltraM 네트워크 토폴로지

참고: 네트워크 토폴로지는 표현일 뿐이며, 스위치 간의 연결은 구축된 솔루션에 따라 약간 달라질 수 있습니다.

이 문서는 Cisco Ultra-M 설정 및 Catalyst Switch 운영에 대해 잘 알고 있는 Cisco 직원을 대상으로 합니다.

약어

VNF	가상 네트워크 기능
스파인	Nexus 9236C Switch as Spine

자루걸레	절차 방법
LAN	로컬 영역 네트워크
FTP	FTP(File Transfer Protocol)
TFTP	TFTP(Trivial File Transfer Protocol)
CIMC	Cisco Integrated Management Controller

MoP의 워크플로

Pre-requisite – Configuration
Backup from spine switch to
be Replaced



Verify current software
version and license usage



Verify the physical port
connections & interfaces are
up and running



Check the BGP & BFD

```
Enter destination filename: [Nexus-POD1-spine2-running-config] backup-spine-cfg-2
Enter vrf (If no input, current vrf 'default' is considered): management
Enter hostname for the sftp server: 10.1.1.1
Enter username: admin
```

```
The authenticity of host '10.1.1.1 (10.1.1.1)' can't be established.
RSA key fingerprint is SHA256:fnbUmd2mL5yE94zxrRoKA1vYfQbheXJfQox7m3XfpIU.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.1.1.1' (RSA) to the list of known hosts.
User Access Verification
Password:
Connected to 10.1.1.1.
sftp> put /var/tmp/vsh/backup-spine-cfg-2 backup-spine-cfg-2
Uploading /var/tmp/vsh/backup-spine-cfg-2 to /backup-spine-cfg-2
/var/tmp/vsh/backup-spine-cfg-2
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.
Nexus-POD1-spine2#
```

상태 검사

1. 스위치에서 실행 중인 현재 소프트웨어 버전을 확인하고 기록해 둡니다.

```
Nexus-POD1-spine2# show ver
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (C) 2002-2018, Cisco and/or its affiliates.
All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under their own
licenses, such as open source. This software is provided "as is," and unless
otherwise stated, there is no warranty, express or implied, including but not
limited to warranties of merchantability and fitness for a particular purpose.
Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or
GNU General Public License (GPL) version 3.0 or the GNU
Lesser General Public License (LGPL) Version 2.1 or
Lesser General Public License (LGPL) Version 2.0.
A copy of each such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://opensource.org/licenses/gpl-3.0.html and
http://www.opensource.org/licenses/lgpl-2.1.php and
http://www.gnu.org/licenses/old-licenses/library.txt.
```

Software

```
BIOS: version 07.59
NXOS: version 7.0(3)I7(3)
BIOS compile time: 08/26/2016
NXOS image file is: bootflash:///nxos.7.0.3.I7.3.bin
NXOS compile time: 2/12/2018 13:00:00 [02/12/2018 19:13:48]
```

Hardware

```
cisco Nexus9000 C9236C chassis
Intel(R) Xeon(R) CPU @ 1.80GHz with 16400560 kB of memory.
```

Processor Board ID FD021120SSN

Device name: Nexus-POD1-spine2

bootflash: 53298520 kB

Kernel uptime is 108 day(s), 13 hour(s), 15 minute(s), 12 second(s)

Last reset

Reason: Unknown

System version: 7.0(3)I7(3)

Service:

plugin

Core Plugin, Ethernet Plugin

Active Package(s):

2. 현재 라이선스 사용량을 확인합니다.

Nexus-POD1-spine2# show license usage

Feature	Ins	Lic	Status	Expiry	Date	Comments
		Count				

N9K_LIC_1G	No	-	Unused			-
VPN_FABRIC	No	-	Unused			-
FCOE_NPV_PKG	No	-	Unused			-
SECURITY_PKG	No	0	Unused			-
N9K_UPG_EX_10G	No	-	Unused			-
TP_SERVICES_PKG	No	-	Unused			-
NXOS_ADVANTAGE_GF	No	-	Unused			-
NXOS_ADVANTAGE_M4	No	-	Unused			-
NXOS_ADVANTAGE_XF	No	-	Unused			-
NXOS_ESSENTIALS_GF	No	-	Unused			-
NXOS_ESSENTIALS_M4	No	-	Unused			-
NXOS_ESSENTIALS_XF	No	-	Unused			-
SAN_ENTERPRISE_PKG	No	-	Unused			-
PORT_ACTIVATION_PKG	No	0	Unused			-
NETWORK_SERVICES_PKG	No	-	Unused			-
NXOS_ADVANTAGE_M8-16	No	-	Unused			-
NXOS_ESSENTIALS_M8-16	No	-	Unused			-
FC_PORT_ACTIVATION_PKG	No	0	Unused			-
LAN_ENTERPRISE_SERVICES_PKG	Yes	-	In use	Never		-

3. 스위치 포트 채널에 연결된 물리적 케이블, Vlan 및 포트 상태가 예상대로 양호한지 확인합니다

Nexus-POD1-spine2# show interface status | grep connected

mgmt0	--	connected	routed	full	100	--
Eth1/1	--	connected	trunk	full	100G	QSFP-100G-AOC5M
Eth1/2	--	connected	trunk	full	100G	QSFP-100G-AOC5M
Eth1/5	--	connected	trunk	full	100G	QSFP-100G-AOC5M
Eth1/6	--	connected	trunk	full	100G	QSFP-100G-AOC5M
Eth1/11/1	Connected to NMNET	connected	101	full	10G	QSFP-40G-SR4
Eth1/21/1	--	connected	routed	full	10G	QSFP-40G-SR4

Eth1/21/2	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/21/3	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/21/4	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/22/1	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/22/2	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/22/3	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/22/4	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/23/1	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/23/2	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/23/3	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/23/4	--	connected	routed	full	10G	QSFP-40G-SR4
Eth1/29	"spine-spine link"	connected	trunk	full	100G	QSFP-100G-AOC5M
Eth1/30	"spine-spine link"	connected	trunk	full	100G	QSFP-100G-AOC5M
Eth1/31	"spine-spine link"	connected	trunk	full	100G	QSFP-100G-AOC5M
Po22	portchannel to Lea	connected	trunk	full	100G	--
Po24	portchannel to Lea	connected	trunk	full	100G	--
Po30	--	connected	routed	full	10G	--
Po30.3201	--	connected	routed	full	10G	--
Po30.3202	--	connected	routed	full	10G	--
Po30.3203	--	connected	routed	full	10G	--
Po30.3204	--	connected	routed	full	10G	--
Po30.3205	--	connected	routed	full	10G	--
Po30.3206	--	connected	routed	full	10G	--
Po99	spine1-spine2	connected	trunk	full	100G	--
Lo1	--	connected	routed	auto	auto	--
Lo2	--	connected	routed	auto	auto	--
Lo3	--	connected	routed	auto	auto	--
Lo4	--	connected	routed	auto	auto	--
Lo5	--	connected	routed	auto	auto	--
Vlan2601	Global VRF spine-2	connected	routed	auto	auto	--
Vlan2602	GI VRF spine-2 <->	connected	routed	auto	auto	--
Vlan2603	IPV6SUB VRF spine-	connected	routed	auto	auto	--
Vlan2604	METROE-E VRF spine	connected	routed	auto	auto	--
Vlan2605	NMNET VRF spine-2	connected	routed	auto	auto	--
Vlan2721	Global VRF spine-2	connected	routed	auto	auto	--
Vlan2722	GI VRF spine-2 <->	connected	routed	auto	auto	--
Vlan2723	IPV6SUB VRF spine-	connected	routed	auto	auto	--
Vlan2724	METROE-E VRF spine	connected	routed	auto	auto	--
Vlan2741	Global VRF spine-2	connected	routed	auto	auto	--
Vlan2742	GI VRF spine-2 <->	connected	routed	auto	auto	--
Vlan2743	IPV6SUB VRF spine-	connected	routed	auto	auto	--
Vlan2744	METROE-E VRF spine	connected	routed	auto	auto	--

4. bgp 인접 디바이스가 작동 중인지 확인합니다.

```

Nexus-POD1-spine2# show ip bgp summary vrf all
BGP summary information for VRF GI, address family IPv4 Unicast
BGP router identifier 10.0.202.2, local AS number 65145
BGP table version is 28, IPv4 Unicast config peers 4, capable peers 4
1 network entries and 1 paths using 236 bytes of memory
BGP attribute entries [1/160], BGP AS path entries [1/6]
BGP community entries [0/0], BGP clusterlist entries [0/0]

```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.0.92.1	4	65145	312621	312617	28	0	0	15w3d	1
10.0.122.2	4	65251	312624	312616	28	0	0	15w3d	0
10.0.142.2	4	65252	312623	312617	28	0	0	15w3d	0
10.178.240.185	4	65137	312618	312616	28	0	0	12w0d	0

BGP summary information for VRF IPV6SUB, address family IPv4 Unicast

BGP summary information for VRF METROE-E, address family IPv4 Unicast

BGP router identifier 10.0.202.4, local AS number 65145

BGP table version is 10, IPv4 Unicast config peers 4, capable peers 4
1 network entries and 1 paths using 236 bytes of memory

BGP attribute entries [1/160], BGP AS path entries [1/6]

BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.0.94.1	4	65145	312619	312617	10	0	0	15w3d	1
10.0.124.2	4	65251	312623	312616	10	0	0	15w3d	0
10.0.144.2	4	65252	312618	312617	10	0	0	15w3d	0
10.178.240.181	4	65137	312618	312616	10	0	0	12w0d	0

BGP summary information for VRF NMNET, address family IPv4 Unicast

BGP router identifier 10.0.202.5, local AS number 65145

BGP table version is 3, IPv4 Unicast config peers 1, capable peers 1
1 network entries and 1 paths using 236 bytes of memory

BGP attribute entries [1/160], BGP AS path entries [0/0]

BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.0.95.1	4	65145	312616	312616	3	0	0	15w3d	1

BGP summary information for VRF default, address family IPv4 Unicast

BGP router identifier 10.0.202.1, local AS number 65145

BGP table version is 261, IPv4 Unicast config peers 4, capable peers 3
35 network entries and 49 paths using 10108 bytes of memory

BGP attribute entries [5/800], BGP AS path entries [3/22]

BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.0.91.1	4	65145	312681	312635	261	0	0	15w3d	35
10.0.121.2	4	65251	312629	312630	261	0	0	15w3d	0
10.0.141.2	4	65252	312683	312620	261	0	0	15w3d	14
10.178.240.177	4	65137	0	124577	0	0	0	15w3d	12

Nexus-POD1-spine2# show ipv6 bgp summary vrf all

BGP summary information for VRF GI, address family IPv6 Unicast

BGP router identifier 10.0.202.2, local AS number 65145

BGP table version is 64, IPv6 Unicast config peers 4, capable peers 4
1 network entries and 1 paths using 248 bytes of memory

BGP attribute entries [1/160], BGP AS path entries [1/6]

BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
fc00:420:81:122::2	4	65251	312637	312629	64	0	0	15w3d	0
fc00:420:81:142::2	4	65252	312637	312630	64	0	0	15w3d	0
fc00:420:81:992::1	4	65145	312635	312630	64	0	0	15w3d	1
fd01:976a:c002:1:4d13:36f3:0:22	4	65137	312631	312627	64	0	0	12w0d	0

BGP summary information for VRF IPV6SUB, address family IPv6 Unicast

BGP router identifier 10.0.202.3, local AS number 65145

BGP table version is 44, IPv6 Unicast config peers 4, capable peers 4
 0 network entries and 0 paths using 0 bytes of memory
 BGP attribute entries [0/0], BGP AS path entries [0/0]
 BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
fc00:420:81:123::2	4	65251	312632	312629	44	0	0	15w3d 0	
fc00:420:81:143::2	4	65252	312636	312629	44	0	0	15w3d 0	
fc00:420:81:993::1	4	65145	312631	312629	44	0	0	15w3d 0	
fd01:976a:c002:1:4d13:36f3:0:24	4	65137	312629	312628	44	0	0	12w0d 0	

BGP summary information for VRF METROE-E, address family IPv6 Unicast

BGP summary information for VRF NMNET, address family IPv6 Unicast

BGP summary information for VRF default, address family IPv6 Unicast

5. BFD 네이버 상태가 UP인지 확인합니다.

Nexus-POD1-spine2# show bfd neighbors vrf all

OurAddr	NeighAddr	LD/RD	RH/RS	Holdown(mult)	State	Int
10.0.124.1	10.0.124.2	1090519045/1090519205	Up	672(3)	Up	Vlan2723
10.0.122.1	10.0.122.2	1090519046/1090519206	Up	639(3)	Up	Vlan2722
10.0.92.2	10.0.92.1	1090519050/1090519094	Up	585(3)	Up	Vlan2723
10.0.95.2	10.0.95.1	1090519051/1090519095	Up	585(3)	Up	Vlan2723
10.0.121.1	10.0.121.2	1090519052/1090519208	Up	639(3)	Up	Vlan2722
10.0.94.2	10.0.94.1	1090519054/1090519097	Up	585(3)	Up	Vlan2723
10.0.91.2	10.0.91.1	1090519055/0	Up	N/A(3)	Up	Vlan2723
10.0.141.1	10.0.141.2	1090519056/1090519212	Up	610(3)	Up	Vlan2723
10.0.144.1	10.0.144.2	1090519057/1090519213	Up	610(3)	Up	Vlan2723
10.0.142.1	10.0.142.2	1090519059/1090519214	Up	610(3)	Up	Vlan2723
10.178.240.182	10.178.240.181	1090519061/0	UP	N/A(3)	Up	Po3
10.178.240.186	10.178.240.185	1090519062/0	Up	N/A(3)	Up	Po3

Nexus-POD1-spine2#

Nexus-POD1-spine2# show bfd ipv6 neighbor vrf all

OurAddr	LD/RD	RH/RS	NeighAddr	Holdown(mult)	State	Int	Vrf
fc00:420:81:123::1	1090519044/1090519204	Up	fc00:420:81:123::2	615(3)	Up	Vlan2723	IPV6SUB
fc00:420:81:122::1	1090519047/1090519207	Up	fc00:420:81:122::2	731(3)	Up	Vlan2722	GI
fc00:420:81:142::1	1090519048/1090519210	Up	fc00:420:81:142::2	696(3)	Up	Vlan2742	GI
fc00:420:81:143::1	1090519049/1090519211	Up	fc00:420:81:143::2	696(3)	Up	Vlan2743	IPV6SUB

fc00:420:81:993::2 1090519053/1090519096 Up	fc00:420:81:993::1 544(3)	Up	Vlan2603	IPV6SUB
fc00:420:81:992::2 1090519058/1090519099 Up	fc00:420:81:992::1 544(3)	Up	Vlan2602	GI

스위치 교체 절차

1. 랙에 새 스위치를 설치하고 표시된 대로 스위치에 케이블을 연결합니다. 스위치 설치 단계는 이 링크에서 찾을 수 있습니다. [Spine Nexus 236C NX-OS mode Switch Hardware Installation Guide](#)
2. Nexus 스파인 스위치의 소프트웨어 버전을 확인하고 여기에 제공된 링크에 따라 소프트웨어 버전으로 업그레이드/다운그레이드합니다. [Cisco Nexus 9000 Series NX-OS Software 업그레이드 및 다운그레이드 가이드, 릴리스 7.x](#)
3. 컨피그레이션 백업을 새 스위치로 전송하고 해당 컨피그레이션을 startup-config에 복사합니다

```
server-backup$ sftp admin@10.1.1.1
The authenticity of host '10.1.1.1 (10.1.1.1)' can't be established.
RSA key fingerprint is SHA256:fnbUmd2mL5yE94zxrRoKAlvYfQbheXJfQox7m3XfpIU.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.1.1.1' (RSA) to the list of known hosts.
User Access Verification
Password:
Password:
Connected to 10.1.1.1.
sftp> ls
20170607_193430_poap_15489_1.log      20170607_193430_poap_15489_2.log      20170607_193430_poap_15489_in
backup_run_02152018                  bios_daemon.dbg                       cfg-july25th
flash:cfg-aug8th-ybattina-afterNSO    flash:cfg-jul28th                     home
lost+found                           nxos.7.0.3.I4.4.bin                  nxos.7.0.3.I5.2.bin
scripts                               spine-config-bkp                      starat
sftp> put backup-spine-cfg-2
Uploading backup-spine-cfg-2 to /backup-spine-cfg-2
backup-spine-cfg-2
sftp> bye
```

```
Nexus-spine1# copy bootflash:///backup-spine-cfg-2 startup-config
Copy progress 100% 33KB
Copy complete, now saving to disk (please wait)...
Copy complete.
```

4. 백업 컨피그레이션을 로드한 후 스위치를 다시 로드합니다.

```
Nexus-POD1-spine2#reload
```

교체된 스파인 스위치 확인

스위치를 액세스할 수 있게 되면 스파인 스위치에서 아래 명령을 사용하여 상태 확인을 수행하여 교체된 스위치가 예상 상태에서 사용 가능한지 확인합니다.

```
Nexus-POD1-spine2# show port-channel summary
```

```
Nexus-POD1-spine2# show ip bgp summary vrf all
```

```
Nexus-POD1-spine2# show ipv6 bgp summary vrf all
```

```
Nexus-POD1-spine2# show bfd neighbor vrf all
```

```
Nexus-POD1-spine2# show bfd ipv6 neighbor vrf all
```

이 번역에 관하여

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