Lab Project: Configuration of Network Devices for a Company
Semester II – Winter 2023

Phase 1

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Section: B10

Task 1: IP addressing

The subnetwork addresses based on KAU ID:

- KAU ID: 1911265

- Reverse KAU ID: 5621191

- Add number 2 in front of the reversed KAU ID: 25621191

- Now, split this number into an IP address with every two digits forming a part: 25.62.11.91

- Consider the network address as: 25.62.11.91/22

- Network ID:

Binary IP address: 00011001001111100000101101011011

Binary Subnet mask: 11111111111111111111110000000000

AND operation: 00011001001111100000100000000000

Network address: 25.62.8.0

Subnet Name	Needed Size	Allocated Size	Address	Mask	Dec Mask	Assignable Range	Broadcast
VLAN 30	500	510	25.62.8.0	/23	255.255.254.0	25.62.8.1 - 25.62.9.254	25.62.9.255
VLAN 40	60	62	25.62.10.0	/26	255.255.255.192	25.62.10.1 - 25.62.10.62	25.62.10.63
VLAN 10	30	30	25.62.10.64	/27	255.255.255.224	25.62.10.65 - 25.62.10.94	25.62.10.95
Multiaccess	4	6	25.62.10.96	/29	255.255.255.248	25.62.10.97 - 25.62.10.102	25.62.10.103
VLAN 88	4	6	25.62.10.104	/29	255.255.255.248	25.62.10.105 - 25.62.10.110	25.62.10.111
VLAN 99	4	6	25.62.10.112	/29	255.255.255.248	25.62.10.113 - 25.62.10.118	25.62.10.119

- VLAN 30 (500 Hosts)
    - Number of hosts: $2^n - 2 >= 500$, n= 9
    - Block size: $2^9 = 512$
    - Network bits: $32 - 9 = 23$
    - Subnet mask: 255.255.254.0
    - Network address: 25.62.8.0
    - Broadcast address: 25.62.9.255
    - First address: 25.62.8.1
    - Last address: 25.62.9.254
    - Range: 25.62.8.1 - 25.62.9.254

- VLAN 40 (60 Hosts)
    - Number of hosts: $2^n - 2 >= 60$, n= 6
    - Block size: $2^6 = 64$
    - Network bits: $32 - 6 = 26$
    - Subnet mask: 255.255.255.192
    - Network address: 25.62.10.0
    - Broadcast address: 25.62.10.63
    - First address: 25.62.10.1
    - Last address: 25.62.10.62
    - Range: 25.62.10.1 - 25.62.10.62

- VLAN 10 (30 Hosts)
    - Number of hosts: 5
    - Block size: 32
    - Network bits: 27
    - Subnet mask: 255.255.255.224
    - Network address: 25.62.10.64
    - Broadcast address: 25.62.10.95
    - First address: 25.62.10.65
    - Last address: 25.62.10.94
    - Range: 25.62.10.65 - 25.62.10.94

- Multiaccess (4 Hosts)
  - Number of hosts: 3
  - Block size: 8
  - Network bits: 29
  - Subnet mask: 255.255.255.248
  - Network address: 25.62.10.96
  - Broadcast address: 25.62.10.103
  - First address: 25.62.10.97
  - Last address: 25.62.10.102
  - Range: 25.62.10.97 - 25.62.10.102

- VLAN 88 (4 Hosts)
  - Number of hosts: 3
  - Block size: 8
  - Network bits: 29
  - Subnet mask: 255.255.255.248
  - Network address: 25.62.10.104
  - Broadcast address: 25.62.10.111
  - First address: 25.62.10.105
  - Last address: 25.62.10.110
  - Range: 25.62.10.105 - 25.62.10.110

- VLAN 99 (4 Hosts)
  - Number of hosts: 3
  - Block size: 8
  - Network bits: 29
  - Subnet mask: 255.255.255.248
  - Network address: 25.62.10.112
  - Broadcast address: 25.62.10.119
  - First address: 25.62.10.113
  - Last address: 25.62.10.118
 - Range: 25.62.10.113 - 25.62.10.118

Device Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
S1	VLAN 99	25.62.10.114	255.255.255.248	25.62.10.113
S2	VLAN 99	25.62.10.115	255.255.255.248	25.62.10.113
S3	VLAN 88	25.62.10.106	255.255.255.248	25.62.10.105
S4	Multiaccess	25.62.10.100	255.255.255.248	25.62.10.98
MS1	G0/1	25.62.10.97	255.255.255.248	N/A
	VLAN 10	25.62.10.65	255.255.255.224	N/A
	VLAN 30	25.62.8.1	255.255.254.0	N/A
	VLAN 40	25.62.10.1	255.255.255.192	N/A
	VLAN 99	25.62.10.113	255.255.255.248	N/A
R1	S0/0/0			N/A
	G0/0	25.62.10.98	255.255.255.248	N/A
R2	G0/0	25.62.10.99	255.255.255.248	N/A
	G0/1	25.62.10.105	255.255.255.248	N/A
Admin PC	NIC	25.62.10.107	255.255.255.248	25.62.10.105
CentralServer	NIC	25.62.10.108	255.255.255.248	25.62.10.105
PC1	NIC	25.62.8.2	255.255.254.0	25.62.8.1
PC2	NIC	25.62.10.2	255.255.255.192	25.62.10.1
PC3	NIC	25.62.8.3	255.255.254.0	25.62.8.1
PC4	NIC	25.62.10.3	255.255.255.192	25.62.10.1
Printer	NIC	25.62.10.66	255.255.255.224	25.62.10.65

Port Assignments Table

Ports	VLAN
F0/1- 0/10 for S1, S2 and MS1	Vlan99
All ports for S3	Vlan88
F0/11- 0/15 for S1, S2 and MS1	Vlan10
F0/16- 0/20 for S1, S2 and MS1	Vlan30
F0/21- 0/24 for S1, S2 and MS1	Vlan40

Task 2: Cable the network
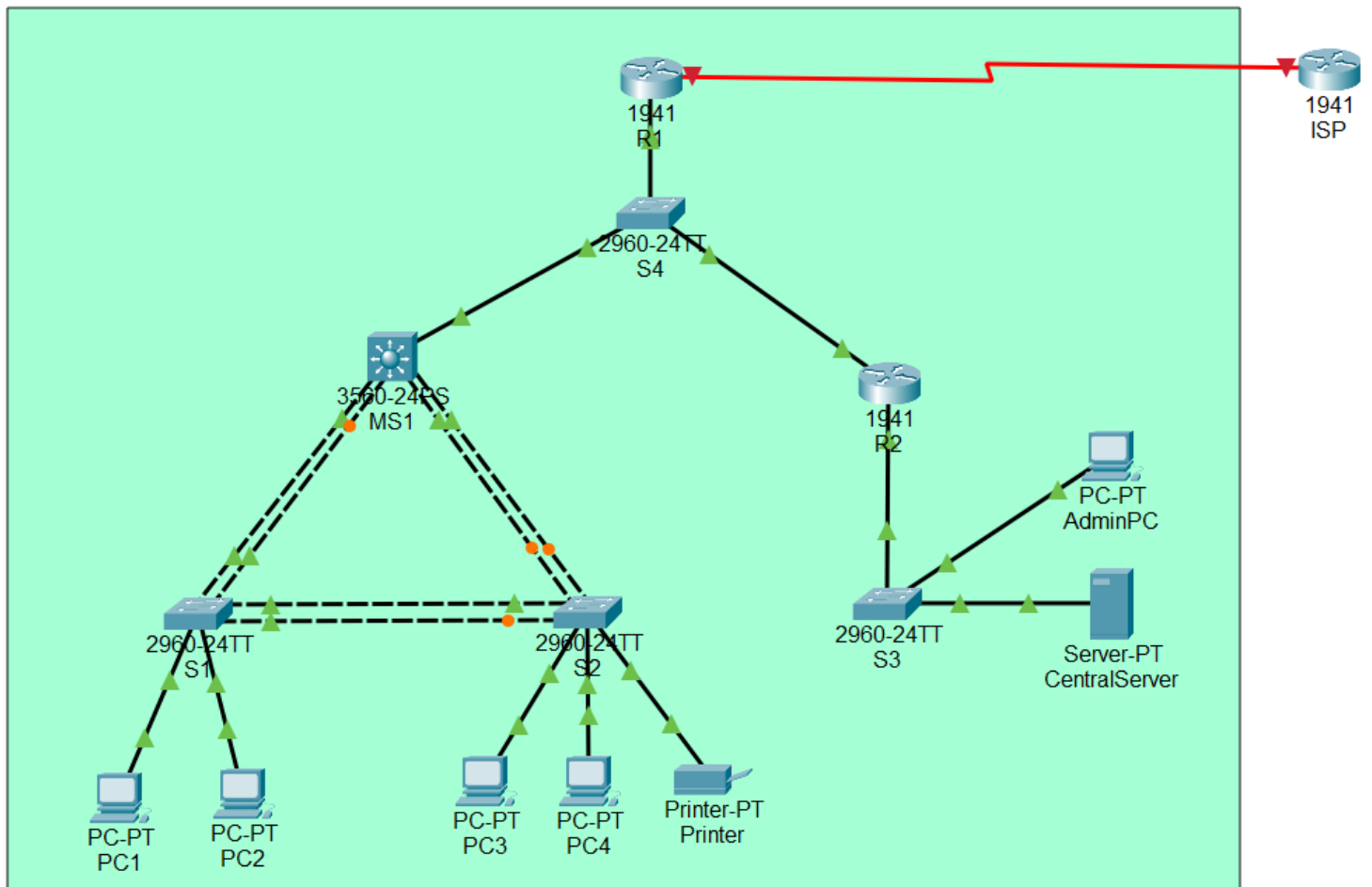
Task 3: Configure host PCs

Configure all PCs with IP addresses and default gateways according to your addressing table.

PC1

| Physical | Config | Desktop | Programming | Attributes |

IP Configuration

Interface: FastEthernet0

IP Configuration

- ◯ DHCP ● Static
- IPv4 Address: 25.62.8.2
- Subnet Mask: 255.255.254.0
- Default Gateway: 25.62.8.1
- DNS Server: 0.0.0.0

IPv6 Configuration

- ◯ Automatic ● Static
- IPv6 Address: /
- Link Local Address: FE80::2D0:BAFF:FEAD:71B
- Default Gateway:
- DNS Server:

802.1X

- ☐ Use 802.1X Security
- Authentication: MD5

☐ Top

PC2

| Physical | Config | Desktop | Programming | Attributes |

IP Configuration

Interface: FastEthernet0

IP Configuration

- ◯ DHCP ● Static
- IPv4 Address: 25.62.10.2
- Subnet Mask: 255.255.255.192
- Default Gateway: 25.62.10.1
- DNS Server: 0.0.0.0

IPv6 Configuration

- ◯ Automatic ● Static
- IPv6 Address: /
- Link Local Address: FE80::260:5CFF:FEB3:8947
- Default Gateway:
- DNS Server:

802.1X

- ☐ Use 802.1X Security
- Authentication: MD5

☐ Top

PC3

Physical | Config | Desktop | Programming | Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

◯ DHCP ● Static

IPv4 Address: 25.62.8.3

Subnet Mask: 255.255.254.0

Default Gateway: 25.62.8.1

DNS Server: 0.0.0.0

IPv6 Configuration

◯ Automatic ● Static

IPv6 Address: /

Link Local Address: FE80::2D0:D3FF:FE7D:C490

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top

PC4

Physical | Config | Desktop | Programming | Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

◯ DHCP ● Static

IPv4 Address: 25.62.10.3

Subnet Mask: 255.255.255.192

Default Gateway: 25.62.10.1

DNS Server: 0.0.0.0

IPv6 Configuration

◯ Automatic ● Static

IPv6 Address: /

Link Local Address: FE80::202:16FF:FE2C:24B3

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top

Printer — □ ×

Physical   Config   Attributes

GLOBAL
Settings
INTERFACE
FastEthernet0

FastEthernet0

Port Status   ☑ On
Bandwidth   ○ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex   ○ Half Duplex ○ Full Duplex ☑ Auto
MAC Address   00E0.A35D.E89D

IP Configuration
○ DHCP
◉ Static
IPv4 Address   25.62.10.66
Subnet Mask   255.255.255.224

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address   /
Link Local Address: FE80::2E0:A3FF:FE5D:E89D

☐ Top

Printer — □ ×

Physical   Config   Attributes

GLOBAL
Settings
INTERFACE
FastEthernet0

Global Settings

Display Name Printer

Gateway/DNS IPv4
○ DHCP
◉ Static
Default Gateway 25.62.10.65
DNS Server

Gateway/DNS IPv6
○ Automatic
◉ Static
Default Gateway
DNS Server

☐ Top

CentralServer

Physical | Config | Services | **Desktop** | Programming | Attributes

IP Configuration   X

IP Configuration

○ DHCP   ● Static

IPv4 Address   25.62.10.108

Subnet Mask   255.255.255.248

Default Gateway   25.62.10.105

DNS Server   0.0.0.0

IPv6 Configuration

○ Automatic   ● Static

IPv6 Address   [   ] / [   ]

Link Local Address FE80::2D0:97FF:FE81:457B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication   MD5

Username

☐ Top

AdminPC

Physical | Config | **Desktop** | Programming | Attributes

IP Configuration   X

Interface   FastEthernet0

IP Configuration

○ DHCP   ● Static

IPv4 Address   25.62.10.107

Subnet Mask   255.255.255.248

Default Gateway   25.62.10.105

DNS Server   0.0.0.0

IPv6 Configuration

○ Automatic   ● Static

IPv6 Address   [   ] / [   ]

Link Local Address FE80::2D0:BCFF:FE44:A90B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication   MD5

☐ Top

9