



Dynamic Virtual Port

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Dynamic Virtual Port



Note This chapter is applicable only for multi-tenancy lite version as multi-tenancy full version already supports this as the default configuration.

The Dynamic Virtual Port (DVP) feature describes the following:

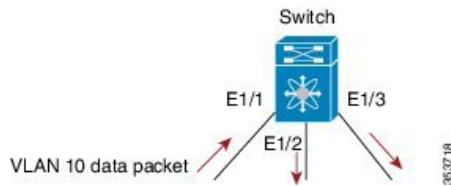
- Virtual Port
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- Overview of Dynamic Virtual Ports

Virtual Port

- A VLAN is activated on all Layer-2 CE trunk interfaces when it is created on the switch
- A (port, VLAN) instance is referred as a 'Virtual Port (VP)' or 'Logical Interface (LI)'

Limitations of Virtual Ports

- Each VP is associated with system resources including memory, control protocol instance, CPU processing time to bring the VP up and so on. This places a limit on the number of instances (port, VLAN) that can be safely supported on the switch—a scaling limit.
- Also, a VP causes traffic to be flooded on interfaces that might not need them but just because the VLAN is activated on that interface.

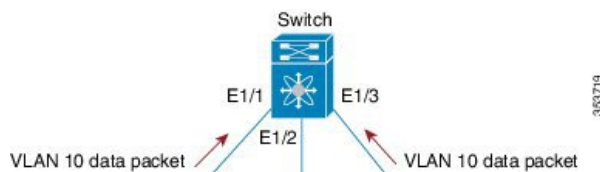
Figure 1: VP Limitation

In the figure shown above:

- E1/1-3 are CE trunks
- When VLAN 10 is created on switch:
 - E1/1-3 will be members of VLAN 10
 - STP will run on E1/1-3
 - Traffic ingressing E1/1 will be flooded out on E1/2-3

Overview of Dynamic Virtual Port

- The DVP feature is designed to address the (port, VLAN) scalability on the switch
- When a VLAN is created on the switch: it is not brought up on the CE trunk interfaces by default
- Dynamically add VLAN to interfaces based on the requirement thus saving crucial resources
- Dynamically remove the VP when not required
- Works in conjunction with workload auto-configuration and the host mobility manager (HMM)
- Per Interfaces control available to follow traditional VP creation mechanism, that is CLI is also available to enable/disable the dynamic virtual port on an given interface

Figure 2: VP Scalability

When a host connected to E1/1 and sends data packet on VLAN 10:

- Workload auto-configuration feature will detect host for VLAN 10 on E1/1
- VLAN 10 is created on switch
- Create (E1/1, 10) instance only (not on E1/2 & E1/3)
- STP for VLAN 10 runs on E1/1 only

Another host connected to E1/3 and sends data packet on VLAN 10:

- Workload auto-configuration feature will detect host for VLAN 10 on E1/3

- VLAN 10 creation is skipped since it already exists on switch
- Create (E1/3, 10) instance
- STP for VLAN 10 runs on E1/1 & E1/3 only

Guidelines and Limitations

- This feature cannot coexist with FCOE VLANs so the feature must be disabled for an interface, which is bonded with FCOE VLAN
- If the allowed VLAN list is configured manually on an interface (using the **switchport trunk allowed vlan** *vlan-id* command), the DVP must be disabled locally for that interface using the **no switchport trunk allocate vlan dynamic** command.
- You must ensure the consistent configuration of DVP in case of VPC peers

Configuring Dynamic Virtual Port

Configuring Dynamic Virtual Port on a Switch

Before you begin

- Feature Fabric Forwarding should be enabled
- System fabric dynamic VLANs should be configured

Guidelines

- Copy running to startup and reboot is required for this feature to become operational on the switch
- This feature works only with auto-configuration (feature fabric forwarding)
- No additional license needed (requirements inherited from fabric forwarding)
- Feature enabled in default POAP Leaf config template

SUMMARY STEPS

1. **configure terminal**
2. **[no] system default trunk allocate VLAN dynamic**
3. **show system trunk dynamic status**
4. **copy running-config startup-config**
5. **reboot**

DETAILED STEPS

	Command or Action	Purpose
Step 1	configure terminal Example:	Enters global configuration mode.

	Command or Action	Purpose
	switch# configure terminal	
Step 2	[no] system default trunk allocate VLAN dynamic Example: switch(config)# system default trunk allocate vlan dynamic	Configures Dynamic Virtual Port.
Step 3	show system trunk dynamic status Example: switch# show system trunk dynamic status	Displays Dynamic Virtual Port configuration and operational status.
Step 4	copy running-config startup-config Example: switch(config)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.
Step 5	reboot Example: switch(config)# reboot	Reboot is required for feature to become operational on the switch.

Example



Note

The DVP feature will be operational by default on all CE trunks after switch reload. This requires copy running-config to startup-config before switch reload.

```
switch# show system trunk dynamic status
```

```
Global Status
-----
```

```
Configured   : Enabled (Will take effect on reboot)
Operational  : Disabled
Number of operationally enabled dynamic logical interfaces : 0
```

This example shows the system trunk dynamic status after copy run start and reboot:

```
switch# show system trunk dynamic status
```

```
Global Status
-----
```

```
Configured   : Enabled
Operational  : Enabled
Number of operationally enabled dynamic logical interfaces : 0
```

Disabling auto-configuration feature will require a reboot with saved running config:

```
switch# show system trunk dynamic status
```

```
Global Status
-----
```

```
Configured   : Enabled
Operational  : Enabled
```

```
Number of operationally enabled dynamic logical interfaces : 10
```

After you perform the **no feature fabric forwarding** command, the system default trunk allocate VLAN dynamic feature is disabled but still operational on all CE trunks, it will be non-operational after switch reload. This requires copy running-config to startup-config before switch reload:

```
switch# show system trunk dynamic status

Global Status
-----
Configured : Disabled (Will take effect on reboot)
Operational : Enabled
Number of operationally enabled dynamic logical interfaces : 10
```

Configuring Dynamic Virtual Port on an Interface

Guidelines

- Enables/Disables the feature for an interface
- This CLI is default on all Layer-2 trunk ports
- CLI is operational only on CE trunk interfaces
- CLI is disabled in default POAP Leaf configuration template
- CLI is operational when DVP feature is operationally enabled

SUMMARY STEPS

1. **configure terminal**
2. **[no] switchport trunk allocate vlan dynamic**
3. **show system trunk dynamic status [enabled-interfaces | interfaces int1]**
4. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	configure terminal Example: switch# configure terminal	Enters global configuration mode.
Step 2	[no] switchport trunk allocate vlan dynamic Example: switch(config)# switchport trunk allocate vlan dynamic	Configures Dynamic Virtual Port Feature on an input interface.
Step 3	show system trunk dynamic status [enabled-interfaces interfaces int1] Example:	Displays list of DVP enabled interfaces or enable status on given interface.

	Command or Action	Purpose
	switch# show system trunk dynamic status enabled-interfaces	
Step 4	copy running-config startup-config Example: switch(config)# copy running-config startup-config	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

This example shows how to configure the dVP feature on an interface:

```
switch(config-if)# switchport trunk allocate VLAN dynamic
switch(config-if)# show system trunk dynamic status enabled-interfaces
```

```
Interface   Status
-----
Eth1/2      Enabled
```

```
switch# show running-config interface ethernet 1/2
```

```
interface Ethernet1/2
  switchport mode trunk
```

```
switch(config-if)# no switchport trunk allocate VLAN dynamic
switch(config-if)# show running-config interface ethernet 1/2
```

```
!Command: show running-config interface Ethernet1/2
interface Ethernet1/2
  switchport mode trunk
  no switchport trunk allocate VLAN dynamic
```

```
switch(config-if)# show system trunk dynamic status enabled-interfaces
```

```
Interface   Status
-----
Eth1/2      Disabled
```

This example shows the sample output of show system trunk dynamic status:

```
switch# show system trunk dynamic status interface ethernet 1/3-5
```

```
Interface   Status
-----
Eth1/3      Enabled
Eth1/4      Disabled
Eth1/5      Not-Applicable
```

This example shows the instances on the CE trunk interfaces:

```
switch# show interface trunk
```

```
-----
Port          Native  Status      Port
              VLAN               Channel
-----
Eth1/1        1       trunking    --
Eth1/2        1       trunking    --
```

```
Eth1/3      1      trunking  --
```

```
-----  
Port        VLANs Allowed on Trunk  
-----
```

```
Eth1/1      1-4094  
Eth1/2      1-4094  
Eth1/3      1-4094  
[snip]
```

```
-----  
Port        STP Forwarding  
-----
```

```
Eth1/1      none  
Eth1/2      10  
Eth1/3      none
```

