VLAN Classification by Port and Protocol

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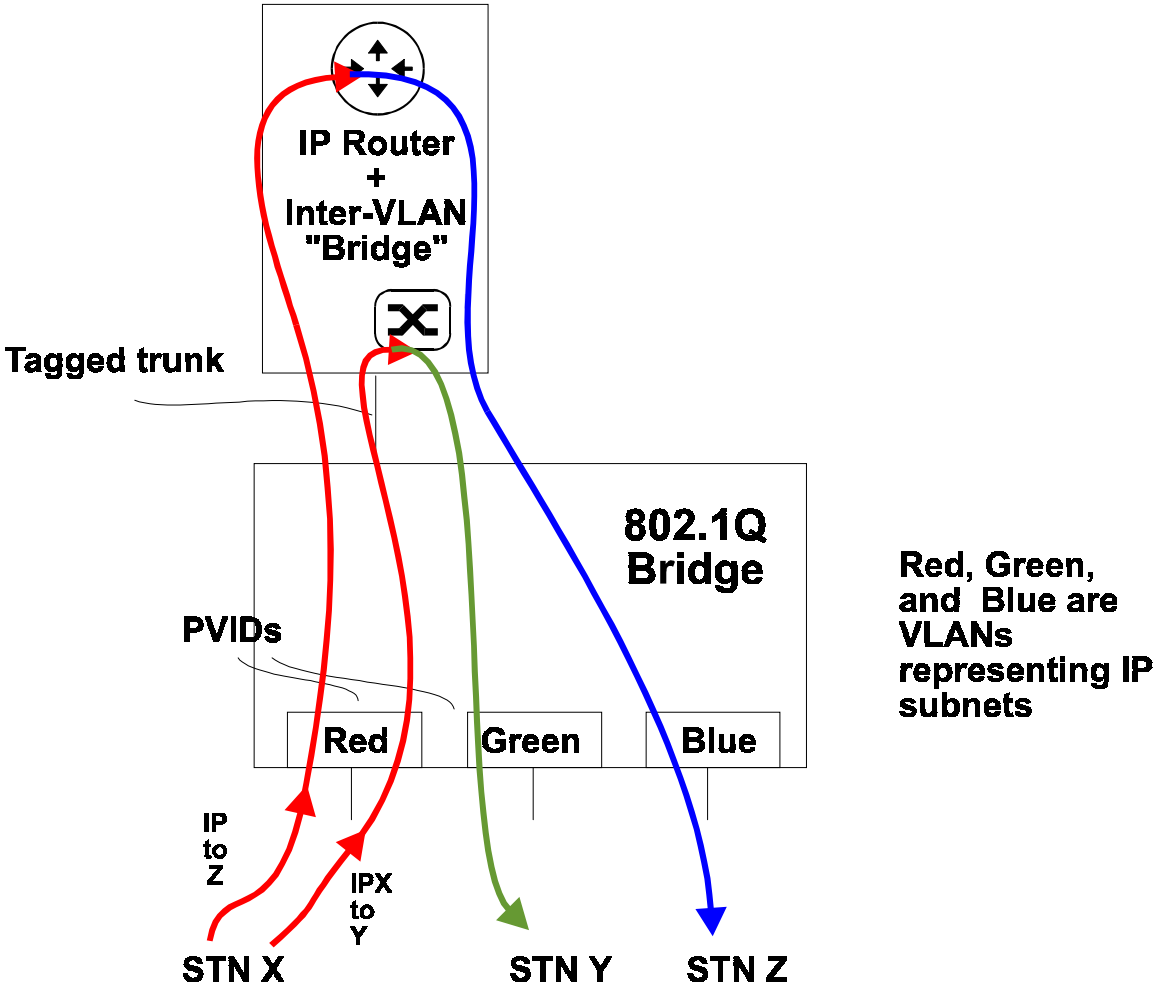
802.1Q: VLAN classification only by port in a multiprotocol LAN

- If VLANs represent a suitable partition of the network for one protocol they may represent an unsuitable partition for any other protocol
- E.g. if VLANs represent IP subnets, then untagged IPX frames received at any port for which the IP subnet VLAN is the PVID will be classified into the IP subnet VLAN
  - Result is that VLAN constraints are either too rigid or are removed completely for secondary protocols

Typical Network Configuration with 802.1Q

- Each VLAN represents a single IP subnet
- All other protocols have IP subnet structure imposed on them - usually inconveniently
- “Bridging” function co-located with IP router joins all VLANs together into one “bridged” LAN for non-IP protocols
- “Bridging” = relaying frames between VLANs at layer 2

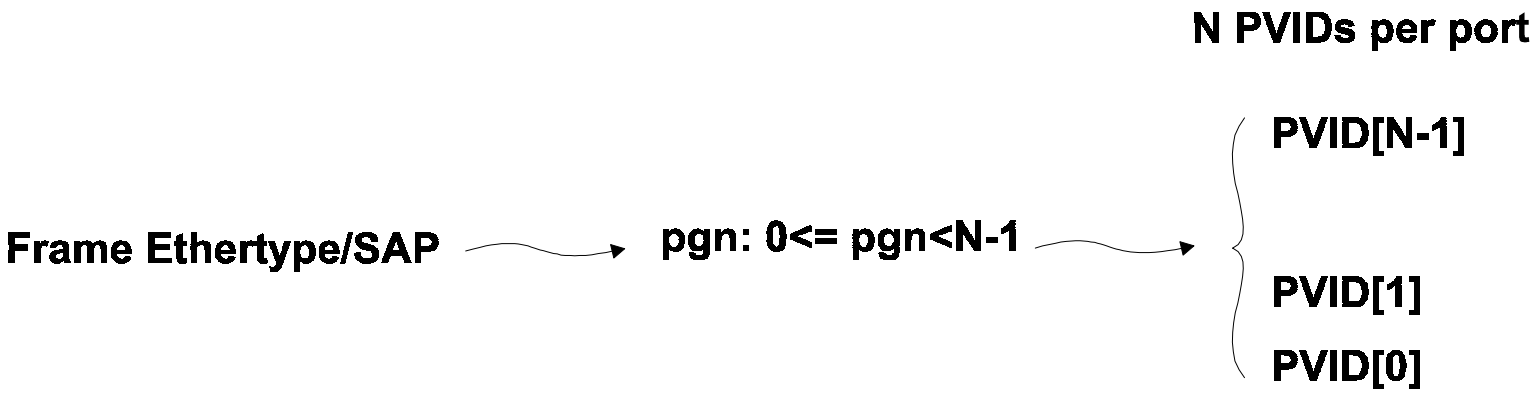
Inter-VLAN “Bridging” Eliminates VLAN Boundaries for Secondary Protocols



Alternative: Multiple PVIDs per Port for Classification by Port *and* Protocol

- Permits distinct VLAN structures for distinct protocol groups
- On ingress, map each untagged frame into a *protocol group number* (pgn) based on its Ethertype or 802.2 LLC SAPs
- Protocol group numbers range from 0 to N-1, where N is the number of PVIDs
- Protocol group number for a frame selects a PVID for the frame

New Ingress Processing for Untagged Frames



Traffic Flow with Classification by Port and Protocol