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Chapter 1 Commands for Basic VSF Configuration

1.1 switch convert mode

Command: `switch convert mode (stand-alone | vsf)`

Function: Make the device transform from independent operation mode to VSF mode or transform from VSF mode to independent operation mode.

Parameters: `<stand-alone>`: Independent operation mode. `<vsf>`: VSF mode.

Default: Judge the mode that the device should enter in according to the VSF configuration file of vsf.cfg.

Command Mode: Global Mode.

Operation Mode: Independent Operation Mode, VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: The device supports two kinds of modes: independent operation mode and VSF mode. The device under the independent operation mode can just operate in stand-alone. The device under the VSF mode can form VSF with other devices. The two modes can be switched through this command.

Example: Configure the device to enter in the VSF mode when it is under the independent operation mode.

```
Switch#config
```

```
Switch(config)#switch convert mode vsf
```

1.2 write

Command: `write`

Function: When the device is under the independent operation mode, `write` command can save the current running-config and it can also write the current relevant VSF configuration into vsf.cfg. if the device is under the VSF mode, `write` command will save the current running-config into vsf_startup.cfg and save the current relevant VSF configuration into vsf.cfg.

Parameters: None.

Default: running-config and the relevant vsf configuration are not saved.

Command Mode: Admin Mode.

Operation Mode: Independent Operation Mode, VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: The device with VSF function will write the current configuration information into startup.cfg and vsf.cfg respectively when save the configuration.

Example: Save the configuration.

```
Switch#write
```

1.3 vsf port-group

Command: vsf port-group <port-number>

no vsf port-group <port-number>

Function: Configure the logic VSF port. The no command deletes the VSF port.

Parameters: <port-number>: the number of logic VSF port, value is 1 to 2.

Default: Do not configure.

Command Mode: Global Mode.

Operation Mode: Independent Operation Mode, VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Configure the logic VSF port. Only two vsf port-group can be configured on the same device, they are vsf port-group1 and vsf port-group2.

Example: Configure the logic VSF port.

```
Switch(config)#vsf port-group 1
```

1.4 vsf port-group interface ethernet

Command: vsf port-group interface Ethernet <interface-list>

no vsf port-group interface Ethernet <interface-list>

Function: After created the logic VSF port, bind the actual physical port under the VSF port mode. The no command cancels the binding.

Parameters: < interface-list >: physical port number.

Default: The physical port is not bond as default.

Command Mode: VSF Port Mode.

Operation Mode: Independent Operation Mode, VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: One vsf port-group can bind 8 physical ports at most, the mode of port in vsf port-group is on. When there are more than 8 ports binding to it, it will prompt the user cannot bind. It supports spread binding of the physical port. Currently, it only supports 10G port and logic VSF port to bind.

Example: Create the logic VSF port and enter in the VSF port configuration mode. Bind the physical port 1/0/1 to the logic VSF port.

```
Switch(config)# vsf port-group 1
```

```
Switch(config)# vsf port-group interface ethernet 1/0/1
```

1.5 vsf domain

Command: vsf domain <domain-id>

no vsf domain

Function: Configure the logic domain that VSF is in. The no command recovers to be default of 1. When the device is in independent operation mode, the vsf domain configuration becomes effective immediately; when the device is in VSF mode, after configured vsf domain, the newest configuration will be shown in running-config, but this configuration will become effective after it is saved and restarted.

Parameters: *<domain-id>*: domain number, range is 1 to 32.

Default: The device is in domain 1.

Command Mode: Global Mode.

Operation Mode: Independent Operation Mode, VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Domain is a kind of logic concept. The devices are connected together through VSF link; they will make up the VSF. The set of these member devices is a VSF domain. For adapting all kinds of network applications, multiple VSF can be deployed in the same network; the domain number is used to distinguish the VSF. The devices in the same domain can form the VSF; the devices or VSF groups in different domains cannot form the VSF. Before forming the VSF, it will conduct the judgement of domain numbers conflict. The default domain number is 1.

1.6 vsf member

Command: vsf member *<member-id>*

no vsf member *<member-id>*

Function: Configure the number of VSF members. The no command deletes the number.

Parameters: *<member-id>*: member number. The range is 1 to 16.

Default: There is no member number of the device.

Command Mode: Global Mode.

Operation Mode: Independent Operation Mode.

Usage Guide: The member number marks every device. In VSF group, each device has the unique member number. After configured the number, enter in the VSF mode. If configured the command with multiple times, it will become effective the last once. There is no member number in the initialization status. After the device enter in the VSF mode, the port format will be modified according to the member number. If there is member number conflict, the VSF cannot be formed.

1.7 vsf non-wait port-inactive

Command: vsf non-wait port-inactive

no vsf non-wait port-inactive

Function: Detect the VSF link status' change quickly for discovering the vsf splitting. The no command recovers to be the default method.

Parameters: None.

Default: The quick detection of vsf link status is not configured.

Command Mode: Global Mode.

Operation Mode: VSF Operation Mode.

Usage Guide: After configured this command, if the vsf link status has changed, the system will receive and confirm the vsf link status immediately, and detect the vsf topology's change. This command will be effective immediately after configured. We suggest using this command when the physical vsf link is stable.

1.8 vsf priority

Command: `vsf priority <priority>`
`no vsf priority`

Function: Configure the priority of the VSF members in the VSF group. The no command recovers to be default of 1. When the device is under the independent operation mode, the priority configuration of vsf member will become effective immediately; when the device is under the VSF mode, after configured the priority of vsf member, the newest configuration will be shown in running-config, but the configuration will become effective after it is saved and restarted.

Parameters: `< priority >`: the priority value of VSF member, range is 1 to 32.

Default: 1.

Command Mode: Global Mode.

Operation Mode: Independent Operation Mode.VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Under the independent operation mode, configure the member priority. The member priority is used for roles election, the larger the member priority value is, and the higher the priority is. The possibility of the device with higher priority becomes the Master is bigger when it is electing. Through configuring the different priorities for different devices, appoint one device as Master of VSF.

1.9 vsf auto-merge enable

Command: `vsf auto-merge enable`
`no vsf auto-merge enable`

Function: Enable the automatic merger function of VSF groups. The no command cancels this function.

Parameters: None.

Default: Disable.

Command Mode: Global Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: When two VSF groups have the correct connection because of some reasons, the connection method is that use the respective VSF port to connect and there

is no vsf domain and vsf member id conflict, then the up of the port, VSF creating and binding will trigger the two VSF groups to merge automatically in the process of connection. In the connection, through the comparing of the priorities and member id, the VSF groups which failed to elect will restart and join in the VSF groups which successfully elected after restarting.

1.10 vsf member description

Command: vsf member <member-id> description <text>

no vsf member <member-id> description

Function: write some description to the member. This message will only write into the master document. No command delete that description.

Parameters: <member-id>: VSF member number <text>: user enter description

Default: No description in the VSF.

Command Mode: Global Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Under the VSF operation mode, adding message is more easy for management. For example, in one network that exist of more than one VSF, or they are separate, using this method can more easy to separate them.

1.11 vsf link delay

Command: vsf link delay<interval>

no vsf link delay

Function: Configure the down delaying reporting function of the VSF link, using for avoid link to split and merge due to changing in short period of time. The **no** command will set the time for delay report to default value.

Parameters: <interval>: The VSF link down time for delay report, default value as 0, it reports immediately.

Default: The time value is not configured as default. The value is 0.

Command Mode: Global Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: After configure the vsf link delay, if the VSF link status from up to down, the port will not report to the system for this changing. After the time for configured, if the VSF link still at the down status, port will report to the system. And the system will act. If the VSF link status from down to up, link layer will report to the system immediately. That command will become effective.

1.12 vsf mac-address persistent

Command: vsf mac-address persistent <timer | always>
no vsf mac-address persistent

Function: Configure VSF split group MAC address retention time. **No** command deletes the MAC address retention time.

Parameters: <timer>: Configure VSF bridge MAC retains time as 6 minutes. It means that after the master leave the VSF, the VSF bridge MAC address will remain unchang for 6 minutes. If the master cannot return to VSF within 6 minutes, the new elected master MAC bridge will become the VSF bridge MAC; <always>: Always configure bridge MAC address forever, no matter whether the master leave or no, VSF bridge MAC will never change.

Default: Do not configure the bridge MAC retain time

Command Mode: Global Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Since VSF as a virtual facility to communicate to other media and it has the unique MAC bridge, become the VSF bridge MAC. Usually, master's bridge MAC will become the VSF bridge MAC. Bridge MAC collosion will cause the communication disorder; bridge MAC switching will cut the flow. Therefore, need to configure bridge MAC retain time. This can let the splitting occur can still depends on the user decision to retain or remove the VSF bridge MAC and the retain time Set up the timer. The master leave the VSF, the VSF bridge MAC address will remain unchang for 6 minutes. If the master cannot return to VSF within 6 minutes, the new elected CPU-MAC bridge will become the VSF bridge MAC; configure always, master leave the VSF, VSF will not restart. It will use the original CPU-MAC MAC as VSF MAC. If the VSF restarts, then using the new selected master CPU-MAC as MAC. After restart, command does not effective, need to configure again.

Chapter 2 Commands for Configuration and Debugging of VSF Conflict Detection

2.1 vsf mad lacp enable

Command: vsf mad lacp enable
no vsf mad lacp enable

Function: Open the particular port-channel to support the LACP MAD detection function. **No** command will close the LACP MAD function on the port-channel LACP MAD

Parameters: None.

Default: Disable.

Command Mode: port-channelPort Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: This command can only be used at VSF operation mode; configure particular port-channel as LACP MAD collision detection group, the group member send the TLV message of MAD.

2.2 vsf mad bfd enable

Command: vsf mad bfd enable
no vsf mad bfd enable

Function: Open the third layer port to support BFD MAD detection function. The **No** command will closing the particular third layer BFD MAD detection function.

Parameters: None.

Default: Disable.

Command Mode: Interface Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: This command can only be used at VSF operation mode; configure particular port to support the BFD MAD detection function.

2.3 vsf mad ip address

Command: vsf mad ip address <ip-address> <ip-mask> member <member-number>

no vsf mad ip address <ip-address> <ip-mask> member <member-

number>

Function: Appoint the particular establish member facility corresponding to BFD conversation.

Parameters: <*ip-address*> : IP address, <*ip-mask*> : IP address mask, <*member-number*> : Member facilities number, the range is 1-16.

Default: MAD address is not configured.

Command Mode: Interface Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: This command can only be used at VSF operation mode, this command can also establish configuration address to conversation to outlying address.

2.4 vsf mad exclude

Command: vsf mad exclude

no vsf mad exclude

Function: When the facilities ente into the recovery status, the port that configure this command can avoid closing and continuous transmitting. No command is delete the MAD retention port configuration.

Parameters: None.

Default: MAD retention port is not configured.

Command Mode: Port Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: VSF split off, the network will present of 2 global configuration entirety the same facilities. This facilities connect to the network may cause network berak down. In order to prevent this happen, the system will have multi Active detection, at the end will only retain one Active facility, th others will enter into Recovery status. Also, it will close all the operation ports that are on the Recovery status. Using this command can appoint which port is not closed and reserve the right to the user.

2.5 vsf mad restore

Command: vsf mad restore

Function: This command will recover the VSF which at Recovery state to the normal working status.

Parameters: None.

Default: restore is not configured.

Command Mode: Global Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: VSF link broken will have Active collision, the original VSF willsplit into 2

Active VSF. In order to prevent the collision in the network, VSF system will through multi Active detection machinism, putting one of the VSF status as Active (continuous for work), other VSFs just amend as Recovery status (which cannot tackle with the operation messages). If the VSF that at Active status has broke down, at this moment, can using this command to change the VSF which is at Recovery state to normal working status.

2.6 show mad config

Command: show mad config

Function: Show status of VSF MAD configuration, through this command can check the LACP MAD and BFD MAD configuration

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: None.

Chapter 3 Commands for VSF Debugging

3.1 show running-config

Command: show running-config

Function: Check the entire current configuration message.

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: Independent Operation Mode.VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: After the VSF function, this command will put the VSF related configuration message together and place in the top for display.

3.2 show vsf

Command: show vsf

Function: Display the related message to all facilities in the VSF, including the VSF master, backup master, VSF CPU-MAC, VSF bridge MAC, description of facilities, the priority of member, whether to check the edition can in-phase, the configuration message that in the preserving function of bridge MAC address, after the merge of VSF whether the function are workable, VSF domain etc.

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: This command can only be used under the VSF mode, through the VSF protocol to obtain the role election message. Throughout the reading of each configuration document vsf.cfg to obtain the configuration message, bridge MAC, CPU-MAC etc message display.

Example:

```
Switch# sho vsf
```

```
Switch SlotID Role Priority CPU-Mac Description
```

```
-----  
2 M1 M 1 00-03-0f-0f-66-b4 (null)
```

```
2 7 S 1 00-03-0f-0f-66-b4 (null)
```

```
The Bridge Mac of the VSF is: 00-03-0f-0f-66-b4
```

```
Auto Merge: yes
```

Mac Persistent: off

Domain ID: 1

3.3 show vsf topology

Command: show vsf topology

Function: Display the current vsf topology message.

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: VSF merge or leave of the member in the VSF, all of this will touch off protocol operation and calculate the new topology structure. Throughout this command, it can obtain current topology information.

Example:

```
Switch# show vsf topology
```

Switch	VSF-Port1	Neighbor	VSF-Port2	Neighbor
2	Ethernet2/7/3(inactive)	--	--	--

3.4 show vsf-config

Command: show vsf-config

Function: According to the order of the facilities to display the VSF configuration message, member id, priority of the member and the VSF port information of member.

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: When the VSF stand-alone facility formed, will collect the VSF configuration of that machine. If the VSF contains of several of machines, it will send the collection request to other facilities and collect entire VSF configuration information.

Example: ◦

```
Switch# show vsf config
```

MemberID	Priority	VSF-Port1	VSF-Port2
2	1	Ethernet2/7/3	--

3.5 show mad config

Command: show mad config

Function: Checking the current VSF mad detection configuration.

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: This command can only be use under the VSF operation mode. Displays whether LACP, BFD are opened and obtins which port has open these functions.

Example:

```
Switch# show mad config
Current lacp MAD status: Disable
Current bfd MAD status: Detecting
Reserved ports:
Reserved ports(defaults):
interface Ethernet2/7/3
MAD lacp enabled aggregation port:
MAD BFD enabled interface:
Interface Vlan10
vsf mad ip address 10.1.1.1 255.255.255.0 member 1
vsf mad ip address 10.1.1.2 255.255.255.0 member 2
```

Display Message	Explanation
Current lacp MAD status	Show the current status of lacp MAD
Current bfd MAD status	Show the current status of BFD MAD
Reserved ports	The reserved ports user configured
Reserved ports(defaults)	Default reserved port (not need for configuration, default)
MAD lacp enabled aggregation port	Enable LACP MAD aggregate port
MAD BFD enabled interface	Enable BFD MAD port

3.6 show vsf cpu-database all-member brief-information

Command: show vsf cpu-database all-member brief-information

Function: Display all members' brief message in CPU database.

Parameters: None.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Display all members' brief message in CPU database.

Example:

```
Switch# show vsf cpu-database all-member brief-information
```

Vsf cpu database include 1 member:
Member 2 : cpu key:00-03-0f-0f-66-b4, PRI:1
Master is : 2, Standby is : 0

3.7 show vsf cpu-database member basic-information

Command: show vsf cpu-database [member <1-16>| basic information]

Function: Display entire vsf or particular member CPU database basic information.

Parameters: < *member* >: VSF member, <1-16>: VSF member member id.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Display entire vsf or particular member CPU database basic information

Example:

```
Switch# show vsf cpu-database member 2 basic-information
```

```
Vsf cpu database member 2 basic information:
```

```
Key: 00-03-0f-0f-66-b4
```

```
CPU-MAC: 00-03-0f-0f-66-b4
```

```
Member ID: 2
```

```
Domain ID: 1
```

```
Sequence Num: 4
```

```
Master Priority: 1
```

```
Units Num: 1
```

```
Dest unit: 1
```

```
Dest port: 0
```

```
Unit prefer module id: 2
```

```
Unit require module id num: 1
```

```
Vsf port num: 1
```

```
Flags: 131072
```

```
Vsf port index 1:
```

```
Unit: 0
```

```
port: 1
```

```
Weight: 0
```

```
Bflag: 1
```

3.8 show vsf cpu-database member running-information

Command: show vsf cpu-database [member <1-16>| running-information]

Function: Display CPU database operation information.

Parameters: < *member* >: VSF member, <1-16>: VSF member member id.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Display entire or particular member operation information in CPU database.

Example:

```
Switch# show vsf cpu-database member 1 running-information
```

```
%Member 1 not exist in the cpu-database!
```

```
Switch# show vsf cpu-database member 2 running-information
```

```
Vsf cpu database member 2 running information:
```

```
Flags: 1
```

```
Tx unit: 0
```

```
Tx port: 0
```

```
Dest module: 2
```

```
Dest port: 0
```

```
Module ID: 2
```

```
Topo index: 0
```

```
Vsf port index 1 link info:
```

```
Flags: 0
```

```
Tx cpu key:
```

```
Tx port-group: 0
```

```
Rx cpu key:
```

```
Rx port-group: 0
```

3.9 show vsf cpu-database member port-information

Command: show vsf cpu-database [member <1-16>| port-information]

Function: Display CPU database VSF basic information.

Parameters: < *member* >: VSF member, <1-16>: VSF member member id.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: Show the VSF basic information of the entire or the appointed VSF member in CPU database.

Example:

```
Switch# show vsf cpu-database member 2 port-information
```

```
Vsf cpu database member 2 port information:
```

```
Vsf port index 1:
```

```
Unit: 0
```

```
port: 1
```

Weight: 0

Bflag: 1

3.10 show vsf cpu-database member port-link-information

Command: show vsf cpu-database [member <1-16>| port-link-information]

Function: Display CPU database VSF port connection message.

Parameters: < *member* >: VSF member, <1-16>: VSF member member id.

Default: None.

Command Mode: Admin and Configuration Mode.

Operation Mode: VSF Operation Mode.

VSF Role: VSF Master.

Usage Guide: None.

Example:

```
Switch# show vsf cpu-database port-link-information
```

```
Vsf cpu database member 1 include 2 vsf port:
```

```
Vsf port index 1 link info:
```

```
Flags:1
```

```
Tx cpu key:00-01-05-11-11-11
```

```
Tx stk idx:1
```

```
Rx cpu key: 00-01-05-11-11-11
```

```
Rx cpu key:1
```

```
Vsf port index 2 link info:
```

```
Flags:1
```

```
Tx cpu key:00-01-05-11-11-12
```

```
Tx stk idx:2
```

```
Rx cpu key: 00-01-05-11-11-12
```

```
Rx cpu key:2
```

3.11 debug vsf packet detail <alive | all | config | member-infor | probe | routing | topo>

Command: debug vsf packet detail <alive | all | config | member-infor | probe | routing | topo>

no debug vsf packet detail <alive | all | config | member-infor | probe | routing | topo>

Function: Enable all kinds of VSF protocol packets viewing on-off. The no command disables it.

Parameters: <*alive*> : keep-alive packets; <*all*> : enable all VSF protocol packets;

<config> : Configure the information packet, this parameter means the packets interaction in viewing the config. In this stage, VSF members achieves the necessary information of master election through packets interaction to elect the master and standby master; **<member-infor>** : member information packets; **<probe>** : VSF member detection packets, it is used to detect the connection information of all the VSF ports; **<routing>**: VSF member information spreading packets, the information includes: local VSF port information, the modid information needed, number of chips information, Master election priority, CPUDB status information and the chip number and port number information which reach this CPU; **<topo>** : Topology analysis packets, the task in the stage of topology analysis is that Master calculates the network without loop according to the topology information and distributes the Module ID for all members. It will calculate the relationship between each member VSF port and the destination Module ID and then Master issues these results to each member.

Default: Disable.

Command Mode: Admin Mode.

VSF Role: VSF Master, member and line card.

Usage Guide: The VSF groups will go through the stages of discovery and topology analysis in forming. At different stages, the device will be in different status, such as discovery. The device goes through the sub-stages of probe, routing and config respectively. Through this debug on-off, the details of the corresponding protocol packets in different stages can be selected inquired.

3.12 debug vsf packet

Command: debug vsf packet <all | receive | send> vsf-port <vsf-port-number>

no debug vsf packet <all | receive | send> vsf-port <vsf-port-number>

Function: Open the VSF packets debug on-off. The no command will close this debug function.

Parameters: **<receive>**: Enable the VSF packets debug on-off received; **<send>**: Enable the VSF packets debug on-off sent; **<all>**: Enable the received and sent; **<vsf-port-id>**: VSF port number.

Default: Disable.

Command Mode: Admin Mode.

VSF Role: VSF Master, Member and Slave.

Usage Guide: After open the VSF packets debug on-off, it can see the VSF protocol message receive.

3.13 debug vsf event

Command: debug vsf event

no debug vsf event

Function: Open the switch of VSF event debug information. **No** command is closing this

debug function

Parameters: None.

Default: Disable.

Command Mode: Admin Mode.

VSF Role: VSF Master, Member and Slave.

Usage Guide: After open the on-off of VSF event debug information, the VSF operates to the defined events in all stages, it can provide corresponding feedback to the user.

3.14 debug vsf error

Command: debug vsf error

no debug vsf error

Function: Open the switch of the VSF debug on-off. **No** command is closing the debug function.

Parameters: None.

Default: None.

Default: Disable.

Command Mode: Admin Mode.

VSF Role: VSF Master, Member and Slave.

Usage Guide: After open the debug, it can display the error messages for all stages during the VSF.