

The University of Jordan, Comp. Eng. Dept.

Spring 2023: Networks lab: Experiment 3

IP Addressing: Version 6

(Problem Sheet)

Problem 1: Configuring IPv6 Addressing - Subnetting

- Your ISP has given you the **IPv6 prefix 2000:ABDF:9C2:5000/52** to use in building the network of the University of Jordan. **Tip: The subnets' numbers should start from 1.**
- Consider the following scenario, as shown in Figure 1 (a) and (b), which helps you practice configuring IPv6 subnetting on routers and PCs, followed by the addressing table for each device interface, as shown in Table 1.
- In this activity, **you are required to fill the IPv6 addressing table after performing the subnetting for routers' interfaces and PCs based on what you've learned about IPv6 subnetting and the IPv6 prefix provided.**
- You are required to assign **the PCs the second valid address of the subnet and the router interface (i.e., default gateway) the first valid address of that subnet.**
- Follow these steps to configure **the routers interfaces**:
 - ✓ Enable the **"ipv6 unicast-routing"** global configuration command on each router (i.e., University of Jordan, School of Science, School of Engineering, School of Business, School of Law, and Computer Department).
 - ✓ On each interface of the routers (i.e., GigabitEthernet0/0 and GigabitEthernet0/1), you must do the following:
 - Configure the IPv6 address with the correct prefix length based on the address you filled in Table 1.
 - Configure the IPv6 link-local address as shown in the table below.
 - Enable the interface.
 - ✓ For routers' serial interfaces, activate them.
- Configure the PCs with the correct IPv6 addresses, prefix lengths, and IPv6 link-local addresses, as shown in the handout.
- Verify the connectivity between each PC and its corresponding default gateway using the ping command, as shown in the handout.

Table 1. Required IPv6 configuration after performing subnetting.

Device	Interface	IPv6 Address	Link-local	Default Gateway	Connected with
University of Jordan	S0/0/0(DCE)		FE80::1	--	School of Science
	S0/0/1(DCE)		FE80::1	--	School of Engineering
	S0/1/0(DCE)		FE80::1	--	School of Business
	S0/1/1(DCE)		FE80::1	--	School of Law
School of Science	S0/0/0		FE80::2	--	University of Jordan
	G0/0		FE80::2	--	PC0
	G0/1		FE80::2	--	PC1
School of Engineering	S0/0/0		FE80::3	--	University of Jordan
	S0/0/1		FE80::3	--	Computer Department
	G0/0		FE80::3	--	PC4
	G0/1		FE80::3	--	PC5
School of Business	S0/0/0		FE80::4	--	University of Jordan
	G0/0		FE80::4	--	PC6
	G0/1		FE80::4	--	PC7
School of Law	S0/0/0		FE80::5	--	University of Jordan
	G0/0		FE80::5	--	PC8
	G0/1		FE80::5	--	PC9
Computer Department	S0/0/0		FE80::6	--	School of Engineering
	G0/0		FE80::6	--	PC2
	G0/1		FE80::6	--	PC3
PC0	Fa0		--	FE80::2	Science G0/0
PC1	Fa0		--	FE80::2	Science G0/1
PC2	Fa0		--	FE80::6	Computer G0/0
PC3	Fa0		--	FE80::6	Computer G0/1
PC4	Fa0		--	FE80::3	Engineering G0/0
PC5	Fa0		--	FE80::3	Engineering G0/1
PC6	Fa0		--	FE80::4	Business G0/0
PC7	Fa0		--	FE80::4	Business G0/1
PC8	Fa0		--	FE80::5	Law G0/0
PC9	Fa0		--	FE80::5	Law G0/1

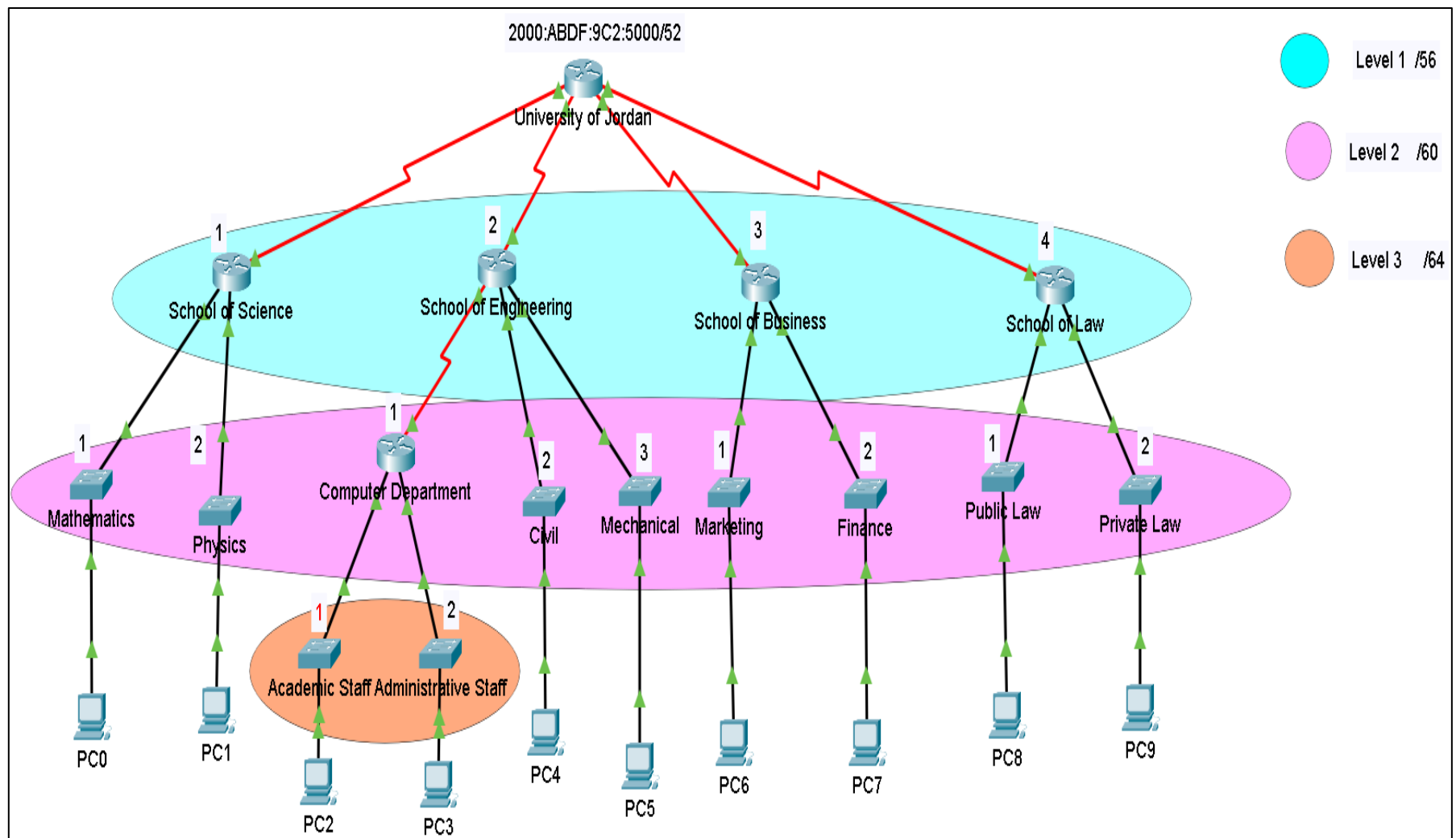


Figure 1 (a). The network topology for IPv6

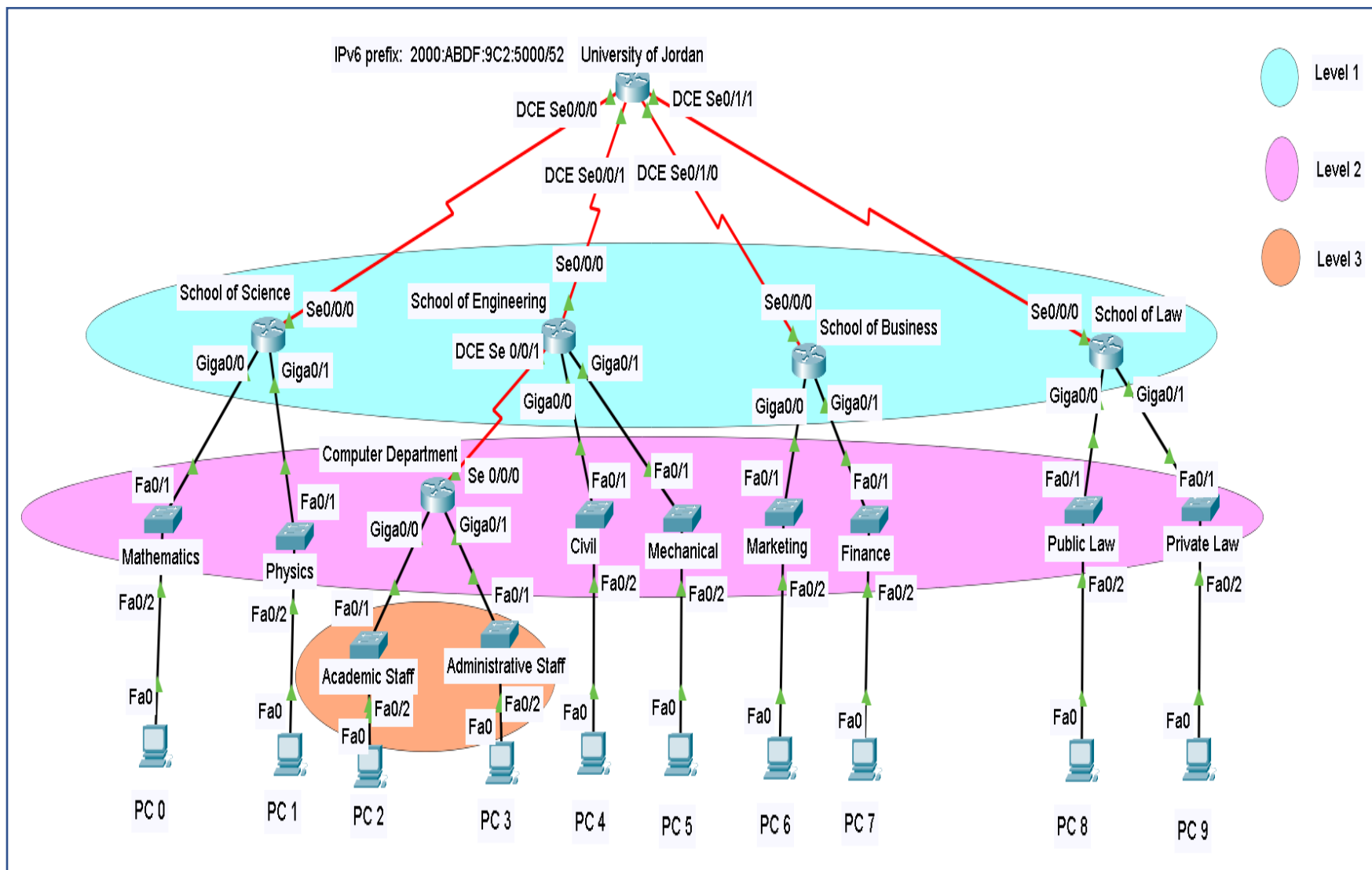


Figure 1 (b). The network topology for IPv6