LAB GUIDE



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OSPFv3 Troubleshooting

IMPORTANT! THIS GUIDE ASSUMES THAT THE AOS-CX OVA HAS BEEN INSTALLED AND WORKS IN GNS3 OR EVE-NG. PLEASE REFER TO GNS3/EVE-NG INITIAL SETUP LABS IF REQUIRED. https://www.eve-ng.net/index.php/documentation/howtos/howto-add-aruba-cx-switch/

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Lab Objective

This lab will enable the reader to gain hands on experience with OSPFv3 troubleshooting. This lab as shown in Figure 1 is preconfigured with 2 problems, you will use the troubleshooting flowchart to perform verification steps to identify and fix the problems.

Lab Overview

This lab as shown in Figure 1 will allow you to route between /128 Loopbacks on each switch via OSPFv3 after the 2 problems are identified and fixed.

/64 subnets are used between the switches.

Note: Importing EVE-NG lab will not import the configs, you will need to copy and paste the configs from the appendix into your switches before attempting this lab.



Figure 1. Lab topology and addresses

Lab Tasks

Task 1 – Lab setup

For this lab refer to Figure 1 for topology and IP address details.

- Start all the devices, including VPCS hosts
- Open each switch console and log in with user "admin" and hit enter, so that no password is applied
- Configs are not transferred in the .unl/.zip files, copy and paste in configs for all devices from the appendix section



Task 2 – Check routing table if expected OSPFv3 routes exist

• Start with Switch1 (in the middle), this way, you can check if routes exist from both neighbors at the same time.

```
Switch1# sh ipv6 rou
Displaying ipv6 routes selected for forwarding
Origin Codes: C - connected, S - static, L - local
          R - RIP, B - BGP, O - OSPF
Type Codes:
          E - External BGP, I - Internal BGP, V - VPN, EV - EVPN
          IA - OSPF internal area, E1 - OSPF external type 1 • • •
          E2 - OSPF external type 2
VRF: default
                                              VRF(egress) Origin/ Distance/
Prefix
                  Nexthop
                                   Interface
                                                                            Age
                                                       • • • Type • • Metric •
. . . . . . . .
                                                    C [0/0]
fd00:192:168:1::/64
                 -
                                   1/1/2
fd00:192:168:1::1/128 -
                                   1/1/2
                                                     1/1/3
                                                      C [0/0]
                 -
                                                                            • •_•
                                             _
fd00:192:168:2::/64
fd00:192:168:2::1/128
                 _
                                   1/1/3
                                              _
                                                           L [0/0]
                                   loopback0
fd00:192:168:100::1/128 -
                                             _
                                                          L [0/0]
                                                                         . . . . . .-.
Total Route Count : 5
```

Since only connected (C) and local (L) routes are seen, this means none of the expected OSPFv3 routes exist.

Task 3 – Check OSPFv3 neighbors

Check if OSPFv3 neighbors are up

Switch1# sh ipv6 ospfv3 nei VRF : default Process : 1

Total Number of Neighbors: 1

Neighbor ID Priority State Interface 192.168.100.3 1 FULL/DR 1/1/3 Neighbor address fe80::800:901:812:8e9e

- You will see only 1 neighbor is up (Switch3 neighbor ID is shown but no routes are learnt, will revisit this issue later)
- Move onto next step to try to figure out why Switch2 neighbor is down

Task 4 – Check IPv6 connectivity with directly connected neighbor

Check that IPv6 connectivity to Switch2 works as expected, good that it responds

Switch1# ping6 fd00:192:168:1::2
PING fd00:192:168:1::2(fd00:192:168:1::2) 100 data bytes
108 bytes from fd00:192:168:1::2: icmp_seq=1 ttl=64 time=2.42 ms
108 bytes from fd00:192:168:1::2: icmp_seq=2 ttl=64 time=2.08 ms
^C
--- fd00:192:168:1::2 ping statistics --2 packets transmitted, 2 received, 0% packet loss, time 1002ms

			• • • • • • • • •	0 0 0 0 0 0 0 0 0 0 0 0 0	
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					Control froublochooding
		• • • • • • • • • • •	• • • • • • • • • •		
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T 1 4 01 1 00		• • • • • • • • • • • • • • • • • • •	• • • • • • • • •	• • • • • • • • • • • •	
Task 4 – Check OS	PEV3 is enabled a	nd status shows	up		
Charle Cwitch 1 1st av	un uthing looks good hav		• • • • • • • • • •	• • • • • • • • • • •	
• Check Switch1 1st, ev	Perything looks good her	e	• • • • • • • • •	• • • • • • • • • • • •	
Switch1# sh ipv6 os	pfv3	\ • • • • • •	• • • • • • •		
VRF : default		Process : 1	• • • • • • • • •	• • • • • • • • • • • •	
		· · · · · · · · · · · · · · · · · · ·	• • • • • • • • •		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
RouterID	: 192 168 100 1	OSDEX73		Fnabled	
BFD	: Disabled	SPF Start Inter	val	200 ms	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
SPF Hold Interval	: 1000 ms	SPF Max Wait In	terval :	5000 ms	
LSA Start Time	: 5000 ms	LSA Hold Time		0 ms	
LSA Max Wait Time	: 0 ms	LSA Arrival	• • • • • •	1000 ms	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
External LSAs	: 2	Checksum Sum	• • • • •	116599	
ECMP	: 4	Reference Bandw	idth ::	100000Mbps	
Area Border	: false	AS Border	• :	true	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GR Status	: Enabled	GR Interval	:	120	
GR State	: inactive	GR Exit Status	ihogle :	none	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GR Ignore Lost I/F	: Disabled	GR SUITCE LSA C	.neck ·	DISADIEU	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Summary address:	Dibabica			0 0	
					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Area Total	Active				· · · · · · · · · · · · · · · · · · ·
Normal 1	1				
Stub 0	0				
NSSA 0	0				
Switch1# sh ipy6 os	pfv3 int 1/1/2				
Interface $1/1/2$ is	Up, Line Protocol	is Up			
VRF	: default		Process		: 1
IPv6 address	: fe80::800:901:8	316:7b7e	Area		: 0.0.0.0
Status	: Up		Network	Туре	: Broadcast
Hello Interval	: 10		Dead Int	erval	: 40 . r
PED	• I • Disabled		Tink Spe	ad interval	· 5 · 1000 Mbbs
Cost Configured	: NA		Cost Cal	culated	: 100
State/Type	: DR		Router F	riority	: 1
DR	: 192.168.100.1		BDR	1	: No
Link LSAs	: 1		Checksum	ı Sum	: 33136
 Check Switch2 next 					
Switch2# sh ipy6 os	pfv3				
VRF : default	PIVS	Process : 1			
RouterID	: 0.0.0.0	OSPFv3	; :	Enabled	
BFD	: Disabled	SPF Start Inter	val :	200 ms	
SPF HOID INCERVAL	• 1000 ms	SPF Max Wait In		ວບບບ ms 0 ຫລ	
LOA DLAIL IIME LSA May Wait Time	: 0 mg	LSA Arrival	•	0 1115 1000 mg	
External LSAs	: 0	Checksum Sum	:	0	
ECMP	: 4	Reference Bandw	vidth :	- 100000Mbps	
Area Border	: false	AS Border	:	true	
GR Status	: Enabled	GR Interval	:	120	
GR State	: inactive	GR Exit Status	:	none	
GR Helper	: Disabled	GR Strict LSA C	heck :	Disabled	
GR Ignore Lost I/F	: Disabled				

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				OSPEv3 Troubleshooting
				OSTIVS Troubleshooting
Summary address	:			
		3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	· · · · · · · · · · · · · · · · · · ·	
Area Total	Active			
Normal 1	1			
Stub 0	-			0.0
Stub 0	0		• • • • • • • • • • • • • • • • • • •	
NSSA U	0			
		\ • • •		
Switch2# sh ipv	6 ospfv3 int 1/1/2	· · · · · · · · · · · · · · · · · · ·	0 0	0 0 0 0 0 0 x
Interface 1/1/2	is Up, Line Protocol	is Up		
		•	• • • • • • • • • • • • • • • • • • •	0 0 0 0 0 0 0 0 0 0 0 0 0
VRF	: default		Process	
IPv6 address	: fe80::800:901:8	88a:14fa	Area	: 0 0 0 0
Status	: Down	Jouvilla	Notwork Type	: Broadgagt
Status			Network type	· Broaucast
Hello Interval	: 10		Dead Interval	: 40
Transit Delay	: 1		Retransmit Interval	. 5
BFD	: Disabled		Link Speed	•: 1000 Mbps
Cost Configured	: NA		Cost Calculated	: 100
State (Trme			Boutor Driority	• 1
State/Type	DOWII		Rouler Priority	· · · · · · · · · · · · · · · · · · ·
DR	: No		BDR	: No
Link LSAs	: 0		Checksum Sum	: 0
			••	
You will notice t	hat status is down and router	ID is 0.0.0.0 (that i	is the problem)	• •
 OSPFv3 require 	es a valid IPv4 routerID to fund	ction		
Add the require	d IPv4 address into Lo0 as sh	own in the diagram	m	~
		ie in in the diagram		
Switch2# conf				
a '+ 10/ c' >				
Switch2(config)	# int lo 0			
Switch2(config)	<pre># int lo 0 loopback-if)# ip add 1</pre>	192 168 100 2/	32	
Switch2(config) Switch2(config-	# int lo 0 loopback-if)# ip add 1	L92.168.100.2/	32	
Switch2(config) Switch2(config-	# int lo 0 loopback-if)# ip add 1	192.168.100.2/	32	
Switch2(config) Switch2(config-	# int lo 0 loopback-if)# ip add 1	192.168.100.2/	32	
• Check again	# int lo 0 loopback-if)# ip add 1	192.168.100.2/	32	
• Check again	<pre># int lo 0 loopback-if)# ip add 1 loopback if)# ch inv(</pre>	192.168.100.2/	32	
 • Check again Switch2(config- 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6</pre>	ospfv3 int 1/	32	
 • Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	059fv3 int 1/	32	
 • Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	059fv3 int 1/ is Up	32	
 • Check again Switch2(config- Interface 1/1/2 VRF 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	050103 int 1/ is Up	32 1/2 Process	: 1
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	0595v3 int 1/ is Up 38a:14fa	32 1/2 Process Area	: 1 : 0.0.0.0
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 88a:14fa	32 1/2 Process Area Network Type	: 1 : 0.0.0.0 : Broadcast
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval	: 1 : 0.0.0.0 : Broadcast
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 88a:14fa	32 1/2 Process Area Network Type Dead Interval	: 1 : 0.0.0.0 : Broadcast : 40
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 88a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval	: 1 : 0.0.0.0 : Broadcast : 40 : 5
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	059fv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	059fv3 int 1/ is Up 38a:14fa	<pre>32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated</pre>	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Bouter Priority	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DB 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority PDP	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192 168 100 2
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 88a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2</pre>
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	0spfv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	0spfv3 int 1/ is Up 38a:14fa	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config-	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa ospfv3	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa ospfv3 Process : 1	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa ospfv3 Process : 1	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa ospfv3 Process : 1	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa ospfv3 Process : 1	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa ospfv3 Process : 1 OSPFv3	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
<pre>Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID BFD</pre>	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa Ba:14fa Process : 1 OSPFv3 SPF Start In	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID BFD SPF Hold Interval 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 0SPFv3 Process : 1 OSPFv3 SPF Start In SPF Max Wait	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms Interval : 5000 ms	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
• Check again Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID BFD SPF Hold Interv LSA Start Time	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms Interval : 5000 ms ie : 0 ms	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID BFD SPF Hold Interv LSA Start Time LSA Max Wait Time 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa Ba:14fa OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms Interval : 5000 ms ie : 0 ms 1000 mc	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
 Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 Process : 1 OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim LSA Arrival	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled iterval : 200 ms : 0 ms : 1000 ms : 1000 ms	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
 Switch2(config) Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa 98a:14fa 97000000000000000000000000000000000000	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms Interval : 5000 ms : 0 ms : 1000 ms : 174643	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID BFD SPF Hold Interv LSA Max Wait Ti External LSAs ECMP 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim LSA Arrival Checksum Sum Reference Ba	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms : 1000 ms : 174643 indwidth : 10000Mbps	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
 Switch2(config) Switch2(config- Interface 1/1/2 VRF IPv6 address Status Hello Interval Transit Delay BFD Cost Configured State/Type DR Link LSAs Switch2(config- VRF : default RouterID BFD SPF Hold Interv LSA Start Time LSA Max Wait Ti External LSAs ECMP Area Border 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim LSA Arrival Checksum Sum Reference Ba AS Border	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms Checksum Sum : 1000 ms : 174643 indwidth : 10000Mbps : true	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>
 Switch2(config) Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim LSA Arrival Checksum Sum Reference Ba AS Border GR Interval	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms : Interval : 5000 ms ne : 0 ms : 174643 indwidth : 10000Mbps : true : 120	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
• Check again Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 Process : 1 OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim LSA Arrival Checksum Sum Reference Ba AS Border GR Interval	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms : 0 ms : 1000 ms : 174643 indwidth : 10000Mbps : true : 120	: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770
 Switch2(config) Switch2(config- Interface 1/1/2 	<pre># int lo 0 loopback-if)# ip add 1 loopback-if)# sh ipv6 is Up, Line Protocol</pre>	ospfv3 int 1/ is Up 38a:14fa 38a:14fa OSPFv3 Process : 1 OSPFv3 SPF Start In SPF Max Wait LSA Hold Tim LSA Arrival Checksum Sum Reference Ba AS Border GR Interval GR Exit Stat	32 1/2 Process Area Network Type Dead Interval Retransmit Interval Link Speed Cost Calculated Router Priority BDR Checksum Sum : Enabled terval : 200 ms : Don ms : 1000 ms : 174643 indwidth : 10000Mbps : true : 120 us : none	<pre>: 1 : 0.0.0.0 : Broadcast : 40 : 5 : 1000 Mbps : 100 : 1 : 192.168.100.2 : 85770</pre>

Lab Guide **OSPFv3** Troubleshooting GR Helper : Disabled GR Strict LSA Check . . Disabled GR Ignore Lost I/F : Disabled Summary address: Area Total Active _____ Normal 1 1 Stub 0 0 NSSA 0 0 Switch2(config-loopback-if)# sh ipv6 ospfv3 nei VRF : default Process : 1 _____ Total Number of Neighbors: 1 Neighbor ID Priority State Interface _____ 192.168.100.1 1 FULL/DR 1/1/2Neighbor address fe80::800:901:816:7b7e You should now see Switch1 /128 loopback learnt via OSPFv3 Switch2(config-loopback-if)# sh ipv6 rou Displaying ipv6 routes selected for forwarding

Origin Codes: C - connected, S - static, L - local R - RIP, B - BGP, O - OSPF Type Codes: E - External BGP, I - Internal BGP, V - VPN, EV - EVPN IA - OSPF internal area, E1 - OSPF external type 1 E2 - OSPF external type 2

VRF: default

Prefix	Nexthop	Interface	VRF(egress)	Origin/ Type	Distance/ Metric	Age
fd00:192:168:1::/64		1/1/2	_	C	[0/0]	
fd00:192:168:1::2/128	-	1/1/2	-	L	[0/0]	-
fd00:192:168:100::1/128 00h:01m:55s	fe80::800:901:816:7b7e	1/1/2	-	0	[110/100]	
fd00:192:168:100::2/128	-	loopback0	-	L	[0/0]	-

Total Route Count : 4

And be able to ping it

Switch2(config-loopback-if)# ping6 fd00:192:168:100::1
PING fd00:192:168:100::1(fd00:192:168:100::1) 100 data bytes
108 bytes from fd00:192:168:100::1: icmp_seq=1 ttl=64 time=2.67 ms
108 bytes from fd00:192:168:100::1: icmp_seq=2 ttl=64 time=1.70 ms

Task 6 – Check OSPFv3 network types match between neighbors

• We now revisit the issue between Switch1 and Switch3, we saw that even though neighbors are up, no routes are learnt

Switchl# sh ipv6 ospfv3 int 1/1/3Interface 1/1/3 is Up, Line Protocol is Up

		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lab Cuida
			OSPEV3 Houbleshooling
VRF	: default	Process :	1
IPv6 address	: fe80::800:901:c16:7b7e	••• Area	0.0.0
Status	: Up	Network Type :	Broadcast
Hello Interval	: 10	••• Dead Interval ••••••	40
Transit Delay	: 1	Retransmit Interval :	5
BFD	: Disabled	Link Speed :	1000 Mbps
Cost Configured	: NA	Cost Calculated :	100
State/Type	: DR-other	Router Priority :	1
DR	: 192.168.100.3	BDR :	192.168.100.3
Link LSAs	: 2	Checksum Sum :	19970
	•		0 0 0 0 0 0 0 0 0 .
			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Notice that Switch3 h 	as OSPFv3 network type set to point-to-p	oint	
Switch3# sh ipv6 os	pfv3 int 1/1/2		
Interface 1/1/2 is	Up. Line Protocol is Up		
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
VRF	: default	Process	4
IPv6 address	: fe80::800:901:812:8e9e	Area	
Status	: IIn	Network Type	Point-to-point
Vello Interval	· 10	Dead Interval	
Trangit Deley	· 10	Detrongmit Interval	
DEP	· I	Recraiismit interval	
	· DISADIEO	LINK Speed	
Cost Configured	· NA	Cost Calculated	TOO
State/Type	: Point-to-point	Router Priority :	n/a
DR	: No	BDR :	No
Link LSAs	: 2	Checksum Sum :	19970

• Fix this by setting both sides to the same network type (we will use point-to-point between Switch1 and Switch3 in this case)

Switch1(config)# int 1/1/3
Switch1(config-if)# ipv6 ospfv3 network point-to-point

• You should now see the /128 loopback from Switch3 on Switch1

Switchl(config) # sh ipv6 route

Displaying ipv6 routes selected for forwarding

Origin Codes: C - connected, S - static, L - local R - RIP, B - BGP, O - OSPF Type Codes: E - External BGP, I - Internal BGP, V - VPN, EV - EVPN IA - OSPF internal area, E1 - OSPF external type 1 E2 - OSPF external type 2

VRF: default

Prefix	Nexthop	Interface	VRF(egress)	Origin/ Type	Distance/ Metric	Age
fd00:192:168:1::/64	_	1/1/2	_	C	[0/0]	_
fd00:192:168:1::1/128	-	1/1/2	-	L	[0/0]	-
fd00:192:168:2::/64	-	1/1/3	-	С	[0/0]	-
fd00:192:168:2::1/128	-	1/1/3	-	L	[0/0]	-
fd00:192:168:100::1/128	-	loopback0	-	L	[0/0]	-
fd00:192:168:100::2/128 00h:21m:16s	fe80::800:901:88a:14fa	1/1/2	-	0	[110/100]	
fd00:192:168:100::3/128 00h:01m:31s	fe80::800:901:812:8e9e	1/1/3	-	0	[110/100]	

Total Route Count : 7

```
Lab Guide
                                                                                OSPFv3 Troubleshooting
   And be able to ping it
Switch1(config)# ping6 fd00:192:168:100::3
PING fd00:192:168:100::3(fd00:192:168:100::3) 100 data bytes
108 bytes from fd00:192:168:100::3: icmp_seq=1 ttl=64 time=1.86 ms
108 bytes from fd00:192:168:100::3: icmp_seq=2 ttl=64 time=4.18 ms
Appendix – Complete Configurations
   Configs with problems are provided below
•
Switch1
!Version ArubaOS-CX Virtual.10.07.0010
!export-password: default
hostname Switch1
led locator on
ntp server pool.ntp.org minpoll 4 maxpoll 4 iburst
ntp enable
!
!
!
!
L
1
ssh server vrf mgmt
vlan 1
interface mgmt
    no shutdown
    ip dhcp
interface 1/1/1
    no shutdown
interface 1/1/2
    no shutdown
    ipv6 address fd00:192:168:1::1/64
    ipv6 ospfv3 1 area 0.0.0.0
interface 1/1/3
    no shutdown
    ipv6 address fd00:192:168:2::1/64
    ipv6 ospfv3 1 area 0.0.0.0
interface 1/1/4
    no shutdown
interface 1/1/5
    no shutdown
interface 1/1/6
    no shutdown
interface loopback 0
    ip address 192.168.100.1/32
    ipv6 address fd00:192:168:100::1/128
    ipv6 ospfv3 1 area 0.0.0.0
!
!
1
1
1
router ospfv3 1
    redistribute local loopback
    area 0.0.0.0
https-server vrf mgmt
```

		Lab Guide
		OSPEV3 Troubleshooting
	• • • • • • • • • • • • • • • • • • •	
Switch2		
Version ArubaOS-CX Virtual.10.07.0010		• · ·
!export-password: default	· • • • • • • • • • • • • • • • • • • •	• •
hostname Switch2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 L
led locator on		
ntp server pool.ntp.org minpoll 4 maxpoll	. 4 iburst	
ntp enable		• • • • • • • • · ·
!		0 0 0 0 0 0 0 0 0
!		
!	· · · · · · · · · · · · · · · · · · ·	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
!		
		• • • • • • • • • • • • • • • • • • •
!	\	
ssn server vri mgmt		· · · · · · · · · · · · · · · · · · ·
vlan l		
interiace mgmt		0 0
no shutdown	• • • • • • • • • •	• • • • • • • • • • • • • • • • • • •
1p dncp		0 0
interface 1/1/1		
no snutdown		0 0
Interface 1/1/2		
no snutdown		· · · · · · · · · · · · · · · · · · ·
ipv6 address 1000.192.168.12/64		<u> </u>
interface $1/1/2$		
interface 1/1/5		
interface 1/1/4		
no shutdown		
interface 1/1/5		
no chutdown		
interface 1/1/6		
no shutdown		
interface loopback 0		
inv6 address fd00:192:168:100::2/128		
ipv6 ospfv3 1 area 0 0 0 0		
!		
!		
1		
1		
!		
router ospfv3 1		
redistribute local loopback		
area 0.0.0.0		
https-server vrf mgmt		
Switch3		
Version ArubaOS-CX Virtual.10.07.0010		
!export-password: default		
hostname Switch3		
led locator on		
ntp server pool.ntp.org minpoll 4 maxpoll	. 4 iburst	
ntp enable		
1		
1		
ssn server vri mgmt		
interface momt		

	Lab Guide
	OSPFv3 Troubleshooting
no shutdown	
in dhen	
$\frac{1}{1}$ interface $\frac{1}{1}$	
interface 1/1/2	
no shutdown	
ipv6 address fd00:192:168:2::2/64	
ipv6 ospfv3 1 area 0.0.0.0	
ipv6 ospfv3 network point-to-point	
interface 1/1/3	
no shutdown	· · · · · · · · · · · · · · · · · · ·
interface 1/1/4	
no shutdown	· · · · · · · · · · · · · · · · · · ·
interface 1/1/5	
no shutdown	· · · · · · · · · · · · · · · · · · ·
interface 1/1/6	· · · · · · · · · · · · · · · · · · ·
no shutdown	
interface loopback 0	
ip address 192.168.100.3/32	
inv6 address fd00:192:168:100::3/128	
ipv6 address $1av0000020000000000000000000000000000000$	
ipvo ospivs i area 0.0.0.0	
!	
!	
!	
!	
router ospfv3 1	
redistribute local loopback	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 ⁻
area U.U.U.U	
nttps-server vri mgmt	





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