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**Welcome
To
Network for you
DTP**



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VLAN Trunking creates one link between switches that supports as many VLANs as we need.

- CISCO has supported two different Trunking protocols.
- 1. Inter-Switch Link (ISL) ----- CISCO created the ISL
- 2. IEEE 802.1Q ----- IEEE

ISL	802.1Q
Proprietary	Open Standard
Encapsulated (ISL Header 26 Bytes and CRC 4 Bytes so total is 30 Bytes) CRC stand for cyclic redundancy check	Tagged (it uses 4 Bytes) it modifies the original frame
Encapsulates the old frame in a new frame	Add a field to the frame header

Dynamic Trunking Protocol (DTP):

- It is CISCO proprietary Protocol.
- If two CISCO switches are cabled together, they can negotiate a trunk connection using CISCO DTP.
- It is however recommended to manually configure switch ports.
- Manual configuration for Trunk port as given below.

Command we use is given below:

- switchport trunk encapsulation dot1q
- Switchport mode trunk

DTP Configuration:

1. Switchport mode dynamic auto
2. Switchport mode dynamic desirable
3. Switchport no negotiate

Switchport mode **dynamic auto:**

- Switch will form a trunk if the neighbor switch port is set to **trunk or desirable**.
- Trunk will not be formed if both sides are set to auto.
- In newer switches default we have auto.

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Switchport mode **dynamic desirable**:

- Switch will form a trunk if the neighbor switch port is set **trunk, desirable or auto**.

Switchport mode no negotiate:

- Disable DTP

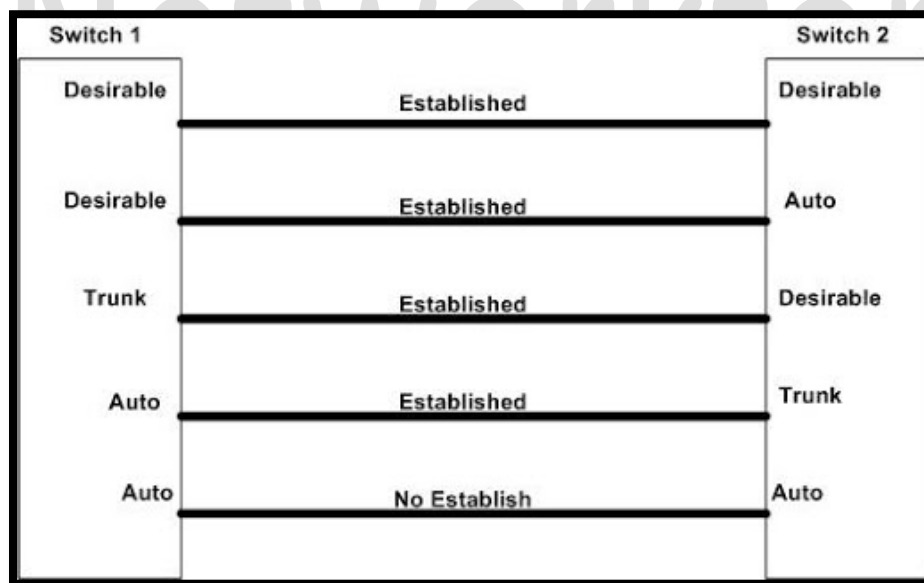
For Layer 3 Switch we use below given command to make trunk Port:

Int f0/1

Switchport trunk encapsulation dot1q

Switchport mode trunk

End



Command	Description
Sh int f0/1 switchport	This command is for checking status of interface.
Int f0/1 Switchport mode dynamic auto	This command is for setting interface as dynamic Auto.

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Int f0/1 Switchport mode dynamic desirable	This command is for setting interface as dynamic desirable.
Sh interfaces trunk	To Check Interface Trunk

Trunking Administrative Mode Options with the Switchport Mode Command:

Command	Description
Access	Always act as an access (nontrunk) port.
Trunk	Always act as trunk port.
Dynamic desirable	Initiates negotiation message and responds to negotiation message to dynamically choose whether to start using trunking.
Dynamic auto	Passively waits to receive trunk negotiation messages, at which point the switch will respond and negotiate whether to use trunking.

Manual (Static) Trunk Configuration:

- Manual configuration of trunk is performed by issuing the switchport mode trunk
- Interface configuration command on the desired Cisco switch port or Interface.
- This Switch command forces the port into a permanent (Static) trunking mode.
- Although Static configuration of a trunk link forces the switch to establish a trunk.
- Dynamic ISL & Dynamic Trunking Protocol packets will still be sent out of interface.
- Statically configured trunk link can establish trunk with neighboring that is using DTP.



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SW1 Configuration	SW2 Configuration
En Config t Hostname SW1 Int g0/0 switchport trunk encapsulation dot1q switchport mode trunk	En Config t Hostname SW2

```
SW1#sh interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Gi0/0	on	802.1q	trunking	1

```
Port          Vlans allowed on trunk  
Gi0/0        1-4094  
  
Port          Vlans allowed and active in management domain  
Gi0/0        1  
  
Port          Vlans in spanning tree forwarding state and not pruned  
Gi0/0        1
```

For Switch 1 we done Static configuration see Mode is "ON" That mean we done Trunk with Static or Manual method.

```
SW2#sh int trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Gi0/0	auto	n-802.1q	trunking	1

```
Port          Vlans allowed on trunk  
Gi0/0        1-4094  
  
Port          Vlans allowed and active in management domain  
Gi0/0        1  
  
Port          Vlans in spanning tree forwarding state and not pruned  
Gi0/0        1
```

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For Switch 2 we done Auto (that is Dynamic) when one site we do Trunk other side automatically become trunk by using DTP protocol and it is called Dynamic trunk method. If you see in above pic it show Mode auto.

```
SW1#sh int g0/0 switchport
Name: Gi0/0
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Administrative Native VLAN tagging: enabled
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk Native VLAN tagging: enabled
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk associations: none
Administrative private-vlan trunk mappings: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
```

To turn off DTP on a switch port apply the following command under the interface commands

```
S1(config)#interface g0/0
S1(config-if)#switchport nonegotiate
```

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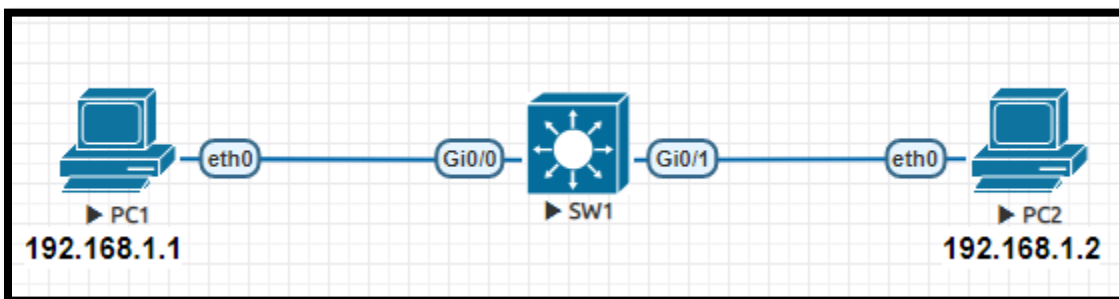
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```
SW1#sh int g0/0 switchport
Name: Gi0/0
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Administrative Native VLAN tagging: enabled
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk Native VLAN tagging: enabled
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk associations: none
Administrative private-vlan trunk mappings: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
```

Troubleshooting Lab1:



PC1 is unable to ping PC2. There are no issues with the PCs; the problem is related to the switch. Let's see what happens when we try a ping:

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```
PC1> ping 192.168.1.2  
host (192.168.1.2) not reachable
```

```
PC2> ping 192.168.1.1  
host (192.168.1.1) not reachable
```

The two computers are unable to ping each other. Let's do a quick check if there are any interface errors:

```
Switch#sh ip int br  
Interface          IP-Address      OK? Method Status Protocol  
GigabitEthernet0/0 unassigned      YES unset  up       up  
GigabitEthernet0/1 unassigned      YES unset  up       up  
GigabitEthernet0/2 unassigned      YES unset  up       up  
GigabitEthernet0/3 unassigned      YES unset  up       up
```

The interfaces are looking good, no errors here. Let's check the VLAN assignments:

```
Switch#sh vlan br  
  
VLAN Name                Status      Ports  
----
```

VLAN	Name	Status	Ports
1	default	active	Gi0/1, Gi0/2, Gi0/3
1001	IT	active	Gi0/0
1002	fddi-default	act/unsup	
1003	token-ring-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trnet-default	act/unsup	

```
-----
```

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At this moment it's a good idea to check the VLAN information. You can use the show vlan command to quickly verify to which VLAN the interfaces belong.

As you can see our interfaces are not in the same VLAN. Let's fix this:

```
SW1(config)#int g0/1  
SW1(config-if)#switchport access vlan 1001
```

We'll move interface g0/1 back to VLAN 1001, both PCs are now in VLAN 1001. Let's try that ping again:

```
PC1> ping 192.168.1.2  
  
84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=11.660 ms  
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=9.025 ms  
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=2.441 ms  
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=3.825 ms  
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=2.700 ms
```

Now it is working problem is solve.

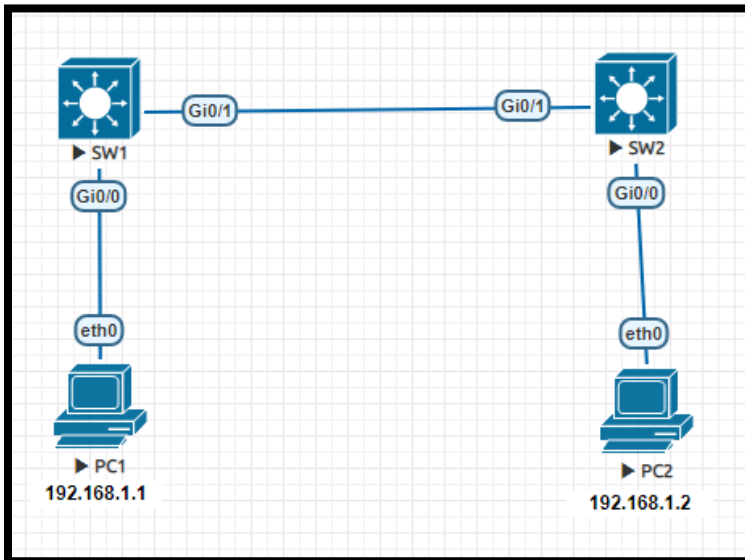
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Troubleshooting Lab2:



PC1 is unable to ping PC2. There are no issues with the PCs; the problem is related to the switch. Let's see what happens when we try a ping:

```
PC1> ping 192.168.1.2
host (192.168.1.2) not reachable
```

```
PC2> ping 192.168.1.1
host (192.168.1.1) not reachable
```

The two computers are unable to ping each other. Let's do a quick check if there are any interface errors:

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```
SW1#sh ip int br
Interface                IP-Address    OK? Method Status    Protocol
GigabitEthernet0/0      unassigned   YES unset   up        up
GigabitEthernet0/1      unassigned   YES unset   up        up
GigabitEthernet0/2      unassigned   YES unset   up        up
GigabitEthernet0/3      unassigned   YES unset   up        up
```

```
Switch#sh ip int br
Interface                IP-Address    OK? Method Status    Protocol
GigabitEthernet0/0      unassigned   YES unset   up        up
GigabitEthernet0/1      unassigned   YES unset   up        up
GigabitEthernet0/2      unassigned   YES unset   up        up
GigabitEthernet0/3      unassigned   YES unset   up        up
```

The interfaces are looking good, no errors here. Let's check the VLAN assignments:

At this moment it's a good idea to check the VLAN information. You can use the show vlan command to quickly verify to which VLAN the interfaces belong.

```
SW1#sh vlan br
VLAN Name                Status      Ports
-----
1    default                active      Gi0/1, Gi0/2, Gi0/3
1001 IT                   active      Gi0/0
1002 fddi-default         act/unsup
1003 token-ring-default   act/unsup
1004 fddinet-default       act/unsup
1005 trnet-default        act/unsup
```

```
SW2#sh vlan br
VLAN Name                Status      Ports
-----
1    default                active      Gi0/1, Gi0/2, Gi0/3
1001 IT                   active      Gi0/0
1002 fddi-default         act/unsup
1003 token-ring-default   act/unsup
1004 fddinet-default       act/unsup
1005 trnet-default        act/unsup
```

It look ok let see trunk is present or not between this switch.

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```
SW1#sh int tru  
SW1#sh int trunk
```

So we don't have trunk that is issues. Try to create trunk between this two switch and verify.

```
SW1(config)#int g0/1  
SW1(config-if)#switchport trunk encapsulation dot1q  
SW1(config-if)#switchport mode trunk
```

```
PC1> ping 192.168.1.2  
  
84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=15.573 ms  
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=19.063 ms  
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=18.726 ms  
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=15.594 ms  
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=16.700 ms
```

After configuring Trunk it is ok

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