Network
Packet tracer project

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Network devices

Network devices:

- 4 routers + IPS router

- 4 switches

- 1 wifi access point

- End devices:

- Least 1 PC to each VLAN

- 5 wifi laptops

LANs an VLANs

LAN 1: 192.168.1.0\24

VLAN10: 50 PC (DHCP)

VLAN20: 30 PC (DHCP)

VLAN30: 25 PC

VLAN40: 15 PC

LAN 3:192.168.3.0\24

VLAN90: 100 PC (DHCP)

VLAN100: 40 PC (DHCP)

VLAN110: 12 PC

VLAN120: 5 PC

LAN 2: 192.168.2.0\24

VLAN50: 15 PC (DHCP)

VLAN60: 10 PC (DHCP)

VLAN70: 8 PC

VLAN80: 2 PC

LAN 4: 192.168.4.0\24

VLAN130: 30 PC (DHCP)

VLAN140: 20 PC (DHCP)

VLAN150: 20 PC

VLAN160: 20 PC

SubNeting

Tolal IP	CIDR	Net mask	Wild Card	Hosts
4	/30	255.255.255.252	0.0.0.3	2
8	/29	255.255.255.248	0.0.0.7	6
16	/28	255.255.255.240	0.0.0.15	14
32	/27	255.255.255.224	0.0.0.31	30
64	/26	255.255.255.192	0.0.0.63	62
128	/25	255.255.255.128	0.0.0.127	126
256	/24	255.255.255.0	0.0.0.255	254
512	/23	255.255.254.0	0.0.1.255	510
1024	/22	255.255.252.0	0.0.3.255	1022
2048	/21	255.255.248.0	0.0.7.255	2046
4096	/20	255.255.240.0	0.0.15.255	4094
8192	/19	255.255.224.0	0.0.32.255	8190

IP calculation

Start with the VLAN with the most hosts and continue in descending order:

- LAN: 192.168.1.0/24

- VLAN 10: 50 Pcs + IP for NetID + IP for Broadcast + IP for default gateway = 53 IP minimum

- Look to the subneting table and choose appropriate subnet size: /26 – 64 IP addresses.

- Subnet mask: 255.255.255.192

- WildCard: 0.0.0.63

- First IP address – NetID: 192.168.1.0

- Last IP address – Broadcast: (if .0 – first address and there are 63 more addresses): 192.168.1.63

- Deafaul Gateway – last IP adress before broadcast: 192.168.1.62

- IP addresses for end devices: 192.168.1.1 – 192.168.1.61

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IP calculation

Next VLAN

- LAN: 192.168.1.0/24

- VLAN 20: 30 Pcs + IP for NetID + IP for Broadcast + IP for default gateway = 33 IP minimum

- Look to the subneting table and choose appropriate subnet size: /26 – 64 IP addresses.

- Subnet mask: 255.255.255.192

- WildCard: 0.0.0.63

- First IP address – (Broadcast IP of previos VLAN + 1: 192.168.1.63 + 1): 192.168.1.64

- Last IP address – Broadcast: (if .64 – first address and there are 63 more addresses): 192.168.1.127

- Deafaul Gateway – last IP adress before broadcast: 192.168.1.126

- IP addresses for end devices: 192.168.1.65 – 192.168.1.125

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IP calculation

Next VLAN

- LAN: 192.168.1.0/24

- VLAN 30: 25 Pcs + IP for NetID + IP for Broadcast + IP for default gateway = 28 IP minimum

- Look to the subneting table and choose appropriate subnet size: /27 – 32 IP addresses.

- Subnet mask: 255.255.255.224

- WildCard: 0.0.0.31

- First IP address – (Broadcast IP of previos VLAN + 1: 192.168.1.127 + 1): 192.168.1.128

- Last IP address – Broadcast: (if .128 – first address and there are 31 more addresses): 192.168.1.159

- Deafaul Gateway – last IP adress before broadcast: 192.168.1.158

- IP addresses for end devices: 192.168.1.129 – 192.168.1.157

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IP calculation

Last VLAN in this LAN

- LAN: 192.168.1.0/24

- VLAN 40: 15 Pcs + IP for NetID + IP for Broadcast + IP for default gateway = 18 IP minimum

- Look to the subneting table and choose appropriate subnet size: /27 – 32 IP addresses.

- Subnet mask: 255.255.255.224

- WildCard: 0.0.0.31

- First IP address – (Broadcast IP of previos VLAN + 1: 192.168.1.159 + 1): 192.168.1.160

- Last IP address – Broadcast: (if .160 – first address and there are 31 more addresses): 192.168.1.191

- Deafaul Gateway – last IP adress before broadcast: 192.168.1.190

- IP addresses for end devices: 192.168.1.161 – 192.168.1.189

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IP calculation

Same way to all VLANs.

Now create

labels in this format:

- And put them on workplace

- In packet tracer window

VLAN10: 50 PC (DHCP)
NETID: 192.168.1.0\26
SM: 255.255.255.192
WC: 0.0.0.63
BC: 192.168.1.63
DG:192.168.1.62
PC: .1 - .61

VLAN20: 30 PC (DHCP)
NETID: 192.168.1.64\26
SM: 255.255.255.192
WC: 0.0.0.63
BC: 192.168.1.127
DG:192.168.1.126
PC: .65 - .126

VLAN30: 25 PC
NETID: 192.168.1.128\27
SM: 255.255.255.224
WC: 0.0.0.31
BC: 192.168.1.159
DG:192.168.1.158
PC: .129 - .157

VLAN40: 15 PC
NETID: 192.168.1.160\27
SM: 255.255.255.224
WC: 0.0.0.31
BC: 192.168.1.191
DG:192.168.1.190
PC: .161 - .189

VLAN50: 15 PC (DHCP)
NETID: 192.168.2.0\27
SM: 255.255.255.224
WC: 0.0.0.31
BC: 192.168.2.31
DG:192.168.2.30
PC: .1 - .29

VLAN60: 10 PC (DHCP)
NETID: 192.168.2.32\28
SM: 255.255.255.240
WC: 0.0.0.15
BC: 192.168.2.47
DG:192.168.2.46
PC: .33 - .45

VLAN70: 8 PC
NETID: 192.168.2.48\28
SM: 255.255.255.240
WC: 0.0.0.15
BC: 192.168.2.63
DG:192.168.2.62
PC: .49 - .61

VLAN80: 2 PC
NETID: 192.168.2.64\29
SM: 255.255.255.248
WC: 0.0.0.7
BC: 192.168.2.71
DG:192.168.2.70
PC: .65 - .69

VLAN90: 100 PC (DHCP)
NETID: 192.168.3.0\25
SM: 255.255.255.128
WC: 0.0.0.127
BC: 192.168.3.127
DG:192.168.3.126
PC: .1 - .125

VLAN100: 40 PC (DHCP)
NETID: 192.168.3.128\26
SM: 255.255.255.192
WC: 0.0.0.63
BC: 192.168.3.191
DG:192.168.3.190
PC: .129 - .189

VLAN110: 12 PC
NETID: 192.168.3.192\28
SM: 255.255.255.240
WC: 0.0.0.15
BC: 192.168.3.207
DG:192.168.3.206
PC: .193 - .205

VLAN120: 5 PC
NETID: 192.168.3.208\29
SM: 255.255.255.248
WC: 0.0.0.7
BC: 192.168.3.215
DG:192.168.3.214
PC: .209- .213

VLAN130: 30 PC (DHCP)
NETID: 192.168.4.0\26
SM: 255.255.255.192
WC: 0.0.0.63
BC: 192.168.4.63
DG:192.168.4.62
PC: .1 - .61

VLAN140: 20 PC (DHCP)
NETID: 192.168.4.64\27
SM: 255.255.255.224
WC: 0.0.0.31
BC: 192.168.4.95
DG:192.168.4.94
PC: .65 - .93

VLAN150: 20 PC
NETID: 192.168.4.96\27
SM: 255.255.255.224
WC: 0.0.0.31
BC: 192.168.4.127
DG:192.168.4.126
PC: .97 - .125

VLAN160: 20 PC
NETID: 192.168.4.128\27
SM: 255.255.255.224
WC: 0.0.0.31
BC: 192.168.4.159
DG:192.168.4.158
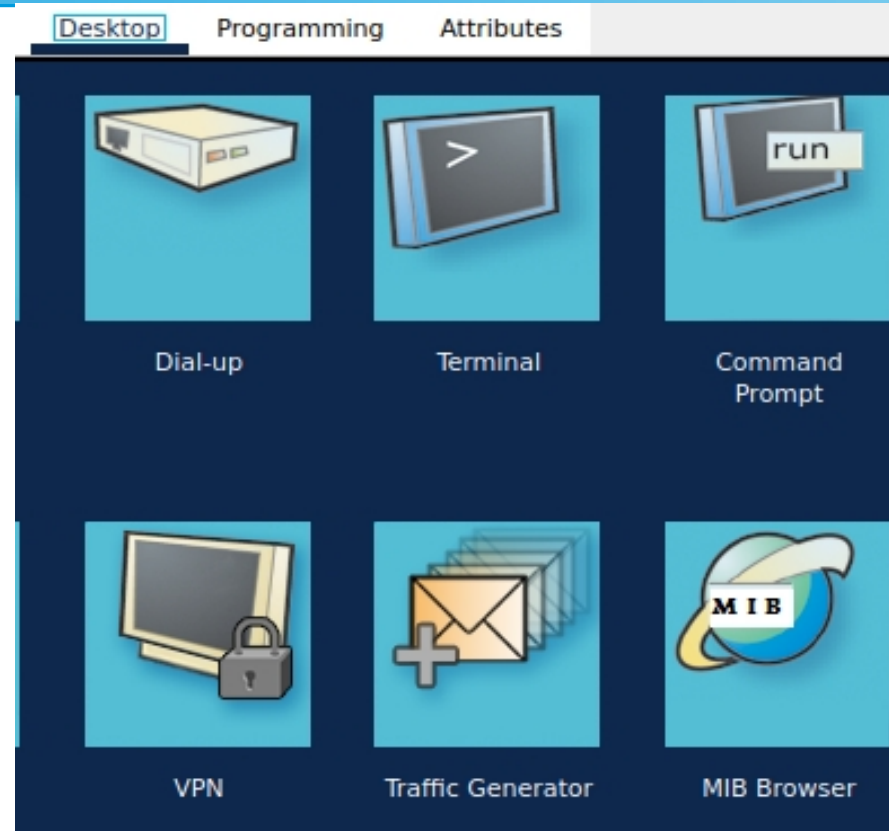PC: .129 - .157

PC configuration

- Take least one PC to each VLAN
- And place them on workplace
- Change name of PC to "VLAN <number>"
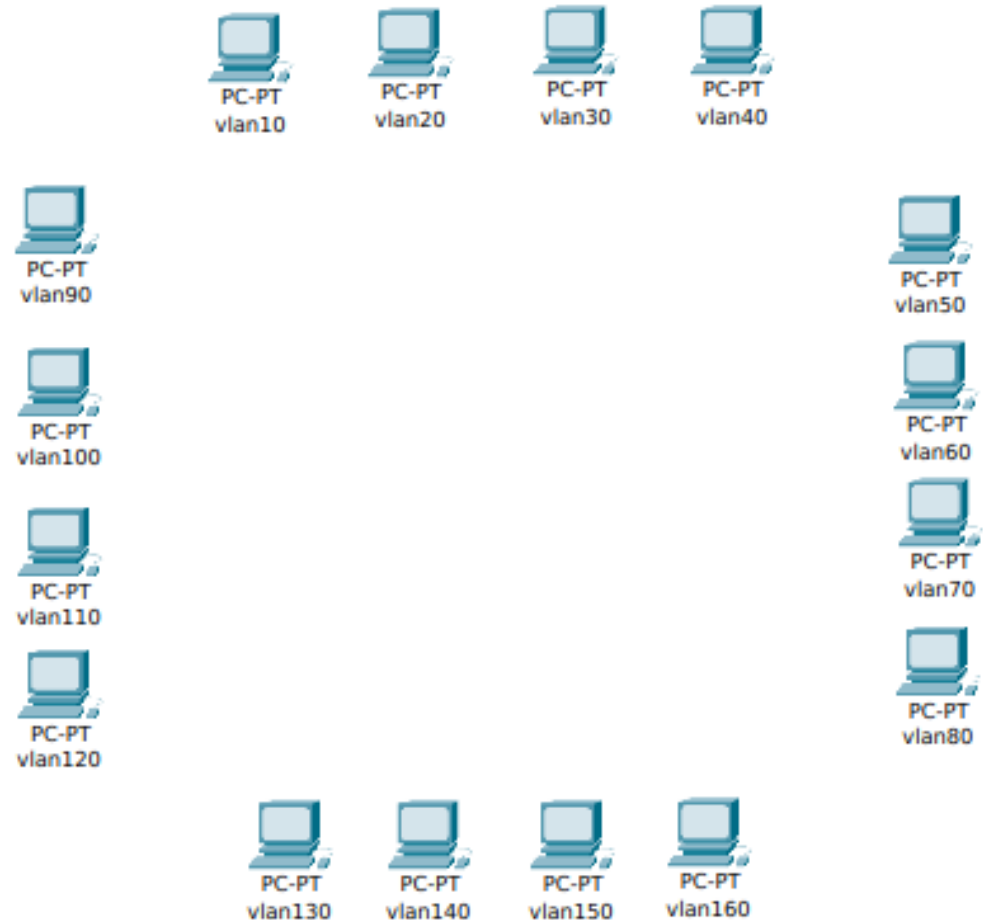
PC configuration. Static IP

- Open PC

- Open command promt

- Enter next command:

- **Ipconfig** <PC IP> <SubnetMask> <Default Gateway>

- For example PC in VLAN30:

- Ipconfig 192.168.1.129 255.255.255.224 192.168.1.158

PC configuration. Static

vlan30   Ipconfig 192.168.1.129 255.255.255.224 192.168.1.158

vlan40   Ipconfig 192.168.1.161 255.255.255.224 192.168.1.190

vlan70   Ipconfig 192.168.2.49 255.255.255.240 192.168.2.62

vlan80   Ipconfig 192.168.2.66 255.255.255.248 192.168.2.70

vlan110   Ipconfig 192.168.3.193 255.255.255.240 192.168.3.206

vlan120   Ipconfig 192.168.3.209 255.255.255.248 192.168.3.214

vlan150   Ipconfig 192.168.4.97 255.255.255.224 192.168.4.126

vlan160   Ipconfig 192.168.4.129 255.255.255.224 192.168.4.158

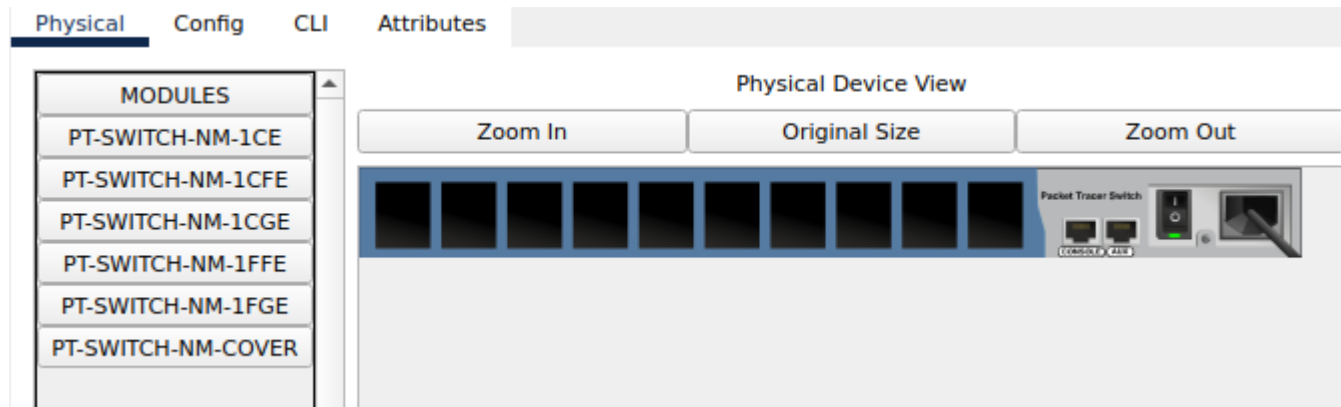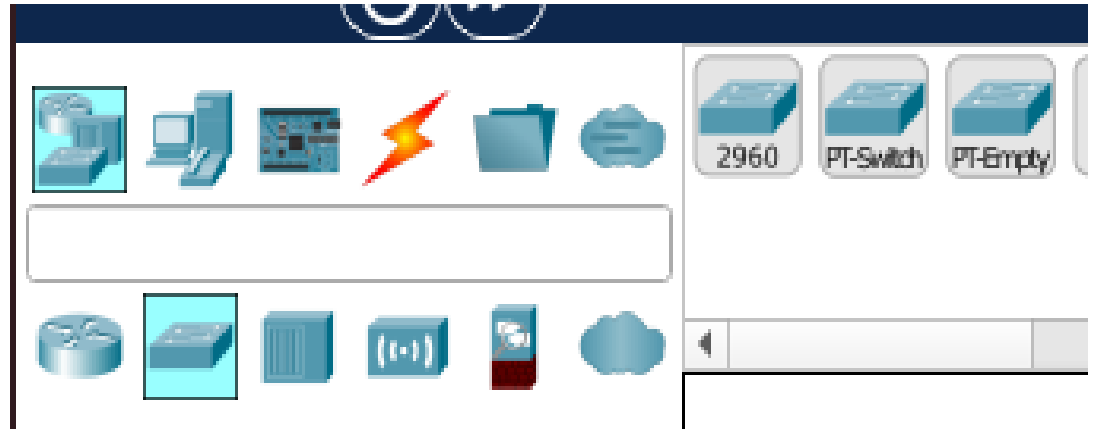# PC configuration. DHCP

- ## Open IP Configuration

- ## Choose DHCP
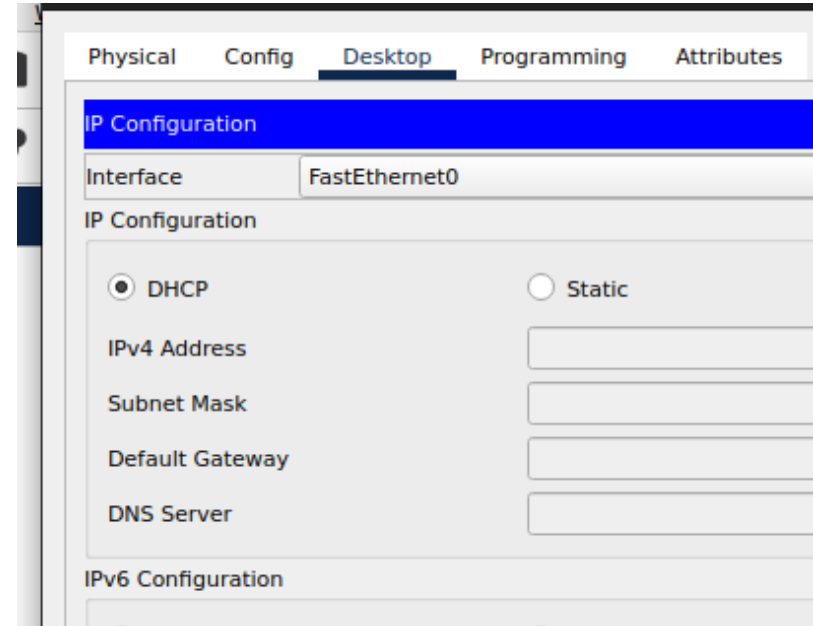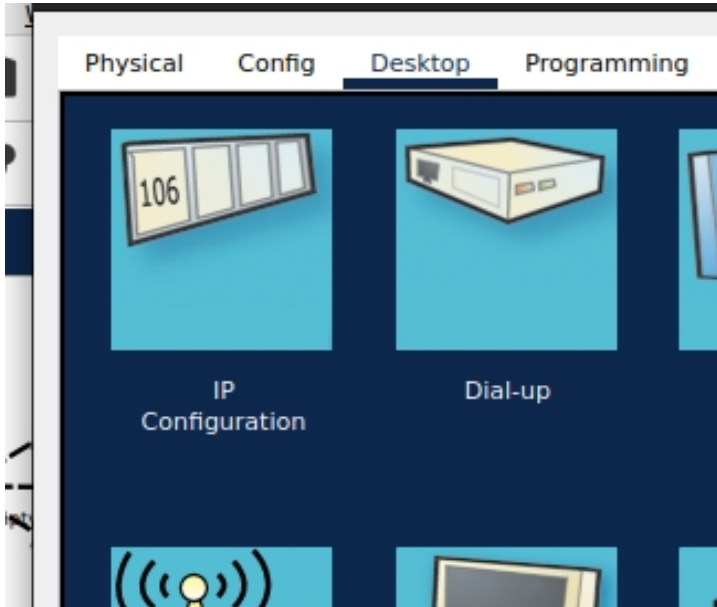

DHCP setting in continuation

Switch configuration

- Take switch "PT-Empty"
-
-
- Enter to switch physical configurations.
-

Switch configuration

- Turn off the switch

- Put into the switch: (from left to right)

- 6 module "PT-SWITCH-NM-1CFE" for PC connections

- 3 modules "PT-SWITCH-NM-1CGE" for switch to switch connections

- 1 module "PT-SWITCH-NM-1FGE" fot switch to router connections

- Turn on the switch

- Copy this switch

- Place 4 same switches
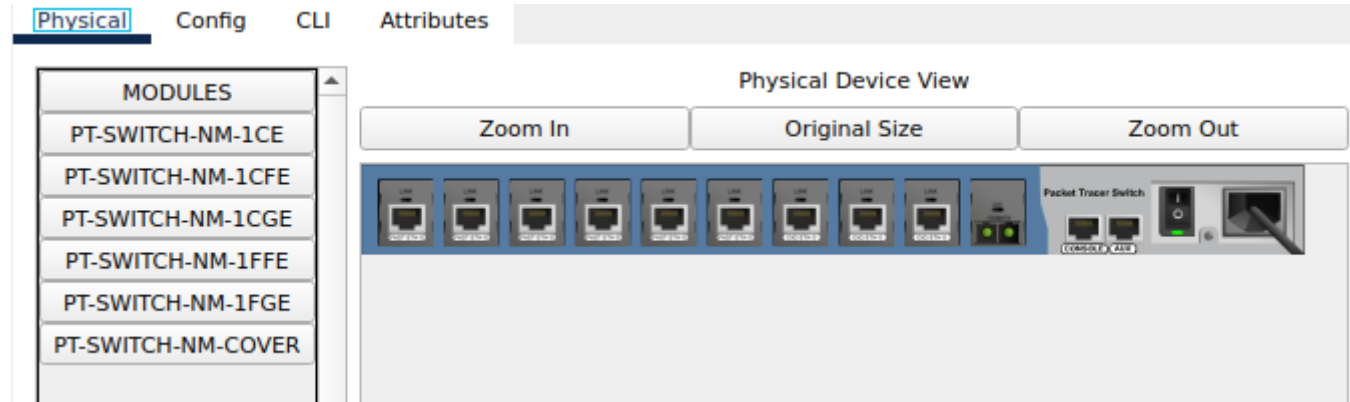
Switch configurations

- Connect all in this configuration
- Pay attention on interfaces

Switch configurations

- Open your switch

- Enter to CLI

- Basic commands:

- *enable* – enter to Privileged mode

- *configuration terminal* – enter to configuration mode

- *Int <interface number>* - enter to interface configuration

- *Int range <interface number> - <interface number>* - choose range of interfaces

- *exit* – previous mode

- *Wr* – save configuration

  *All following command you can copy-paste to CLI

Switch configuration

Interfaces configuration:

En

conf t

int f4/1 – choose interface PC-SWITCH

switchport mode access - access mode support one VLAN

switchport access vlan 10 – setup VLAN 10 to this interface

Int g1/1 – choose interface SWITCH – SWITCH

switchport mode trunk – trunk mode provide all VLANS

Int g0/1 – choose interfaces ROUTER – SWITCH

switchport mode trunk – trunk mode provide all VLANS

Switch configuration

- ## Switch 1

En
conf t
int f4/1
switchport mode access
switchport access vlan 10
int f5/1
switchport mode access
switchport access vlan 20
int f6/1
switchport mode access
switchport access vlan 30
int f7/1
switchport mode access
switchport access vlan 40
int g1/1
switchport mode trunk
int g2/1
switchport mode trunk
int g3/1
switchport mode trunk
int g0/1
switchport mode trunk

- ## Switch 2

En
conf t
int f4/1
switchport mode access
switchport access vlan 50
int f5/1
switchport mode access
switchport access vlan 60
int f6/1
switchport mode access
switchport access vlan 70
int f7/1
switchport mode access
switchport access vlan 80
int g1/1
switchport mode trunk
int g2/1
switchport mode trunk
int g3/1
switchport mode trunk
int g0/1
switchport mode trunk

Switch configuration

- ## Switch 1

En
conf t
int f4/1
switchport mode access
switchport access vlan 90
int f5/1
switchport mode access
switchport access vlan 100
int f6/1
switchport mode access
switchport access vlan 110
int f7/1
switchport mode access
switchport access vlan 120
int g1/1
switchport mode trunk
int g2/1
switchport mode trunk
int g3/1
switchport mode trunk
int g0/1
switchport mode trunk

- ## Switch 2

En
conf t
int f4/1
switchport mode access
switchport access vlan 130
int f5/1
switchport mode access
switchport access vlan 140
int f6/1
switchport mode access
switchport access vlan 150
int f7/1
switchport mode access
switchport access vlan 160
int g1/1
switchport mode trunk
int g2/1
switchport mode trunk
int g3/1
switchport mode trunk
int g0/1
switchport mode trunk

Switch configuration

- ## PVST switch 1

  - *spanning-tree vlan 10 root primary*

  - *spanning-tree vlan 20 root primary*

  - *spanning-tree vlan 30 root primary*

  - *spanning-tree vlan 40 root primary*

- ## PVST switch 3

  - *spanning-tree vlan 90 root primary*

  - *spanning-tree vlan 100 root primary*

  - *spanning-tree vlan 110 root primary*

  - *spanning-tree vlan 120 root primary*

- ## PVST switch 2

  - *spanning-tree vlan 50 root primary*

  - *spanning-tree vlan 60 root primary*

  - *spanning-tree vlan 70 root primary*

  - *spanning-tree vlan 80 root primary*

- ## PVST switch 4

  - *spanning-tree vlan 130 root primary*

  - *spanning-tree vlan 140 root primary*

  - *spanning-tree vlan 150 root primary*

  - *spanning-tree vlan 160 root primary*

Switch configuration

- VTP

  ## Switch 1 – VTP server

  - En
  - conf t
  - vtp mode server
  - vtp domain work
  - vtp password 1234
  - vlan 10
  - ex
  - vlan 20
  - ex
  - vlan 30
  - ex
  - vlan 40
  - ex
  - vlan 50
  - ex
  - vlan 60
  - ex
  - vlan 70
  - ex

vlan 80
ex
vlan 90
ex
vlan 100
ex
vlan 110
ex
vlan 120
ex
vlan 130
ex
vlan 140
ex
vlan 150
ex
vlan 160
end

- Switches 2-4 VTP clients:

- Switch 3
  - En
  - conf t
  - vtp mode client
  - vtp domain work
  - vtp password 1234
  - end

- Switch 2

En

conf t

vtp mode client

vtp domain work

vtp password 1234

end

- Switch 4
  - En
  - conf t
  - vtp mode client
  - vtp domain work
  - vtp password 1234
  - end

Switch configuration

Switch 1 SSH configuration

En
conf t
int vlan 1
ip address 10.10.10.1 255.255.255.0
no shutdown
ip default-gateway 10.10.10.201
ex
hostname SWITCH_1
username admin privilege 15 secret 1234
line vty 0 4
transport input ssh
login local
logging synchronous
ip domain-name work
crypto key generate rsa general-keys modulus 2048
end
wr

- **Switch 2 SSH configuration**
-
- En
- conf t
- int vlan 1
- ip address 10.10.10.2 255.255.255.0
- no shutdown
- ip default-gateway 10.10.10.202
- ex
- hostname SWITCH_2
- username admin privilege 15 secret 1234
- line vty 0 4
- transport input ssh
- login local
- logging synchronous
- ip domain-name work
- crypto key generate rsa general-keys modulus 2048
- end
- wr

Switch configuration

Switch 3 SSH configuration

En
conf t
int vlan 1
ip address 10.10.10.3 255.255.255.0
no shutdown
ip default-gateway 10.10.10.203
ex
hostname SWITCH_3
username admin privilege 15 secret 1234
line vty 0 4
transport input ssh
login local
logging synchronous
ip domain-name work
crypto key generate rsa general-keys modulus 2048
end
wr

- **Switch 4 SSH configuration**
-
- En
- conf t
- int vlan 1
- ip address 10.10.10.4 255.255.255.0
- no shutdown
- ip default-gateway 10.10.10.204
- ex
- hostname SWITCH_4
- username admin privilege 15 secret 1234
- line vty 0 4
- transport input ssh
- login local
- logging synchronous
- ip domain-name work
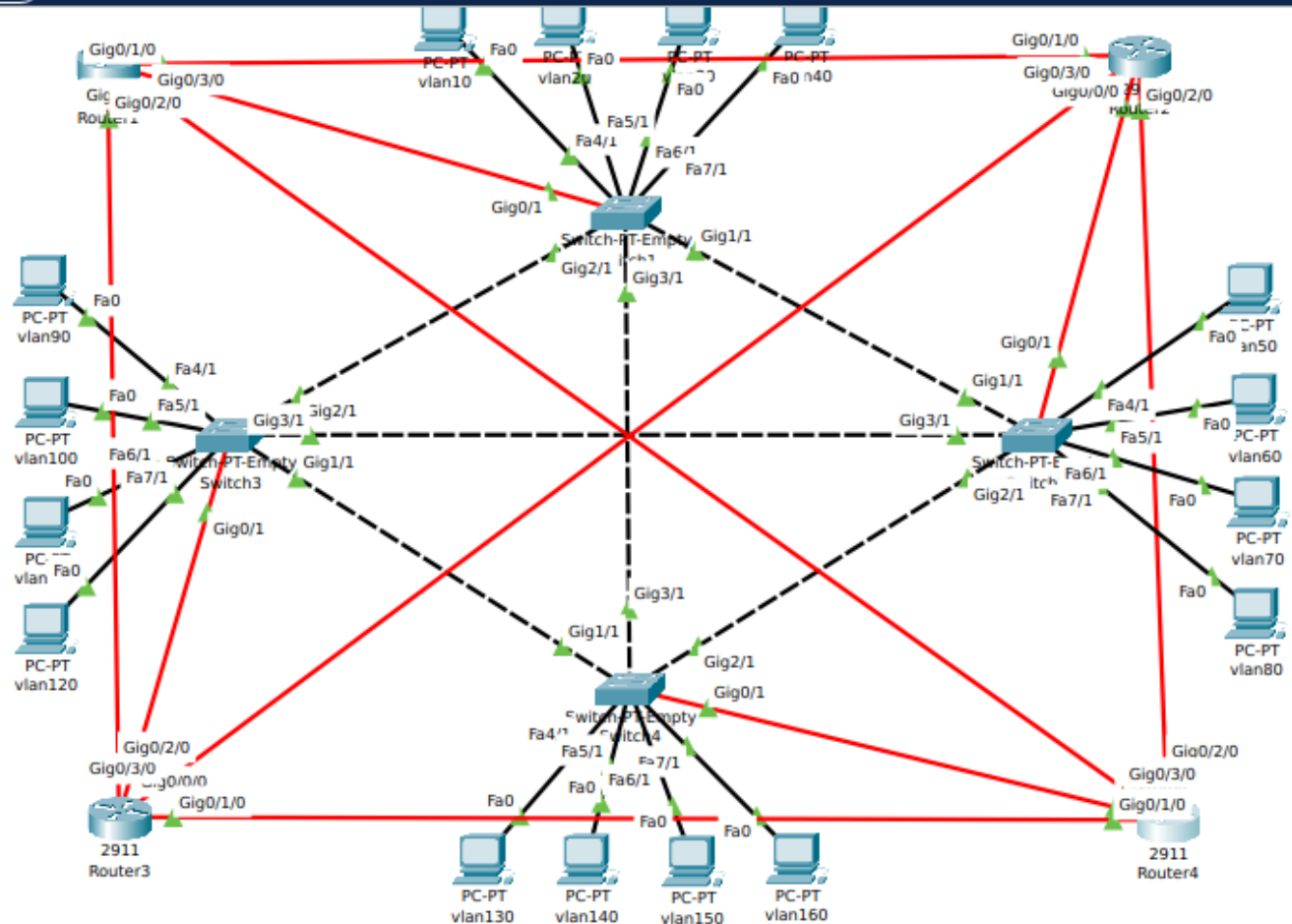- crypto key generate rsa general-keys modulus 2048
- end
- wr

Router configuration

- Take router 2911

- Open physical configurations

- Turn off the routher

- Add 4 modules HWIC-1GE-SFP

- Add GLC-LH-SMD module to each HWIC-1GE-SFP

- Turn on the router

- Copy this router

- Place 4 same routers

-
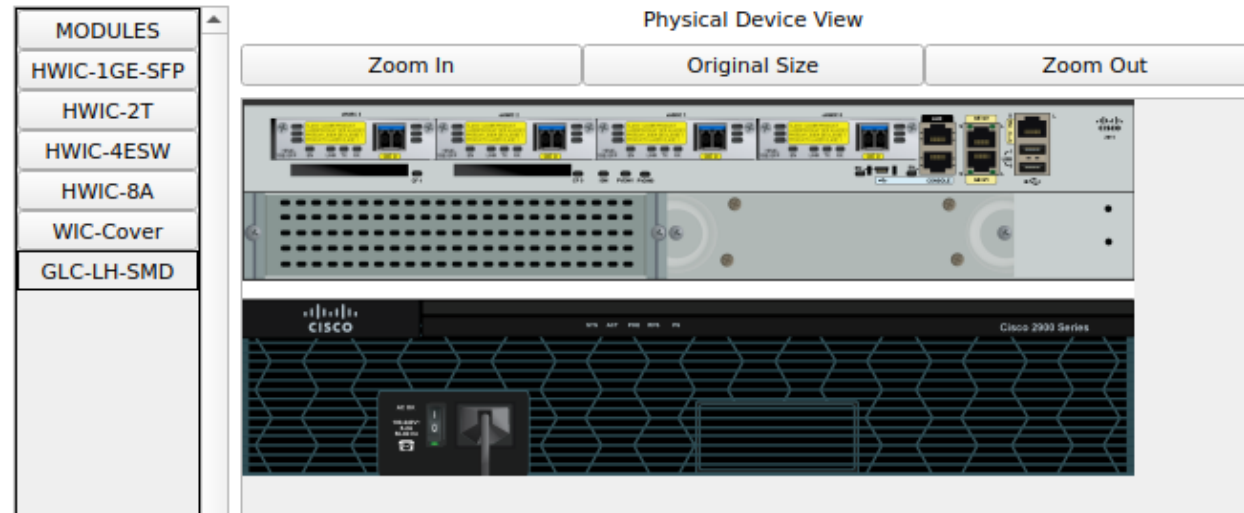
- Connect all devices in full mesh topology
- Pay attention on interfaces

Router configuration

- Create router-on-a_stick for all VLANs on each router

- Create WANs on each router

- Configurate VLAN1 on each router

- Configurate routing: OSPF + static for 0.0.0.0 0.0.0.0

  *see next slides for configuration

Router configuration

Router 1 router on a stick
En
conf t
int g0/0/0
no shutdown
int g0/0/0.10
encapsulation dot1q 10
ip address 192.168.1.62 255.255.255.192
int g0/0/0.20
encapsulation dot1q 20
ip address 192.168.1.126 255.255.255.192
int g0/0/0.30
encapsulation dot1q 30
ip address 192.168.1.158 255.255.255.224
int g0/0/0.40
encapsulation dot1q 40
ip address 192.168.1.190 255.255.255.224
int g0/0/0.50
encapsulation dot1q 1
ip address 10.10.10.201 255.255.255.0
end

Router 2 router on a stick
En
conf t
int g0/0/0
no shutdown
int g0/0/0.10
encapsulation dot1q 50
ip address 192.168.2.30 255.255.255.224
int g0/0/0.20
encapsulation dot1q 60
ip address 192.168.2.46 255.255.255.240
int g0/0/0.30
encapsulation dot1q 70
ip address 192.168.2.62 255.255.255.240
int g0/0/0.40
encapsulation dot1q 80
ip address 192.168.2.70 255.255.255.248
int g0/0/0.50
encapsulation dot1q 1
ip address 10.10.10.202 255.255.255.0
end

Router configuration

Router 3 router on a stick
En
conf t
int g0/0/0
no shutdown
int g0/0/0.10
encapsulation dot1q 90
ip address 192.168.3.126 255.255.255.128
int g0/0/0.20
encapsulation dot1q 100
ip address 192.168.3.190 255.255.255.192
int g0/0/0.30
encapsulation dot1q 110
ip address 192.168.3.206 255.255.255.240
int g0/0/0.40
encapsulation dot1q 120
ip address 192.168.3.214 255.255.255.248
int g0/0/0.50
encapsulation dot1q 1
ip address 10.10.10.203 255.255.255.0
end

Router 4 router on a stick
En
conf t
int g0/0/0
no shutdown
int g0/0/0.10
encapsulation dot1q 130
ip address 192.168.4.62 255.255.255.192
int g0/0/0.20
encapsulation dot1q 140
ip address 192.168.4.94 255.255.255.224
int g0/0/0.30
encapsulation dot1q 150
ip address 192.168.4.126 255.255.255.224
int g0/0/0.40
encapsulation dot1q 160
ip address 192.168.4.158 255.255.255.224
int g0/0/0.50
encapsulation dot1q 1
ip address 10.10.10.204 255.255.255.0
end

Router configuration

Router 1 WAN configuration

En
conf t
Int g0/1/0
ip address 10.1.1.1 255.255.255.0
no shutdown
Int g0/2/0
ip address 10.1.2.1 255.255.255.0
no shutdown
Int g0/3/0
ip address 10.1.3.1 255.255.255.0
no shutdown

Router 2 WAN configuration

En
conf t
Int g0/1/0
ip address 10.1.1.2 255.255.255.0
no shutdown
Int g0/2/0
ip address 10.1.2.2 255.255.255.0
no shutdown
Int g0/3/0
ip address 10.1.3.2 255.255.255.0
no shutdown

Router configuration

Router 3 WAN configuration

En
conf t
Int g0/1/0
ip address 10.1.1.3 255.255.255.0
no shutdown
Int g0/2/0
ip address 10.1.2.3 255.255.255.0
no shutdown
Int g0/3/0
ip address 10.1.3.3 255.255.255.0
no shutdown

Router 4 WAN configuration

En
conf t
Int g0/1/0
ip address 10.1.1.4 255.255.255.0
no shutdown
Int g0/2/0
ip address 10.1.2.4 255.255.255.0
no shutdown
Int g0/3/0
ip address 10.1.3.4 255.255.255.0
no shutdown

Router configuration

Routing Router 1

conf t

ip route 0.0.0.0 0.0.0.0 10.10.100.101

router ospf 1

network 192.168.1.0 0.0.0.63 area 1

network 192.168.1.64 0.0.0.63 area 1

network 192.168.1.128 0.0.0.31 area 1

network 192.168.1.160 0.0.0.31 area 1

network 10.1.1.0 0.0.0.255 area 1

network 10.1.2.0 0.0.0.255 area 1

network 10.1.3.0 0.0.0.255 area 1

network 10.10.10.1 0.0.0.255 area 1

Routing Router 2

conf t

ip route 0.0.0.0 0.0.0.0 10.10.100.101

router ospf 1

network 192.168.2.0 0.0.0.31 area 1

network 192.168.2.32 0.0.0.15 area 1

network 192.168.2.48 0.0.0.15 area 1

network 192.168.2.64 0.0.0.7 area 1

network 10.1.1.0 0.0.0.255 area 1

network 10.1.2.0 0.0.0.255 area 1

network 10.1.3.0 0.0.0.255 area 1

network 10.10.10.2 0.0.0.255 area 1

Router configuration

Routing Router 3

conf t

ip route 0.0.0.0 0.0.0.0 10.10.100.101

router ospf 1

network 192.168.3.0 0.0.0.127 area 1

network 192.168.3.128 0.0.0.63 area 1

network 192.168.3.192 0.0.0.15 area 1

network 192.168.3.208 0.0.0.7 area 1

network 10.1.1.0 0.0.0.255 area 1

network 10.1.2.0 0.0.0.255 area 1

network 10.1.3.0 0.0.0.255 area 1

network 10.10.10.3 0.0.0.255 area 1

Routing Router 4

conf t

ip route 0.0.0.0 0.0.0.0 10.10.100.101

router ospf 1

network 192.168.4.0 0.0.0.63 area 1

network 192.168.4.64 0.0.0.31 area 1

network 192.168.4.96 0.0.0.31 area 1

network 192.168.4.128 0.0.0.31 area 1

network 10.1.1.0 0.0.0.255 area 1

network 10.1.2.0 0.0.0.255 area 1

network 10.1.3.0 0.0.0.255 area 1

network 10.10.10.4 0.0.0.255 area 1

DHCP

- Open CLI of router 1
- Create list of excluded IP. (NetID, Broadcast, Default Gateway) of all VLANS
- Create DHCP pool for each VLAN
- Setup ip-helper on interfaces

DHCP on router 1

ip dhcp excluded-address 192.168.1.0
ip dhcp excluded-address 192.168.1.62
ip dhcp excluded-address 192.168.1.63
ip dhcp excluded-address 192.168.1.64
ip dhcp excluded-address 192.168.1.126
ip dhcp excluded-address 192.168.1.127
ip dhcp excluded-address 192.168.1.128
ip dhcp excluded-address 192.168.1.158
ip dhcp excluded-address 192.168.1.159
ip dhcp excluded-address 192.168.1.160
ip dhcp excluded-address 192.168.1.190
ip dhcp excluded-address 192.168.1.191
ip dhcp excluded-address 192.168.2.0
ip dhcp excluded-address 192.168.2.30
ip dhcp excluded-address 192.168.2.31
ip dhcp excluded-address 192.168.2.32
ip dhcp excluded-address 192.168.2.46
ip dhcp excluded-address 192.168.2.47
ip dhcp excluded-address 192.168.2.48
ip dhcp excluded-address 192.168.2.62
ip dhcp excluded-address 192.168.2.63
ip dhcp excluded-address 192.168.2.64
ip dhcp excluded-address 192.168.2.70
ip dhcp excluded-address 192.168.2.71

ip dhcp excluded-address 192.168.3.0
ip dhcp excluded-address 192.168.3.126
ip dhcp excluded-address 192.168.3.127
ip dhcp excluded-address 192.168.3.128
ip dhcp excluded-address 192.168.3.190
ip dhcp excluded-address 192.168.3.191
ip dhcp excluded-address 192.168.3.192
ip dhcp excluded-address 192.168.3.206
ip dhcp excluded-address 192.168.3.207
ip dhcp excluded-address 192.168.3.208
ip dhcp excluded-address 192.168.3.214
ip dhcp excluded-address 192.168.3.215
ip dhcp excluded-address 192.168.4.0
ip dhcp excluded-address 192.168.4.62
ip dhcp excluded-address 192.168.4.63
ip dhcp excluded-address 192.168.4.64
ip dhcp excluded-address 192.168.4.94
ip dhcp excluded-address 192.168.4.95
ip dhcp excluded-address 192.168.4.96
ip dhcp excluded-address 192.168.4.126
ip dhcp excluded-address 192.168.4.127
ip dhcp excluded-address 192.168.4.128
ip dhcp excluded-address 192.168.4.158
ip dhcp excluded-address 192.168.4.159

DHCP

ip dhcp pool vlan10

network 192.168.1.0 255.255.255.192

default-router 192.168.1.62

dns-server 8.8.8.8

domain-name work

ex

ip dhcp pool vlan50

network 192.168.2.0 255.255.255.224

default-router 192.168.2.30

dns-server 8.8.8.8

domain-name work

ex

ip dhcp pool vlan20

network 192.168.1.64 255.255.255.192

default-router 192.168.1.126

dns-server 8.8.8.8

domain-name work

ex

ip dhcp pool vlan60

network 192.168.2.32 255.255.255.240

default-router 192.168.2.46

dns-server 8.8.8.8

domain-name work

ex

DHCP

ip dhcp pool vlan90

network 192.168.3.0 255.255.255.128

default-router 192.168.3.126

dns-server 8.8.8.8

domain-name work

ex

ip dhcp pool vlan130

network 192.168.4.0 255.255.255.192

default-router 192.168.4.62

dns-server 8.8.8.8

domain-name work

ex

ip dhcp pool vlan100

network 192.168.3.128 255.255.255.192

default-router 192.168.3.190

dns-server 8.8.8.8

domain-name work

ex

iip dhcp pool vlan140

network 192.168.4.64 255.255.255.224

default-router 192.168.4.94

dns-server 8.8.8.8

domain-name work

ex

DHCP

Router 1
int g0/0/0.10
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1
int g0/0/0.20
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1

Router 3
int g0/0/0.10
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1
int g0/0/0.20
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1

Router 2
int g0/0/0.10
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1
int g0/0/0.20
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1

Router 4
int g0/0/0.10
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1
int g0/0/0.20
ip helper-address 10.1.1.1
ip helper-address 10.1.2.1
ip helper-address 10.1.3.1

ACL standart

White list

en

Conf t

ip access-list standard VL10

permit 192.168.1.0 0.0.0.63

permit 192.168.1.64 0.0.0.63

permit 192.168.1.128 0.0.0.31

permit host 192.168.1.161

int g0/0/0.10

ip access-group VL10 in

ip access-group VL10 out

Black list

en

Conf t

ip access-list standard vl20

deny 192.168.1.160 0.0.0.31

deny 192.168.2.0 0.0.0.31

deny host 192.168.3.193

permit any

int g0/0/0.20

ip access-group vl20 in

ip access-group VL10 out

ACL extended

ip access-list extended vl20

deny ip 192.168.2.64 0.0.0.7 192.168.4.0 0.0.0.63

deny ip 192.168.2.48 0.0.0.15 192.168.4.96 0.0.0.31

deny ip host 192.168.2.65 192.168.4.64 0.0.0.31

permit ip any any