802.1Q tunneling

IEEE 802.1Q tunneling can be used to achieve simple layer 2 VPN connectivity between sites by encapsulating one 802.1Q trunk inside another. 802.1Q tunneling also called QinQ

Business customers of service providers often have specific requirements for VLAN IDs and the number of VLANs to be supported. The VLAN ranges required by different customers in the same service-provider network might overlap, and traffic of customers through the infrastructure might be mixed. Assigning a unique range of VLAN IDs to each customer would restrict customer configurations and could easily exceed the VLAN limit (4096) of the IEEE 802.1Q specification.

802.1Q tunneling solves this issues by assigning each customer a single VLAN number, chosen by the service provider. Within each customer VLAN exists a secondary 802.1Q trunk, which is controlled by the customer. Each customer packet traversing the service provider network is tagged twice: the inner-most 802.1Q header contains the customer-chosen VLAN ID, and the outer-most header contains the VLAN ID assigned to the customer by the service provider.

Customer traffic tagged in the normal way with appropriate VLAN IDs comes from an IEEE 802.1Q trunk port on the customer device and into a tunnel port on the service-provider edge switch. The link between the customer device and the edge switch is asymmetric because one end is configured as an IEEE 802.1Q trunk port, and the other end is configured as a tunnel port.

Note: By default, the native VLAN traffic of a dot1q trunk is sent untagged, which cannot be double-tagged in the service provider network. Because of this situation, the native VLAN traffic might not be tunneled correctly. Be sure that the native VLAN traffic is always sent tagged in an asymmetrical link.Also we must verify that all of our switches support the necessary maximum transmission unit (MTU), 1504 bytes before configuring 802.1Q tunneling

These are some ways to solve Native VLAN tagging problem:

•Use the vlan dot1q tag native global configuration command to configure the edge switch so that all packets going out an IEEE 802.1Q trunk, including the native VLAN, are tagged. If the switch is configured to tag native VLAN packets on all IEEE 802.1Q trunks, the switch accepts untagged packets, but sends only tagged packets.

•Ensure that the native VLAN ID on the edge-switch trunk port is not within the

customer VLAN range. For example, if the trunk port carries traffic of VLANs 100 to 200, assign the native VLAN a number outside that range.