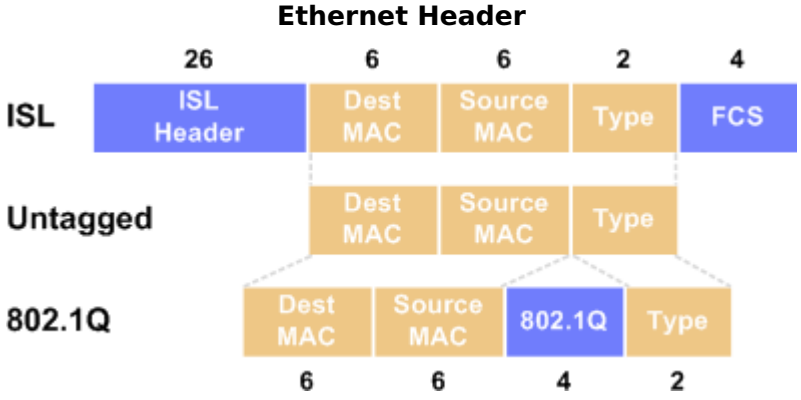
VLANs

Trunk Encapsulation



VLAN Creation

```
Switch(config)# vlan 100
Switch(config-vlan)# name Engineering
```

Access Port Configuration

```
Switch(config-if)# switchport mode access
Switch(config-if)# switchport nonegotiate
Switch(config-if)# switchport access vlan 100
Switch(config-if)# switchport voice vlan 150
```

Trunk Port Configuration

```
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk encapsulation dot1q
Switch(config-if)# switchport trunk allowed vlan 10,100-200
Switch(config-if)# switchport trunk native vlan 10
```

SVI Configuration

```
Switch(config)# interface vlan100
Switch(config-if)# ip address 192.168.100.1 255.255.255.0
```

VLAN Trunking Protocol

Domain · Common to all switches participating in VTP

Server Mode · Generates and propagates VTP advertisements to clients; this mode is default on unconfigured switches

Client Mode · Receives and forwards advertisements from servers; VLANs cannot be manually configured on switches in client mode

Transparent Mode · Forwards advertisements but does not participate in VTP; VLANs must be configured manually

Pruning · VLANs not having any access ports on an end switch are removed from the trunk to reduce flooded traffic

VTP Configuration

```
Switch(config)# vtp mode server
Switch(config)# vtp domain LASVEGAS
Switch(config)# vtp password Presl3y
Switch(config)# vtp version 2
Switch(config)# vtp pruning
```

Trunk Types

	802.1Q	ISL
Header Size	4 bytes	26 bytes
Trailer Size	N/A	4 bytes
Standard	IEEE	Cisco
Maximum VLANs	4094	1000
Command	`dot1q`	`isl`

VLAN Numbers

0	Reserved	**1004**	fdnet
1	default	**1005**	trnet
1002	fddi-default	**1006-4094**	Extended
1003	tr	**4095**	Reserved

Terminology

Trunking · Extending multiple VLANs over the same physical connection

Native VLAN · By default, frames in this VLAN are untagged when sent across a trunk

Access VLAN · The VLAN to which an access port is assigned

Voice VLAN · If configured, enables minimal trunking to support voice traffic in addition to data traffic on an access port

Dynamic Trunking Protocol (DTP) · Can be used to automatically establish trunks between capable ports; carries a security risk

Switched Virtual Interface (SVI) · A virtual interface which provides a routed gateway into and out of a VLAN

Switch Port Modes

`trunk` · Forms an unconditional trunk

`dynamic desirable` · Actively attempts to negotiate a trunk with the distant end

`dynamic auto` · Will form a trunk only if requested by the distant end

`access` · Will never form a trunk

Troubleshooting

```
show vlan
show interface status
show interface switchport
show interface trunk
show vtp status
show vtp password
```