

Commands to Solve Lab 2 and Lab 3

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Lab 2: Routing Configuration

Switch Configuration (e.g., SW1 and SW2)

SW1

```shell

Configure VLANs

vlan 10

name VLAN10

exit

vlan 20

name VLAN20

exit

vlan 30

name VLAN30

exit

Assign VLANs to ports

interface fa0/1

switchport mode access

switchport access vlan 10

exit

interface fa0/2

switchport mode access

switchport access vlan 20

exit

interface fa0/3

switchport mode access

switchport access vlan 30

exit

Configure trunk port

interface fa0/24

switchport mode trunk

no shutdown

exit

```

SW2

```shell

Configure VLANs

vlan 40

name VLAN40

exit

vlan 50

name VLAN50

exit

vlan 60

name VLAN60

exit

Assign VLANs to ports

interface fa0/1

switchport mode access

switchport access vlan 40

exit

interface fa0/2

switchport mode access

switchport access vlan 50

exit

interface fa0/3

switchport mode access

switchport access vlan 60

exit

Configure trunk port

interface fa0/24

switchport mode trunk

no shutdown

exit

```

Router Configuration (RX1, RX2)

RX1

```shell

hostname RX1

interface fa0/1

description LOCAL_LAN_TRUNK

no ip address

no shutdown

interface fa0/1.10

encapsulation dot1Q 10

ip address 172.1.2.1 255.255.255.0

exit

interface fa0/1.20

encapsulation dot1Q 20

ip address 172.1.0.1 255.255.255.0

exit

interface fa0/1.30

encapsulation dot1Q 30

ip address 172.1.1.1 255.255.255.0

exit

interface fa0/0

ip address 172.1.3.1 255.255.255.0

no shutdown

exit

router rip

version 2

network 172.1.3.0

network 172.1.2.0

network 172.1.0.0

network 172.1.1.0

no auto-summary

exit

...

RX2

```shell

hostname RX2

interface fa0/1

description LOCAL_LAN_TRUNK

no ip address

no shutdown

```
interface fa0/1.40
encapsulation dot1Q 40
ip address 172.1.4.193 255.255.255.224
exit
```

```
interface fa0/1.50
encapsulation dot1Q 50
ip address 172.1.4.129 255.255.255.192
exit
```

```
interface fa0/1.60
encapsulation dot1Q 60
ip address 172.1.4.1 255.255.255.128
exit
```

```
interface fa0/0
ip address 172.1.3.2 255.255.255.0
no shutdown
exit
```

```
router rip
version 2
network 172.1.3.0
network 172.1.4.0
network 172.1.4.128
network 172.1.4.192
no auto-summary
```

exit

...

Lab 3: DHCP, DNS, NAT, and ACLs

VLAN Setup

Switch Configuration (e.g., SW1 and SW2)

```shell

Configure VLANs

vlan 70

name VLAN70

exit

vlan 80

name VLAN80

exit

vlan 90

name VLAN90

exit

Assign VLANs to ports

interface fa0/1

switchport mode access

switchport access vlan 70

exit

interface fa0/2

switchport mode access

switchport access vlan 80

exit

interface fa0/3

switchport mode access

switchport access vlan 90

exit

Configure trunk port

interface fa0/24

switchport mode trunk

no shutdown

exit

```

Sub-interfaces for VLANs on Routers

RX1

```shell

interface fa0/0

no shutdown

exit


```
interface fa0/0.70
encapsulation dot1Q 70
ip address 192.168.70.1 255.255.255.0
exit
```

```
interface fa0/0.80
encapsulation dot1Q 80
ip address 192.168.80.1 255.255.255.0
exit
```

```
interface fa0/0.90
encapsulation dot1Q 90
ip address 192.168.90.1 255.255.255.0
exit
...
```

DHCP Configuration

DHCP Server Setup (RX2)

```
``shell
```

```
# Exclude addresses from DHCP pool
```

```
ip dhcp excluded-address 192.168.70.1 192.168.70.10
```

```
ip dhcp excluded-address 192.168.80.1 192.168.80.10
```

```
ip dhcp excluded-address 192.168.90.1 192.168.90.10
```

```
# Create DHCP pool for VLAN70
```

```
ip dhcp pool VLAN70
network 192.168.70.0 255.255.255.0
default-router 192.168.70.1
dns-server 192.168.70.1
lease 0 4 0
```

Create DHCP pool for VLAN80

```
ip dhcp pool VLAN80
network 192.168.80.0 255.255.255.0
default-router 192.168.80.1
dns-server 192.168.80.1
lease 0 4 0
```

Create DHCP pool for VLAN90

```
ip dhcp pool VLAN90
network 192.168.90.0 255.255.255.0
default-router 192.168.90.1
dns-server 192.168.90.1
lease 0 4 0
```

...

NAT Configuration

NAT and PAT on RX1

```
```shell
```

```
Configure inside and outside interfaces
interface fa0/0
```

**ip nat inside**

**exit**

**interface fa0/1**

**ip nat outside**

**exit**

**# Dynamic NAT with PAT**

**access-list 1 permit 192.168.0.0 0.0.255.255**

**ip nat inside source list 1 interface fa0/1 overload**

**# Static NAT (for web server)**

**ip nat inside source static tcp 192.168.90.10 80 203.0.113.1 80**

**```**

**### Access Control Lists (ACLs)**

**#### Deny Traffic to Specific Networks**

**```shell**

**# Deny traffic between S7 and S3**

**access-list 101 deny ip 192.168.7.0 0.0.0.255 192.168.3.0 0.0.0.255**

**access-list 101 deny ip 192.168.3.0 0.0.0.255 192.168.7.0 0.0.0.255**

**# Permit traffic to S10**

**access-list 101 permit ip 192.168.7.0 0.0.0.255 192.168.10.0 0.0.0.255**

**access-list 101 permit ip 192.168.3.0 0.0.0.255 192.168.10.0 0.0.0.255**

**# Apply ACL to interfaces**

**interface fa0/0**

**ip access-group 101 in**

**exit**

**...**

**### DNS Configuration**

**#### Primary DNS on IntSer1 (Prague)**

**```shell**

**# Set up DNS domain**

**ip domain-name aqua.test**

**# Map hostnames to IPs**

**ip host web.aqua.test 192.168.90.10**

**ip host dns.aqua.test 192.168.80.10**

**...**

**#### Delegation to Subdomain (IntSer2 in Plzen)**

**```shell**

**# Forward requests to subdomain**

**ip name-server 192.168.80.10**

**ip domain-name plzen.aqua.test**

**...**

**### Verification Commands**

#### **#### Check DHCP Bindings**

```
``shell
```

```
show ip dhcp binding
```

```
``
```

#### **#### Test NAT**

```
``shell
```

```
ping 8.8.8.8
```

```
``
```

#### **#### Test DNS**

```
``shell
```

```
nslookup web.aqua.test
```

```
``
```