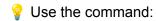
## 19. DTP / VTP (Not in Syllabus)

## **Dynamic Trunking Protocol (DTP)**

- **Purpose**: Allows switches to negotiate the status of their switchports dynamically:
  - Access Ports
  - o Trunk Ports
- **Default Setting**: DTP is enabled by default on all Cisco switch interfaces.
- **Manual Configuration**: Recommended for security purposes. Use the following commands:
  - switchport mode access
  - switchport mode trunk



show interfaces <interface-id> switchport

to check a switchport's settings.

**Key Recommendation**: Disable DTP on all switchports and configure them manually for security.

#### **DTP Modes**

#### **Dynamic Desirable**

- Actively attempts to form a trunk with another Cisco switch.
- Forms a trunk with:
  - switchport mode trunk
  - o switchport mode dynamic desirable
  - o switchport mode dynamic auto
- **Note**: If the other interface is set to static access, a trunk will not form, and it will remain an access port.

#### **Dynamic Auto**

- Does not actively try to form a trunk.
- Forms a trunk if the connected switch actively attempts it.
- Forms a trunk with:

- switchport mode trunk
- o switchport mode dynamic desirable

#### **Trunk to Access Connection**

- Results in a Mismatched Mode.
- This configuration is invalid and will generate an error. Traffic will not work.

## **Mode Compatibility Table**

Administrative Mode	Trunk	Dynamic Desirable	Access	Dynamic Auto
Trunk	Trunk	Trunk	X	Trunk
Dynamic Desirable	Trunk	Trunk	Access	Trunk
Access	X	Access	Access	Access
Dynamic Auto	Trunk	Trunk	Access	Access

## **Additional DTP Details**

- DTP does NOT form a trunk with:
  - Routers
  - o PCs
  - Non-switch devices
- Default Administrative Modes:
  - o Old switches: switchport mode dynamic desirable
  - o Newer switches: switchport mode dynamic auto

## How to Disable DTP Negotiation on an Interface

- 1. switchport nonegotiate
- 2. switchport mode access

**Security Tip**: Always disable DTP and manually configure switchports as access or trunk.

## **Encapsulation**

- Supported encapsulation types:
  - o 802.1Q
  - o ISL

#### **DTP Negotiation** (enabled by default):

switchport trunk encapsulation negotiate

- **Priority**: ISL is preferred over 802.1Q.
  - o DTP frames are sent:
    - In VLAN1 when using ISL
    - In the Native VLAN when using 802.1Q (default Native VLAN is VLAN1).

# **VLAN Trunking Protocol (VTP)**

Use the command:

show vtp status

to check VTP status in Privileged EXEC mode.

#### **Overview**

- **Purpose**: Configures VLANs on a central switch (server) that other switches (clients) synchronize with.
- Use Case: Large networks with many VLANs to reduce manual configuration.
- Recommendation: Rarely used and not recommended.

#### **VTP Versions**

- 1. **v1**
- Does not support extended VLAN range (1006–4094).
- 2. **v2**

- Does not support extended VLAN range (1006–4094).
- Supports Token Ring VLANs.

#### 3. **v3**

- Supports extended VLAN range (1006–4094).
- Stores VLAN database in NVRAM (for clients).

#### **VTP Modes**

#### 1. Server Mode

- Can add, modify, or delete VLANs.
- o Stores VLAN database in NVRAM.
- o Increments revision number with every change.
- o Advertises the latest VLAN database to clients.
- o Can act as a client to another server with a higher revision number.
- 2. **Caution**: Connecting an old switch with a higher revision number to the network can overwrite VLAN databases across the domain.

#### 3. Client Mode

- o Cannot add, modify, or delete VLANs.
- Does not store the VLAN database in NVRAM (except in v3).
- o Synchronizes VLAN database from the server.
- o Forwards VTP advertisements to other switches.

#### 4. Transparent Mode

- Does not participate in VTP domain synchronization.
- Maintains its own VLAN database in NVRAM.
- o Can add, modify, or delete VLANs locally.
- o Forwards VTP advertisements within the same domain.

#### **VTP Domains**

- A switch with no VTP domain (domain NULL) will automatically join the VTP domain of any received advertisement.
- If a switch receives an advertisement from the same domain with a higher revision number, it will update its VLAN database.

## **Revision Numbers**

- Resetting a revision number to 0:
  - 1. Change the VTP domain to an unused one.

2. Switch to transparent mode.

# **VTP Version Configuration**



Use the command:

(config)# vtp version <version-number>

to set the VTP version. Changing the version will force an update across all connected switches.