

4 Inter-VLAN Routing

4.1 Inter-VLAN Routing Operation

- Legacy Inter-VLAN routing
 - 1 Ethernet-Interface pro VLAN
 - nicht skalierbar
 - kohnlehome.de/netz/vlan-switch-router.png
 - kohnlehome.de/netz/vlan-2switch-router.png

4.2 Router-on-a-Stick Inter-VLAN Routing

- 1 Router-Interface mit Subinterfaces
- kohnlehome.de/netz/vlan-switch-trunk-router.png
- not scale beyond 50 VLANs

Subinterface Configuration

```
Router(config)# interface G0/1                               Physikalische Schnittstelle
Router(config-if)# no shutdown

Router(config-if)# interface G0/1.10                       Subschnittstelle
Router(config-subif)# encapsulation dot1q 10              VLAN 10 zuweisen
Router(config-subif)# ip address 192.168.10.1 255.255.255.0

Router(config-if)# interface G0/1.99                       Subschnittstelle
Router(config-subif)# encapsulation dot1q 99 native       VLAN99 als Native-VLAN
Router(config-subif)# ip address 192.168.99.1 255.255.255.0
```

Verification

```
Router# show ip route
Router# show ip interface brief
Router# show interfaces
Router# show interfaces trunk
```

4.3 Inter-VLAN Routing using Layer 3 Switches

- 1 SVI pro VLAN
- kohnlehome.de/cisco/layer-3-switch.png
- much faster than router-on-a-stick
- more expensive
- kohnlehome.de/cisco/multilayer-switch.pdf

4.4 Troubleshoot Inter-VLAN Routing

- Missing VLANs
 - `show vlan [brief]`
 - `show interfaces switchport`
 - `ping`
- Switch Trunk Port Issues
 - `show interfaces trunk`
 - `show running-config`
- Switch Access Port Issues
 - `show interfaces switchport`
 - `show running-config`
 - `ipconfig`
- Router Configuration Issues
 - `show ip interface brief`
 - `show interfaces`