

## VLAN & Inter-VLAN Routing

Restriction

Support 4K VLANs.

Known issue:

On Barefoot series, the VLAN 1 default disable MAC learning. It means all of traffic will be flooding.

VLAN tag and untag settings

Topology :

mceclip0.png

Steps 1. Create VLAN1 and VLAN2 on the switch

```
admin@sonic:~$ sudo config vlan add 1
```

```
admin@sonic:~$ sudo config vlan add 2
```

Steps 2. Make sure that the port configuration of the VLAN member is not a router port. If the port is configured as a VLAN member of a router port, you will get the following error:

```
admin@sonic:~$ sudo config vlan member add 1 Ethernet48
```

```
Usage: config vlan member add [OPTIONS]
```

```
Try "config vlan member add -h" for help.
```

Error: Ethernet48 is a L3 interface!

Note. If you face the same error message, you should use the command "sudo config interface ip remove Ethernet48 [IP Address]" to remove IP on the interface. (Detail command information, you can refer to the CLI guide)

Steps 3. Let the Ethernet48 as VLAN1 untag member.

```
admin@sonic:~$ sudo config vlan member add -u 1 Ethernet48
```

Steps 4. Let the Ethernet52 as VLAN2 tag member.

```
admin@sonic:~$ sudo config vlan member add 2 Ethernet52
```

Result

Check the VLAN setting by command **or**

```
admin@sonic:~$ show vlan brief
```

+-----+-----+-----+-----+-----+					
+-----+-----+-----+-----+-----+					
VLAN ID	IP Address	Ports	Port	Proxy	
DHCP Helper	DHCP Relay Configuration				
			Tagging	ARP	
Address					
+=====+=====+=====+=====+=====+					
=====+=====+=====+=====+					

1	Ethernet48	untagged	disabled
Source Interface:			
Link Selection:			
Server Vrf:			
Server ID Override:			

2	Ethernet52	tagged	disabled
Source Interface:			
Link Selection:			
Server Vrf:			
Server ID Override:			

admin@sonic:~\$ show vlan config

Name	VID	Member	Mode
Vlan1	1	Ethernet48	untagged
Vlan2	2	Ethernet52	tagged

Caution:

In the 202012 branch, there is more display column of "show vlan brief" command.

admin@sonic:~\$ show vlan brief

VLAN ID	IP Address	Ports	Port Tagging	DHCP
Helper	DHCP Source	DHCP Link	Proxy ARP	
Address	Interface	Selection		
1		Ethernet48	untagged	
		disabled		
2		Ethernet52	tagged	
		disabled		

If the VLAN has no members, the command "show vlan config" is skipped and the VLAN information is displayed as follows:

```
admin@sonic:~$ show vlan brief
```

VLAN ID	IP Address	Ports	Port Tagging	DHCP
1		Ethernet48	untagged	
2				

```
admin@sonic:~$ show vlan config
```

Name	VID	Member	Mode
Vlan1	1	Ethernet48	untagged

Check the native VLAN (PVID)

```
admin@sonic:~$ sudo bridge vlan
port      vlan ids
docker0   1 PVID Egress Untagged
```

```
Ethernet48   1 PVID Egress Untagged
```

```
Ethernet52   2
```

```
Bridge      1
            2
```

```
dummy        1 PVID Egress Untagged
```

Inter-VLAN routing

Steps 1. Configure IP addresses on VLAN1 and VLAN2

```
admin@sonic:~$ sudo config interface ip add Vlan1 192.168.1.2/24
```

```
admin@sonic:~$ sudo config interface ip add Vlan2 192.168.2.1/24
```

Caution: Vlan1 and Vlan2 are the Names of the VLAN interface. So, must be capital.

Result

Check the VLAN setting and IP addresses

admin@sonic:~\$ show vlan brief

VLAN ID	IP Address	Ports	Port	Proxy
DHCP Helper	DHCP Relay Configuration		Tagging	ARP
Address				
1	192.168.1.2/24	Ethernet48	untagged	disabled
	Source Interface:			
	Link Selection:			
	Server Vrf:			
	Server ID Override:			
2	192.168.2.1/24	Ethernet52	tagged	disabled
	Source Interface:			
	Link Selection:			
	Server Vrf:			
	Server ID Override:			

admin@sonic:~\$ show ip interfaces

Interface	Master	IPv4 address/mask	Admin/Oper	BGP
Neighbor	Neighbor IP			
Vlan1		192.168.1.2/24	up/up	N/A
N/A				
Vlan2		192.168.2.1/24	up/up	N/A
N/A				
docker0		240.127.1.1/24	up/down	N/A
N/A				
eth0		188.188.9.10/16	up/up	N/A
N/A				
lo		127.0.0.1/16	up/up	N/A
N/A				

Check the routing table.

```
admin@sonic:~$ show ip route
```

Codes: K - kernel route, C - connected, S - static, R - RIP,  
O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,  
T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,  
F - PBR, f - OpenFabric,  
> - selected route, \* - FIB route, q - queued route, r -  
rejected route

```
C>* 192.168.1.0/24 is directly connected, Vlan1, 00:01:57
```

```
C>* 192.168.2.0/24 is directly connected, Vlan2, 00:02:02
```

## Appendix

Content about VLAN in /etc/sonic/config\_db.json

```
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-  
json "VLAN"
```

```
{  
  "Vlan1": {  
    "vlanid": "1"  
  },  
  "Vlan2": {  
    "vlanid": "2"  
  }  
}
```

```
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-  
json "VLAN_MEMBER"
```

```
{  
  "Vlan1|Ethernet48": {  
    "tagging_mode": "untagged"  
  },  
  "Vlan2|Ethernet52": {  
    "tagging_mode": "tagged"  
  }  
}
```

```
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-  
json "VLAN_INTERFACE"
```

```
{  
  "Vlan1": {},  
  "Vlan2": {},  
  "Vlan1|192.168.1.2/24": {},  
  "Vlan2|192.168.2.1/24": {}  
}
```

## Frequently Asked Question

How to add range of VLAN members?

Tested model & firmware version:

Switch model name:

DCS203 (AS7326-56X)

Edgecore SONiC version:

202012.4

Problem description:

SONiC could only add VLAN members one by one to the Interface.

How to add range of VLAN members?

```
admin@sonic:~$ sudo config vlan add 10,20
```

```
Usage: config vlan add [OPTIONS] <vid>
```

```
Try "config vlan add -h" for help.
```

```
Error: Invalid value for "<vid>": 10,20 is not a valid integer
```

```
admin@sonic:~$ sudo config vlan add 10-20
```

```
Usage: config vlan add [OPTIONS] <vid>
```

```
Try "config vlan add -h" for help.
```

```
Error: Invalid value for "<vid>": 10-20 is not a valid integer
```

Solution:

Users can use the For Loop to create a range of VLANs.

For example:

```
admin@sonic:~$ for i in {2000..2010..1};do sudo config vlan add $i;done
```

```
admin@sonic:~$ for i in {2000..2010..1};do sudo config vlan member add $i Ethernet0; done
```

Note:

Where 2000 is the starting vlan and 2010 is the last vlan and the vlan number increases by 1 with each loop.

Check the status.

```
admin@sonic:~$ show vlan brief
```

```
+-----+-----+-----+-----+
+-----+-----+-----+-----+
|  VLAN ID | IP Address   | Ports   | Port Tagging | DHCP  
Helper    | DHCP Source | DHCP Link | Proxy ARP    |
```

Interface	Selection		Address
2000		Ethernet0 tagged disabled	
2001		Ethernet0 tagged disabled	
2002		Ethernet0 tagged disabled	
2003		Ethernet0 tagged disabled	
2004		Ethernet0 tagged disabled	
2005		Ethernet0 tagged disabled	
2006		Ethernet0 tagged disabled	
2007		Ethernet0 tagged disabled	
2008		Ethernet0 tagged disabled	
2009		Ethernet0 tagged disabled	
2010		Ethernet0 tagged	

```

|           |           | disabled |
+-----+-----+-----+-----+
+-----+-----+-----+-----+

```