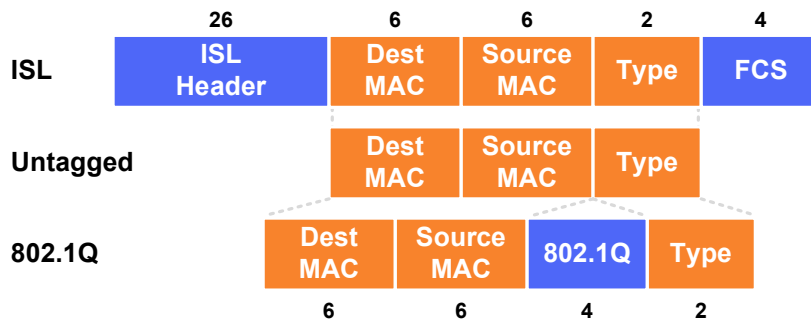


## Trunk Encapsulation



## 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 10,20-30
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 (VTP)

### Domain

Common to all switches participating in VTP

### Server Mode

Generates and propagates VTP advertisements to clients; default mode 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 | client | transparent}
Switch(config)# vtp domain <name>
Switch(config)# vtp password <password>
Switch(config)# vtp version {1 | 2}
Switch(config)# vtp pruning
```

## Trunk Types

	802.1Q	ISL
<b>Header Size</b>	4 bytes	26 bytes
<b>Trailer Size</b>	N/A	4 bytes
<b>Standard</b>	IEEE	Cisco
<b>Maximum VLANs</b>	4094	1000

## VLAN Numbers

<b>0</b> Reserved	<b>1004</b> fdnet
<b>1</b> default	<b>1005</b> trnet
<b>1002</b> fddi-default	<b>1006-4094</b> Extended
<b>1003</b> tr	<b>4095</b> Reserved

## Terminology

### Trunking

Carrying 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 (insecure)

### 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

Attempts to negotiate a trunk with the far end

### dynamic auto

Forms a trunk only if requested by the far end

### access

Will never form a trunk

## Troubleshooting

```
show vlan
```

```
show interface [status | switchport]
```

```
show interface trunk
```

```
show vtp status
```

```
show vtp password
```