

SPEC-2 Homelab (ISR4331 Isolated Router + Catalyst 3560/2960)

Background

This document defines a homelab using a Cisco ISR4331 router connected to Spectrum ISP equipment. The homelab is isolated from the household LAN. Inter-VLAN routing is performed by the Catalyst 3560 Layer 3 switch. VLAN 10 is used for management, VLAN 20 for workstations. Static IP addressing is used for simplicity, with DHCP as an optional add-on.

Configuration Input (Step-by-Step)

Core Switch (3560) — Basic Device Configuration

```
CORE-SW(config)# hostname CORE-SW
! Set device hostname for identification

CORE-SW(config)# enable secret class
! Set encrypted enable password for privileged EXEC mode

CORE-SW(config)# ip domain-name homelab.local
! Required for generating SSH keys

CORE-SW(config)# username admin privilege 15 secret cisco123
! Creates local admin account with highest privileges

CORE-SW(config)# crypto key generate rsa
! Generates RSA keypair for SSH

How many bits in the modulus [512]: 1024
! 1024-bit key (sufficient for lab use)

CORE-SW(config)# ip ssh version 2
! Enables SSH protocol version 2 (more secure)

CORE-SW(config)# line vty 0 4
! Select VTY lines for SSH

CORE-SW(config-line)# login local
! Use local username for SSH login

CORE-SW(config-line)# transport input ssh
! Restrict remote access to SSH only

CORE-SW(config)# line console 0
! Enter console line configuration

CORE-SW(config-line)# logging synchronous
! Prevent log messages from interrupting CLI

CORE-SW(config-line)# exec-timeout 10 0
! Auto-logout after 10 minutes of inactivity

CORE-SW(config-line)# password consolepass
! Set console password

CORE-SW(config-line)# login
! Enable password prompt for console
```

Core Switch (3560) — VLAN Creation

```
CORE-SW(config)# vlan 10
! Create VLAN 10 for management

CORE-SW(config-vlan)# name Management
! Assigns a name for VLAN 10

CORE-SW(config)# vlan 20
```

```
! Create VLAN 20 for workstations
CORE-SW(config-vlan)# name Workstations
! Assigns a name for VLAN 20
```

Core Switch (3560) — Trunk to 2960

```
CORE-SW(config)# interface GigabitEthernet0/2
! Interface to Access Switch
CORE-SW(config-if)# description Trunk to ACCESS-SW
! Documentation for interface
CORE-SW(config-if)# switchport mode trunk
! Enable trunk mode
CORE-SW(config-if)# switchport trunk allowed vlan 10,20
! Allow VLANs 10 and 20
CORE-SW(config-if)# spanning-tree portfast trunk
! Faster convergence for trunk
```

Access Switch (2960) — Trunk to 3560

```
ACCESS-SW(config)# interface GigabitEthernet0/1
! Interface to Core Switch
ACCESS-SW(config-if)# description Trunk to CORE-SW
! Documentation for interface
ACCESS-SW(config-if)# switchport mode trunk
! Enable trunk mode
ACCESS-SW(config-if)# switchport trunk allowed vlan 10,20
! Allow VLANs 10 and 20
ACCESS-SW(config-if)# spanning-tree portfast trunk
! Faster convergence for trunk
```

Access Switch (2960) — Access Ports

```
ACCESS-SW(config)# interface range Gi0/2 - 3
! Select workstation ports
ACCESS-SW(config-if-range)# switchport mode access
! Set access mode
ACCESS-SW(config-if-range)# switchport access vlan 20
! Assign ports to VLAN 20
ACCESS-SW(config-if-range)# spanning-tree portfast
! Enable PortFast for PCs
```

Core Switch (3560) — Inter-VLAN Routing (SVIs)

```
CORE-SW(config)# interface Vlan10
! Create SVI for VLAN 10
CORE-SW(config-if)# ip address 192.168.10.1 255.255.255.0
! Assign IP for management VLAN
CORE-SW(config-if)# no shutdown
! Enable interface
CORE-SW(config)# interface Vlan20
! Create SVI for VLAN 20
CORE-SW(config-if)# ip address 192.168.20.1 255.255.255.0
! Assign IP for workstations VLAN
CORE-SW(config-if)# no shutdown
```

```
! Enable interface
CORE-SW(config)# ip routing
! Enable Layer 3 routing on 3560
```

Core Switch (3560) — Optional DHCP (for VLAN 20)

```
CORE-SW(config)# ip dhcp excluded-address 192.168.20.1 192.168.20.10
! Exclude addresses reserved for static use
CORE-SW(config)# ip dhcp pool WORKSTATIONS
! Create DHCP pool for VLAN 20
CORE-SW(dhcp-config)# network 192.168.20.0 255.255.255.0
! Define subnet for VLAN 20
CORE-SW(dhcp-config)# default-router 192.168.20.1
! Set default gateway for DHCP clients
CORE-SW(dhcp-config)# dns-server 1.1.1.1
! Specify DNS server
```

Verification Commands

```
ping 192.168.20.10
! Ping workstation 1
ping 192.168.20.11
! Ping workstation 2
show vlan brief
! Verify VLAN creation and assignment
show interfaces trunk
! Verify trunk operational status
show ip interface brief
! Check SVI IP assignments
show ip route
! Check routing table
show running-config
! Review current configuration
```