

## VLAN Operation Summary

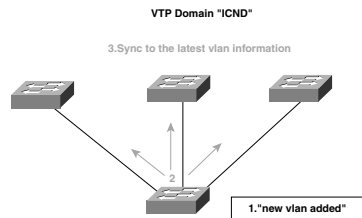
- A VLAN is a broadcast domain that can span multiple physical LAN segments.
- VLANs improve performance, flexibility, and security by restricting broadcasts.
- VLANs only forward data to ports assigned to the same VLAN.
- VLAN ports can be assigned either statically or dynamically.
- ISL is a Cisco-proprietary protocol used to share and manage VLAN information across switches.
- ISL trunks encapsulate frames with an ISL header CRC.

## Configuring a VLAN

*VLAN Trunking Protocol* (VTP) is a Layer 2 messaging protocol that maintains VLAN configuration consistency throughout a common administrative domain by managing VLAN additions, deletions, and name changes across multiple switches. VTP server updates are propagated to all connected switches in the network, which reduces the need for manual configuration (promotes scaling) and minimizes the risk of errors caused by duplicate names or incorrect VLAN types.

VTP operates in server, client, or transparent mode. The default is server mode. VLAN updates are not propagated over the network until a management domain name is specified or learned.

## VTP Example



The VTP server notifies all switches in its domain that a new VLAN, named ICND, has been added. The server advertises VLAN configuration information to maintain domain consistency.

## How VTP Works

Whenever a change to a VLAN occurs, the VTP server increments its configuration revision number and then advertises the

new revision throughout the domain. When a switch receives the advertisement, it overwrites its configuration with the new information if the new revision number is higher than the one it already has.

## VTP Advertisements

VTP advertisements are flooded over the factory default VLAN (VLAN1) every five minutes or whenever there is a change. The **delete vtp** command resets the configuration number.

## VTP Modes

VTP operates in server, client, or transparent mode. The default is server mode. VLAN configurations are not advertised until a management domain name is specified or learned.

Server Mode	Client Mode	Transparent Mode
Sends and forwards VTP advertisements.	Sends and forwards VTP advertisements.	Forwards VTP advertisements.
Syncs VLAN configuration information with other switches.	Syncs VLAN configuration information with other switches.	Does <i>not</i> sync VLAN configuration information with other switches.
Configurations are saved in NVRAM.	Configurations are <i>not</i> saved in NVRAM.	Configurations are saved in NVRAM.
Switch can create VLANs.	Cannot create VLANs.	Switch can create VLANs.
Switch can modify VLANs.	Switch cannot modify VLANs.	Switch can modify VLANs.
Switch can delete VLANs.	Cannot delete VLANs.	Switch can delete VLANs.

## VTP Pruning

VTP pruning improves bandwidth by keeping unnecessary traffic from flooding the entire domain.

By default, a trunk carries traffic for all VLANs in the VTP management domain. With VTP pruning enabled, updated traffic from station A is not forwarded to switches

