

Configuration

Router 1

```
interface GigabitEthernet0/0/0
ip address 192.168.100.1 255.255.255.0
no sh
exit
interface GigabitEthernet0/0/1
ip address 192.168.200.1 255.255.255.0
no sh
exit
ip ospf 1 area 0
exit
ip dhcp pool VLAN10
network 192.168.10.0 255.255.255.0
default-router 192.168.10.3
dns-server 8.8.8.8
exit
ip dhcp pool VLAN20
network 192.168.20.0 255.255.255.0
default-router 192.168.20.3
dns-server 8.8.8.8
exit
ip dhcp pool VLAN30
network 192.168.30.0 255.255.255.0
default-router 192.168.30.3
dns-server 8.8.8.8
exit
ip dhcp pool VLAN40
network 192.168.40.0 255.255.255.0
```

default-router 192.168.40.3

dns-server 8.8.8.8

exit

ip dhcp pool VLAN50

network 192.168.50.0 255.255.255.0

default-router 192.168.50.3

dns-server 8.8.8.8

exit

ip dhcp pool VLAN60

network 192.168.60.0 255.255.255.0

default-router 192.168.60.3

dns-server 8.8.8.8

exit

ip dhcp pool VLAN70

network 192.168.70.0 255.255.255.0

default-router 192.168.70.3

dns-server 8.8.8.8

exit

ip dhcp pool VLAN80

network 192.168.80.0 255.255.255.0

default-router 192.168.80.3

dns-server 8.8.8.8

exit

R1(config)#int serial 0/1/0

R1(config-if)#ip ad

R1(config-if)#ip address 192.168.110.1 255.255.255.0

R1(config-if)#no sh

R1(config-if)#

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

R1(config-if)#int serial 0/1/0

R1(config-if)#ip os

R1(config-if)#ip ospf 1 area 0

R1(config-if)#ex

R1(config)#ro

R1(config)#router os

R1(config)#router ospf 1

R1(config-router)#pas

R1(config-router)#passive-interface se

R1(config-router)#passive-interface serial 0/1/0

R1(config-router)#ex

R1(config)#

enable secret cisco123

line console 0

password cisco123

login

exit

line vty 0 4

password cisco123

login

exit

ip domain-name cisco.com

crypto key generate rsa

ip ssh version 2

username admin password cisco123

```
line vty 0 4
transport input ssh
login local
exit
```

Router 2

```
interface GigabitEthernet0/0/0
ip address 192.168.50.1 255.255.255.0
no sh
exit
interface GigabitEthernet0/0/1
ip address 192.168.150.1 255.255.255.0
no sh
exit
```

ISP Router

```
Router(config)#int serial 0/1/0
Router(config-if)#ip ad
Router(config-if)#ip address 192.168.110.2 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

Router(config-if)#ex
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config)#int se
Router(config)#int serial 0/1/1
Router(config-if)#ip address 192.168.120.2 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

Router(config-if)#ex
```

ML 1,2

channel-group 4 mode active

switchport mode trunk

Ip routing

channel-group 1,2,3 mode active

```
int fa0/1
ip ospf 1 area 0
exit
int fa0/2
ip ospf 1 area 0
exit
```

```
int vlan 10
ip ospf 1 area 0
ip helper 192.168.100.1
exit
```

```
int vlan 20
ip ospf 1 area 0
ip helper 192.168.100.1
exit
```

```
int vlan 30
ip ospf 1 area 0
ip helper 192.168.100.1
exit
```

```
int vlan 40
ip ospf 1 area 0
ip helper 192.168.100.1
exit
```

```
int vlan 50
```

```
ip ospf 1 area 0
```

```
ip helper 192.168.100.1
```

```
exit
```

```
int vlan 60
```

```
ip ospf 1 area 0
```

```
ip helper 192.168.100.1
```

```
exit
```

```
int vlan 70
```

```
ip ospf 1 area 0
```

```
ip helper 192.168.100.1
```

```
exit
```

```
int vlan 80
```

```
ip ospf 1 area 0
```

```
ip helper 192.168.100.1
```

```
exit
```

```
spanning-tree mode rapid-pvst
```

```
ML_1(config)# spanning-tree vlan 10 root primary
```

```
ML_1(config)# spanning-tree vlan 20 root primary
```

```
ML_1(config)# spanning-tree vlan 30 root primary
```

```
ML_1(config)# spanning-tree vlan 40 root primary
```

```
ML_2(config)# spanning-tree vlan 10 root secondary
```

```
ML_2(config)# spanning-tree vlan 20 root secondary
```

```
ML_2(config)# spanning-tree vlan 30 root secondary
```

```
ML_2(config)# spanning-tree vlan 40 root secondary
```

```
ML_2(config)# spanning-tree vlan 50 root primary
```

```
ML_2(config)# spanning-tree vlan 60 root primary
```

```
ML_2(config)# spanning-tree vlan 70 root primary
```

```
ML_2(config)# spanning-tree vlan 80 root primary
```

```
ML_1(config)# spanning-tree vlan 50 root secondary
ML_1(config)# spanning-tree vlan 60 root secondary
ML_1(config)# spanning-tree vlan 70 root secondary
ML_1(config)# spanning-tree vlan 80 root secondary
```

ML 1

```
interface vlan 10
ip address 192.168.10.1 255.255.255.0
standby 1 ip 192.168.10.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 20
ip address 192.168.20.1 255.255.255.0
standby 1 ip 192.168.20.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 30
ip address 192.168.30.1 255.255.255.0
standby 1 ip 192.168.30.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 40
ip address 192.168.40.1 255.255.255.0
standby 1 ip 192.168.40.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 50
ip address 192.168.50.1 255.255.255.0
standby 1 ip 192.168.50.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 60
ip address 192.168.60.1 255.255.255.0
standby 1 ip 192.168.60.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 70
```

```
ip address 192.168.70.1 255.255.255.0
standby 1 ip 192.168.70.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 80
ip address 192.168.80.1 255.255.255.0
standby 1 ip 192.168.80.3
standby 1 priority 100
standby 1 preempt
exit
ML_1(config)#router ospf 1

ML_1(config-router)#net

ML_1(config-router)#network 192.168.10.0 0.0.0.255 a

ML_1(config-router)#network 192.168.10.0 0.0.0.255 area 0

ML_1(config-router)#network 192.168.20.0 0.0.0.255 area 0

ML_1(config-router)#network 192.168.30.0 0.0.0.255 area 0

ML_1(config-router)#network 192.168.40.0 0.0.0.255 area 0

ML_1(config-router)#do wr

Building configuration...

[OK]

ML_1(config-router)#ex

ML_1(config)#
```

ML 2

```
interface vlan 10
ip address 192.168.10.2 255.255.255.0
standby 1 ip 192.168.10.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 20
ip address 192.168.20.2 255.255.255.0
standby 1 ip 192.168.20.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 30
```



```
ip address 192.168.30.2 255.255.255.0
standby 1 ip 192.168.30.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 40
ip address 192.168.40.2 255.255.255.0
standby 1 ip 192.168.40.3
standby 1 priority 100
standby 1 preempt
exit
interface vlan 50
ip address 192.168.50.2 255.255.255.0
standby 1 ip 192.168.50.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 60
ip address 192.168.60.2 255.255.255.0
standby 1 ip 192.168.60.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 70
ip address 192.168.70.2 255.255.255.0
standby 1 ip 192.168.70.3
standby 1 priority 110
standby 1 preempt
exit
interface vlan 80
ip address 192.168.80.2 255.255.255.0
standby 1 ip 192.168.80.3
standby 1 priority 110
standby 1 preempt
exit
ML_2(config)#router ospf 1

ML_2(config-router)#net

ML_2(config-router)#network 192.168.50.0 0.0.0.255 area 0

ML_2(config-router)#network 192.168.60.0 0.0.0.255 area 0

ML_2(config-router)#network 192.168.70.0 0.0.0.255 area 0

ML_2(config-router)#network 192.168.80.0 0.0.0.255 area 0

ML_2(config-router)#do wr

Building configuration...
```

[OK]

ML_2(config-router)#ex

ML_2(config)#

ML 3,4,5

interface vlan 10

ip address 192.168.10.1 255.255.255.0

exit

interface vlan 20

ip address 192.168.20.1 255.255.255.0

exit

interface vlan 30

ip address 192.168.30.1 255.255.255.0

exit

interface vlan 40

ip address 192.168.40.1 255.255.255.0

exit

interface vlan 50

ip address 192.168.50.1 255.255.255.0

exit

interface vlan 60

ip address 192.168.60.1 255.255.255.0

exit

interface vlan 70

ip address 192.168.70.1 255.255.255.0

exit

interface vlan 80

ip address 192.168.80.1 255.255.255.0

exit

switchport mode trunk

switchport trunk allowed vlan 10,20,30,40,50,60,70,80

exit

channel-group 5,6 mode active

ip dhcp snooping

ip dhcp snooping vlan 10,20,30,40,50,60,70,80

ML_3(config)#int range fa0/1 -4

ML_3(config-if-range)#ip dhcp snooping trust

ML_3(config-if-range)#ex

ML_3(config)#int range fa0/5 -12

ML_3(config-if-range)#ip dhcp snooping limit rate 10

ML_3(config-if-range)#ex

spanning-tree mode rapid-pvst

ML 4

int range fa0/1 -2

channel-group 1 mode active

exit

int range fa0/3 -4

channel-group 2 mode active

exit

int range fa0/5 -6

channel-group 3 mode active

exit

int range fa0/7 -8

channel-group 4 mode active

exit

ML 3,5

```
int range fa0/5 -6
channel-group 1 mode active
exit
int range fa0/7 -8
channel-group 2 mode active
exit
int range fa0/9 -10
channel-group 3 mode active
exit
int range fa0/11 -12
channel-group 4 mode active
exit
```

SW 1

```
interface range fastEthernet 0/11 - 14
switchport mode access
switchport access vlan 20
exit
interface range fastEthernet 0/7 - 10
switchport mode access
switchport access vlan 10
exit
int range fa0/1 -2
channel-group 2 mode active
exit
```

```
int range fa0/5 -6

channel-group 3 mode active

exit

int range fa0/3 -4

channel-group 4 mode active

exit

enable secret cisco123

line console 0

password cisco123

login

exit

line vty 0 4

password cisco123

login

exit

ip domain-name cisco.com

crypto key generate rsa

ip ssh version 2

username admin password cisco123

line vty 0 4

transport input ssh

login local

exit

switchport mode access

switchport port-security

switchport port-security maximum 2

switchport port-security violation restrict

switchport port-security mac-address sticky

exit
```

spanning-tree mode rapid-pvst
spanning-tree portfast

spanning-tree bpduguard enable

ex

mls qos
interface range fastEthernet 0/7
mls qos trust dscp

SW 2

interface range fastEthernet 0/11 - 14

switchport mode access

switchport access vlan 30

exit

interface range fastEthernet 0/7 - 10

switchport mode access

switchport access vlan 40

exit

int range fa0/1 -2

channel-group 1 mode active

exit

int range fa0/5 -6

channel-group 3 mode active

exit

int range fa0/3 -4

channel-group 4 mode active

exit

enable secret cisco123

line console 0

password cisco123

```
login
exit
line vty 0 4
password cisco123
login
exit
ip domain-name cisco.com
crypto key generate rsa
ip ssh version 2
username admin password cisco123
line vty 0 4
transport input ssh
login local
exit
switchport mode access
switchport port-security
switchport port-security maximum 2
switchport port-security violation restrict
switchport port-security mac-address sticky
exit
spanning-tree mode rapid-pvst
spanning-tree portfast
spanning-tree bpduguard enable
ex
```

SW 3

```
interface range fastEthernet 0/11 - 14
switchport mode access
switchport access vlan 60
```

exit

interface range fastEthernet 0/7 - 10

switchport mode access

switchport access vlan 50

exit

int range fa0/1 -2

channel-group 1 mode active

exit

int range fa0/5 -6

channel-group 2 mode active

exit

int range fa0/3 -4

channel-group 4 mode active

exit

enable secret cisco123

line console 0

password cisco123

login

exit

line vty 0 4

password cisco123

login

exit

ip domain-name cisco.com

crypto key generate rsa

ip ssh version 2

username admin password cisco123

line vty 0 4


```
transport input ssh
login local
exit
switchport mode access
switchport port-security
switchport port-security maximum 2
switchport port-security violation restrict
switchport port-security mac-address sticky
exit
spanning-tree mode rapid-pvst
spanning-tree portfast
spanning-tree bpduguard enable
ex
```

SW 4

```
interface range fastEthernet 0/11 - 14
switchport mode access
switchport access vlan 80
exit
interface range fastEthernet 0/7 - 10
switchport mode access
switchport access vlan 70
exit
int range fa0/1 -2
channel-group 1 mode active
exit
int range fa0/5 -6
channel-group 2 mode active
exit
```

```
int range fa0/3 -4
channel-group 3 mode active
exit
enable secret cisco123
line console 0
password cisco123
login
exit
line vty 0 4
password cisco123
login
exit
ip domain-name cisco.com
crypto key generate rsa
ip ssh version 2
username admin password cisco123
line vty 0 4
transport input ssh
login local
exit
switchport mode access
switchport port-security
switchport port-security maximum 2
switchport port-security violation restrict
switchport port-security mac-address sticky
exit
spanning-tree mode rapid-pvst
spanning-tree portfast
spanning-tree bpduguard enable
```

ex

Vlan

VLAN 10: **Reception**
VLAN 20: **IT**
VLAN 30: **HR**
VLAN 40: **Management**
VLAN 50: **Marketing**
VLAN 60: **Sales**
VLAN 70: **Quality**
VLAN 80: **Finance**

```
vlan 10
name Reception
exit
vlan 20
name IT
exit
vlan 30
name HR
exit
vlan 40
name Management
exit
vlan 50
name Marketing
exit
vlan 60
name Sales
exit
vlan 70
name Quality
exit
vlan 80
name Finance
Exit
```