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Chapter 1 Commands for Centralized Forwarding

1.1 clear counters

Command: clear counters [interface wlan <ifname>]

Function: Clear statistic information of port.

Parameters: <ifname>: Centralized tunnel name.

Default: None.

Command Mode: Admin Mode.

Usage Guide: Clear statistic information of the appointed tunnel port. If the port is not appointed, clear statistic information of all ports.

Example: Clear statistic information of capwaptnl3, then examine the flow statistic of capwaptnl3.

```
AC#clear counters interface wlan capwaptnl3
```

```
AC#show interface wlan capwaptnl3
```

```
5 minute input rate 0 bits/sec, 0 packets/sec
```

```
5 minute output rate 0 bits/sec, 0 packets/sec
```

```
The last 5 second input rate 0 bits/sec, 0 packets/sec
```

```
The last 5 second output rate 0 bits/sec, 0 packets/sec
```

```
Input packets statistics:
```

```
0 input packets, 0 bytes
```

```
Output packets statistics:
```

```
0 output packets, 0 bytes
```

1.2 debug wireless cl2tunnel error

Command: debug wireless cl2tunnel error <FF-FF-FF-FF-FF-FF>

no debug wireless cl2tunnel error <FF-FF-FF-FF-FF-FF>

Function: Enable/disable centralized forwarding error debug information.

Parameters: <FF-FF-FF-FF-FF-FF>: MAC address of AP opposite to tunnel.

Default: None.

Command Mode: Admin Mode.

Usage Guide: After enabling debug on-off, the error information of creating, deleting and configuring centralized tunnel will be printed.

Example: Enable error debug information on-off of centralized tunnel in APs whose MAC

address is 00-03-0f-11-11-00.

```
AC#debug wireless cl2tunnel error 00-03-0f-11-11-00
```

```
error WD_LEVEL_CENTTNNL_ERROR debug is on
```

```
MAC: 00-03-0f-11-11-00 error WD_LEVEL_CENTTNNL_ERROR debug is on
```

1.3 debug wireless cl2tunnel internal-info

Command: debug wireless cl2tunnel internal-info <FF-FF-FF-FF-FF-FF>

no debug wireless cl2tunnel internal-info <FF-FF-FF-FF-FF-FF>

Function: Enable/disable the internal debug information of centralized forwarding.

Parameters: <FF-FF-FF-FF-FF-FF>: MAC address of AP opposite to tunnel.

Default: None.

Command Mode: Admin Mode.

Usage Guide: After enabling debug on-off, the internal information of creating, deleting and configuring centralized tunnel will be printed to locate the error.

Example: Enable internal debug information of centralized tunnel in APs whose MAC address is 00-03-0f-11-11-00.

```
AC#debug wireless cl2tunnel internal-info 00-03-0f-11-11-00
```

```
internal WD_LEVEL_CENTTNNL_INFO debug is on
```

```
MAC: 00-03-0f-11-11-00 internal WD_LEVEL_CENTTNNL_INFO debug is on
```

1.4 l2tunnel vlan-list

Command: l2tunnel vlan-list <1-4094>

no l2tunnel vlan-list <1-4094>

Function: Add a VLAN to tunnel VLAN list, the no command deletes a VLAN from tunnel VLAN list.

Parameters: <1-4094>: ID of VLAN added to tunnel VLAN list.

Default: Tunneled VLAN list is free.

Command Mode: Wireless Global Mode.

Usage Guide: Add a VLAN to tunnel VLAN list, all user data packets which belong to this VLAN run CAPWAP centralized tunnel. Please pay attention that managed packets do not forward through tunnel.

Example: Add VLAN 21 to tunnel VLAN list.

```
AC(config-wireless)#l2tunnel vlan-list 21
```

1.5 show interface wlan

Command: show interface wlan [*<ifname>* | counter rate]

Function: Examine statistic information of all centralized tunnels or the tunnels which are appointed name.

Parameters: *<ifname>*: centralized tunnel name.

Default: None.

Command Mode: Admin Mode.

Usage Guide: If the tunnel name is appointed, print flow statistic of the appointed tunnel; if the tunnel name is not appointed, print flow statistic of all tunnels. Counter rate shows rate statistic information of all tunnel ports, it is number and bytes of packets which are input or output in 5 minutes or 5 seconds.

Example: Examine flow statistic of all tunnels in system.

```
AC#show interface wlan
```

```
capwaptnl2
```

```
5 minute input rate 630 bits/sec, 1 packets/sec
```

```
5 minute output rate 2587 bits/sec, 3 packets/sec
```

```
The last 5 second input rate 0 bits/sec, 0 packets/sec
```

```
The last 5 second output rate 448 bits/sec, 0 packets/sec
```

```
Input packets statistics:
```

```
5351 input packets, 363868 bytes
```

```
Output packets statistics:
```

```
11495 output packets, 1429784 bytes
```

```
capwaptnl1
```

```
5 minute input rate 0 bits/sec, 0 packets/sec
```

```
5 minute output rate 2504 bits/sec, 3 packets/sec
```

```
The last 5 second input rate 0 bits/sec, 0 packets/sec
```

```
The last 5 second output rate 435 bits/sec, 0 packets/sec
```

```
Input packets statistics:
```

```
203998 input packets, 16095096 bytes
```

```
Output packets statistics:
```

```
282213 output packets, 33968640 bytes
```

```
capwaptnl3
```

```
5 minute input rate 0 bits/sec, 0 packets/sec
```

```
5 minute output rate 2504 bits/sec, 3 packets/sec
```

```
The last 5 second input rate 0 bits/sec, 0 packets/sec
```

The last 5 second output rate 435 bits/sec, 0 packets/sec

Input packets statistics:

0 input packets, 0 bytes

Output packets statistics:

281311 output packets, 33809753 bytes

1.6 show wireless l2tunnel count

Command: show wireless l2tunnel count

Function: Examine number of all centralized tunnels in system.

Parameters: None.

Default: None.

Command Mode: Admin Mode.

Usage Guide: This command is used to show the total number of centralized tunnels in current system. When the number of tunnels is larger, using this command can know if there is tunnel created or deleted in system quickly.

Example: Examine number of all centralized tunnels in system.

AC#show wireless l2tunnel count

Number of centtnnl: 9

1.7 show wireless l2tunnel tunnel-list

Command: show wireless l2tunnel tunnel-list

Function: Examine all centralized tunnels in system.

Parameters: None.

Default: None.

Command Mode: Admin Mode.

Usage Guide: Search for all centralized tunnels from system and print them. SIP: source IP address of tunnels; DIP: target IP address of tunnels; SPORT: source port number of tunnels; DPORT: target port number of tunnels; TYPE: tunnels types, ap2ac means the tunnel between AP and AC.

Example: Examine all centralized tunnels in system.

AC#show wireless l2tunnel tunnel-list

Tunnel List

tunnel_name	SIP	DIP	SPORT	DPORT	TYPE
capwaptn1	192.168.20.1	192.168.10.201	57778	57779	ap2ac
capwaptn2	192.168.20.1	192.168.10.202	57778	57779	ap2ac

1.8 show wireless l2tunnel vlan-list

Command: show wireless l2tunnel vlan-list

Function: Examine tunnel VLAN list in system.

Parameters: None.

Default: None.

Command Mode: Admin Mode.

Usage Guide: Search for all tunnel VLAN from system and print them.

Example: Examine tunnel VLAN list in system.

AC#show wireless l2tunnel vlan-list

VLAN List

21 - VLAN0021

42 - VLAN0042

Chapter 2 Commands for Local Forwarding

2.1 vlan

Command: vlan <1-4094>

Function: Configure vlan in AC.

Parameter: <1-4094> is the VLAN ID for VAP.

Default: VLAN 1.

Command Mode: Network configuration mode.

Usage Guide: Choose network ID before configuring network vlan in the AC, after network vlan configured, the wireless packets which are received from the VPN related to this network will be tagged the VLAN tag when it is changed to 802.3 format.

Example: Set the VLAN of network 38 to be 39.

```
AC(config-wireless)#network 38
```

```
AC(config-network)#vlan 39
```

Chapter 3 Commands for Distributed Forwarding

3.1 clear wireless detected-client roam-history

Command: clear wireless detected-client [*<macaddr>*] roam-history

Function: Clear the roaming informations of roaming users.

Parameter: macaddr: MAC address of roaming client.

Default: None.

Command Mode: Admin mode.

Usage Guide: With no parameters, clear roaming informations of all roaming users. When more than one AC make up the cluster, this command only can be used in AC Controller of the cluster, if not, there will be corresponding prompt when executing this command.

Example: Clear roaming informations of user with mac address of 08-10-74-ad-93-c8.

```
AC#clear wireless detected-client 08-10-74-ad-93-c8 roam-history
Process with clear the client roam-history? [Y/N]y
```

3.2 debug wireless dl2tunnel error

Command: debug wireless dl2tunnel error *<FF-FF-FF-FF-FF-FF>*

no debug wireless dl2tunnel error *<FF-FF-FF-FF-FF-FF>*

Function: Enable/disable distributed layer 2 interior tunnel error information.

Parameter: *<FF-FF-FF-FF-FF-FF>* MAC address of AP or wireless Client.

Default: None.

Command Mode: Admin mode.

Usage Guide: Use this command to enable the distributed layer 2 interior tunnel error information of the specified AP or the wireless Client.

Example: Enable the distributed layer 2 interior tunnel error information of the wireless client with MAC of 08-10-74-ad-93-c8.

```
AC#debug wireless dl2tunnel error 08-10-74-ad-93-c8
```

3.3 debug wireless dl2tunnel internal-info

Command: debug wireless dl2tunnel internal-info *<FF-FF-FF-FF-FF-FF>*

no debug wireless dl2tunnel internal-info *<FF-FF-FF-FF-FF-FF>*

Function: Enable/disable the distributed layer 2 interior tunnel debugging information.

Parameter: `<FF-FF-FF-FF-FF-FF>` : MAC address of AP or wireless Client.

Default: None.

Command Mode: Admin mode.

Usage Guide: Use this command to enable the distributed layer 2 interior tunnel debugging information of specified AP or the wireless Client.

Example: Enable the distributed layer 2 interior tunnel debugging information of the wireless Client with MAC of 08-10-74-ad-93-c8.

```
AC#debug wireless dl2tunnel internal-info 08-10-74-ad-93-c8
```

3.4 dist-tunnel

Command: `dist-tunnel`

`no dist-tunnel`

Function: Enable distributed tunnel, the no command will disable distributed tunnel function.

Parameter: None.

Default: Disable distributed tunnel.

Command Mode: Network configuration mode.

Usage Guide: In Network configuration mode, enable dist-tunnel.

Example: Enable distributed tunnel function of network 34.

```
AC(config-wireless)#network 34
```

```
AC(config-network)#dist-tunnel
```

3.5 dist-tunnel idle-timeout

Command: `dist-tunnel idle-timeout <30-3600>`

`no dist-tunnel idle-timeout`

Function: Configure the tunnel Idle Timeout value of Home-AP, the no command will restore the default value as 120s.

Parameter: `<30-3600>` is the tunnel Idle Timeout value for Home-AP.

Default: 120s.

Command Mode: Wireless global configuration mode.

Usage Guide: Home-AP will inspect the Client tunnel idle time whether it is timeout once every 30 seconds, if true, then send releasing tunnel message to AC, AC forwards it to Assoc-AP to release tunnel, Client will re-obtain the IP address. If IdleTimeout changed, the new value will be sent to AP from AC, AP will inspect the tunnel idle time whether it is timeout at the next 30 seconds. If true, the same as above.

Example: Set the IdleTimeout value to be 1200s of Home-AP.

```
AC(config-wireless)#dist-tunnel idle-timeout 1200
```

3.6 dist-tunnel max-client

Command: `dist-tunnel max-client <1-8000>`

`no dist-tunnel max-client`

Function: Configure the maximum number of roaming users of Home-AP. The no command will restore the default value as 128.

Parameter: `<1-8000>` is the number of maximum number of roaming users of Home-AP.

Default: 128.

Command Mode: Wireless global configuration mode.

Usage Guide: If the roaming users' number is already over Home-AP MaxClient, then create tunnel message sent from AC will unsuccessful, the AP will reply AC a releasing tunnel message to AC, then AC forwards it to Assoc-AP or Peer-switch. If MaxClients changed, the configuration will be sent to AP, AP will inspect the correlation tunnel users' number whether exceeds the limit, if exceed, it will delete the first user from the user list one by one till it does not exceed the limit.

Example: Set the Home-AP MaxClient number to be 256.

```
AC(config-wireless)#dist-tunnel max-client 256
```

3.7 dist-tunnel max-timeout

Command: `dist-tunnel max-timeout <30-86400>`

`no dist-tunnel max-timeout`

Function: Configure Home-AP tunnel tunnel timeout value, the no command will restore the default value as 7200s.

Parameter: `<30-86400>` is for Home-AP tunnel timeout value.

Default: 7200s

Command Mode: Wireless global configuration mode.

Usage Guide: Regardless whether there is client traffic, Home-AP will inspect the wireless Client whether it is timeout once every 30 seconds, when the tunnel set-up time exceeds this value, Home-AP will send releasing tunnel message to AC, AC forwards it to Assoc-AP to release the tunnel.

Example: Set the Home-AP tunnel timeout value as 36000s.

```
AC(config-wireless)#dist-tunnel max-timeout 36000
```

3.8 dist-tunnel mcast-repl

Command: `dist-tunnel mcast-repl <1-1024>`

`no dist-tunnel mcast-repl`

Function: Configure number of multicast copying of Home-AP, the no command will restore the default value as 128.

Parameter: `<1-1024>` is number of multicast copying of Home-AP.

Default: 128.

Command Mode: Wireless global configuration mode

Usage Guide: If the roaming users exceed the MaxMcastRepl value, then create tunnel message sent from AC will unsuccessful, the AP will reply AC a releasing tunnel message to AC, then AC forwards it to Assoc-AP or Peer-switch. If MaxMcastRepl changed, the configuration will be sent to AP from AC, AP will inspect the correlation tunnel number whether it exceeds the limit, if exceed, it will delete the tunnels till it does not exceed the limit.

Example: Set number of multicast copying of Home-AP as 256.

AC(config-wireless)#dist-tunnel mcast-repl 256

3.9 show wireless ap dist-tunnel

Command: `show wireless ap <macaddr> dist-tunnel {statistics | status}`

Function: Show AP distributed tunnel correlation information.

Parameter: `<macaddr>`: MAC address of AP

statistics: AP distributed tunnel statistics

status: AP distributed tunnel status

Default: None.

Command Mode: Admin mode.

Usage Guide: Use this command to check the distributed tunnel statistics or tunnel status of specified AP.

Example: Check the distributed tunnel statistics of AP with MAC address of 00-03-0f-08-01-80.

AC#show wireless ap 00-03-0f-08-01-80 dist-tunnel statistics

MAC address..... 00-03-0f-08-01-80

Distributed Tunnel Bytes Transmitted..... 2673289

Distributed Tunnel Packets Transmitted..... 18258

Distributed Tunnel Multicast Packets Transmit.. 1404

Distributed Tunnel Bytes Received..... 11784659

Distributed Tunnel Packets Received..... 15099

Distributed Tunnel Multicast Packets Received.. 87894
 Distributed Tunnel Roamed Clients of AP..... 33
 Distributed Tunnel Roamed Clients Idle Timed .. 0
 Distributed Tunnel Roamed Clients Age Timed o.. 0
 Distributed Tunnel Client Limit Denials..... 0
 Distributed Tunnel Client Max Replication Den.. 0

3.10 show wireless client detected-client roam-history

Command: show wireless client [*macaddr*] detected-client roam-history

Function: Show roaming information of roaming users. If it is without parameters, show the roaming information of all roaming users.

Parameter: *macaddr*: MAC address of roam user.

Default: None.

Command Mode: Admin mode.

Usage Guide: This command only can be used in AC Controller of the cluster, if not, there will be corresponding prompt when executing this command.

Example: Check the client roaming information in AC Controller of the cluster with MAC of e0-05-c5-90-1c-54.

AC#show wireless client e0-05-c5-90-1c-54 detected-client roam-history

Client MAC Address..... e0-05-c5-90-1c-54

AP MAC Addr(Radio)	VAP MAC Address	SSID	Auth	Time
			Status	Event
00-03-0f-22-22-00(1)	00-03-0f-22-22-0b	ax_ac1_34	New Auth	1d:23:31:49
00-03-0f-11-11-00(1)	00-03-0f-11-11-0b	ax_ac1_34	Roam	1d:23:34:14

3.11 show wireless client dist-tunnel status

Command: show wireless client *macaddr* dist-tunnel status

Function: Show distributed tunnel roaming user information.

Parameter: *macaddr*: MAC address of roaming user.

Default: None.

Command Mode: Admin mode.

Usage Guide: Use this command to check distributed tunnel status information of

roaming user. When the roaming user associates with Home-Ap before roaming, Distributed Tunnel Client Roam Status shows: Home; When the roaming user associates with with Assoc-Ap after roaming; Distributed Tunnel Client Roam Status shows: Roaming.

Example: Check the distributed tunnel roaming user status whose MAC is 08-10-74-ad-93-c8.

```
AC#show wireless client 08-10-74-ad-93-c8 dist-tunnel status
MAC address..... 08-10-74-ad-93-c8
VAP MAC Address..... 00-03-0f-08-03-0b
AP MAC Address..... 00-03-0f-08-03-00
Associating Switch..... Peer Switch
Switch MAC Address..... 00-03-0f-17-d2-13
Switch IP Address..... 192.168.40.1
Distributed Tunneling Status..... Enable
Distributed Tunnel Client Roam Status..... Roaming
Distributed Tunnel Home AP MAC Address..... 00-03-0f-08-01-80
Distributed Tunnel Associated AP MAC Address... 00-03-0f-08-03-00
```

3.12 show wireless dist-tunnel

Command: show wireless dist-tunnel

Function: Show distributed tunnel configuration information.

Parameter: None.

Default: None.

Command Mode: Admin mode.

Usage Guide: Check: Home-AP tunnel max clients, tunnel idle timeout, tunnel timeout, tunnel max multicast replications.

Example: Check distributed tunnel information.

```
AC#show wireless dist-tunnel
Distributed Tunnel Max Clients..... 128
Distributed Tunnel Idle Timeout..... 120
Distributed Tunnel Timeout..... 7200
Distributed Tunnel Max Multicast Replications. 128
```

3.13 show wireless dist-tunnel statistics

Command: show wireless dist-tunnel statistics

Function: Show distributed tunnel statistics.

Parameter: None.

Default: None.

Command Mode: Admin mode.

Usage Guide: Check statistic information: tunnel packets transmitted, tunnel roamed clients, tunnel client denials.

Example: Show distributed tunnel statistics.

```
AC#show wireless dist-tunnel statistics
```

```
Distributed Tunnel Packets Transmitted..... 33350
```

```
Distributed Tunnel Roamed Clients..... 64
```

```
Distributed Tunnel Client Denials..... 0
```