

# Cisco VTP: VLAN Trunking Protocol

VLAN Trunking Protocol (VTP) is a Cisco Layer 2 messaging protocol that manages the addition, deletion, and renaming of VLANs on a network-wide basis. Virtual Local Area Network (VLAN) Trunk Protocol (VTP) reduces administration in a switched network. When you configure a new VLAN on one VTP server, the VLAN is distributed through all switches in the domain. This reduces the need to configure the same VLAN everywhere. VTP is a Cisco-proprietary protocol that is available on most of the Cisco Catalyst Family products.

VTP ensures that all switches in the VTP domain are aware of all VLANs. There are occasions, however, when VTP can create unnecessary traffic. All unknown unicasts and broadcasts in a VLAN are flooded over the entire VLAN. All switches in the network receive all broadcasts, even in situations where few users are connected in that VLAN. VTP pruning is a feature used to eliminate (or prune) this unnecessary traffic.

By default, all Cisco Catalyst switches are configured to be VTP servers. This is suitable for small-scale networks where the size of the VLAN information is small and easily stored in all switches (in NVRAM). In a large network, a judgment call must be made at some point when the NVRAM storage needed is wasted, because it is duplicated on every switch. At this point, the network administrator should choose a few well-equipped switches and keep them as VTP servers. Everything else participating in VTP can be turned into a client. The number of VTP servers should be chosen so as to provide the degree of redundancy desired in the network.

## Modes of Operation

### Server

In VTP server mode, you can create, modify, and delete VLANs and specify other configuration parameters (such as VTP version and VTP pruning) for the entire VTP domain. VTP servers advertise their VLAN configuration to other switches in the same VTP domain and synchronize their VLAN configuration with other switches based on advertisements received over trunk links. VTP server is the default mode.

### Transparent

VTP transparent switches do not participate in VTP. A VTP transparent switch does not advertise its VLAN configuration and does not synchronize its VLAN configuration based on received advertisements. However, in VTP version 2, transparent switches do forward VTP advertisements that they receive out their trunk ports.

### Client

VTP clients behave the same way as VTP servers, but you cannot create, change, or delete VLANs on a VTP client.

## **Advertisements**

### **Summary Advertisements**

When the switch receives a summary advertisement packet, it compares the VTP domain name to its own VTP domain name. If the name is different, the switch simply ignores the packet. If the name is the same, the switch then compares the configuration revision to its own revision. If its own configuration revision is higher or equal, the packet is ignored. If it is lower, an advertisement request is sent.

### **Subset Advertisements**

When you add, delete, or change a VLAN in a switch, the server switch where the changes were made increments the configuration revision and issues a summary advertisement, followed by one or several subset advertisements. A subset advertisement contains a list of VLAN information. If there are several VLANS, more than one subset advertisement may be required in order to advertise them all.

### **Advertisement Requests**

A switch needs a VTP advertisement request in the following situations:

- The switch has been reset.
- The VTP domain name has been changed.
- The switch has received a VTP summary advertisement with a higher configuration revision than its own.

Upon receipt of an advertisement request, a VTP device sends a summary advertisement, followed by one or more subset advertisements.

## **Configuration**

To configure an IOS based switch to be a VTP server, issue the following commands:

```
SwitchA# vlan database
SwitchA(vlan)# vtp domain vtpdom
SwitchA(vlan)# vtp server
SwitchA(vlan)# exit
```

These commands configure the switch to be a VTP server in the VTP domain vtpdom. The changes are saved and the revision number is incremented when the exit command is issued.

To configure a VTP client, run the following commands:

```
SwitchB# vlan database
SwitchB(vlan)# vtp domain vtpdom
```

```
SwitchB(vlan)# vtp client  
SwitchB(vlan)# exit
```

To disable VTP, set the vtp mode to transparent as such:

```
SwitchC# vlan database  
SwitchC(vlan)# vtp transparent  
SwitchC(vlan)# exit
```

To monitor the VTP operation and status, use either:

```
SwitchA# show vtp status
```

```
SwitchA# show vtp counters
```