⚙️ VTP & DTP Simplified – Configuration, Modes, and Behavior

🔄 DTP – Dynamic Trunking Protocol

What is DTP?

- A Cisco proprietary protocol used to automatically negotiate trunk links between switches.
- Helps eliminate the need to manually configure switchport mode trunk.

Key DTP Modes:

Mode	Behavior
Dynamic Auto	Waits to be asked to form a trunk; passive mode.
Dynamic Desirable	Actively tries to form a trunk with the other end.
Trunk	Forces the port to become a trunk unconditionally.
Access	Forces the port to be an access port only.

Important Notes:

- **Trunk forms** if one side is trunk or dynamic desirable and the other is desirable or auto.
- **Security Best Practice**: Manually set trunking (switchport mode trunk) and **disable DTP** using switchport nonegotiate.

🔗 VTP – VLAN Trunking Protocol

What is VTP?

- A Cisco protocol that distributes VLAN configuration changes (like creation, deletion) across switches in the same domain.
- Saves time in large Layer 2 networks.

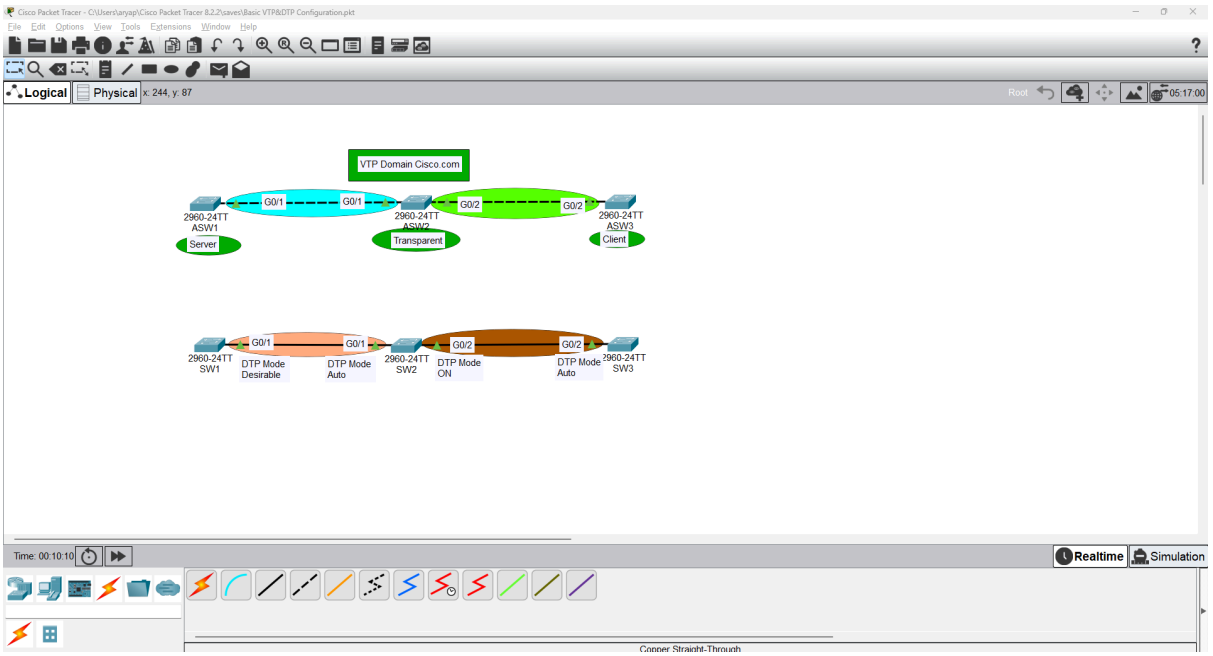
VTP Modes:

Mode	Function
Server	Can add/delete VLANs and propagate updates.
Client	Cannot modify VLANs; receives updates from server.
Transparent	Doesn't participate in VTP, but forwards VTP messages.

VTP Components:

- **Domain name**: Must match across all switches
- **Revision number**: Tracks version of VLAN database
- **Password** (optional): Adds security

📷 Visual Diagram:




```
ASW1#show vtp status
VTP Version capable             : 1 to 2
VTP version running             : 1
VTP Domain Name                 : cisco.com
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : 00D0.BA87.1700
Configuration last modified by 0.0.0.0 at 3-1-93 00:12:13
Local updater ID is 0.0.0.0 (no valid interface found)

Feature VLAN :
--------------
VTP Operating Mode                : Server
Maximum VLANs supported locally   : 255
Number of existing VLANs          : 10
Configuration Revision            : 20
MD5 digest                        : 0x2A 0x69 0x0A 0x96 0x01 0x83 0x84 0xB6
                                    0xCF 0xFC 0x89 0xAD 0x66 0x73 0xA4 0x36
ASW1#
```

```
ASW2#show vtp status
VTP Version capable             : 1 to 2
VTP version running             : 1
VTP Domain Name                 : cisco.com
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : 00E0.F968.0D00
Configuration last modified by 0.0.0.0 at 3-1-93 00:08:43

Feature VLAN :
--------------
VTP Operating Mode                : Transparent
Maximum VLANs supported locally   : 255
Number of existing VLANs          : 8
Configuration Revision            : 0
MD5 digest                        : 0xC0 0xD4 0x3C 0xBE 0xB8 0x98 0xC9 0x79
                                    0xBB 0xE9 0xCF 0x7D 0x55 0x25 0xA3 0x5E

ASW2#
ASW2#
```

```
ASW3#show vtp status
VTP Version capable             : 1 to 2
VTP version running             : 1
VTP Domain Name                 : cisco.com
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : 0060.3E1C.7B00
Configuration last modified by 0.0.0.0 at 3-1-93 00:12:13

Feature VLAN :
--------------
VTP Operating Mode              : Client
Maximum VLANs supported locally : 255
Number of existing VLANs        : 10
Configuration Revision          : 20
MD5 digest                      : 0x2A 0x69 0x0A 0x96 0x01 0x83 0x84 0xB6
                                  0xCF 0xFC 0x89 0xAD 0x66 0x73 0xA4 0x36
ASW3#
```

```
SW1#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/1      desirable    n-802.1q       trunking      1

Port        Vlans allowed on trunk
Gig0/1      1-1005

Port        Vlans allowed and active in management domain
Gig0/1      1

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/1      1

SW1#
```

```
SW2#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/1      auto         n-802.1q       trunking      1
Gig0/2      on           802.1q         trunking      1

Port        Vlans allowed on trunk
Gig0/1      1-1005
Gig0/2      1-1005

Port        Vlans allowed and active in management domain
Gig0/1      1
Gig0/2      1

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/1      1
Gig0/2      1

SW2#
```

```
SW3#show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/2      auto         n-802.1q       trunking      1

Port        Vlans allowed on trunk
Gig0/2      1-1005

Port        Vlans allowed and active in management domain
Gig0/2      1

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/2      1

SW3#
```

✅ Key Takeaways:

- VTP simplifies VLAN propagation but must be handled carefully to avoid accidental VLAN deletions.
- DTP eases trunk setup, but it's a security risk if left unconfigured — always disable unused trunk negotiation **(switchport nonegotiate).**
- Real-world engineers often use manual trunking and VTP Transparent mode for better control.