

# HSRP Configuration Lab Report

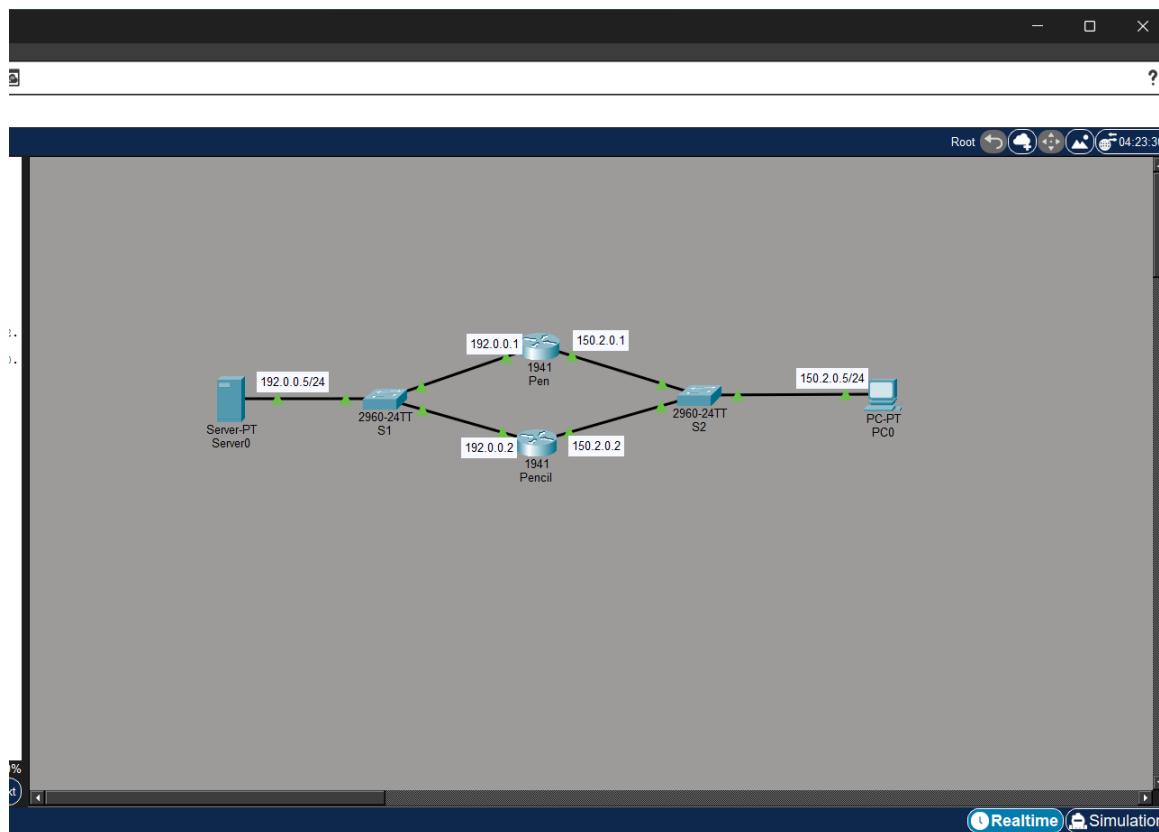
## 1. Introduction

This report documents the configuration and verification of Hot Standby Router Protocol (HSRP) between the Pen and Pencil routers. The objective is to implement gateway redundancy using HSRP version 2, configure virtual IP addresses on two interfaces, and ensure that the Pen router acts as the preferred active router using preemption.

## 2. Network Topology Overview

The topology includes two routers (Pen and Pencil), two switches, a server on the 192.0.0.0/24 network, and a PC on the 150.2.0.0/24 network. The routers participate in HSRP to provide default gateway redundancy.

Figure 1: Network Topology



### **3. IP Addressing Summary**

Pen Router:

- g0/0: 192.0.0.1/24
- g0/1: 150.2.0.1/24

Pencil Router:

- g0/0: 192.0.0.2/24
- g0/1: 150.2.0.2/24

HSRP Virtual IPs:

- g0/0: 192.0.0.10 (Group 192)
- g0/1: 150.2.0.10 (Group 150)

### **4. Configuration Summary**

Pen Router is configured with a higher priority (120) and preempt enabled, ensuring that it becomes the Active router whenever available. Pencil Router uses default priority (100) and acts as Standby.

## 5. Verification Screenshots

### 5.1 Pen Router - show standby brief

The screenshot shows a terminal window titled "Pen". The tab bar at the top has four tabs: "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is selected and highlighted in blue. The main pane displays the output of the "show standby brief" command:

```
Pen(config-if)#no shutdown
Pen(config-if)#end
Pen#
%SYS-5-CONFIG_I: Configured from console by console

Pen#
%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 150 state Speak -> Standby
%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 150 state Standby -> Active
Pen#

Pen con0 is now available

Press RETURN to get started.

User Access Verification

Username: student
Password:

Pen>enable
Password:
Pen#show standby brief
      P indicates configured to preempt.
      |
Interface  Grp  Pri  P State    Active          Standby          Virtual IP
Gig0/0     192  120  P Active   local           192.0.0.2        192.0.0.10
Gig0/1     150  120  P Active   local           150.2.0.2        150.2.0.10
Pen#
```

At the bottom right of the terminal window, there are two buttons: "Copy" and "Paste". At the bottom left, there is a "Top" button.

## 5.2 Pencil Router - show standby brief

The screenshot shows the Pencil CLI interface. The title bar says "Pencil". The menu bar has tabs: Physical, Config, CLI (which is selected), and Attributes. The main window displays the following text:

```
Press RETURN to get started!

User Access Verification

Username: student
Password:

Pencil>enable
Password:
Pencil#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Pencil(config)#interface g0/0
Pencil(config-if)#ip address 192.0.0.2 255.255.255.0
Pencil(config-if)#standby version 2
Pencil(config-if)#standby 192 ip 192.0.0.10
Pencil(config-if)#
%HSRP-6-STATECHANGE: GigabitEthernet0/0 Grp 192 state Init -> Init

Pencil(config-if)#no shutdown
Pencil(config-if)#interface g0/1
Pencil(config-if)#
%HSRP-6-STATECHANGE: GigabitEthernet0/0 Grp 192 state Speak -> Standby

Pencil(config-if)#ip address 150.2.0.2 255.255.255.0
Pencil(config-if)#standby version 2
Pencil(config-if)#standby 150 ip 150.2.0.10
Pencil(config-if)#
%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 150 state Init -> Init

Pencil(config-if)#no shutdown
Pencil(config-if)#end
Pencil#
$SYS-5-CONFIG_I: Configured from console by console

Pencil#show standby brie
%HSRP-6-STATECHANGE: GigabitEthernet0/1 Grp 150 state Speak -> Standby

Pencil#show standby brief
    P indicates configured to preempt.
    |
Interface  Grp  Pri  P State      Active          Standby        Virtual IP
Gig0/0     192  100  S Standby  192.0.0.1      local         192.0.0.10
Gig0/1     150  100  S Standby  150.2.0.1      local         150.2.0.10
Pencil#
```

At the bottom right of the terminal window are two buttons: "Copy" and "Paste".

### 5.3 Server - Ping to Virtual IP 192.0.0.10

The screenshot shows a window titled "Server0" with a tab bar containing "Physical", "Config", "Services", "Desktop" (which is selected), "Programming", and "Attributes". Below the tab bar is a blue header bar labeled "Command Prompt" with a close button "X". The main area of the window is a black terminal window displaying the output of a ping command. The output is as follows:

```
Cisco Packet Tracer SERVER Command Line 1.0
C:\>ping 192.0.0.10

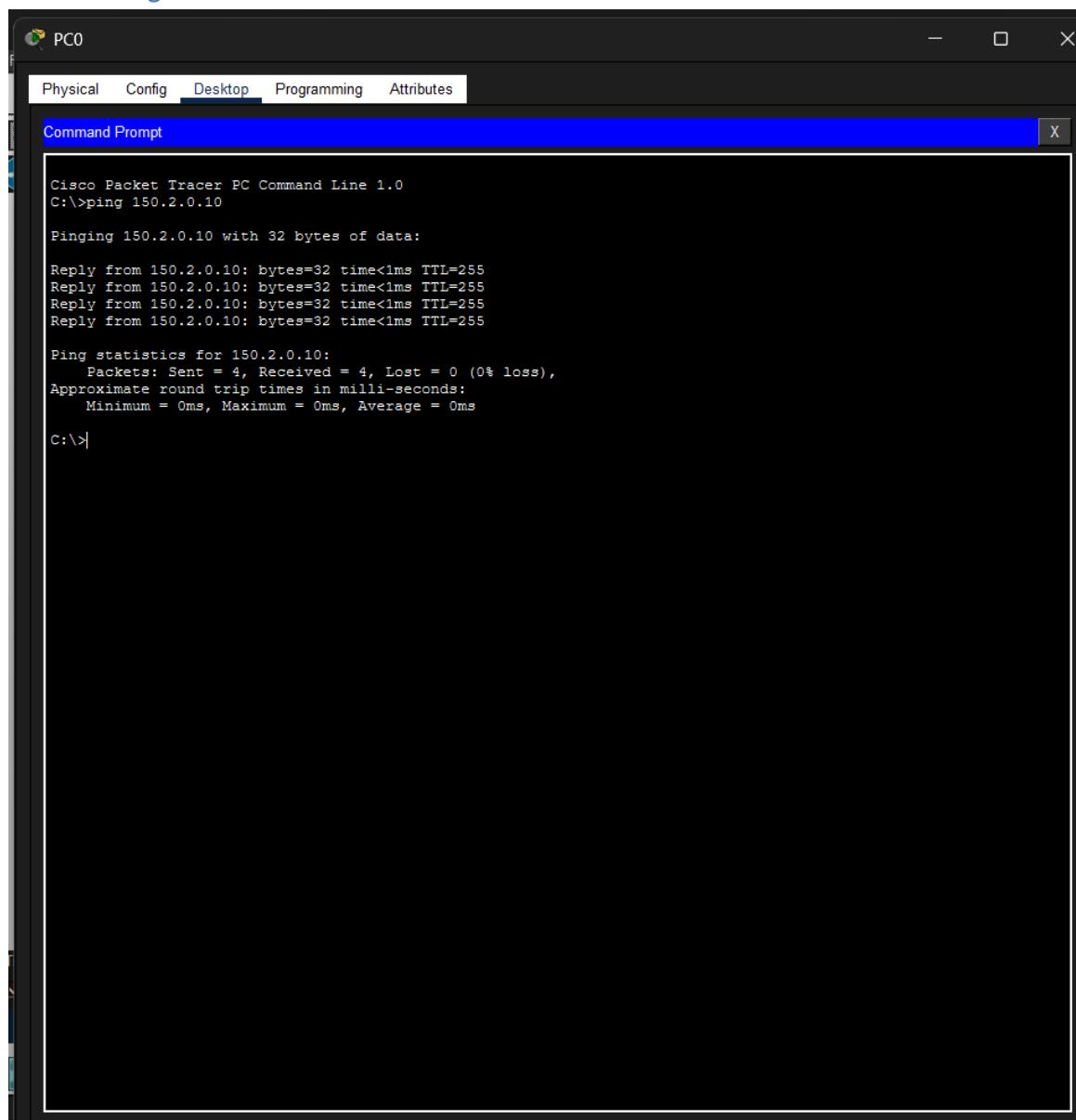
Pinging 192.0.0.10 with 32 bytes of data:

Reply from 192.0.0.10: bytes=32 time<1ms TTL=255

Ping statistics for 192.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

#### 5.4 PC0 - Ping to Virtual IP 150.2.0.10



The screenshot shows a window titled "PC0" with a tab bar at the top containing "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is selected. Below the tab bar is a blue header bar labeled "Command Prompt" with a close button ("X"). The main area of the window is a black terminal-like interface displaying the output of a ping command. The text reads:

```
Cisco Packet Tracer PC Command Line 1.0
C:>ping 150.2.0.10

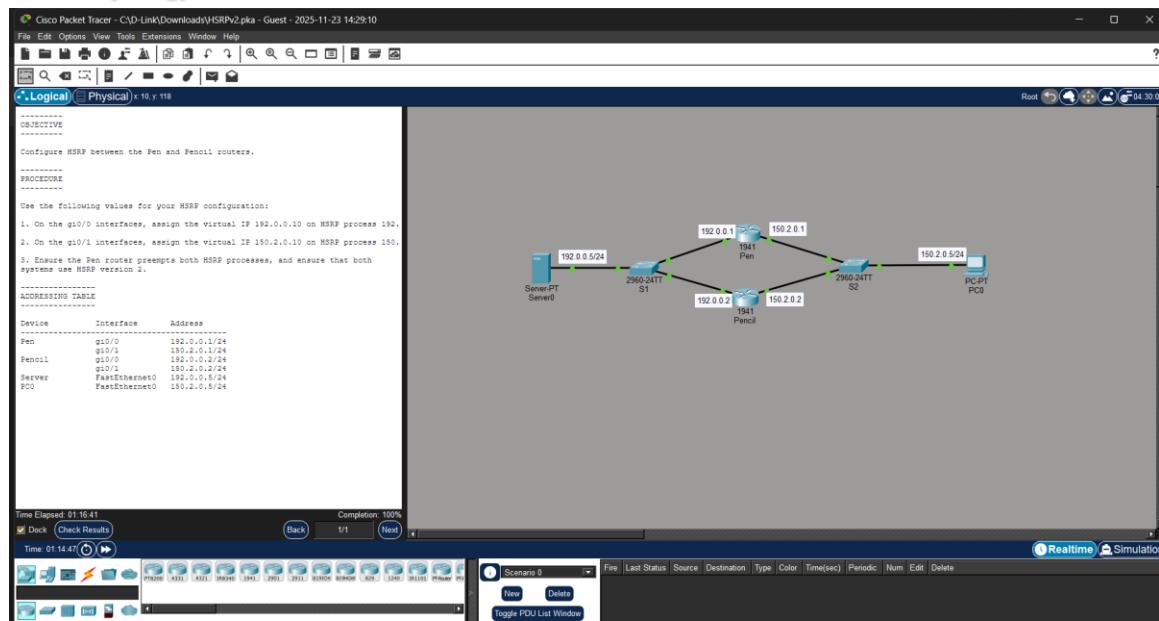
Pinging 150.2.0.10 with 32 bytes of data:

Reply from 150.2.0.10: bytes=32 time<1ms TTL=255

Ping statistics for 150.2.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:>|
```

## Final Topology:



## 6. Conclusion

The HSRP configuration was successfully implemented. Pen router became the Active router for both HSRP groups, while Pencil correctly transitioned to Standby. Verification tests confirmed successful redundancy through pings to the virtual IP addresses from both network segments. The network now supports fault-tolerant default gateway functionality using HSRP version 2.