

Session 7

Basic Network and Connectivity

7.1 Objective

The student will configure a network and test its connectivity. Also, the student will learn how to remotely configure a network element.

7.2 Before the lab session

For this session, the student needs to understand how to manually configure an IPv4 address in a computer and how to use the *ping* command to test connectivity between network elements. This information may be found in reference [3].

7.2.1 Required for the lab session

For this session, the student needs to bring the following:

1. A one-page description on how to configure an IPv4 address in a computer and how to use the *ping* command.
2. A *.pkt* file with the network shown in Figure 7.1. This file must include the basic configuration for devices R1 and S1, as it was shown in Session 6.

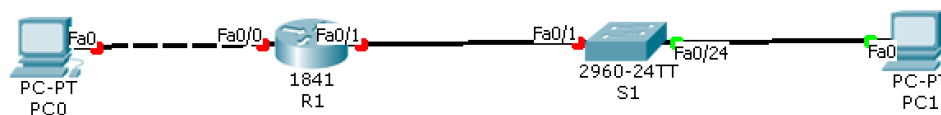


Figure 7.1: Network Topology

7.3 Procedure

The instructions in this section will help you to review the commands needed to perform a basic network configuration in a CISCO network device. Assign network addresses

and parameters to the devices in your network using the information in Table 7.1 or information provided by your instructor.

Table 7.1: Network Address Configuration

Device	Interface	IP Address	Subnet Mask	Gateway
PC0	NIC	10.7.1.3	255.255.255.0	10.7.1.1
PC1	NIC	10.1.15.3	255.255.255.0	10.1.15.1
R1	Fa0 0	10.7.1.1	255.255.255.0	None
R1	Fa0 1	10.1.15.1	255.255.255.0	None
S1	Vlan 1	10.1.15.2	255.255.255.0	10.1.15.1

7.3.1 Configuring network parameters in a router

1. Configure the router's (R1) network interface using the following example:

```

1 R1(config)# interface gigabitethernet 0/0
2 R1(config-if)# ip address 192.168.1.1 255.255.255.0
3 R1(config-if)# no shutdown

```

2. Verify your configuration and save it in the startup-config file.

7.3.2 Configuring network parameters in a switch

1. Configure the switch's (S1) network address. By default, the switch is configured to work at the Vlan 1 interface. This virtual interface is employed to assign an IP address to the switch. For example:

```

1 S1(config)# interface vlan 1
2 S1(config-if)# ip address 192.168.1.2 255.255.255.0
3 S1(config-if)# no shutdown

```

2. To allow remote configuration for the S1 switch, it is necessary to configure a default gateway. Use the following command as an example:

```

1 S1(config)# ip default-gateway 192.168.0.193

```

3. Verify your configuration and save it in the *startup-config* file.
4. Configure the IP address, subnet mask and gateway at the PCs.
5. Use the *ping* command to verify there is connectivity between the computers and all the other network elements.

7.3.3 Configure the telnet service at router R1

Telnet is a legacy service that allows to connect to CISCO network devices. It must be noted that telnet has security issues, but the application is available in most computers.

1. Use the following commands to enable and configure telnet at router R1:

```
1 R1(config)# line vty 0 4
2 R1(config-line)# transport input telnet
3 R1(config-line)# login local
```

2. Verify the telnet service is enabled by trying to login to R1 from one of the network's PCs:

```
1 [PC]# telnet 148.24.90.3
```

7.3.4 Configure the ssh service at switch S1

The ssh service allows to securely connect to a CISCO network device. This is because ssh encrypts all communication between devices. The following commands enable and configure ssh in network devices:

1. At switch S1, configure a domain name:

```
1 S1(config)# ip domain-name redesa.com
```

2. Define a username for the ssh session:

```
1 S1(config)# username redes password labredesa
```

3. Generate the 1024-bit RSA key:

```
1 S1(config)# crypto key generate rsa
```

4. Configure the VTY lines to support ssh:

```
1 S1(config)# line vty 0 4
2 S1(config)# transport input ssh
3 S1(config)# login local
```

5. Verify the ssh service is enabled by trying to login to S1 from one of the network's PCs:

```
1 [PC]# ssh -l redes 148.24.90.3
```

7.4 Report

The report for this Session has two parts:

1. Four figures that show the configuration process for each of the four subsections in 7.3.
2. The *.pkt* files generated at R1 and S1 after all the procedures have been completed.