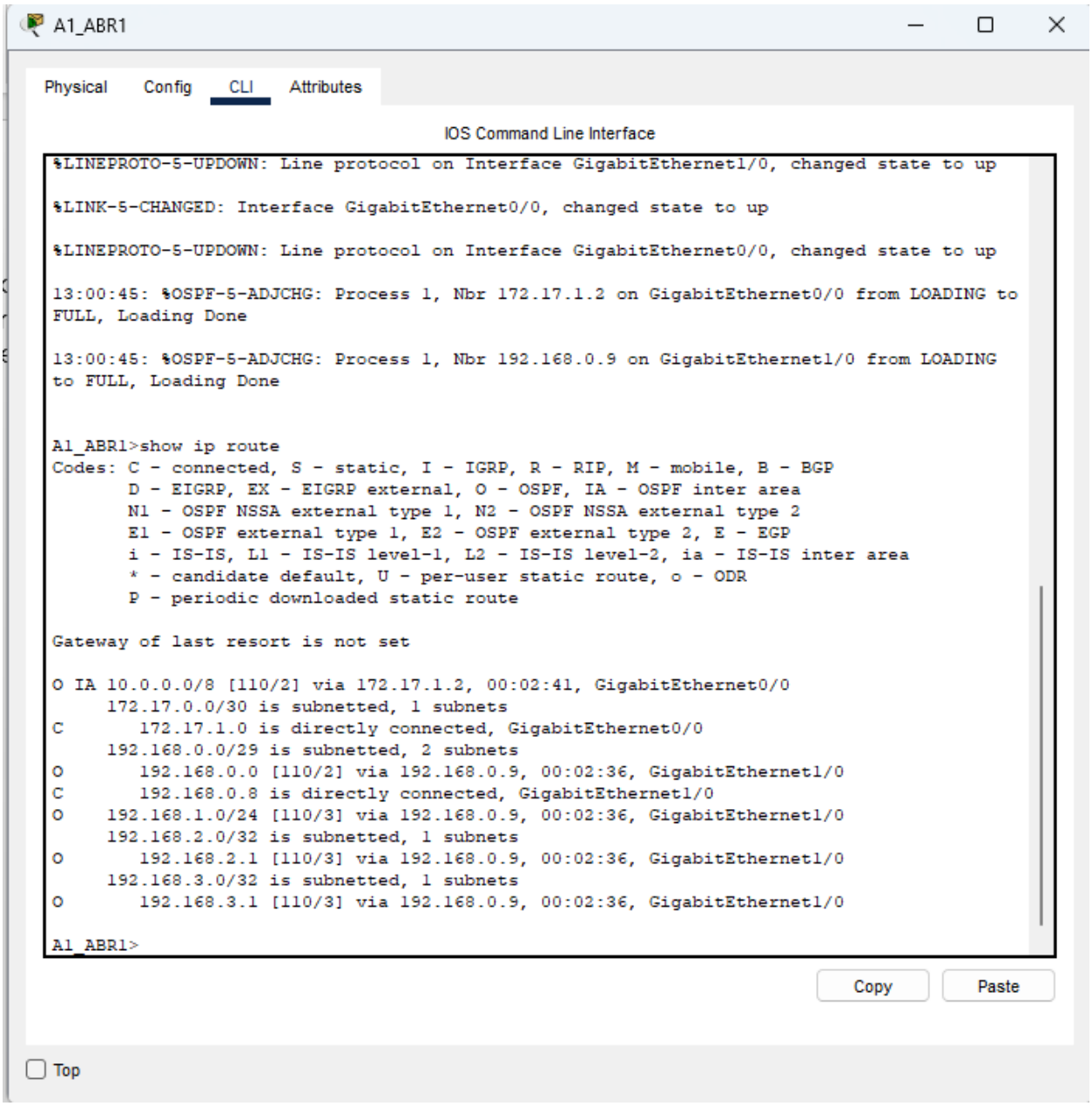
Brozo, Nel Andrew M. **BS5AA**

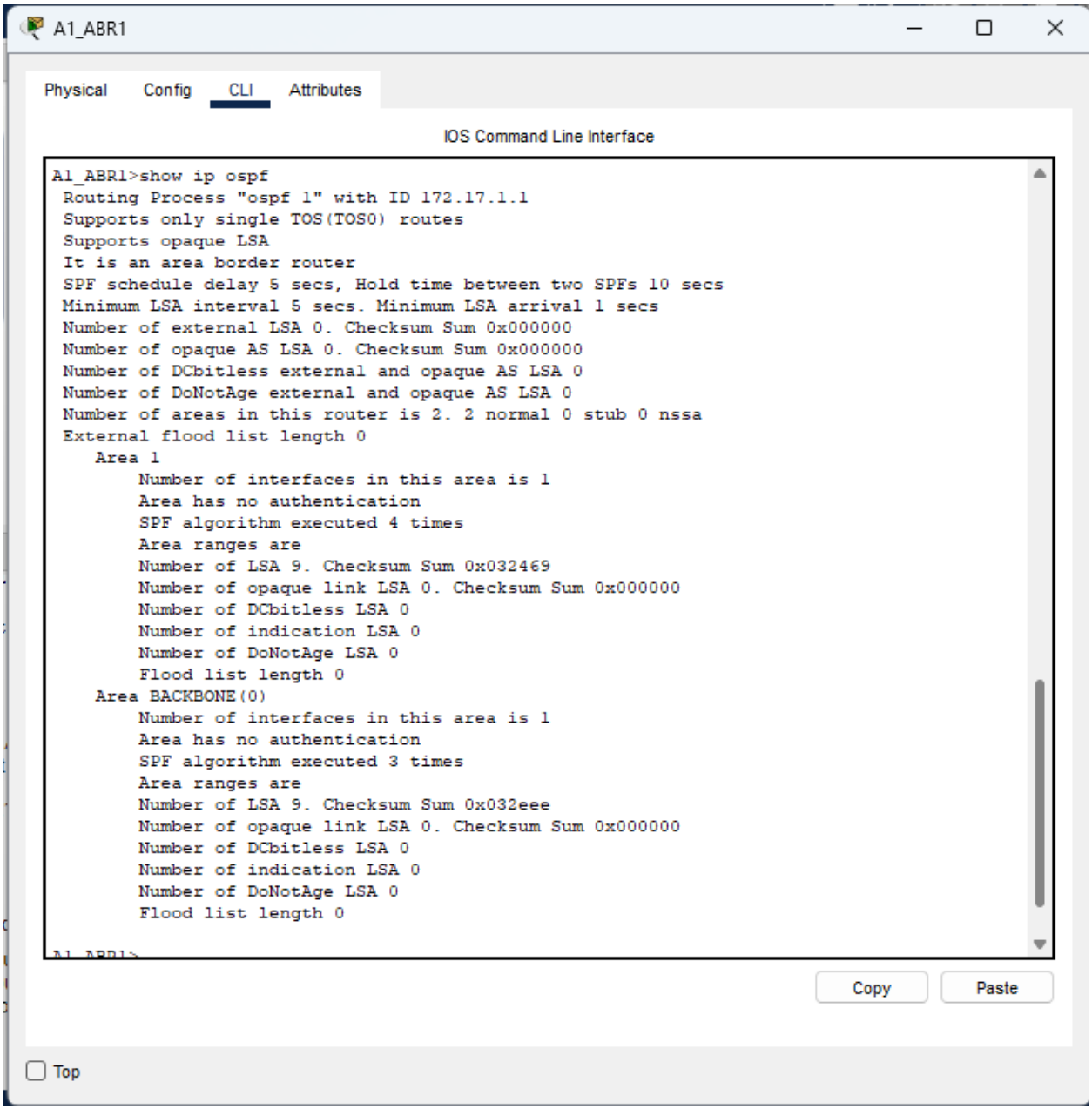
d. Execute the **show ip route** command. Notice that the routing table on router A1_ABR1 is shorter than it was on router B1_R5 in the single-area OPSF example in Part 1.



How are the networks from Area 51 displayed in the routing table of A1_ABR1?

Answer: All of Area 51 networks are displayed as one summarized network.
O IA 10.0.0.0/8 [110/3] via 192.168.0.10, 00:00:10, GigabitEthernet0/0/1

e. Execute the **show ip ospf** command on router A1_ABR1.



Which areas are displayed on router A1_ABR1?

Answer: The backbone area 1 and area 0 are displayed.

Record the number of times that the SPF algorithm has been executed in each area.

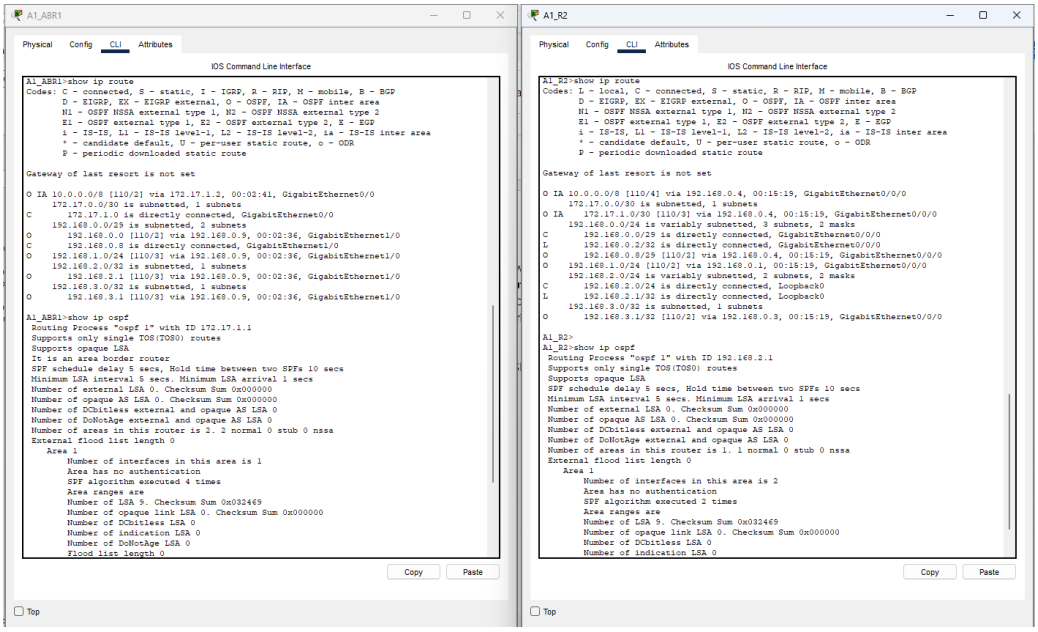
Answer: Most likely 4 times for Area 1 and 3 times for Area 0.

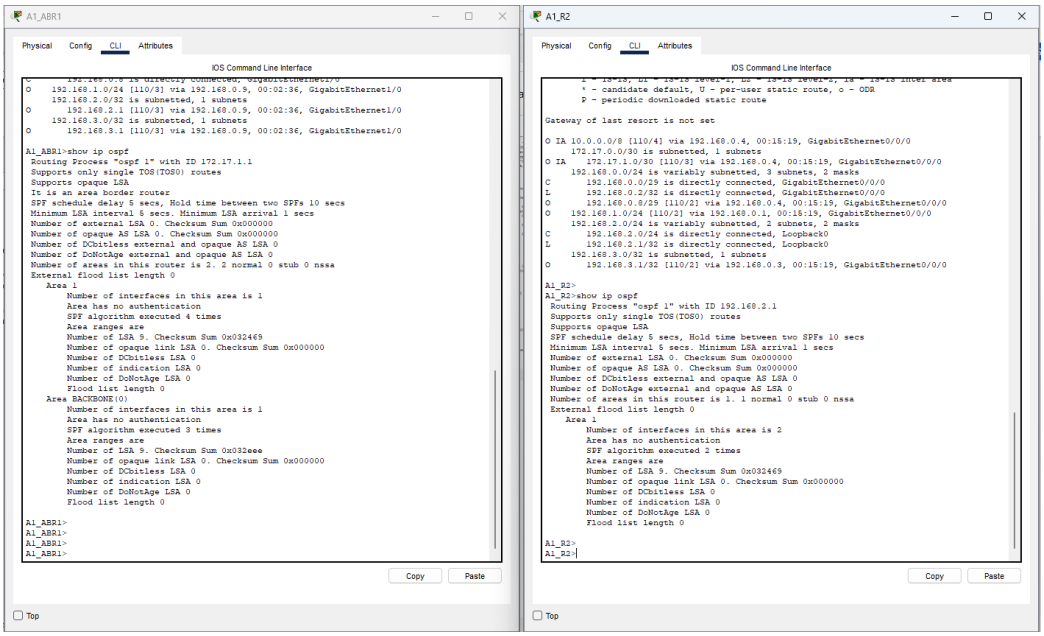
f. Keep the console window for A1_ABR1 open and select **router A1_R2**. Execute the **show ip route** and **show ip ospf** commands, and then compare the output with the output on A1_ABR1. Similar networks should be displayed and the number of SPF algorithm executions should be similar.

Question:

Record the number of SPF algorithm executions.

Answer:



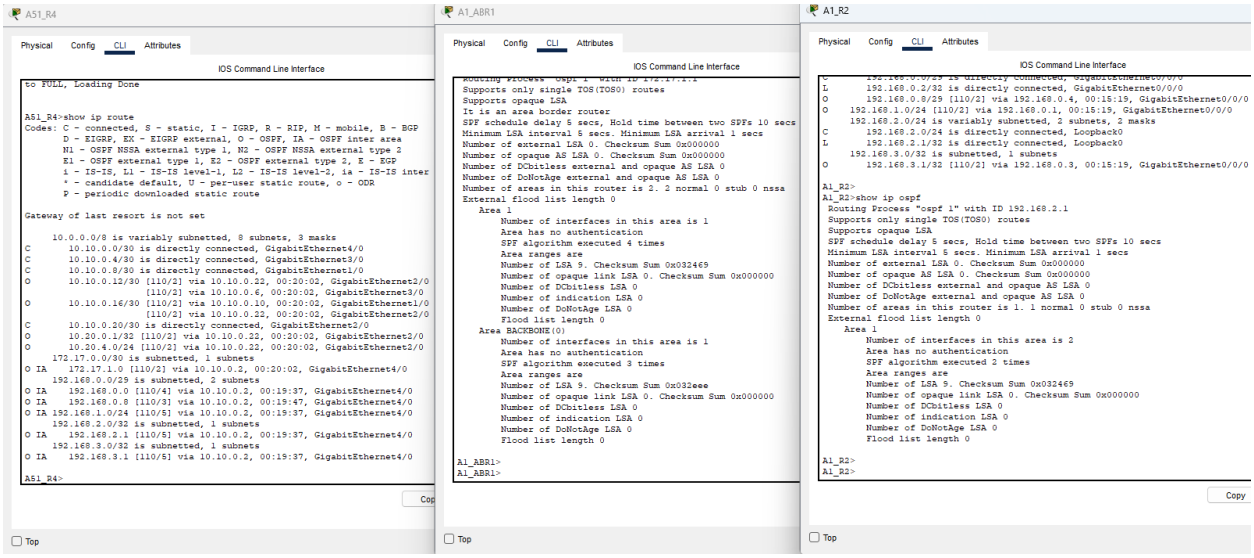


f. Execute the **show ip route** command. Compare the output of A51_R4 to the output of A1_ABR1 and A1_R2. Notice that other than a few connected or local routes, the same networks are displayed.

Question:

Record the number of IA routes displayed.

Answer: **6 IA routes are displayed.**

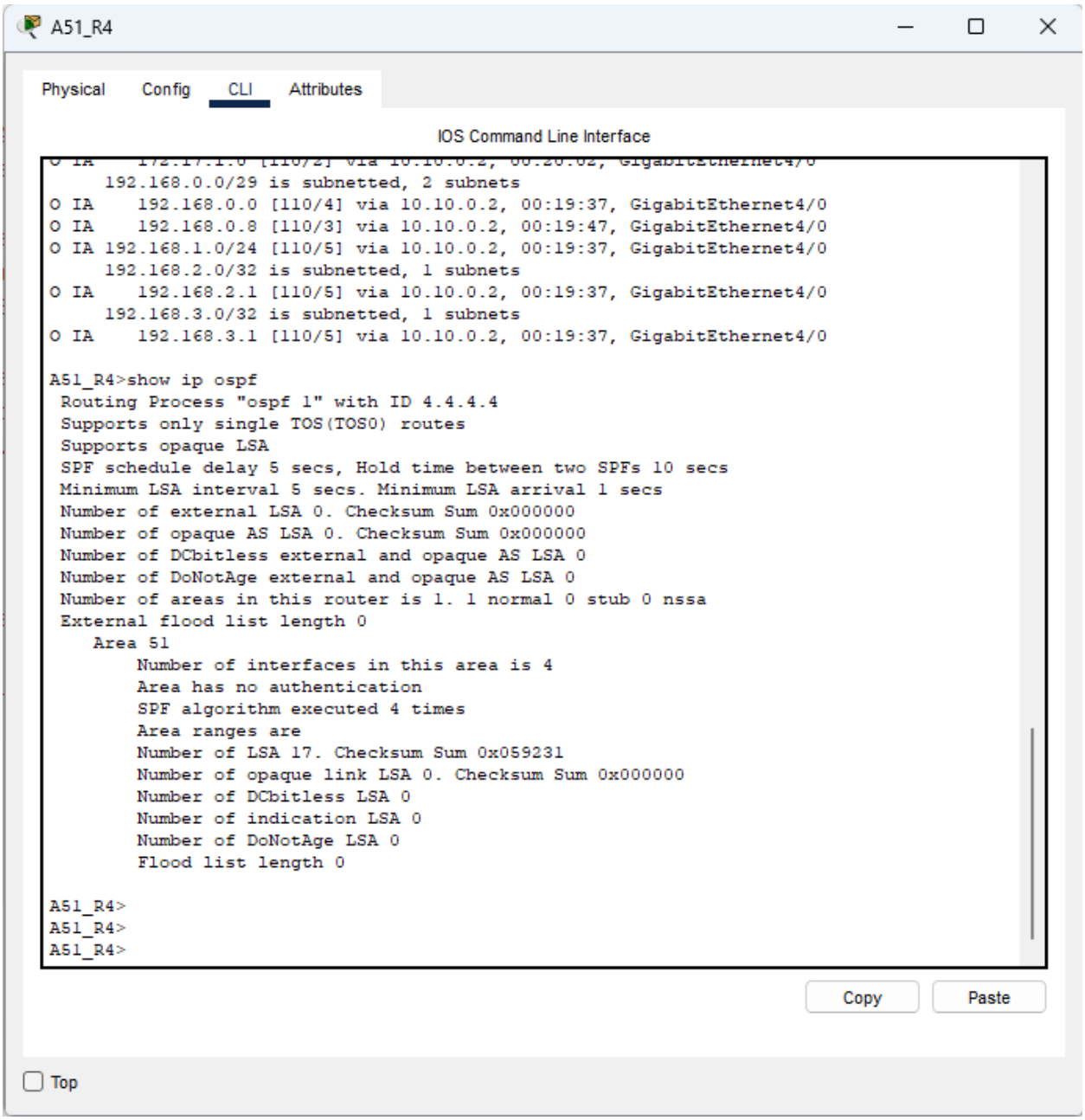


g. Execute the **show ip ospf** command.

Question:

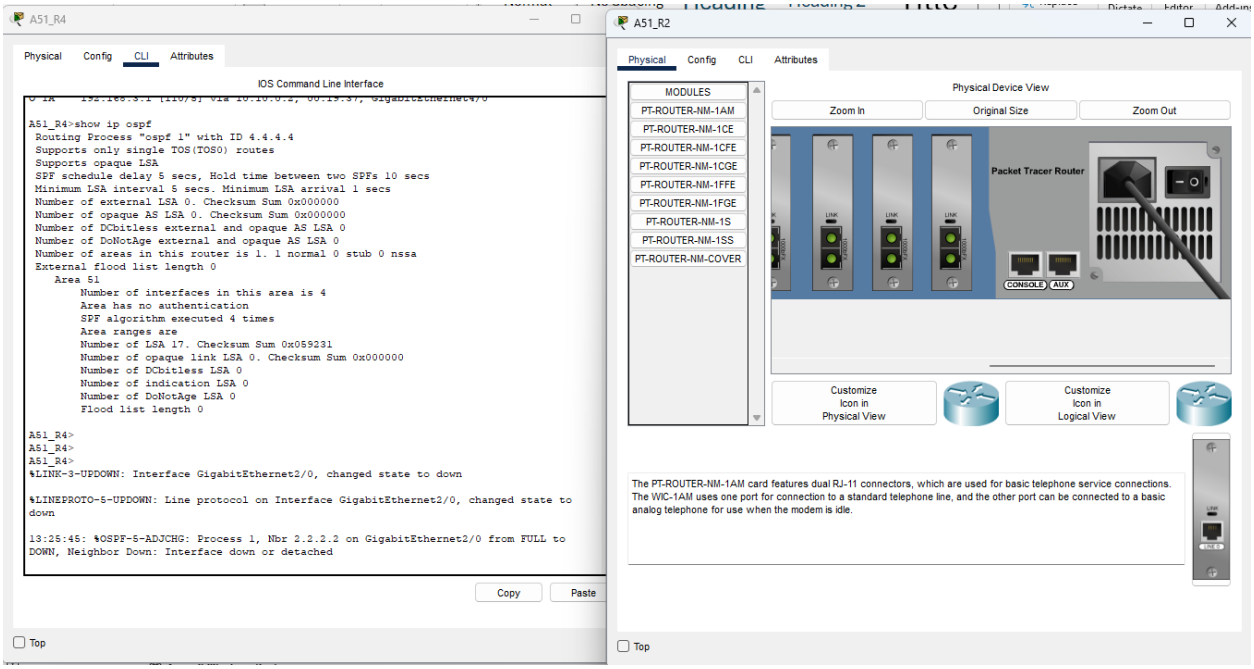
Record the number of SPF calculations.

Answer: **4 Times**


A51_R4
Physical
Config
CLI
Attributes
IOS Command Line Interface
O IA 172.17.1.0 [110/2] via 10.10.0.2, 00:20:02, GigabitEthernet4/0
192.168.0.0/29 is subnetted, 2 subnets
O IA 192.168.0.0 [110/4] via 10.10.0.2, 00:19:37, GigabitEthernet4/0
O IA 192.168.0.8 [110/3] via 10.10.0.2, 00:19:47, GigabitEthernet4/0
O IA 192.168.1.0/24 [110/5] via 10.10.0.2, 00:19:37, GigabitEthernet4/0
192.168.2.0/32 is subnetted, 1 subnets
O IA 192.168.2.1 [110/5] via 10.10.0.2, 00:19:37, GigabitEthernet4/0
192.168.3.0/32 is subnetted, 1 subnets
O IA 192.168.3.1 [110/5] via 10.10.0.2, 00:19:37, GigabitEthernet4/0
A51_R4>show ip ospf
Routing Process "ospf 1" with ID 4.4.4.4
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 0. Checksum Sum 0x000000
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
Area 51
Number of interfaces in this area is 4
Area has no authentication
SPF algorithm executed 4 times
Area ranges are
Number of LSA 17. Checksum Sum 0x059231
Number of opaque link LSA 0. Checksum Sum 0x000000
Number of DCbitless LSA 0
Number of indication LSA 0
Number of DoNotAge LSA 0
Flood list length 0
A51_R4>
A51_R4>
A51_R4>
Copy
Paste
Top

h. Keep the console window for A51_R4 open. Click **A51_R2**. On the **Physical** tab, turn the power off to simulate a power failure.

i. Return to the console window for **A51_R4**. You should see a console message that the adjacency with A51_R2 is down.



j. Re-issue the **show ip route** and **show ip ospf** commands.

Have the SPF algorithm executions increased?
Answer: **Yes**

Record the number of SPF algorithm executions.
Answer: **5 times**

What networks are missing from the A51_R4 routing table?
Answer: **All networks that were advertised by A51_R2 are missing.**

k. Navigate to A1_R2 and issue the **show ip route** and **show ip ospf** commands again.

Questions:

Is the summary route for Area 51 still in the routing table?

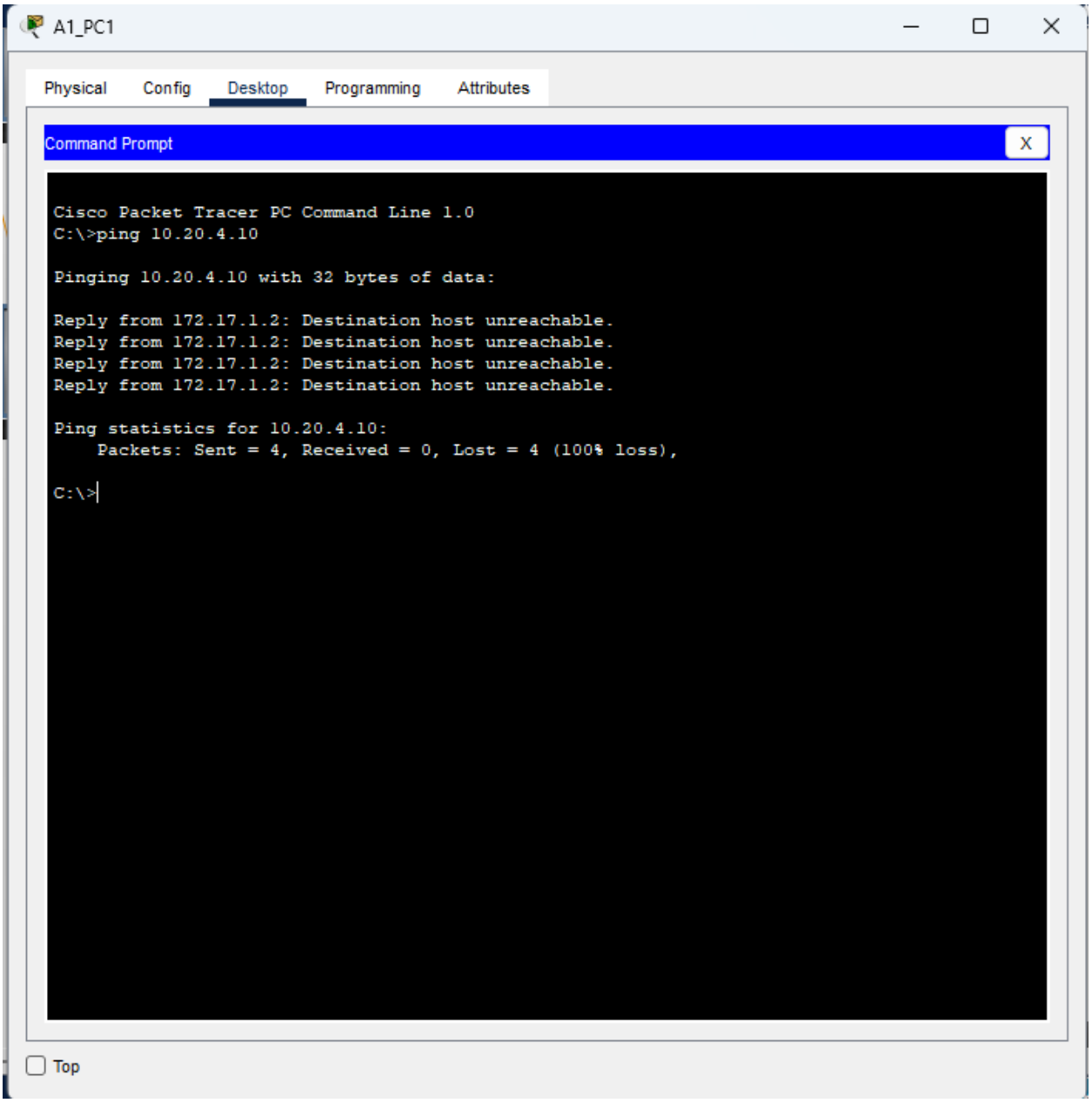
Answer: **Yes**

Has the value for the SPF algorithm executions increased from Step 1g?

Answer: **No**

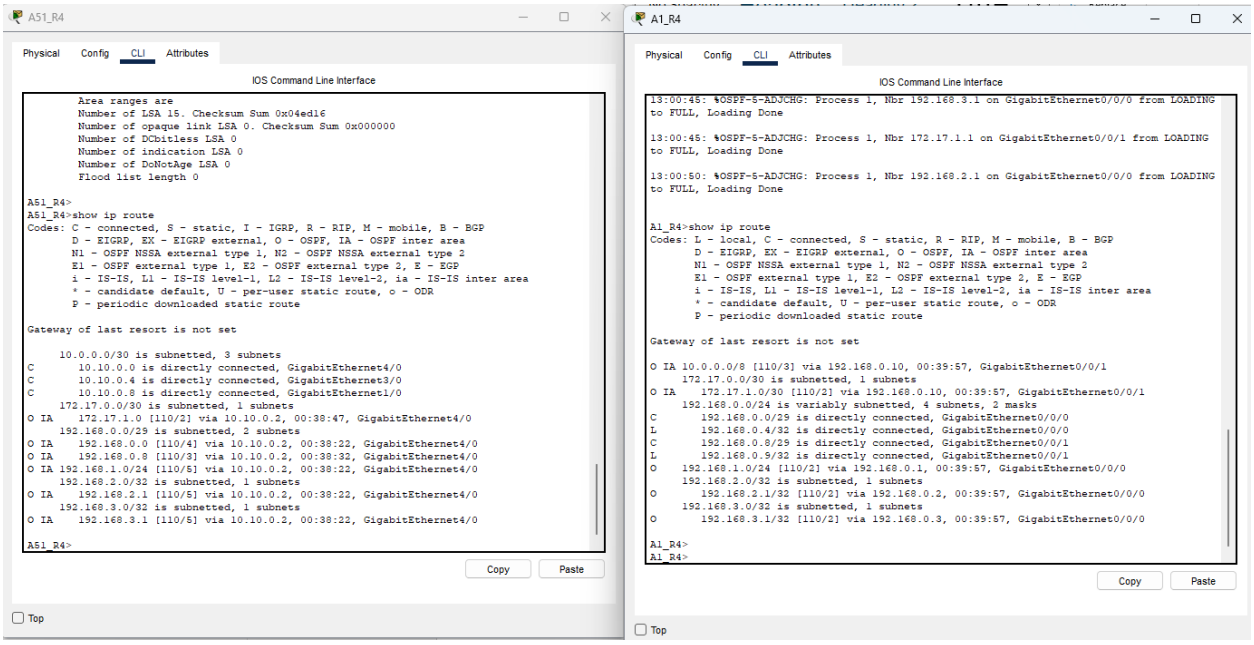
Will a **ping** or a **tracert** between A1_PC1 (192.168.1.10) and A51_PC1 (10.20.4.10) be successful?

Answer: No. Destination host unreachable



a. Select router **A51_R4** and execute the **show ip route.**

Compare the output of A51_R4 to the output of A1_R4. You should notice that all of the 192.168.0.0 networks from area 1 are showing inside the routing table.



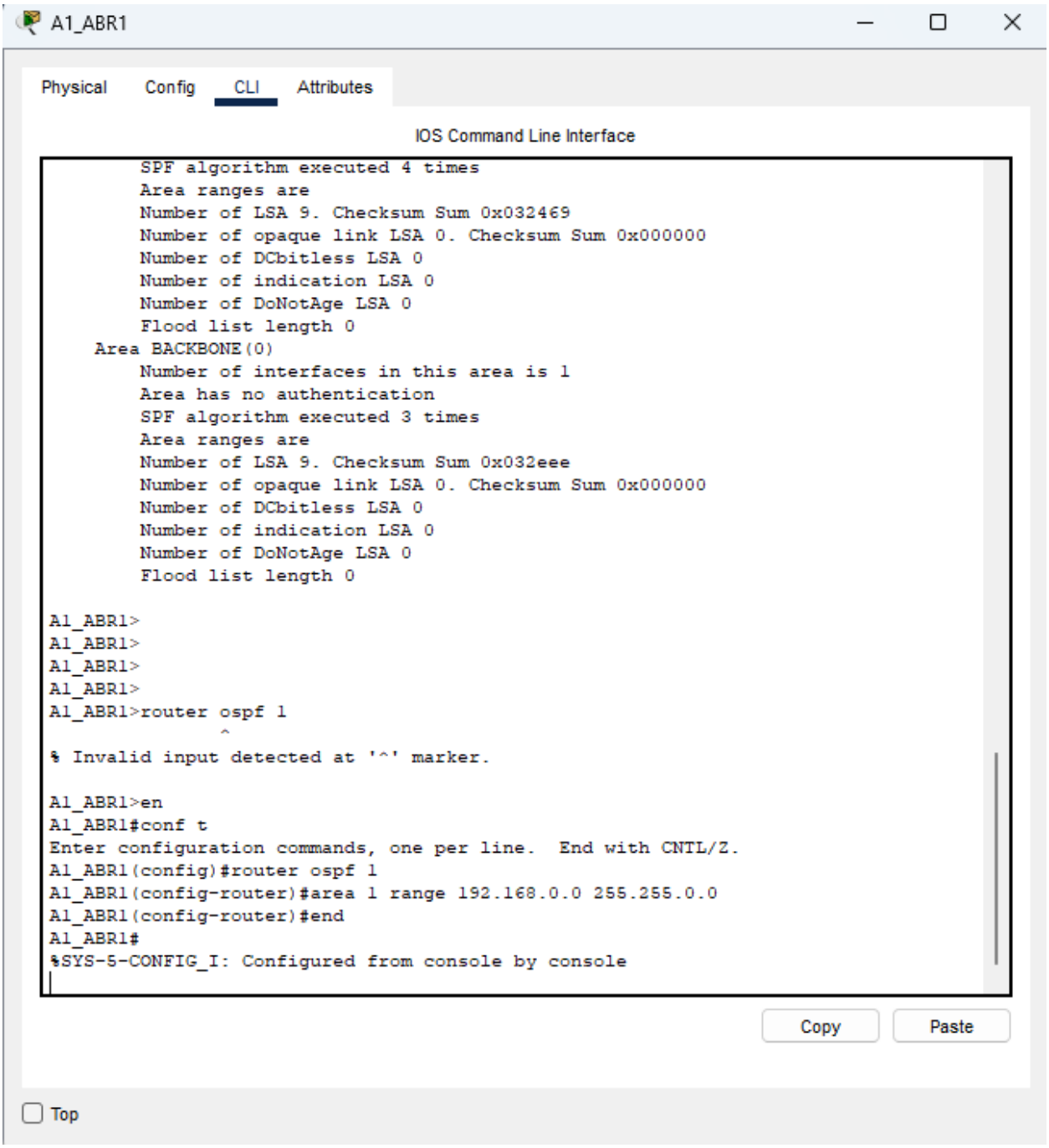
If a cleaning crew accidentally removed the cable on A1_R1 (192.168.1.0/24), how will the routers in area 51 be affected?

Answer: **All area 51 routers would have SPF algorithm executions and would have to update their routing tables.**

What could be done to avoid the area 51 recalculations?

Answer: **Router A1_ABR1 should summarize the 192.168.0.0/16 networks of area 1.**

b. Navigate to **A1_ABR1**. Using the CLI tab, enter the following commands to implement OSPF summarization for the 192.168.0.0 network in area 1:



c. Return to the screen of **A51_R4** and execute a **show ip route** command.

Question:

How is the routing table output different following the summarization?

Answer: **The networks from area 1 are all summarized with an interarea route: IA 10.0.0.0/8 [110/2] via 172.17.1.2, 00:44:30, GigabitEthernet0/0**