

3 VLANs

3.1 Overview of VLANs

- benefits
 - Smaller broadcast domains
 - Improved security
 - Improved IT efficiency
 - Reduced cost
 - Better performance
 - Simpler project and application management
- Types of VLANs
 - Default VLAN
 - Data VLAN
 - Native VLAN
 - Management VLAN
 - Voice VLAN

3.2 VLANs in a Multi-Switched Environment

- VLAN tag
 - Type: 0x8100
 - User Priority: 3 bit
 - Canonical Format Identifier (CFI): 1 bit (Token Ring)
 - VLAN ID: 12 bit (0-4095)
- Native VLAN, 802.1Q tagging → VLAN 1
- Voice VLAN tagging for QoS

3.3 VLAN Configuration

- VLAN Ranges
 - Normal Range VLANs 1-1001, vlan.dat, VTP
 - legacy (Token ring, FDDI): 1002-1005
 - Extended Range 1006-4094, running-config, VTP nur transparent mode

VLAN Creation

```
S(config)# vlan 20
S(config-vlan)# name beispiel
```

VLAN Port Assignment

```
S(config)# int fa0/1
S(config-if)# switchport mode access
S(config-if)# switchport access vlan 20
```

Data and Voice

```
S(config)# vlan 20
S(config-vlan)# name student
S(config-vlan)# vlan 50
S(config-vlan)# name Voice

S(config-if)# switchport mode access
S(config-if)# switchport access vlan 20
S(config-if)# mls qos trust cos
S(config-if)# sswitchport voice vlan 150
```

Verify VLAN Information

```
S# show vlan brief
S# show vlan id 20
S# show vlan name student
S# show vlan summary
S# show interfaces fa0/18 switchport
```

Delete vlan

```
S(config)# no vlan 20
```

3.4 VLAN Trunks

Data and Voice

```
S(config-if)# switchport mode trunk
S(config-if)# switchport trunk native vlan 99
S(config-if)# switchport trunk allowed vlan 10,20,30,99
```

3.5 Dynamic Trunking Protocol

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