Notes – Ticket 01: Network Adapter Failure

Issue Overview

This issue simulated a **common real-world problem**: a VM not connecting to the internet due to a disabled network adapter. It reinforced the importance of verifying *both* the guest OS and host virtualization platform when troubleshooting connectivity.

Environment

- **Virtualization Tool**: VirtualBox 7.1.6
- **Guest OS**: Ubuntu 22.04 LTS
- **Host OS**: Windows 11 (24H2)
- **VM Network Mode**: Bridged Adapter
- **Account Used**: `jordan-bradfield` (non-root)

Symptoms Observed

- Missing network icon in Ubuntu GUI
- `ping google.com` returned: `Temporary failure in name resolution`
- No IP assigned to the interface (`ip a` showed only loopback)

These symptoms clearly suggested **no active network interface** on the VM.

Key Diagnostic Commands and Their Purpose

1. Check IP address:

```
ip a
```

- **What it does:** Shows all network interfaces and their IP addresses on the system.
- **Why I ran it:** To check if the VM had an active network interface with a valid IP address. Seeing only the loopback interface means no network was assigned.

2. Test DNS resolution and connectivity:

```
ping google.com
```

- **What it does:** Sends ICMP echo requests (“pings”) to `google.com` to test network connectivity and DNS resolution.

- **Why I ran it:** To verify if the VM can reach external hosts and resolve domain names. The failure indicated either no network or broken DNS.

Root Cause

VirtualBox **Adapter 1** was disabled in VM settings. Since the guest OS couldn't detect a physical NIC, it couldn't obtain an IP address or connect to the internet.

Fix Applied

1. **Powered off** the Ubuntu VM.
2. Opened VirtualBox → **Settings** → **Network**
3. Enabled **Adapter 1**.
4. Set the attached mode to **Bridged Adapter**.
5. Selected the correct host NIC (Ethernet).
6. Booted VM and tested connectivity again.

Verifying the Fix

1. Check IP after fix:

```
ip a
```

- The output now shows a valid IP address (e.g., `192.168.x.x`) assigned to the VM's network interface (`enp0s3`). This confirms the VM is connected to the network.

2. Confirm internet connectivity:

```
ping google.com
```

- Successful ping responses confirm the VM can resolve domain names and communicate with external servers.

Additional Troubleshooting Tips

- If bridged mode does not work as expected, try switching the VM network adapter to **NAT** mode temporarily to check if that restores connectivity.
- Verify that the **host network adapter** is active and connected, as bridged mode relies on this.
- Check **VirtualBox host-only network** and firewall settings on the host machine, which can sometimes block or restrict VM network traffic.

Potential Pitfalls and Warnings

- Always **power off the VM** before changing VirtualBox network settings to avoid configuration errors or crashes.
- Bridged networking requires the host NIC to be **physically connected and active**; otherwise, the VM won't get an IP address.
- Some **firewall or antivirus software** on the host can block VM network traffic, temporarily disable them if you suspect this.

Broader Application of This Issue

Although this issue occurred in VirtualBox, the principle of checking **virtualization layer settings** applies to other hypervisors like VMware and Hyper-V. Likewise, physical machines may encounter similar issues if network adapters are disabled or misconfigured.

Key Takeaways

> **Always check the virtualization layer and host network adapters first when a VM has connectivity issues.**
>
> Using simple commands like `ip a` and `ping` methodically helps quickly pinpoint network problems.
>
> Documenting troubleshooting steps clearly makes it easier to reproduce and resolve similar issues in the future.

Screenshot References

Description	Image Path

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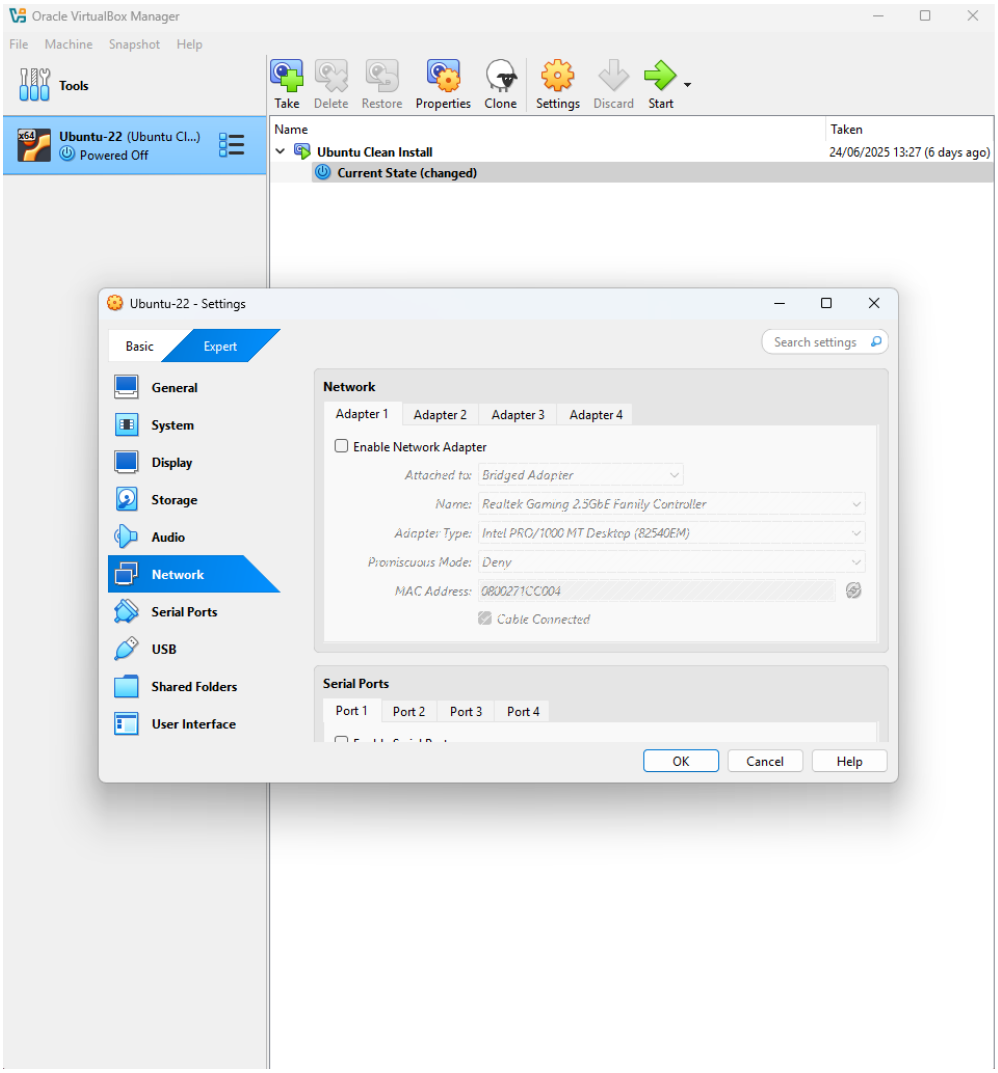
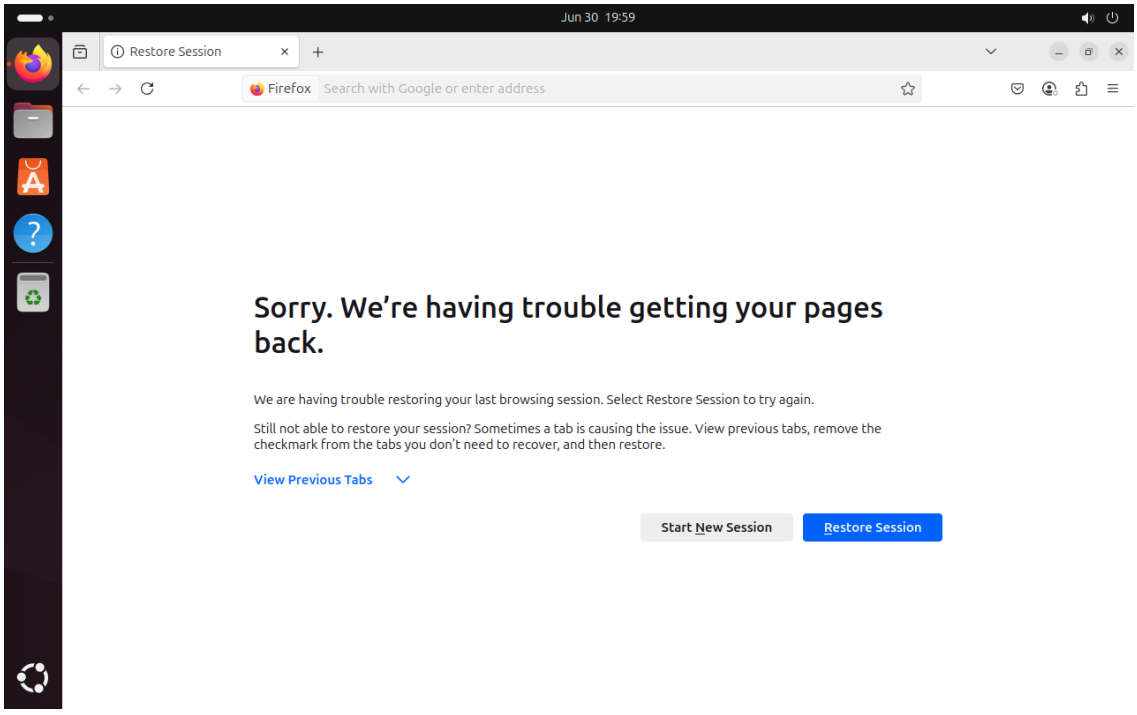
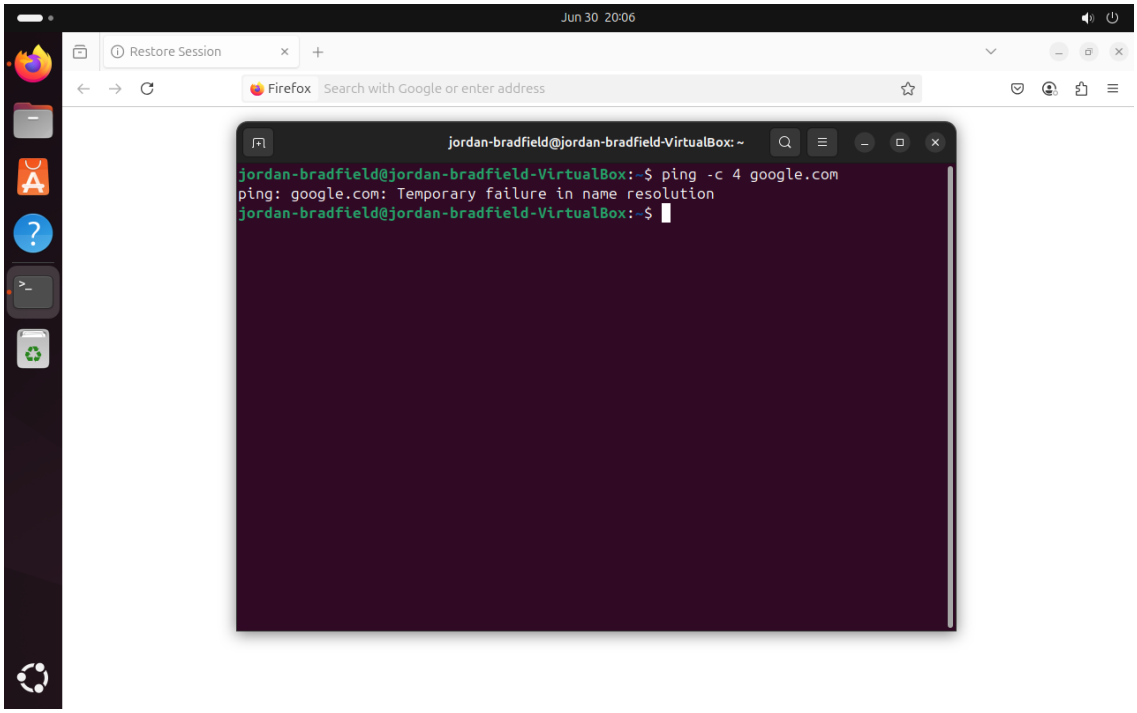
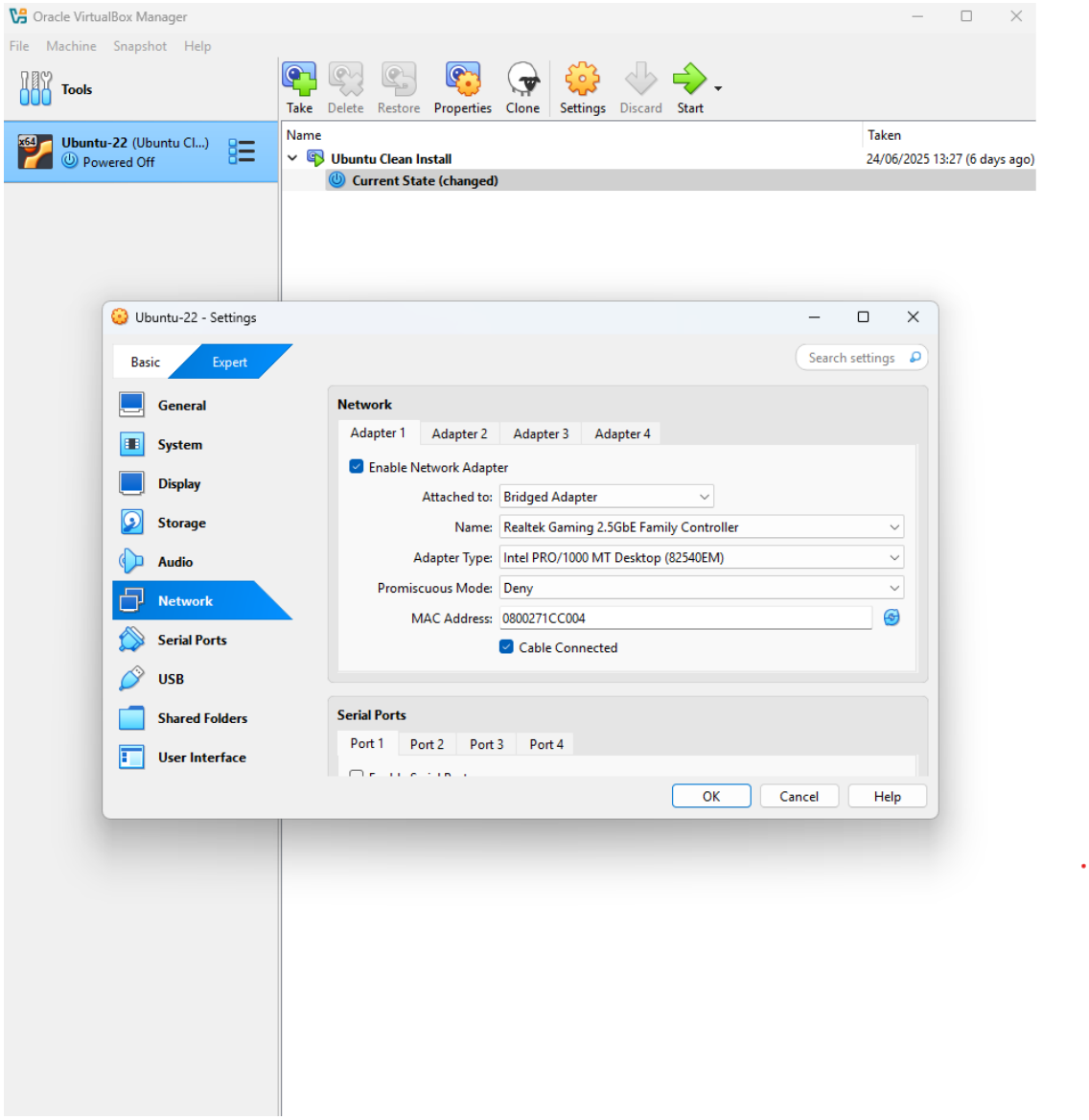
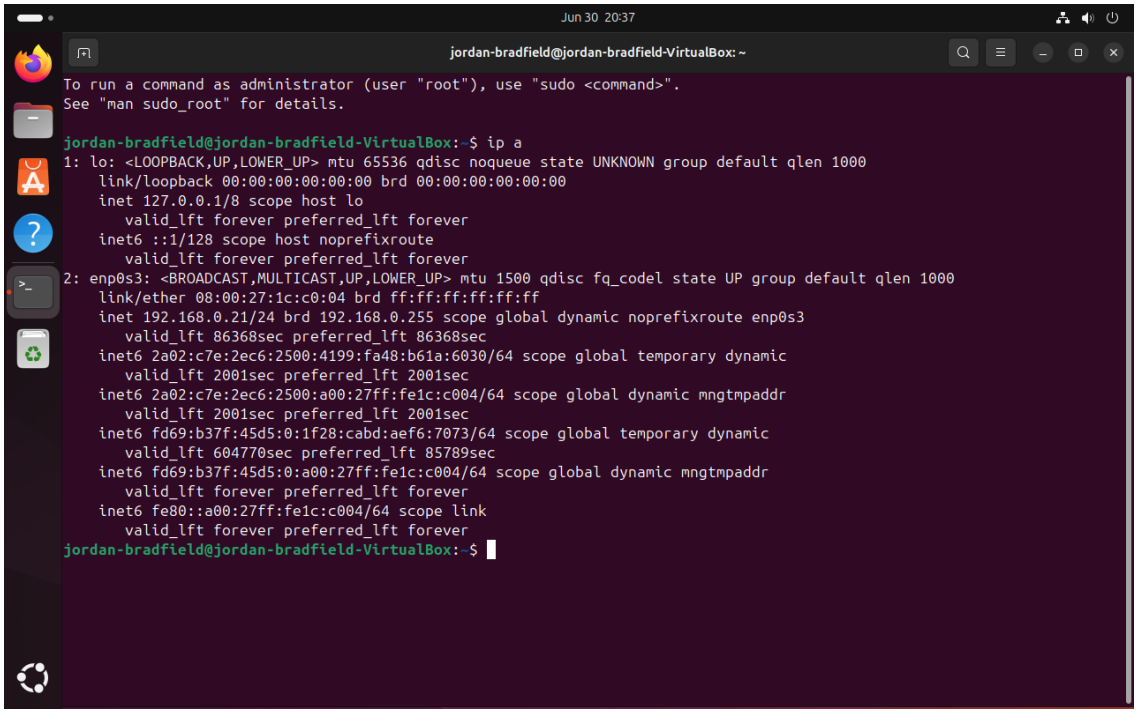
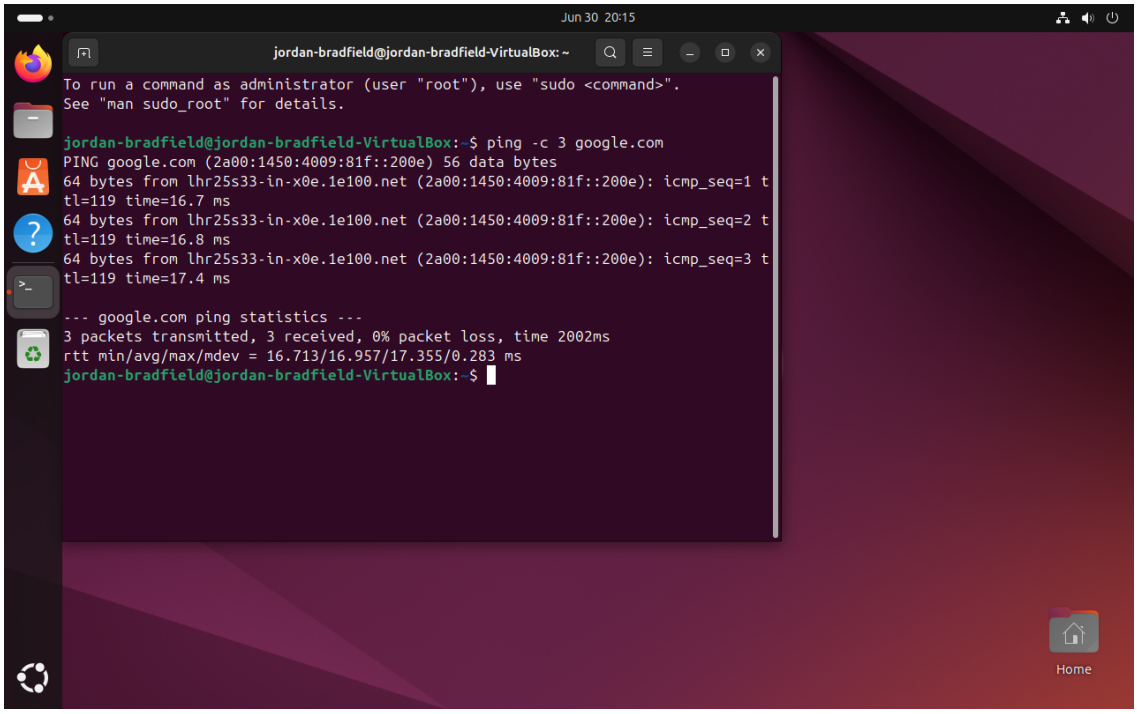
Disabled adapter in VirtualBox	
Ubuntu with no connection	

Description	Image Path
Ping failure	
Enabled adapter in VirtualBox	

Description	Image Path
Successful DHCP IP assignment	
Ping success (after fix)	

Final Thoughts

This was a small but realistic scenario — a disabled network adapter is easy to overlook. It helped reinforce a key principle:

> **Always check the virtualization layer when network problems arise in a VM.**

Using simple commands like `ip a` and `ping` in a logical order helped quickly pinpoint the issue. Documenting the process ensures I can easily repeat the troubleshooting if needed.