

Stacking and Rewriting Gigabit Ethernet VLAN Tags

You can configure rewrite operations to stack (**push**), remove (**pop**), or rewrite (**swap**) tags on single-tagged frames and dual-tagged frames. If a port is not tagged, rewrite operations are not supported on any logical interface on that port.

You can configure the following VLAN rewrite operations:

- **pop**—Remove a VLAN tag from the top of the VLAN tag stack. The outer VLAN tag of the frame is removed.
- **pop-pop**—For Ethernet IQ2 and IQ2-E interfaces, remove both the outer and inner VLAN tags of the frame.
- **pop-swap**—For Ethernet IQ2 and IQ2-E interfaces, remove the outer VLAN tag of the frame, and replace the inner VLAN tag of the frame with a user-specified VLAN tag value. The inner tag becomes the outer tag in the final frame.
- **push**—Add a new VLAN tag to the top of the VLAN stack. An outer VLAN tag is pushed in front of the existing VLAN tag.
- **push-push**—For Ethernet IQ2 and IQ2-E interfaces, push two VLAN tags in front of the frame.
- **swap-push**—For Ethernet IQ2 and IQ2-E interfaces, replace the outer VLAN tag of the frame with a user-specified VLAN tag value. A user-specified outer VLAN tag is pushed in front. The outer tag becomes an inner tag in the final frame.
- **swap-swap**—For Ethernet IQ2 and IQ2-E interfaces, replace both the inner and the outer VLAN tags of the incoming frame with a user-specified VLAN tag value.

You configure VLAN rewrite operations for logical interfaces in the input VLAN map for incoming frames and in the output VLAN map for outgoing frames. To configure the input VLAN map, include the **input-vlan-map** statement:

```
[Unresolved xref] {  
    ...interface-specific configuration...  
}
```

To configure the output VLAN map, include the **output-vlan-map** statement:

```
[Unresolved xref] {  
    ...interface-specific configuration...  
}
```

You can include both statements at the following hierarchy levels:

- [edit interfaces *interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*]

The type of VLAN rewrite operation permitted depends upon whether the frame is single-tagged or dual-tagged. Table 1 shows supported rewrite operations and whether

they can be applied to single-tagged frames or dual-tagged frames. The table also indicates the number of tags being added or removed during the operation.

Table 1: Rewrite Operations on Not Tagged, Single-Tagged, and Dual-Tagged Frames

Rewrite Operation	Not Tagged	Single-Tagged	Dual-Tagged	Number of Tags
pop	No	Yes	Yes	– 1
push	Sometimes	Yes	Yes	+ 1
swap	No	Yes	Yes	0
push-push	Sometimes	Yes	Yes	+ 2
swap-push	No	Yes	Yes	+ 1
swap-swap	No	No	Yes	0
pop-pop	No	No	Yes	– 2
pop-swap	No	No	Yes	– 1

The rewrite operations **push** and **push-push** can be valid in certain circumstances on frames that are not tagged. For example, a single-tagged logical interface (interface 1) and a dual-tagged logical interface (interface 2) have the following configurations:

```

Interface 1  [edit interfaces interface-name unit logical-unit-number]
                [Unresolved xref] {
                pop;
                }
                [Unresolved xref] {
                push;
                }

Interface 2  [edit interfaces interface-name unit logical-unit-number]
                [Unresolved xref] {
                pop-pop;
                }
                [Unresolved xref] {
                push-push;
                }

```

When a frame is received on the interface as a result of the **input-vlan-map** operation, the frame is not tagged. As it goes out of the second interface, the **output-vlan-map** operation **push-push** is applied to it. The resulting frame will be dual-tagged at the logical interface output.

Depending on the VLAN rewrite operation, you configure the rewrite operation for the interface in the input VLAN map, the output VLAN map, or in both the input VLAN map and the output VLAN map. Table 2 shows what rewrite operation

combinations you can configure. “None” means that no rewrite operation is specified for the VLAN map.

Table 2: Applying Rewrite Operations to VLAN Maps

Input VLAN Map	Output VLAN Map								
	none	push	pop	swap	push-push	swap-push	swap-swap	pop-pop	swap-pop
none	Yes	No	No	Yes	No	No	Yes	No	No
push	No	No	Yes	No	No	No	No	No	No
pop	No	Yes	No	No	No	No	No	No	No
swap	Yes	No	No	Yes	No	No	No	No	No
push-push	No	No	No	No	No	No	No	Yes	No
swap-push	No	No	No	No	No	No	No	No	Yes
swap-swap	Yes	No	No	No	No	No	Yes	No	No
pop-pop	No	No	No	No	Yes	No	No	No	No
pop-swap	No	No	No	No	No	Yes	No	No	No

As well as knowing if the VLAN rewrite operation is valid, and whether it is applied to the input VLAN map or the output VLAN map, you must also know whether the rewrite operation requires you to include statements to configure the inner and outer TPIDs and inner and outer VLAN IDs in the input VLAN map or output VLAN map. For information about configuring inner and outer TPIDs and inner and outer VLAN IDs, see [Configuring Inner and Outer TPIDs and VLAN IDs](#).

