



## Configuring 802.1Q-in-Q VLAN Tagging

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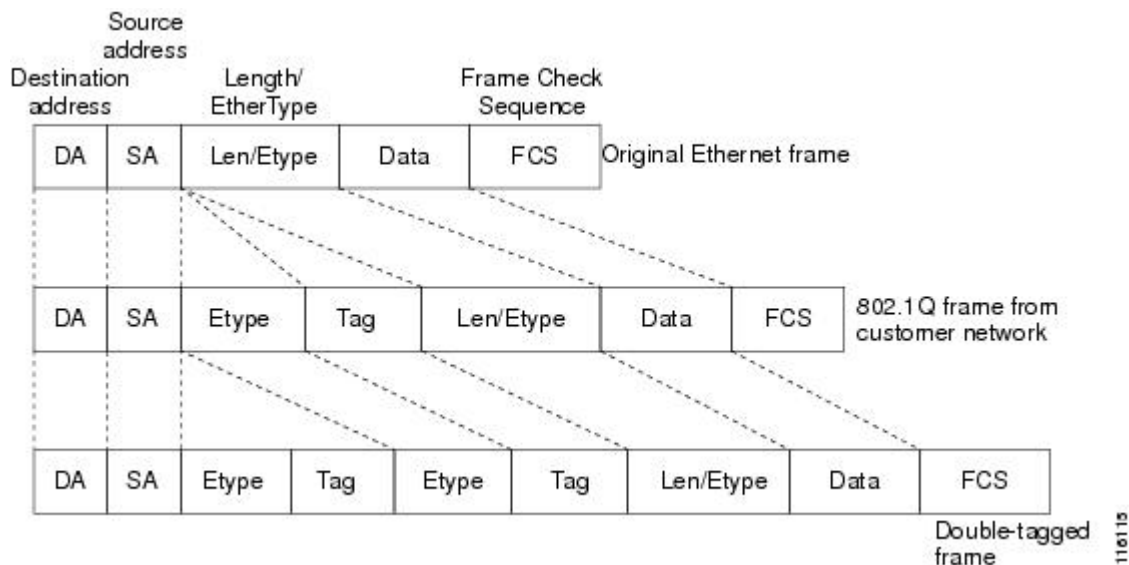
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### Information About 802.1Q-in-Q VLAN Tagging

Assigning a unique range of VLAN IDs to each client can exceed the limit of 4096 VLANs. The 802.1Q-in-Q VLAN tag feature encapsulates the 802.1Q VLAN tagging within another 802.1Q VLAN tag. The outer tag is assigned according to the AP group, and the inner VLAN ID is assigned dynamically by the AAA server.

Using the 802.1Q-in-Q feature you can use a single VLAN to support multiple VLANs. With the 802.1Q-in-Q feature you can preserve VLAN IDs and segregate traffic of different VLANs. The figure below shows the untagged, 802.1Q-tagged, and 802.1Q-in-Q tagged Ethernet frames.

**Figure 1: Untagged 802.1Q-Tagged and 802.1Q-in-Q Tagged Ethernet Frames**



### Related Topics

- [Configuring 802.1Q-in-Q VLAN Tagging \(GUI\)](#)
- [Configuring 802.1Q-in-Q VLAN Tagging \(CLI\)](#)
- [Restrictions for 802.1Q-in-Q VLAN Tagging](#)
- [Configuring 802.1Q-in-Q VLAN Tagging \(GUI\)](#)
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## Restrictions for 802.1Q-in-Q VLAN Tagging

- 802.1Q-in-Q VLAN tagging is supported only on Cisco 5500 Series Wireless LAN Controllers, Cisco 8500 Series Wireless LAN Controllers, and Cisco WiSM2.
- You cannot enable multicast until you disable IGMP snooping.
- 802.1Q-in-Q VLAN tagging is supported only on Layer 2 and Layer 3 intra-Controller roaming, and Layer 2 inter-Controller roaming. Layer 3 inter-Controller roaming is not supported.
- 0x8100 is the only supported value for the EtherType field of the 802.1Q-in-Q Ethernet frame.
- You can enable 802.1Q-in-Q VLAN tagging only on centrally switched packets.
- You can enable only IPv4 DHCP packets and not IPv6 DHCP packets for 802.1Q-in-Q VLAN tagging.
- The IETF attribute which is a tunnel-type is required to override the C-VLAN.

- C-VLAN can be set with `tunnel-private-group-ID /tunnel-type` and `tunnel-private-group-id`.

### Related Topics

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## Configuring 802.1Q-in-Q VLAN Tagging (GUI)

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- Step 1** Choose **WLANS > Advanced > AP Groups** to open the AP Groups page.
- Step 2** Click an AP group Name to open the corresponding AP Group > Edit page.
- Step 3** Click the **General** tab to configure the 802.1Q-in-Q VLAN tagging details.
- Step 4** Select the **Enable Client Traffic QinQ** check box to enable 802.1Q-in-Q VLAN tagging for the AP group.
- Step 5** Select the **Enable DHCPv4 QinQ** check box to enable 802.1Q-in-Q VLAN tagging of IPv4 DHCP packets in the AP group.
- Step 6** In the **QinQ Service VLAN ID** text box, enter the VLAN ID for 802.1Q-in-Q VLAN tagging.
- Step 7** Click **Apply**.
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### Related Topics

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- [Restrictions for 802.1Q-in-Q VLAN Tagging](#)
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## Configuring 802.1Q-in-Q VLAN Tagging (CLI)

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- Step 1** Enable or disable 802.1Q-in-Q VLAN tagging for an AP group by entering this command:  
**config wlan apgroup qinq tagging client-traffic *apgroup\_name* {enable | disable}**  
By default, 802.1Q-in-Q tagging of client traffic for an AP group is disabled.
- Step 2** Configure the service VLAN for the AP group by entering this command:  
**config wlan apgroup qinq service-vlan *apgroup\_name* *vlan\_id***
- Step 3** Enable or disable IPv4 DHCP packets of the client traffic in the AP group by entering this command::  
**config wlan apgroup qinq tagging dhcp-v4 *apgroup\_name* {enable | disable}**

**Note** You must enable 802.1Q-in-Q tagging of client traffic before you enable 802.1Q-in-Q tagging of DHCPv4 traffic.

By default, 802.1Q-in-Q tagging of DHCPv4 traffic for an AP group is disabled.

**Step 4** Enable or disable 802.1Q-in-Q VLAN tagging for EAP for Global System for Mobile Communications (GSM) Subscriber Identity Module (EAP-SIM) or EAP for Authentication and Key Agreement-authenticated client traffic in the AP group by entering this command:

```
config wlan apgroup qinq tagging eap-sim-aka apgroup_name {enable | disable}
```

When you enable 802.1Q-in-Q tagging of client traffic, the 802.1Q-in-Q tagging of EAP for Authentication and Key Agreement (EAP-AKA) and EAP-SIM traffic is enabled.

**Step 5** Verify if 802.1Q-in-Q VLAN tagging is enabled by entering this command:

```
show wlan apgroups
```

```
(Cisco Controller) >show wlan apgroups
Total Number of AP Groups..... 5

Site Name..... CT_building1
Site Description..... APs for CT Building1
Venue Group Code..... Unspecified
Venue Type Code..... Unspecified

NAS-identifier..... CTB1
Client Traffic Qinq Enable..... TRUE
DHCPv4 Qinq Enable..... TRUE
AP Operating Class..... Not-configured
```

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