



Dell Networking MXL and PowerEdge I/O Aggregator with Cisco Nexus 5000 series “fabric mode” Config Sheets

CLI Config Sheets

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Dell Networking MXL and Dell PowerEdge M I/O Aggregator – Port Mapping

	QSFP+ 2x40Gb	QSFP+ 8x10GB SFP+ (breakout)	SFP+ 4x10Gb	10G-BaseT 4x10Gb	FC8 x 4
I/O Bay Two		56			
		55			
		54			
	53	53			
		52	52	52	52
		51	51	51	51
		50	50	50	50
	49	49	49	49	49
I/O BayOne	QSFP+ 2 X 40Gb	QSFP+ 8 X 10GB SFP+ (breakout)	SFP+ 4 X10Gb	10G-BaseT 4 X 10Gb	FC8 x 4
		48			
		47			
		46			
	45	45			
		44	44	44	44
		43	43	43	43
	42	42	42	42	
	41	41	41	41	41
Fixed QSFP Ports	QSFP+ 2 X 40Gb	QSFP+ 8 X 10GB SFP+ (breakout)	SFP+ 4 X10Gb	10G-BaseT 4 X 10Gb	FC8 x 4
		40			
		39			
		38			
	37	37			
		36	.	.	.
		35	.	.	.
	34	.	.	.	
	33	33	.	.	.
Internal 10/1 Gb	Internal 10 / 1 GB interfaces				
	32	32	32	32	32
	31	31	31	31	31

	2	2	2	2	2
	1	1	1	1	1

Figure 1 Port mapping for MXL and IOA



1 Dell Networking MXL and PowerEdge M I/O Aggregator Module switches in Cisco Nexus 5000 series FCoE environment

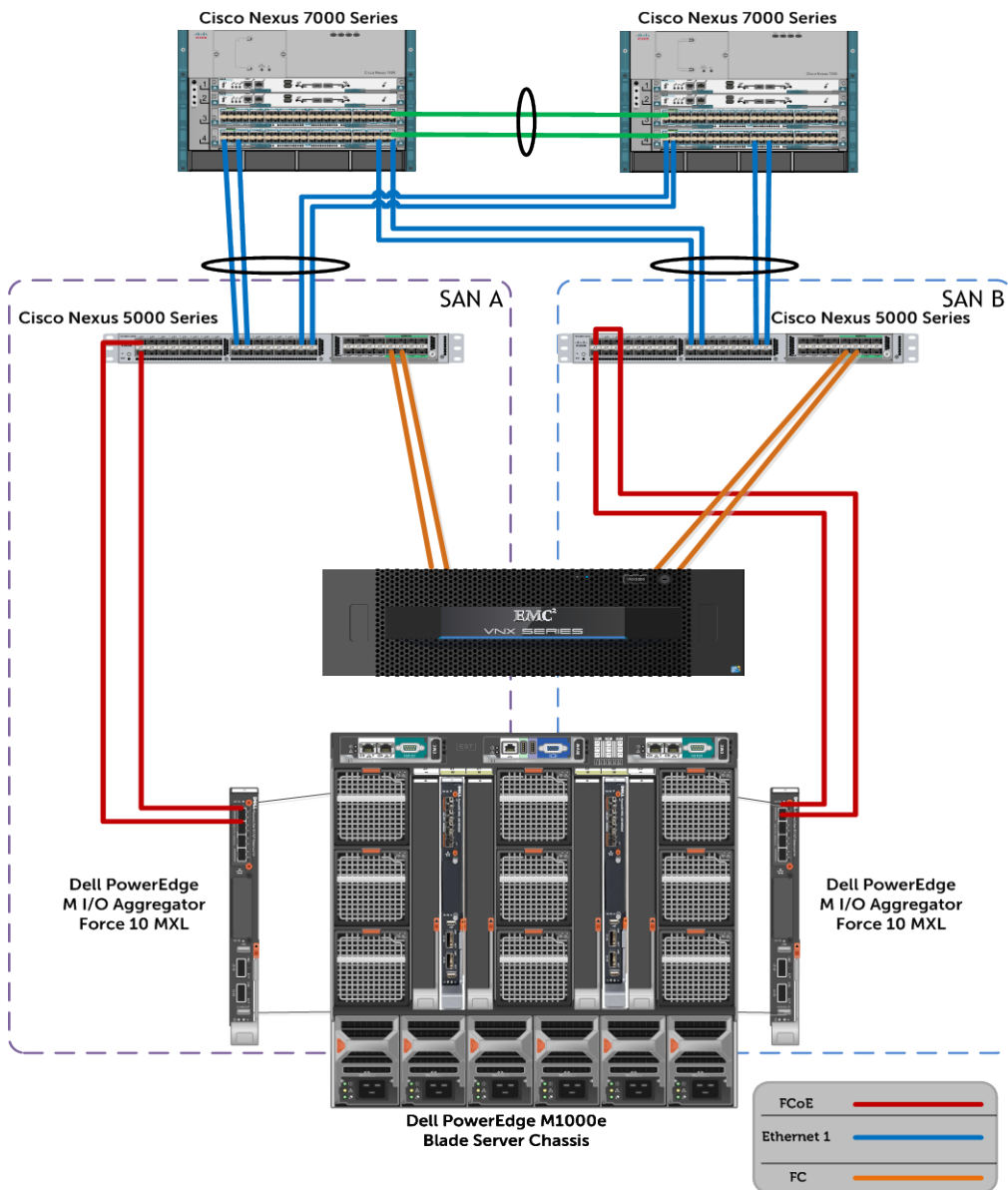


Figure 2 Dell MXL and IOA with Cisco Nexus 5000 series “fabric mode” topology



1.1 Cisco Nexus 5000 series configuration – fabric mode

Enable features, configure all pre-planned VSAN's, VLAN's, and VFC's (see planning matrix) - Side 1 (SAN A)

1. Enable "feature fcoe" to allow the FC ports to function.
2. Feature npiv allows multiple device logins through the same physical port
3. Feature lacp enables the LACP protocol for port-channels (LAGs)

```
feature fcoe
feature npiv
feature lacp
```

Command line interface

4. Create a new VSAN - instantiate it in the VSAN database.
5. Configure regular ethernet VLANs, and then the FCoE VLAN is created with an assignment to its respective VSAN
6. Instantiate but do not configure the upstream port-channel (LAG) to the core /aggregation switch
7. Instantiate but do not configure the downstream port-channel (LAG) to the IOA

```
vsan database
vsan 2
vlan 20,30-32, 88
vlan 1000
fcoe vsan 2
interface port-channel 1
interface port-channel 20
```

Command line interface

8. Create the VFC interface to bind to the servers CNA FIP MAC address. This can be located in the CMC WWN table or the IDRAC page for the server. (in this example 2 different server's CNA's are configured)

```
interface vfc101
bind mac-address 5C:F9:DD:16:EF:07
no shutdown
interface vfc102
bind mac-address 5C:F9:DD:16:EF:21
no shutdown
```

Command line interface

9. Move back into the VSAN database and create entries for the new VFC just created and create entries for the FC port(s) that will be used.

```
vsan database
vsan 2 interface vfc101
vsan 2 interface vfc102
vsan 2 interface fc2/1
vsan 2 interface fc2/2
```

Command line interface

Enable features, configure all pre-planned VSAN's, VLAN's, and VFC's (see planning matrix) - Side 2 (SAN B)

1. Enable "feature fcoe" to allow the FC ports to function.
2. Feature npiv allows multiple device logins through the same physical port
3. Feature lacp enables the LACP protocol for port-channels (LAGs)

```
feature fcoe
feature npiv
feature lacp
```

Command line interface

4. Create a new VSAN - instantiate it in the VSAN database.
5. Configure regular ethernet VLANs, and then the FCoE VLAN is created with an assignment to its respective VSAN
6. Instantiate but do not configure the upstream port-channel (LAG) to the core /aggregation switch
7. Instantiate but do not configure the downstream port-channel (LAG) to the IOA

```
vsan database
vsan 3
vlan 21,30-32,88
vlan 1001
fcoe vsan 3
interface port-channel 2
interface port-channel 21
```

Command line interface

8. Create the VFC interface to bind to the servers CNA FIP MAC address. This can be located in the CMC WWN table or the IDRAC page for the server. (in this example 2 different server's CNA's are configured)

```
interface vfc201
bind mac-address 5C:F9:DD:16:F0:10
no shutdown
interface vfc202
bind mac-address 5C:F9:DD:16:F1:7E
no shutdown
```

Command line interface

9. Move back into the VSAN database and create entries for the new VFC just created and create entries for the FC port(s) that will be used.

```
vsan database
vsan 3 interface vfc201
vsan 3 interface vfc202
vsan 3 interface fc2/1
vsan 3 interface fc2/2
```

Command line interface

1st (SAN A) Cisco Nexus 5548 Configuration

2nd (SAN B) Cisco Nexus 5548 Configuration



Side 1 (SAN A)

10. Configure the needed port-channels/LAGs/Trunks.
- There will be one going upstream to the core/aggregation switch, and one going downstream to the IOA/MXL.

Command line interface

```
interface ethernet 1/1-2
channel-group 20 mode active
description FCoE_downlink_to_IOA-MXL
interface ethernet 1/9-10
channel-group 1 mode active
description Ethernet_uplink_to_7K
```

11. Configure the port-channels with the applicable settings which will then automatically apply to the individual ethernet interfaces if done in this order.
- VLAN 30-32, and 88 are example ethernet VLAN's just to show how these are applied in this configuration.
 - VLAN 20 is the native VLAN applicable to the port-channel that is being used for FCoE, however the default VLAN of the switch can be used in this case and this is not required to be configured.
 - VLAN 1000 is the FCoE VLAN and this must be configured for FCoE traffic to traverse from the FSB to the Nexus 5k and then to storage.

Command line interface

```
interface port-channel 1
description port-channel_eth9+10_to_7k
switchport mode trunk
switchport trunk allowed vlan 30-32,88

interface port-channel 20
description port-
channel_eth1+2_to_IOA-MXL
switchport mode trunk
switchport trunk native vlan 20
switchport trunk allowed vlan 20,1000
```

12. Turn on or enable the FC ports that are applicable to this configuration.

Command line interface

```
interface fc2/1-2
no shutdown
```



Side 2 (SAN B)

10. Configure the needed port-channels (LAGs)/Trunks. There will be one going upstream to the core/aggregation switch, and one going downstream to the IOA/MXL.

Command line interface

```
interface ethernet 1/1-2
channel-group 21 mode active
description FCoE_downlink_to_IOA-MXL
interface ethernet 1/9-10
channel-group 2 mode active
description Ethernet_uplink_to_7K
```

11. Configure the port-channels with the applicable settings which will then automatically apply to the individual ethernet interfaces if done in this order.
- VLAN 30-32, and 88 are example ethernet VLAN's just to show how these are applied in this configuration.
 - VLAN 21 is the native VLAN applicable to the port-channel that is being used for FCoE, however the default VLAN of the switch can be used in this case and this is not required to be configured.
 - VLAN 1001 is the FCoE VLAN and this must be configured for FCoE traffic to traverse from the FSB to the Nexus 5k and then to storage.

Command line interface

```
interface port-channel 2
description port-channel_eth9+10_to_7k
switchport mode trunk
switchport trunk allowed vlan 30-32,88

interface port-channel 21
description port-
channel_eth1+2_to_IOA-MXL
switchport mode trunk
switchport trunk native vlan 21
switchport trunk allowed vlan 21,1001
```

12. Turn on or enable the FC ports that are applicable to this configuration.

Command line interface

```
interface fc2/1-2
no shutdown
```



Configure Zoning with Cisco Nexus in switch mode (NPIV)- Side 1 (SAN A)

13. Configure applicable zones that will match the blade server CNA's (2 are used in this example) to applicable FC port(s) going to storage.

- "zone1SAN_A" is the example name being used here but this name is at the discretion of the administrator
- pwwn <hh...hh> is applicable to the PWWN of the CNA

```
Command line interface
zone name zone1SAN_A vsan 2
member pwwn <20:01:5c:f9:dd:16:ef:07>
member pwwn <20:01:5c:f9:dd:16:ef:21>
member interface fc2/1
member interface fc2/2
```

14. Create a zoneset that will group all the applicable zones together and allow for the group activation.

- "set1SAN_A" is just an example name for this configuration

15. Activate the zoneset

```
Command line interface
zoneset name set1SAN_A vsan 2
member zone1SAN_A

zoneset activate name set1SAN_A vsan 2
```

- Check that the applicable zoneset and zones are now active

```
Command line interface
Show zoneset active
```

==

```
results
Zoneset name set1SAN_A vsan 2
zone name zone1SAN_A vsan 2
* fcid 0x850000 [interface pwwn
20:01:5c:f9:dd:16:ef:07]
* fcid 0x850100 [interface pwwn
20:01:5c:f9:dd:16:ef:21]
* fcid 0x850200 [interface fc2/1 swwn
20:41:54:7f:ee:53:3e:80]
* fcid 0x850300 [interface fc2/1 swwn
20:42:54:7f:ee:53:3e:80]
```

Configure Zoning with Cisco Nexus in switch mode (NPIV)- Side 2 (SAN B)

13. Configure applicable zones that will match the blade server CNA's (2 are used in this example) to applicable FC port(s) going to storage.

- "zone1SAN_B" is the example name being used here but this name is at the discretion of the administrator
- pwwn <hh...hh> is applicable to the PWWN of the CNA

```
Command line interface
zone name zone1SAN_B vsan 3
member pwwn <20:01:5c:f9:dd:16:f0:10>
member pwwn <20:01:5c:f9:dd:16:f1:7e>
member interface fc2/1
member interface fc2/2
```

14. Create a zoneset that will group all the applicable zones together and allow for the group activation.

- "set1SAN_B" is just an example name for this configuration

15. Activate the zoneset

```
Command line interface
zoneset name set1SAN_B vsan 3
member zone1SAN_B

zoneset activate name set1SAN_B vsan 3
```

- Check that the applicable zoneset and zones are now active

```
Command line interface
Show zoneset active
```

==

```
results
Zoneset name set1SAN_B vsan 3
zone name zone1SAN_A vsan 3
* fcid 0x850000 [interface pwwn
20:01:5c:f9:dd:16:f0:10]
* fcid 0x850100 [interface pwwn
20:01:5c:f9:dd:16:f1:7e]
* fcid 0x850200 [interface fc2/1 swwn
20:41:54:7f:ee:56:55:40]
* fcid 0x850300 [interface fc2/1 swwn
20:42:54:7f:ee:56:55:40]
```


1.2 Dell Networking MXL CLI configuration for FIP Snooping

Enable features, configure all pre-planned VLAN's, and other commands - Side 1 (SAN A)

- Enable FIP-snooping feature
- Enable LLDP protocol
- Configure service-class dynamic dot1p

```

Command line interface
feature fip-snooping
protocol lldp
exit
service-class dynamic dot1p
    
```

- Configure default VLAN for switch if needed, this is the global untagged VLAN for the switch

```

Command line interface
default vlan-id 20
    
```

- Configure the downstream or server facing switch ports.

```

Command line interface
interface range te 0/1 - 2
portmode hybrid
switchport
protocol lldp
  dcbx port-role auto-downstream
spanning-tree pvst edge-port
no shutdown
    
```

- Configure the upstream or FCF switch facing individual external ports to be part of a port-channel

```

Command line interface
interface range te 0/51 - 52
port-channel-protocol LACP
port-channel 1 mode active
protocol lldp
no advertise dcbx-tlv ets-reco
dcbx port-role auto-upstream
no shutdown
    
```

- Configure the upstream port-channel

```

Command line interface
interface port-channel 1
portmode hybrid
switchport
fip-snooping port-mode fcf
no shutdown
    
```

1st (SAN A) Dell Networking MXL (FIP-Snooping) Configuration

Enable features, configure all pre-planned VLAN's, and other commands - Side 2 (SAN B)

- Enable FIP-snooping feature
- Enable LLDP protocol
- Configure service-class dynamic dot1p

```

Command line interface
feature fip-snooping
protocol lldp
exit
service-class dynamic dot1p
    
```

- Configure default VLAN for switch if needed, this is the global untagged VLAN for the switch

```

Command line interface
default vlan-id 21
    
```

- Configure the downstream or server facing switch ports.

```

Command line interface
interface range te 0/1 - 2
portmode hybrid
switchport
protocol lldp
  dcbx port-role auto-downstream
spanning-tree pvst edge-port
no shutdown
    
```

- Configure the upstream or FCF switch facing individual external ports to be part of a port-channel

```

Command line interface
interface range te 0/51 - 52
port-channel-protocol LACP
port-channel 1 mode active
protocol lldp
no advertise dcbx-tlv ets-reco
dcbx port-role auto-upstream
no shutdown
    
```

- Configure the upstream port-channel

```

Command line interface
interface port-channel 1
portmode hybrid
switchport
fip-snooping port-mode fcf
no shutdown
    
```

2nd (SAN B) Dell Networking MXL (FIP-Snooping) Configuration

