VLANs

are used to separate hosts residing in the same physical network

Router on a Stick

CyberQuince

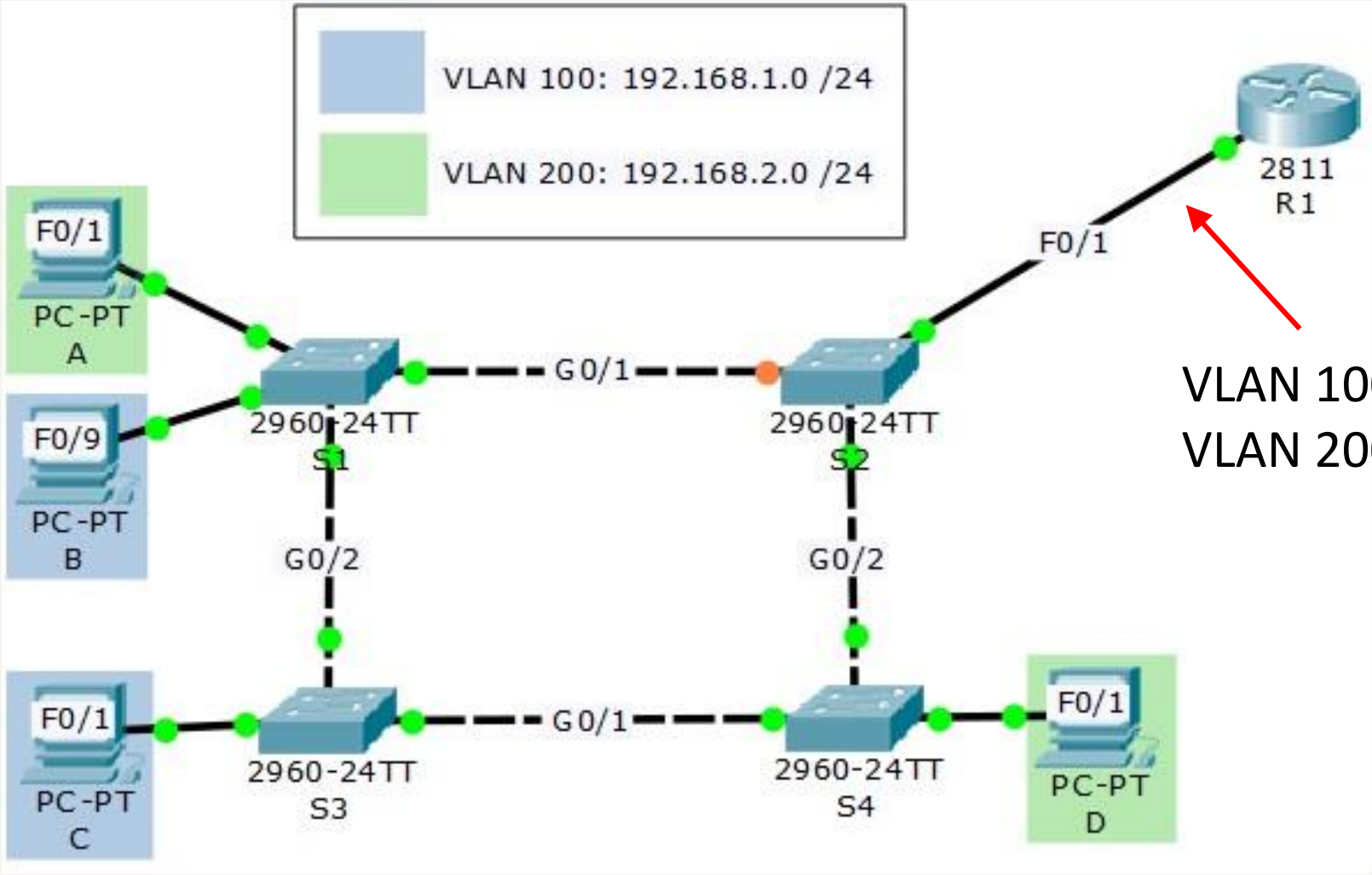
Router-on-a-Stick

If there is a need for endpoints in different VLANs to communicate, a router is needed.

„Router on a stick” is a specific router configuration whose task is to connect different VLANs. The router is “on a stick” because there’s often several separate networks connected to a single router interface.

This is achieved by creating several virtual interfaces on top of a single physical interface. Each virtual interface is a gateway for it’s VLAN.

Router-on-a-Stick



VLAN 100: FastEthernet 0/1.100
VLAN 200: FastEthernet 0/1.200

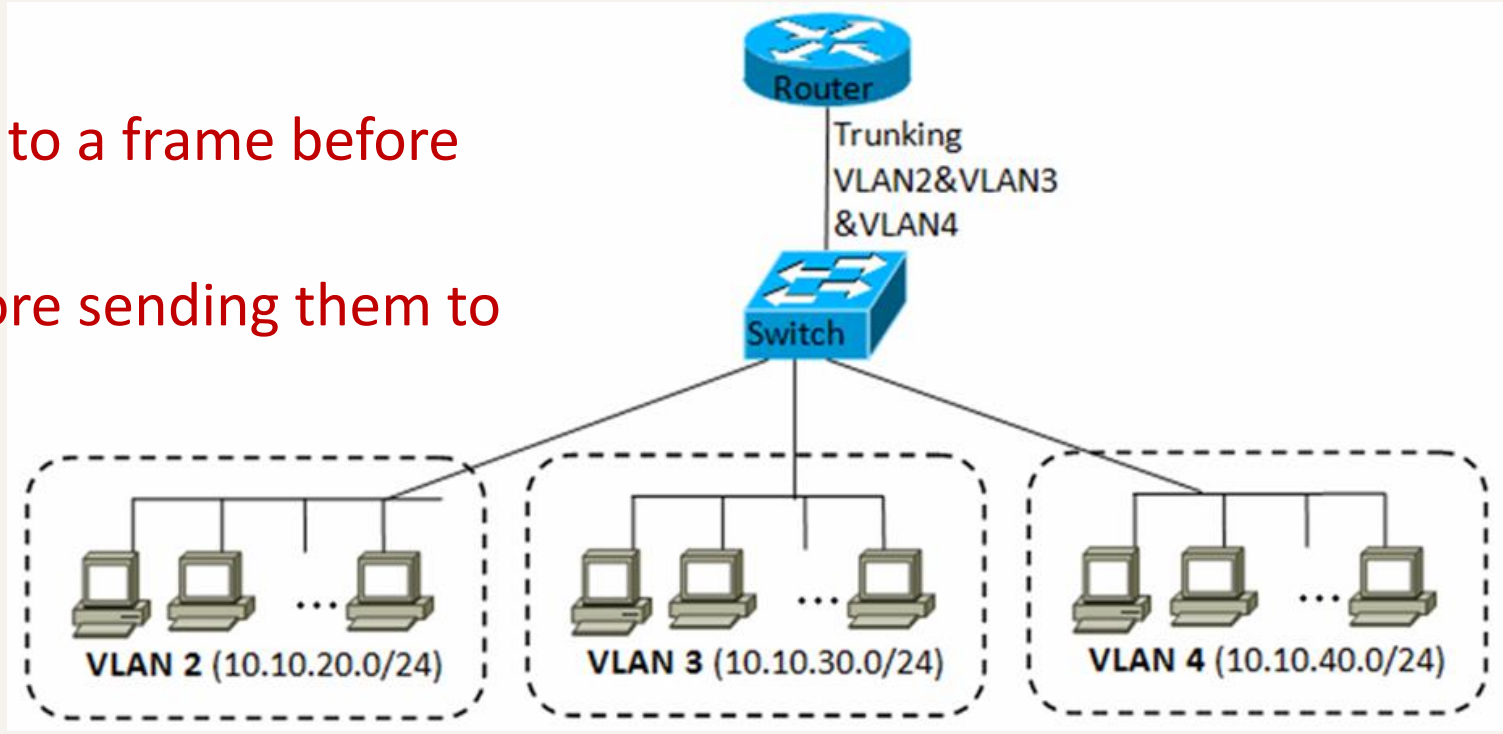
"dot1q"

Since a trunk link can carry packets belonging to different VLANs, there has to be a way to differentiate those packets, so that the receiving switch knows to which access port it should forward them to.

To solve this, ***tagging*** is used: an ID is attached to each frame transferred via trunk links.

In short: an ID (or a tag) is added to a frame before sending over a trunk link,

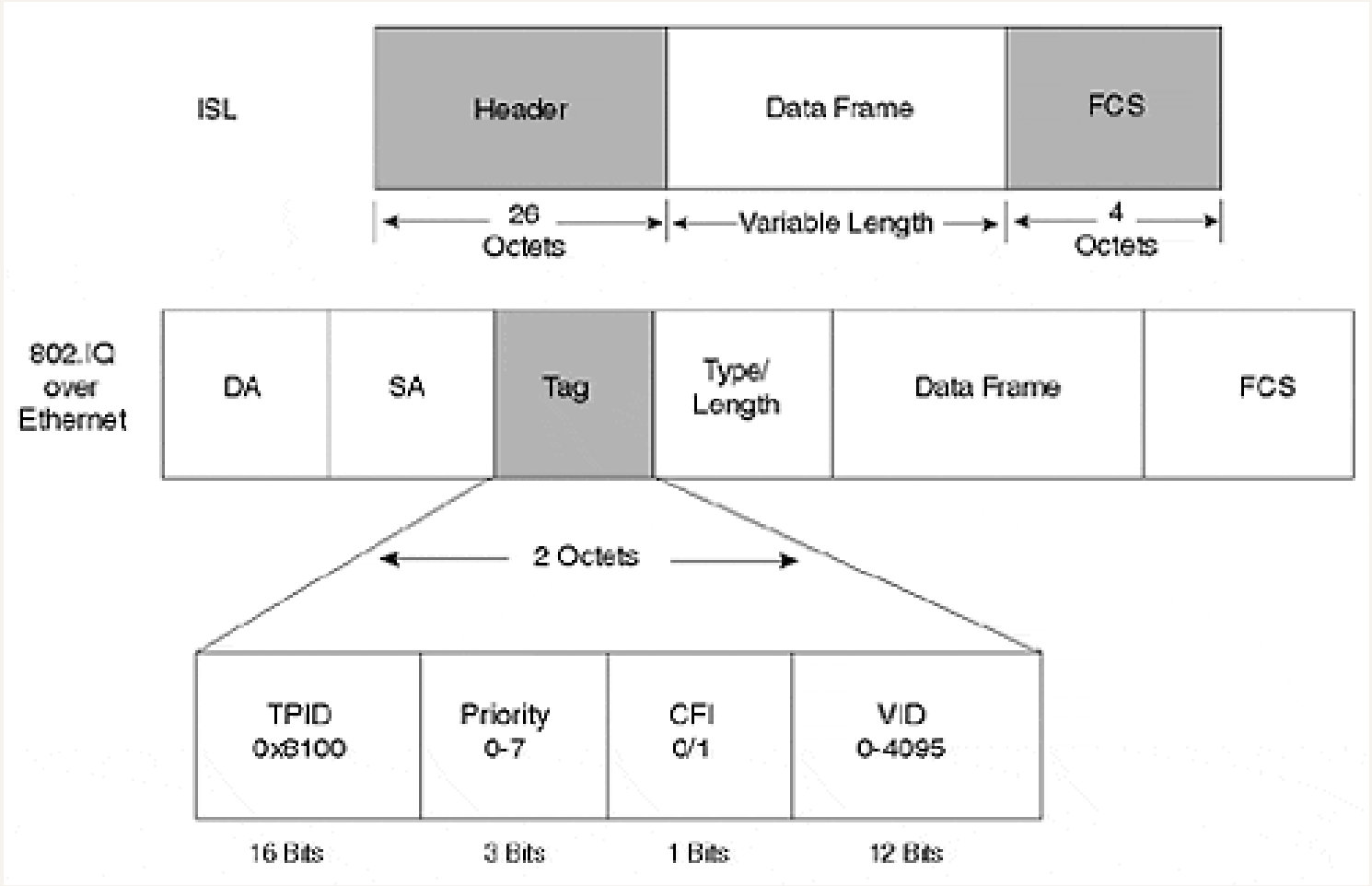
and is removed from frames before sending them to access links



ISL vs 802.1Q

Tagging a packet can be done in two ways:

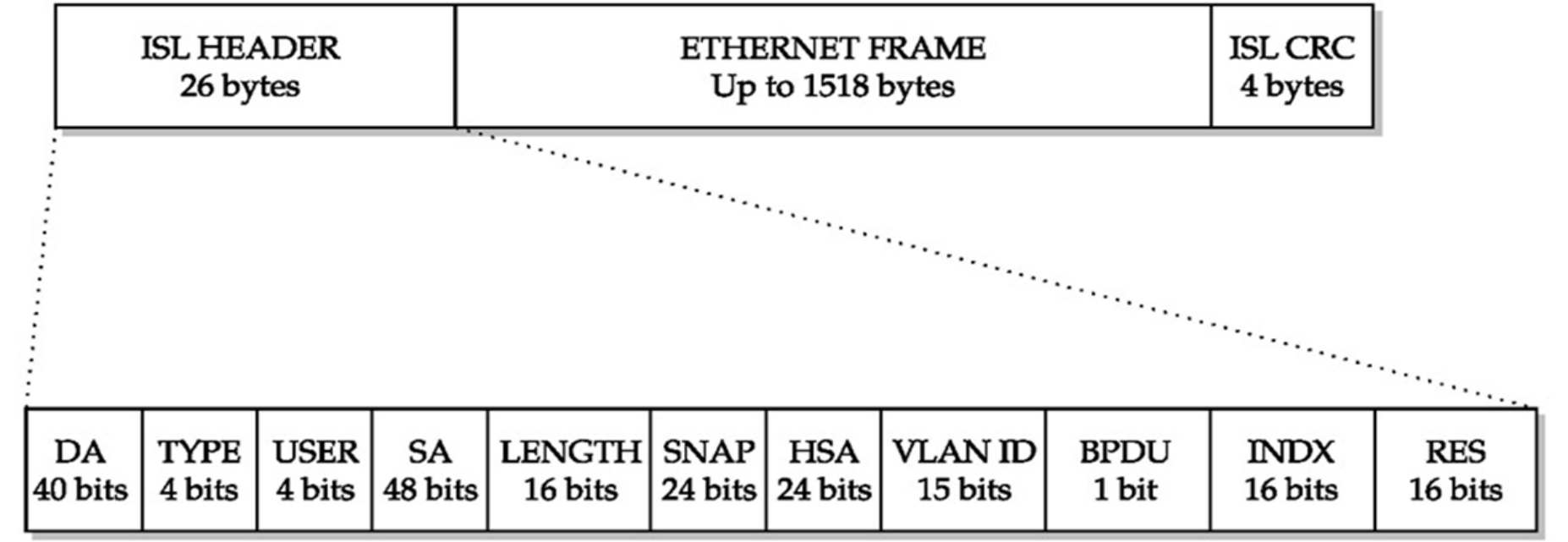
- ***ISL*** (Inter-Switch Link) and
- ***IEEE 802.1Q***



ISL

ISL (*Inter-Switch Link*) is a Cisco standard for VLAN tagging

It adds a 26-byte header and a 4-byte trail to a frame being sent to a trunk link. The VLAN ID field is 15-bits long.



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