

Troubleshooting Fundamentals Lab – Phase 1.4

Objective

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

Topology Overview

There are three hosts in the topology. **Hosts A and B are connected to SW1**, while **Host C is connected to SW2**. An inter-switch link connects **SW1 and SW2**.

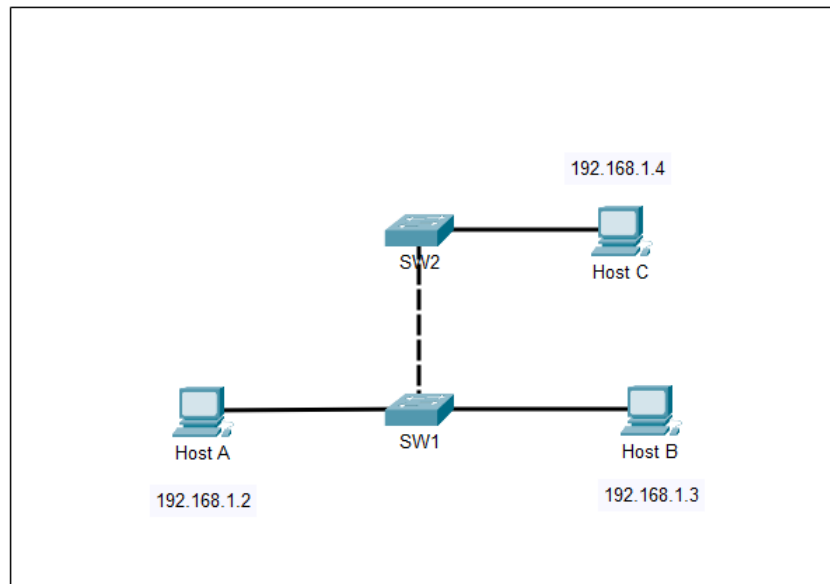


Figure 1 – Lab Topology

Step 1 – Verify the Problem

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

Result: **Ping fails**

```
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

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

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Figure 2 – Unsuccessful ping from host C to Host B

The Issue is confirmed.

Step 2 – Decide Where to Start

With the issue confirmed, it is understood that **Host C does not have reachability to Host B**. 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 C communicate with Host A.**
- **Can hosts A and B communicate with each other?**

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

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

Result: **Ping fails**

From **Host A**, ping **Host B**

Result: **Ping Succeeds**

These results reveal several important details:

- Hosts A and B can communicate.
- Their respective switchports are likely functioning correctly.
- The issue is most likely localized to Host C, its switchport, or SW1 the path between SW2.

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

Layer 1 – Physical Requirements

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

- Host C must be powered on.
- The cabling between Host C and SW2 must be correct and operational.
- The cabling between SW1 and SW2 must be correct and operational.
- The switchport connected to Host C must show the status of **connected**.
- The inter-switch link between SW1 and SW2 must show the status of **connected**.

If these requirements are validated as true, the issue is less likely to be caused by a Layer 1 problem. Maintaining a structured troubleshooting approach, the next logical step is to examine **Layer 2**.

Layer 2 – Data Link Requirements

- The ports connected to the hosts must be assigned to the **same VLAN**.
- The ports between SW1 and SW2 must both operate as trunks or both operate as access ports in the same VLAN.
- If the inter-switch link is configured as a trunk, the VLAN used by the hosts must be allowed on the trunk.

Step 3 – Switch Verification

On SW1 and SW2, examine the switchport status and VLAN assignments.

```
show interface status
show interface trunk
```

Observation:

- All host-facing switchports are assigned to **VLAN 10**
- The inter-switch links are configured as trunks
- **VLAN 10 is not allowed on SW1's trunk port**

```
SW1#show int status
Port      Name      Status      Vlan      Duplex  Speed  Type
Fa0/1     Host_A    connected   10        a-full  a-100  10/100BaseTX
Fa0/2     Host_B    connected   10        a-full  a-100  10/100BaseTX
Fa0/3     notconnect 1          auto      auto    10/100BaseTX
Fa0/4     SW2       connected   trunk     a-full  a-100  10/100BaseTX
```

Figure 3 – SW1 show interface status output

```
SW2#show int status
Port      Name      Status      Vlan      Duplex  Speed  Type
Fa0/1     SW1       connected   trunk     a-full  a-100  10/100BaseTX
Fa0/2     Host_C    connected   10        a-full  a-100  10/100BaseTX
Fa0/3     notconnect 1          auto      auto    10/100BaseTX
```

Figure 4 – SW2 show interface status output

```
SW1#show int trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/4     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/4     1-9,11-1005

Port      Vlans allowed and active in management domain
Fa0/4     1

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/4     1

SW1#
```

Figure 5 – SW1 show interface trunk output

```

SW2#show int trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/1     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1,10

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1,10

SW2#

```

Figure 6 – SW1 show interface trunk output

```

interface FastEthernet0/4
description SW2
switchport trunk allowed vlan 1-9,11-1005
switchport mode trunk

```

Figure 7 – SW1 show run interface fa0/4 output

The configuration in *Figure 7* explains the issue. The inter-switch link between SW1 and SW2 is operating as a trunk; however, the VLAN used by the host (**VLAN 10**) is not allowed on SW1's side of the trunk.

For tagged frames to traverse a trunk port, the associated VLAN must be allowed on both sides of the trunk.

Restricting VLANs on trunk links can be a useful **security and design practice**, as it limits which VLAN traffic is permitted to cross an inter-switch link.

Step 4 – Correct and Validate

On SW1, allow VLAN 10 on the trunk interface

```

interface fa0/4
switchport trunk allowed vlan add 10

```

Note: Removing the switchport trunk allowed VLAN command entirely would also have been a valid solution. However, this lab expects the learner to add VLAN 10 to the allowed list.

```

SW1#show int trun
SW1#show int trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/4     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/4     1-1005

Port      Vlans allowed and active in management domain
Fa0/4     1,10

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/4     1,10

SW1# |

```

Figure 8 – SW1 show interface trunk output

Figure 8, shows that SW1's trunk toward SW2 now allows VLAN 10, and VLAN 10 is in the spanning tree forwarding state.

Re-test ping.

Result: **Pings succeed**