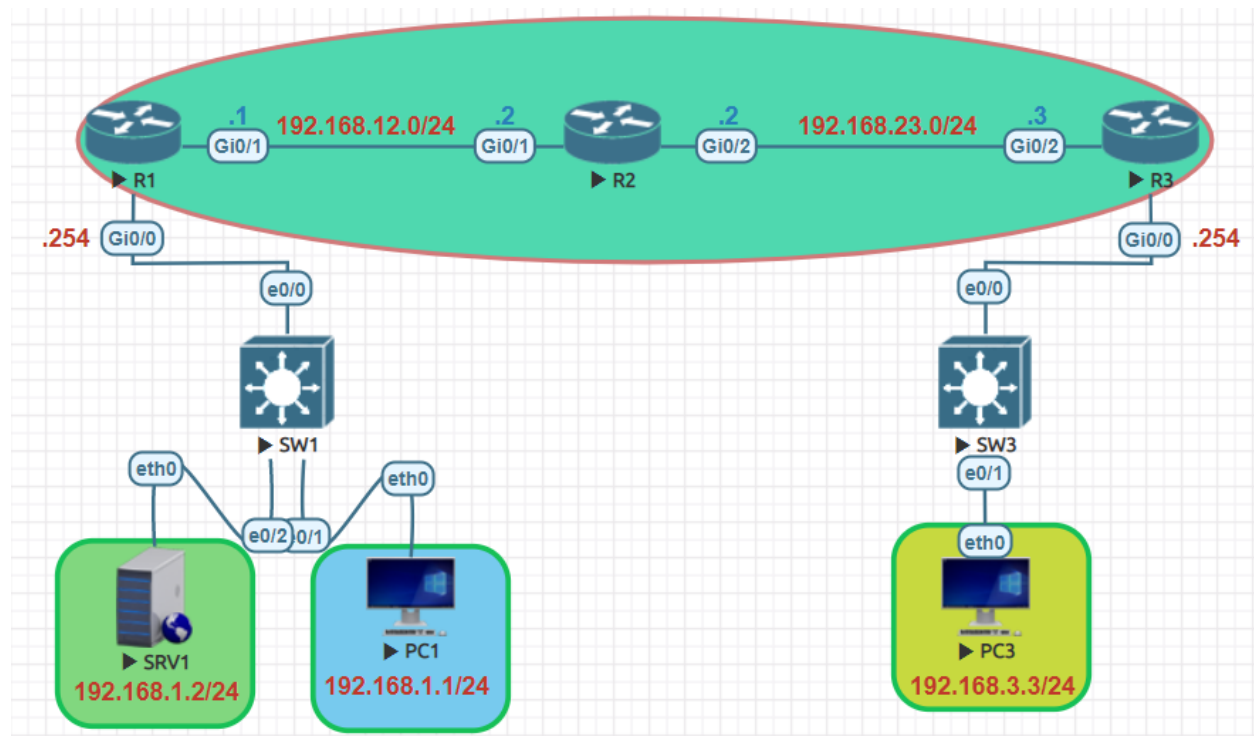


Static Route Lab:



Switch Images	I86bi_linuxl2-ipbasek9-ms.high_iron_aug9_2017b
Router Images	vios-adventerprisek9-m.spa.159-3.m2
Client PC	VPCS
VLANs	Default VLAN1
PC1 IP Address	192.168.1.1
SRV1 IP Address	192.168.1.2
PC3 IP Address	192.168.3.3
R1 G0/0 Interface IP Address	192.168.1.254
R1 G0/1 Interface IP Address	192.168.12.1
R2 G0/1 Interface IP Address	192.168.12.2
R2 G0/2 Interface IP Address	192.168.23.2
R3 G0/2 Interface IP Address	192.168.23.3
R3 G0/0 Interface IP Address	192.168.3.254
Routing Protocols	Static, Default, Host, Network
Static Routing Types	Directly Attached Static Routes, Recursive Static Routes, Fully Specified Static Routes and Static Null Routes

R1 Basic Configuration

```
Router(config)#hostname R1
R1(config)#no ip domain lookup
R1(config)#line con 0
R1(config-line)#exec-timeout 0 0
R1(config-line)#logging synchronous
R1(config-line)#exit
R1(config)#interface GigabitEthernet0/0
R1(config-if)#ip address 192.168.1.254 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface GigabitEthernet0/1
R1(config-if)#ip address 192.168.12.1 255.255.255.0
R1(config-if)#no shutdown
```

R2 Basic Configuration

```
Router(config)#hostname R2
R2(config)#no ip domain lookup
R2(config)#line con 0
R2(config-line)#exec-timeout 0 0
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#interface GigabitEthernet0/1
R2(config-if)#ip address 192.168.12.2 255.255.255.0
R2(config-if)#no shutdown
R2(config)#interface GigabitEthernet0/2
R2(config-if)#ip address 192.168.23.2 255.255.255.0
R2(config-if)#no shutdown
```

R3 Basic Configuration

```
Router(config)#hostname R3
R3(config)#no ip domain lookup
R3(config)#line con 0
R3(config-line)#exec-timeout 0 0
R3(config-line)#logging synchronous
R3(config-line)#exit
R3(config)#interface GigabitEthernet0/0
R3(config-if)#ip address 192.168.3.254 255.255.255.0
R3(config-if)#no shutdown
R3(config)#interface GigabitEthernet0/2
R3(config-if)#ip address 192.168.23.3 255.255.255.0
R3(config-if)#no shutdown
```

PC1 Configuration

```
VPCS> set pncname PC1  
PC1> ip 192.168.1.1/24 192.168.1.254
```

SRV1 Configuration

```
VPCS> set pncname SRV1  
SRV1> ip 192.168.1.2/24 192.168.1.254
```

PC3 Configuration

```
VPCS> set pncname PC3  
PC1> ip 192.168.3.3/24 192.168.3.254
```

R1 Default Route Configuration

```
R1(config)#ip route 0.0.0.0 0.0.0.0 192.168.12.2
```

R2 Static Route Configuration

```
R2(config)#ip route 192.168.3.0 255.255.255.0 192.168.23.3  
R2(config)#ip route 192.168.1.0 255.255.255.0 192.168.12.1
```

R3 Default Route Configuration

```
R3(config)#ip route 0.0.0.0 0.0.0.0 192.168.23.2
```

Verification

```
R1#show ip route  
R2#show ip route  
R3#show ip route  
R1#show ip route static  
R2#show ip route static  
R3#show ip route static
```

Ping Hosts

```
PC3> ping 192.168.1.1  
PC3> ping 192.168.1.2  
PC1> ping 192.168.3.3
```

```
R1#show ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PfR
```

Gateway of last resort is 192.168.12.2 to network 0.0.0.0

```
S* 0.0.0.0/0 [1/0] via 192.168.12.2
```

In the braces, "1", is AD for static routes, and "0" is the metric.

```
R2#show ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PfR
```

Gateway of last resort is not set

```
S 192.168.1.0/24 [1/0] via 192.168.12.1
S 192.168.3.0/24 [1/0] via 192.168.23.3
```

```
R3#show ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PfR
```

Gateway of last resort is 192.168.23.2 to network 0.0.0.0

```
S* 0.0.0.0/0 [1/0] via 192.168.23.2
```

Host Route Configuration

```
R3(config)#no ip route 0.0.0.0 0.0.0.0 192.168.23.2
```

```
R3(config)#ip route 192.168.1.1 255.255.255.255 192.168.23.2
```

```
R3#show ip route static
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2  
ia - IS-IS inter area, * - candidate default, U - per-user static route  
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP  
a - application route  
+ - replicated route, % - next hop override, p - overrides from PfR
```

Gateway of last resort is not set

```
S      192.168.1.0/32 is subnetted, 1 subnets  
S      192.168.1.1 [1/0] via 192.168.23.2
```



```
PC3> ping 192.168.1.1
```

```
84 bytes from 192.168.1.1 icmp_seq=1 ttl=61 time=20.346 ms  
84 bytes from 192.168.1.1 icmp_seq=2 ttl=61 time=32.504 ms
```



```
^C
```

```
PC3> ping 192.168.1.2
```

```
*192.168.3.254 icmp_seq=1 ttl=255 time=23.985 ms (ICMP type:3, code:1, Destination host unreachable)  
*192.168.3.254 icmp_seq=2 ttl=255 time=18.010 ms (ICMP type:3, code:1, Destination host unreachable)  
*192.168.3.254 icmp_seq=3 ttl=255 time=15.562 ms (ICMP type:3, code:1, Destination host unreachable)
```



```
^C
```

Network Route Configuration

```
R3(config)#no ip route 192.168.1.1 255.255.255.255 192.168.23.2
```

```
R3(config)#ip route 192.168.1.0 255.255.255.0 192.168.23.2
```

```
R3#show ip route static
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2  
ia - IS-IS inter area, * - candidate default, U - per-user static route  
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP  
a - application route  
+ - replicated route, % - next hop override, p - overrides from PfR
```

Gateway of last resort is not set

```
S      192.168.1.0/24 [1/0] via 192.168.23.2
```