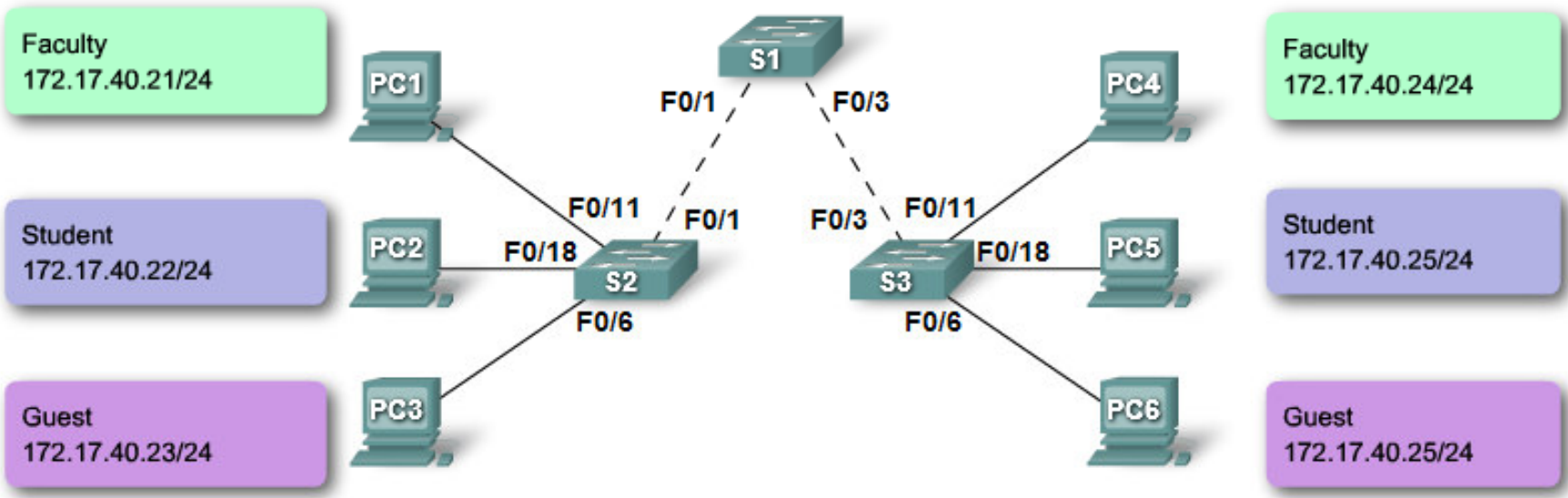


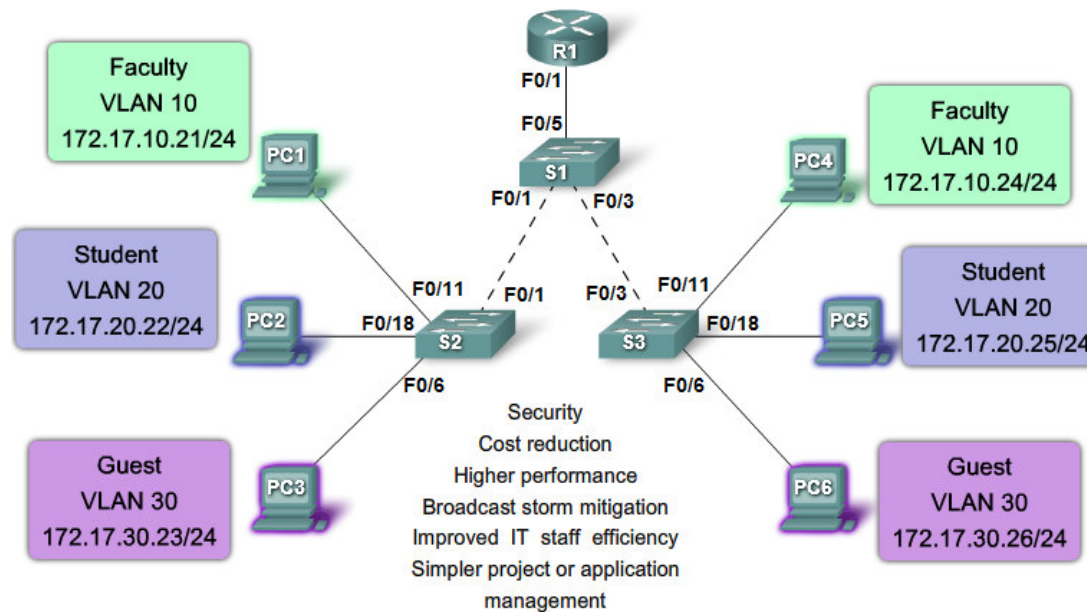
# Introducing VLANs

## Chapter 3



# VLAN

- Virtual Local Area Network
- a network of computers that appear to be connected to the same network



- Intra VLAN
  - Communication within a VLAN
  
- Inter VLAN
  - Communication between VLANs
  - Requires a layer 3 device (Router or Layer 3 switch)

- Static vlan
  - Access port
- Dynamic vlan
  - VMPS
    - Vlan Management Policy server, Eg. FreeNac
    - Assigns vlan based on the who the hosts are

# Configuration

- Create vlan

```
Switch(config)#vlan 7
```

```
Switch(config-vlan)#name Guest (Optional)
```

**Or**

```
Switch#vlan database
```

```
Switch (vlan)#vlan 7 name Guest
```

- **Assign switchports**

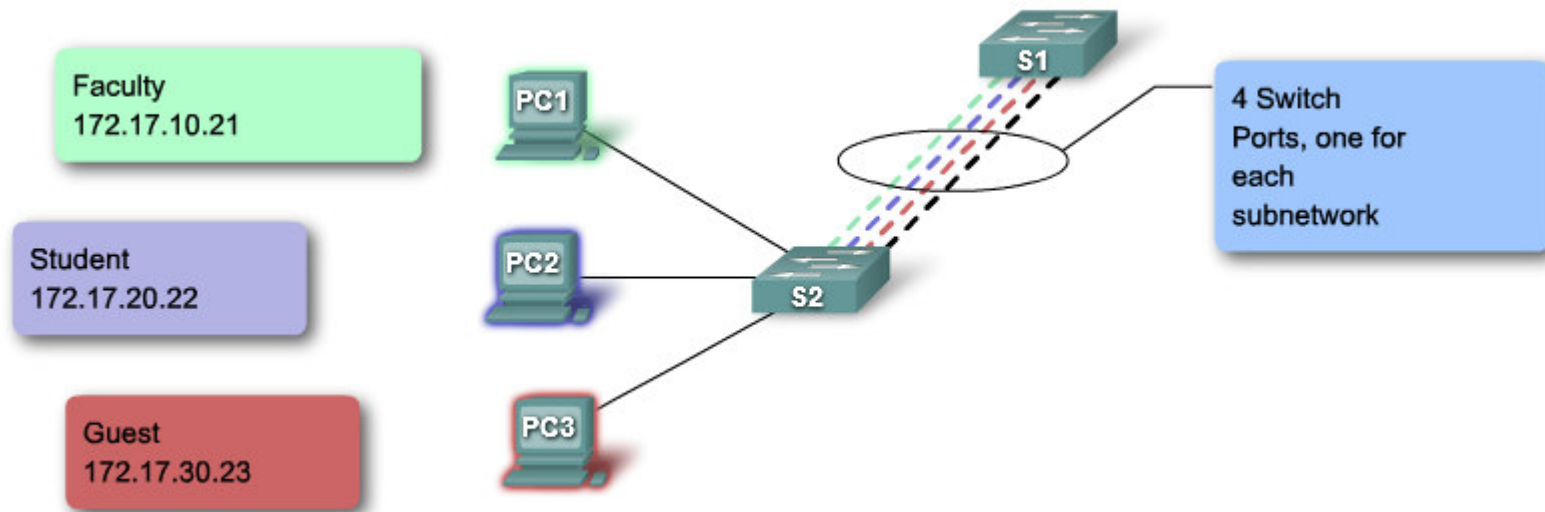
```
Switch(config)#interface FastEthernet0/1
```

```
Switch(config-if)# switchport mode access
```

```
Switch(config-if)# switchport access vlan 7
```

# Trunk

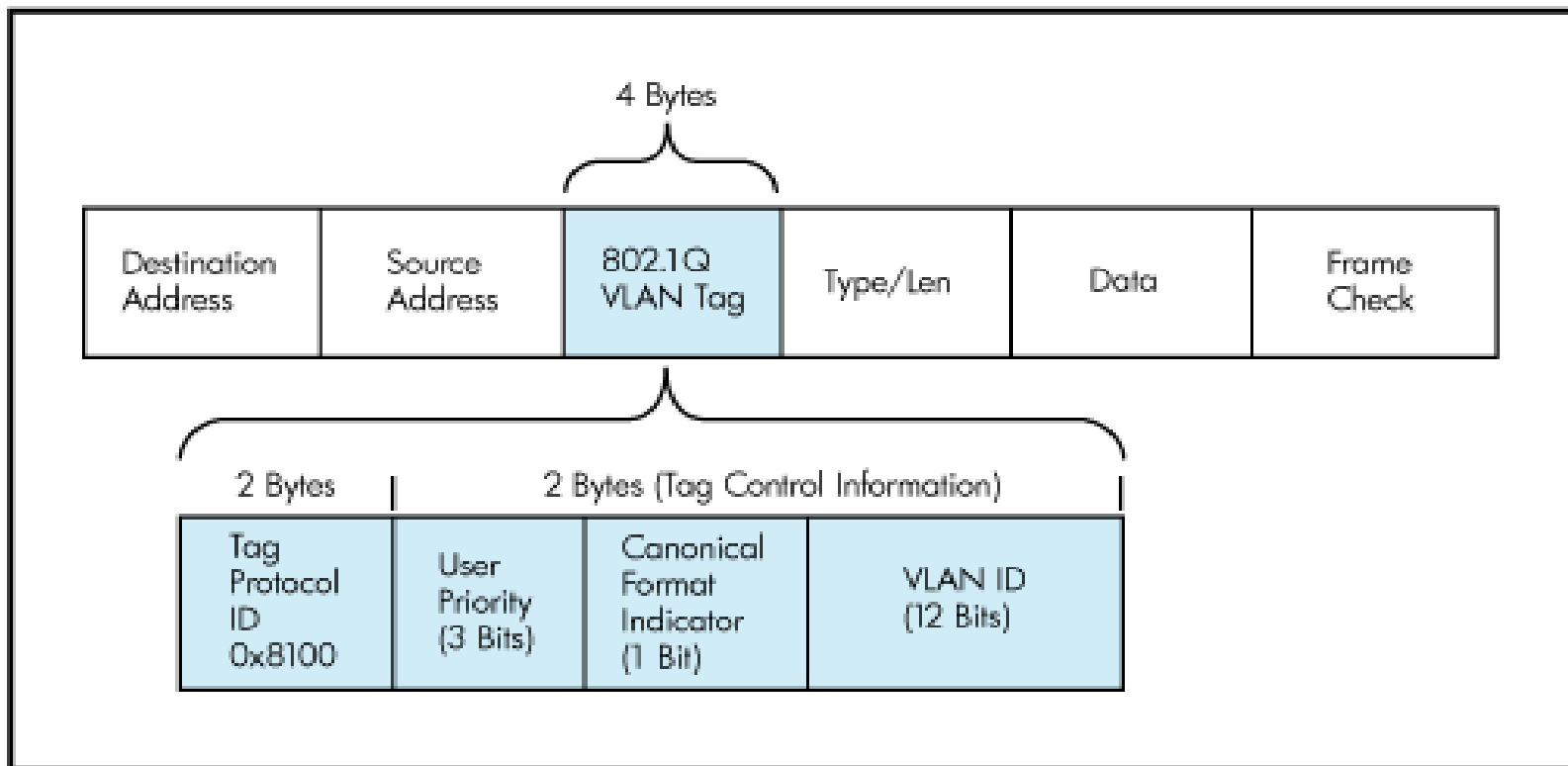
- A link that carries more than one VLAN
- Alternative: One physical link pr. Vlan between switches.





# 802.1Q

- IEEE standard
- Inserts a 4 Byte vlan tag in the frame header



- VLAN ID
  - Normal-range IDs
    - 1 – 1005
    - 1002 -1005 reserved for Token Ring and FDDI VLANs
    - 1 and 1002 to 1005 are automatically created and cannot be removed
    - Stored in the vlan.dat file in flash memory
  - Extended-range IDs
    - 1006 – 4094
    - Designed for service providers
    - Have fewer options than normal range VLANs
    - Stored in the running configuration file

- Native vlan
  - Untagged traffic
  - Default: vlan 1
  - Used by CDP, DTP and others

# DTP

- Dynamic Trunking Protocol
- Cisco proprietary
- Automatically configures the link as a trunk:
  - Dynamic auto
  - Dynamic desirable
  - On

|                   | Dynamic Auto | Dynamic Desirable | Trunk           | Access          |
|-------------------|--------------|-------------------|-----------------|-----------------|
| Dynamic Auto      | Access       | Trunk             | Trunk           | Access          |
| Dynamic Desirable | Trunk        | Trunk             | Trunk           | Access          |
| Trunk             | Trunk        | Trunk             | Trunk           | Not Recommended |
| Access            | Access       | Access            | Not Recommended | Access          |

**Note:** Table assumes DTP is enabled at both ends.

\* `show dtp interface` - to determine current settings

# Configuration

```
Switch(config)#interface FastEthernet0/1
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk native vlan 40
```

```
Switch(config-if)# switchport trunk allowed vlan 7,40
```

- You can remove a vlan with active ports
- You can assign an interface to non-existent vlans (some IOS's)
- Vlan.dat is not cleared when you erase startup configuration
- The native VLAN must be the same on both sides of the link