

```
## R1_VLAN
```

```
...
```

```
hostname R1_VLAN
```

```
interface loopback 0
```

```
ip address 172.21.1.1 255.255.255.255
```

```
exit
```

```
interface f0/0
```

```
ip address 172.21.12.1 255.255.255.252
```

```
no shutdown
```

```
exit
```

```
interface f0/1.1
```

```
encapsulation dot1q 1
```

```
ip address 172.21.64.129 255.255.255.128
```

```
exit
```

```
interface f0/1.5
```

```
encapsulation dot1q 5
```

```
ip address 172.21.64.1 255.255.254.128
```

```
exit
```

```
interface f0/1.77
```

```
encapsulation dot1q 77 native
```

```
ip address 172.21.65.1 255.255.255.0
```

```
exit
```

```
interface f0/1.15
```

```
encapsulation dot1q 15
```

```
ip address 172.21.66.1 255.255.254.0
exit
```

```
interface f0/1.25
encapsulation dot1q 25
ip address 172.21.68.1 255.255.252.0
exit
```

```
interface f0/1.35
encapsulation dot1q 35
ip address 172.21.72.1 255.255.248.0
exit
```

```
interface f0/1.45
encapsulation dot1q 45
ip address 172.21.80.1 255.255.240.0
exit
```

```
ip route 0.0.0.0 0.0.0.0 172.21.12.2
```

```
...
```

```
## R2_Reuna
```

```
...
```

```
hostname R2_Reuna
```

```
interface loopback 0
ip address 172.21.2.2 255.255.255.255
exit
```

```
interface loopback 32
ip address 172.21.32.1 255.255.240.0
exit
```

```
interface f0/0
ip address 172.21.12.2 255.255.255.252
no shutdown
exit
```

```
interface f0/1
ip address 192.168.1.2 255.255.255.252
no shutdown
exit
```

```
ip route 0.0.0.0 0.0.0.0 192.168.1.1
No ip route 172.21.64.128 255.255.255.128 172.21.12.1
No ip route 172.21.64.0 255.255.254.128 172.21.12.1
No ip route 172.21.65.0 255.255.252.0 172.21.12.1
No ip route 172.21.66.0 255.255.254.0 172.21.12.1
No ip route 172.21.68.0 255.255.252.0 172.21.12.1
No ip route 172.21.72.0 255.255.248.0 172.21.12.1
No ip route 172.21.80.0 255.255.240.0 172.21.12.1
No ip route 172.21.1.1 255.255.255.255 172.21.12.1
...
```

```
## R3_ISP
```

```
...
```

```
hostname R3_ISP
```

```
interface loopback 0
```

```
ip address 111.112.113.1 255.255.255.255
```

```
exit
```

```
interface f0/0
```

```
ip address 192.168.1.1 255.255.255.252
```

```
no shutdown
```

```
exit
```

```
ip route 0.0.0.0 0.0.0.0 192.168.1.2
```

```
```
```

```
## SW1_3560
```

```
```
```

```
hostname SW1_3560
```

```
vlan 5
```

```
name Apu
```

```
exit
```

```
vlan 77
```

```
name VerHal
```

```
exit
```

```
vlan 15
```

```
name WLAN
```

```
exit
```

```
vlan 25
```

name Myy

exit

vlan 35

name Osto

exit

vlan 45

name Tuota

exit

interface f0/22

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 1,5,77,15,25,35,45

switchport trunk native vlan 77

no shutdown

exit

interface range f0/23-24

channel-group 1 mode desirable

exit

interface port-channel 1

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 1,5,77,15,25,35,45

switchport trunk native vlan 77

interface f0/1

switchport mode access

switchport access vlan 1

```
switchport nonegotiate
exit
```

```
interface f0/21
switchport mode access
switchport access vlan 1
switchport nonegotiate
exit
```

```
interface f0/2
switchport mode access
switchport access vlan 77
switchport nonegotiate
exit
```

```
interface range f0/3-6
switchport mode access
switchport access vlan 15
switchport nonegotiate
exit
```

```
interface range f0/7-9
switchport mode access
switchport access vlan 25
switchport nonegotiate
exit
```

```
interface range f0/10-17
switchport mode access
switchport access vlan 35
switchport nonegotiate
```

exit

interface range f0/18-20

switchport mode access

switchport access vlan 45

switchport nonegotiate

exit

interface vlan 77

ip address 172.21.65.21 255.255.255.0

exit

ip default-gateway 172.21.65.1

```

## SW2\_3560

```

hostname SW2\_3560

vlan 5

name Apu

exit

vlan 77

name VerHal

exit

```
vlan 15
name WLAN
exit
```

```
vlan 25
name Myy
exit
```

```
vlan 35
name Osto
exit
```

```
vlan 45
name Tuota
exit
```

```
interface range f0/23-24
channel-group 1 mode auto
exit
interface port-channel 1
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan 1,5,77,15,25,35,45
switchport trunk native vlan 77
```

```
interface range f0/21-22
channel-group 2 mode active
exit
switchport trunk encapsulation dot1q
switchport mode trunk
```



```
switchport trunk allowed vlan 1,5,77,15,25,35,45
```

```
switchport trunk native vlan 77
```

```
interface f0/1
```

```
switchport mode access
```

```
switchport access vlan 1
```

```
switchport nonegotiate
```

```
exit
```

```
interface f0/21
```

```
switchport mode access
```

```
switchport access vlan 1
```

```
switchport nonegotiate
```

```
exit
```

```
interface f0/2
```

```
switchport mode access
```

```
switchport access vlan 77
```

```
switchport nonegotiate
```

```
exit
```

```
interface range f0/3-6
```

```
switchport mode access
```

```
switchport access vlan 15
```

```
switchport nonegotiate
```

```
exit
```

```
interface range f0/7-9
```

```
switchport mode access
```

```
switchport access vlan 25
```

```
switchport nonegotiate
```

```
exit
```

```
interface range f0/10-17
```

```
switchport mode access
```

```
switchport access vlan 35
```

```
switchport nonegotiate
```

```
exit
```

```
interface range f0/18-20
```

```
switchport mode access
```

```
switchport access vlan 45
```

```
switchport nonegotiate
```

```
exit
```

```
interface vlan 77
```

```
ip address 172.21.65.22 255.255.255.0
```

```
exit
```

```
ip default-gateway 172.21.65.1
```

```
...
```

```
## SW3_2960
```

```
...
```

```
hostname SW3_2960
```

```
vlan 5
```

```
name Apu
```

exit

vlan 77

name VerHal

exit

vlan 15

name WLAN

exit

vlan 25

name Myy

exit

vlan 35

name Osto

exit

vlan 45

name Tuota

exit

interface range f0/21-22

channel-group 2 mode active

exit

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 1,5,77,15,25,35,45

switchport trunk native vlan 77

interface f0/1

```
switchport mode access
switchport access vlan 1
switchport nonegotiate
exit
```

```
interface f0/21
switchport mode access
switchport access vlan 1
switchport nonegotiate
exit
```

```
interface f0/2
switchport mode access
switchport access vlan 77
switchport nonegotiate
exit
```

```
interface range f0/3-6
switchport mode access
switchport access vlan 15
switchport nonegotiate
exit
```

```
interface range f0/7-9
switchport mode access
switchport access vlan 25
switchport nonegotiate
exit
```

```
interface range f0/10-17
switchport mode access
```

switchport access vlan 35

switchport nonegotiate

exit

interface range f0/18-20

switchport mode access

switchport access vlan 45

switchport nonegotiate

exit

interface vlan 77

ip address 172.21.65.23 255.255.255.0

exit

ip default-gateway 172.21.65.1

...

PC

...

PC1

default gateway: 172.21.65.1

172.21.65.51 255.255.255.0

PC2

default gateway: 172.21.65.1

172.21.65.52 255.255.255.0

PC3

default gateway: 172.21.65.1

172.21.65.53 255.255.255.0

...

Conf t

Router ospf 2

Interface f0/0

Ip ospf 2 area 0

Interface lo0

Ip ospf 2 area 0

Interface f0/1.1

Ip ospf 2 area 0

Jne...

RID

Router ospf 2

Router-id 1.1.1.1

clear ip ospf process or reset

Jakele oletusreitti R2\_ Reuna -reitittimestä OSPF:n avulla R1\_ VLAN -reitittimeen.

R1>enable

R1#configure terminal

R1(config)#router ospf 2

R1(config-router)#network 172.21.12.0 0.0.0.255 area 0

R1(config-router)#end

R2>enable

R2#configure terminal

R2(config)#router ospf 2

R2(config-router)#network 172.21.12.0 0.0.0.255 area 0

WORKS

Router#configure terminal

Router(config)#router ospf 2

Router(config-router)#auto-cost reference-bandwidth 1000

\*\*% OSPF: Reference bandwidth is changed.\*\*

\*\*Please ensure reference bandwidth is consistent across all routers\*\*.

Router(config-router)#exit

Ospf mainonta

Router#conf t

Router(config)#router ospf 1

Router(config-router)#passive-interface default

Router(config-router)#no passive-interface f0/0

sh ip ospf interface brief

Router ospf 2

Default-information originate