

Troubleshooting Fundamentals – Phase 1.2

Objective

Host C is unable to communicate with host A. Investigate the issue and resolve it if possible.

Topology Overview

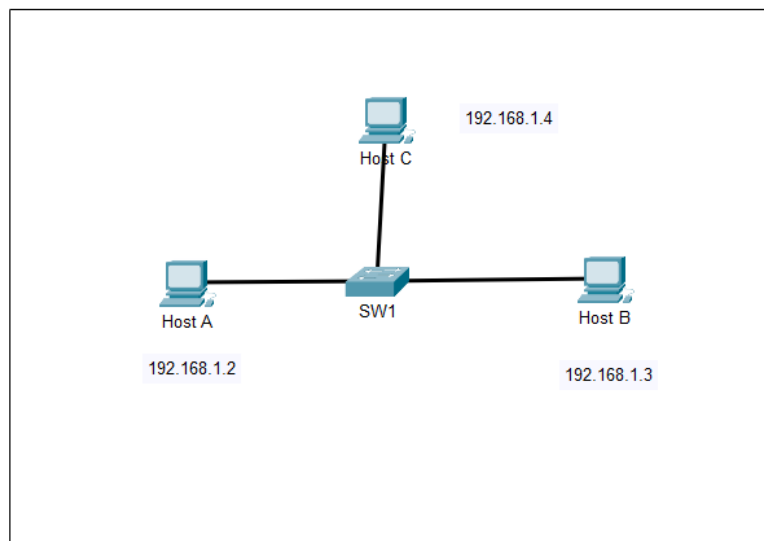


Figure 1 – Lab Topology

Step 1 – Verify the Problem

From **Host C**, ping host **A**.

Result: **Ping fails**

```
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Figure 2 – Unsuccessful ping from host C and host A

The Issue is confirmed.

Step 2 – Decide Where to Start

With the issue confirmed, it is understood that Hosts C and A do not have reachability. We could immediately begin checking physical components, but doing so would skip an opportunity to gather additional useful information. Before selecting a starting point, it is helpful to ask another question:

Can Host B communicate with either Host A or Host C?

The answer to this question provides valuable clues that help determine both the most logical starting point and which device is most relevant to examine first. Checking expectations against another device helps reveal whether the issue is localized to one part of the network or more widespread.

From **Host A**, ping host **B**.

Result: **Ping fails**

From **Host C**, ping host **B**.

Result: **Ping succeeds**

These results reveal several important details:

- Hosts B and C can communicate
- Their respective switchports are likely functioning correctly
- The issue is most likely localized to Host A or its switchport

What must be true for communication to work? Each requirement becomes something that can be verified.

Layer 1 – Physical

For Host A to communicate with the network, several physical requirements must be true.

- Host A must be powered on.
- The cabling between Host A and SW1 must be correct and operational. Cabling may be incorrect, damaged, or degraded.
- The switchport connected to Host A must show the status of **connected**.

Validating these requirements as true suggests the issue is unlikely to be caused by the Physical layer problem. Maintaining a structured troubleshooting approach, the next logical step is to examine **Layer 2 – the Data Link layer**.

With the switchport status confirmed as **connected**, what Layer 2 components could reasonably prevent communication?

Layer 2 – Data Link

- The ports connected to the hosts must be assigned to the **same VLAN**.

Step 3 – Switch Verification

On the switch:

```
show interface status
```

Observation:

- Fa0/1 is assigned to VLAN 2.

```
SW1>en
SW1#sh int status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Fa0/1	Host_A	connected	2	a-full	a-100	10/100BaseTX
Fa0/2	Host_B	connected	1	a-full	a-100	10/100BaseTX
Fa0/3	Host_C	connected	1	a-full	a-100	10/100BaseTX

Figure 3 – SW1 Show interface status output

```
interface FastEthernet0/1
description Host_A
switchport access vlan 2
spanning-tree portfast
```

Figure 4 – SW1 show run interface FastEthernet 0/1

VLANs are a Layer 2 mechanism used to logically segment devices on a switch. Devices connected to interfaces in different VLANs belong to separate broadcast domains and cannot communicate directly. If Host A is placed in a different VLAN than Hosts B and C, the switch will not forward frames between them. Devices in different VLANs behave as though they are connected to separate physical switches.

Step 4 – Correct and Validate

On the switch:

```
interface fa0/1
no switchport access vlan 2
```

Note: Assigning the ports connected to Hosts **B and C** to **VLAN 2** would also restore connectivity. In this lab, the intended solution is to **remove the VLAN assignment from Fa0/1**, returning it to the default VLAN.

```
SW1(config-if)#do sh int status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Fa0/1	Host_A	connected	1	a-full	a-100	10/100BaseTX
Fa0/2	Host_B	connected	1	a-full	a-100	10/100BaseTX
Fa0/3	Host_C	connected	1	a-full	a-100	10/100BaseTX
Fa0/4		notconnect	1	auto	auto	10/100BaseTX

Figure 4 – SW1 show interface status output

Re-test ping.

Result: Pings succeed