Topic: Installing and Configuring Hyper-V and Virtual Machines

Objective:

The objective of this lab is to understand and perform the installation, configuration, and management of the **Hyper-V role** in Windows Server 2016. Students will also learn to create and configure virtual machines (VMs), manage checkpoints, and configure nested virtualization for lab environments.

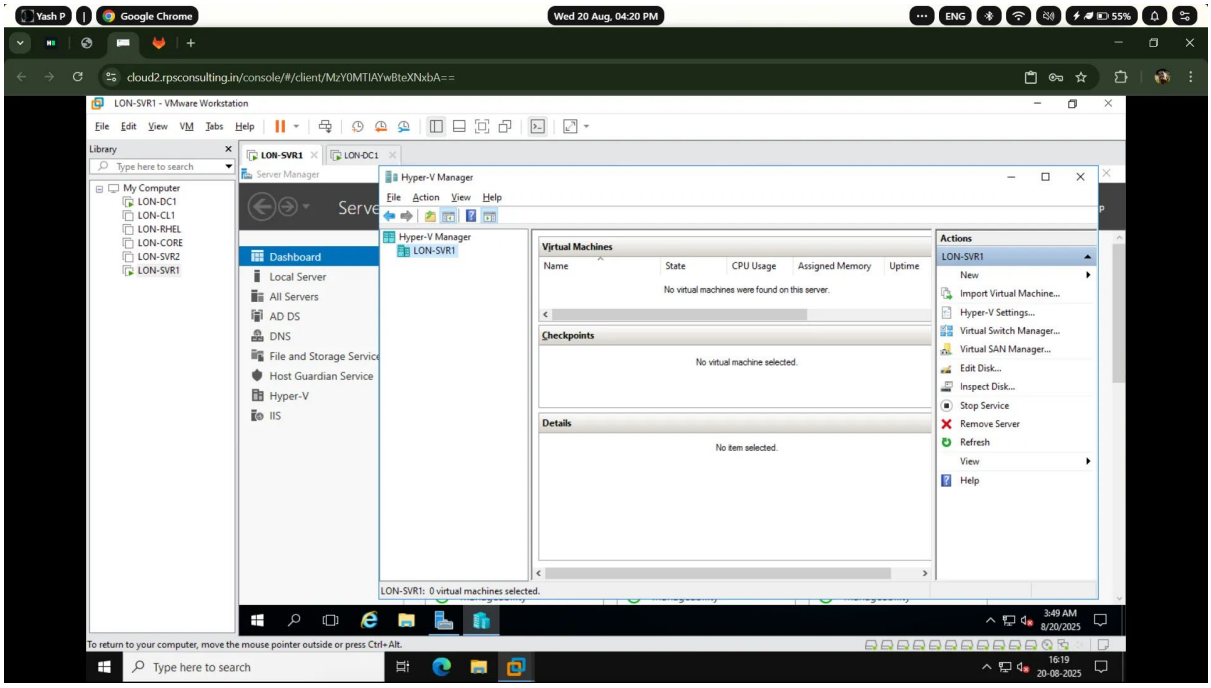
Pre-requisites:

1. **Lab Environment Setup:**
    - VMware Workstation with the following virtual machines:
        - **LON-DC1** – Windows Server 2016 Datacenter (Domain Controller, AD DS configured).
        - **LON-SVR1** – Windows Server 2016 Standard (used to install Hyper-V).
        - **LON-SVR2** – Windows Server 2016 Standard.
        - **LON-CORE** – Windows Server 2016 Datacenter (Core Edition).
        - **LON-CL1** – Windows 10 Pro (Domain Joined).
        - **LON-RHEL** – Red Hat Enterprise Linux 10 (Standalone).
    - All machines (except LON-RHEL) joined to domain **RPSLAB.COM**.
2. **Network Configuration:**
    - Ensure that the VMs are connected to the same virtual network within VMware Workstation.
    - LON-DC1 must be running Active Directory and DNS.
3. **User Access:**
    - Domain Admin account to install roles and features.
    - RDP access enabled for remote management.

Procedure:

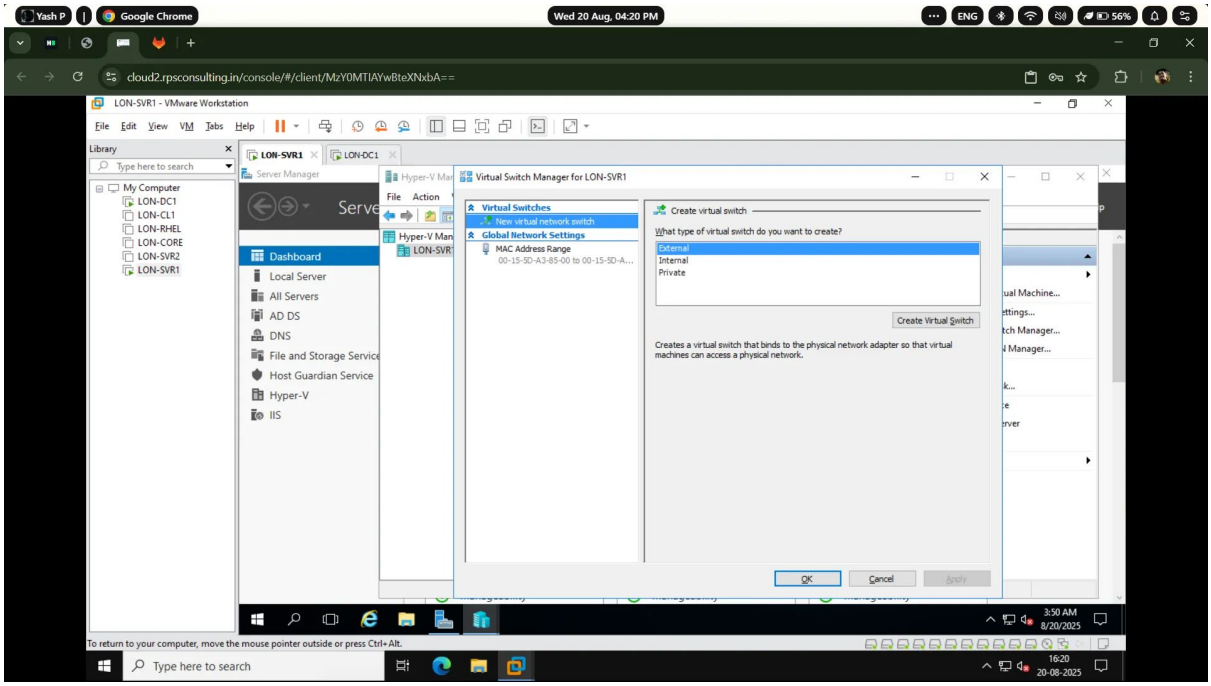
Exercise 1: Installing the Hyper-V Role

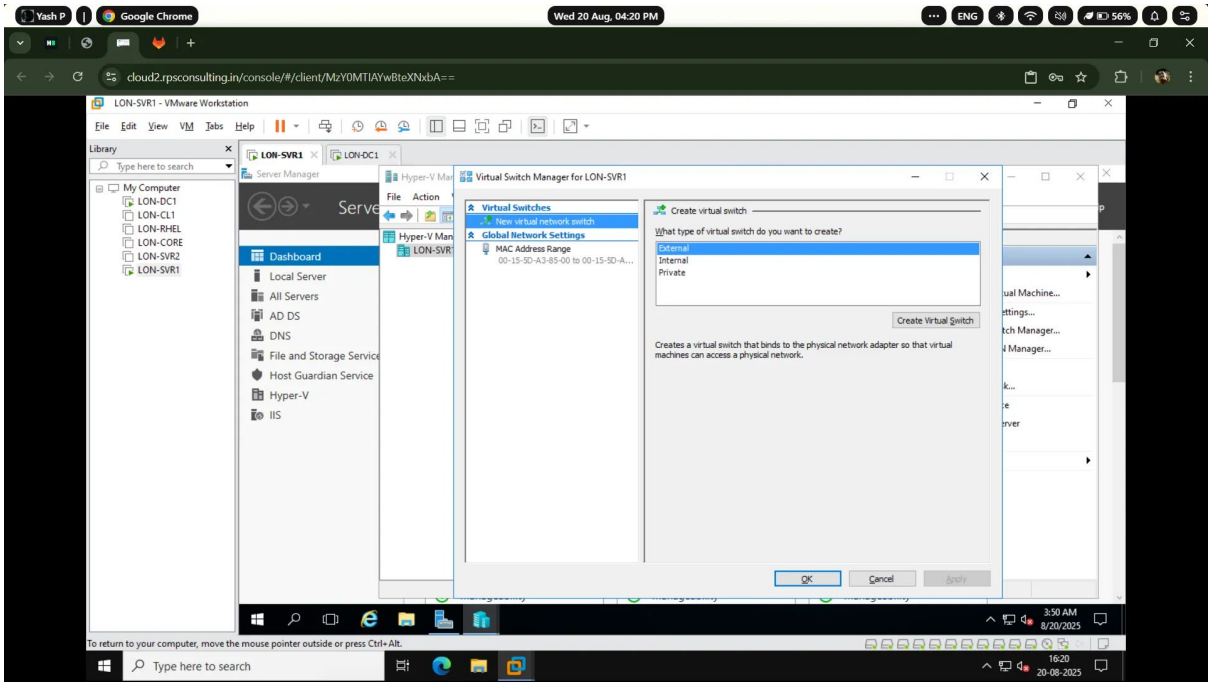
1. Log on to **LON-SVR1** with Domain Admin credentials.
2. Open **Server Manager** → *Add roles and features*.
3. In the **Roles** section, select **Hyper-V** and proceed with installation.
4. Enable **Hyper-V Management Tools**.
5. Restart the server if prompted.
6. Verify installation by opening **Hyper-V Manager** from *Tools* in Server Manager.



Exercise 2: Creating a Virtual Switch

1. In **Hyper-V Manager**, go to **Virtual Switch Manager**.
2. Create a **New Virtual Switch** of type *Internal*.
3. Name the switch: **RPSLAB-Switch**.
4. Assign it for VM connectivity within the Hyper-V host.
5. Confirm and apply changes.

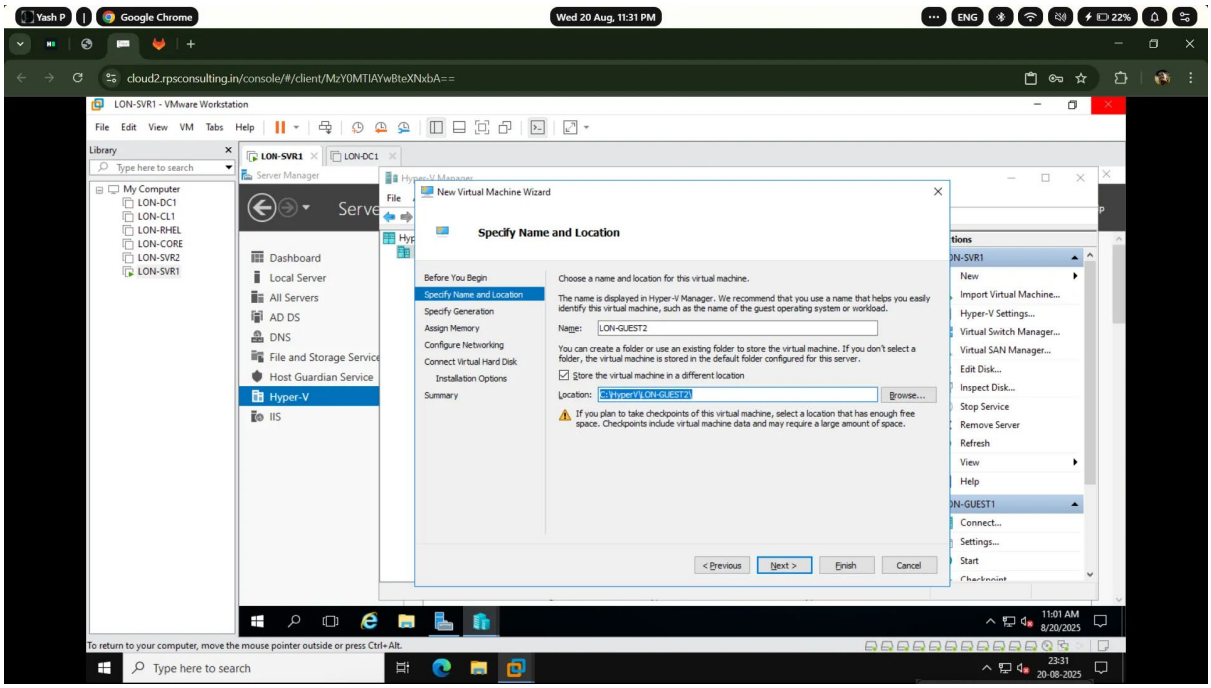


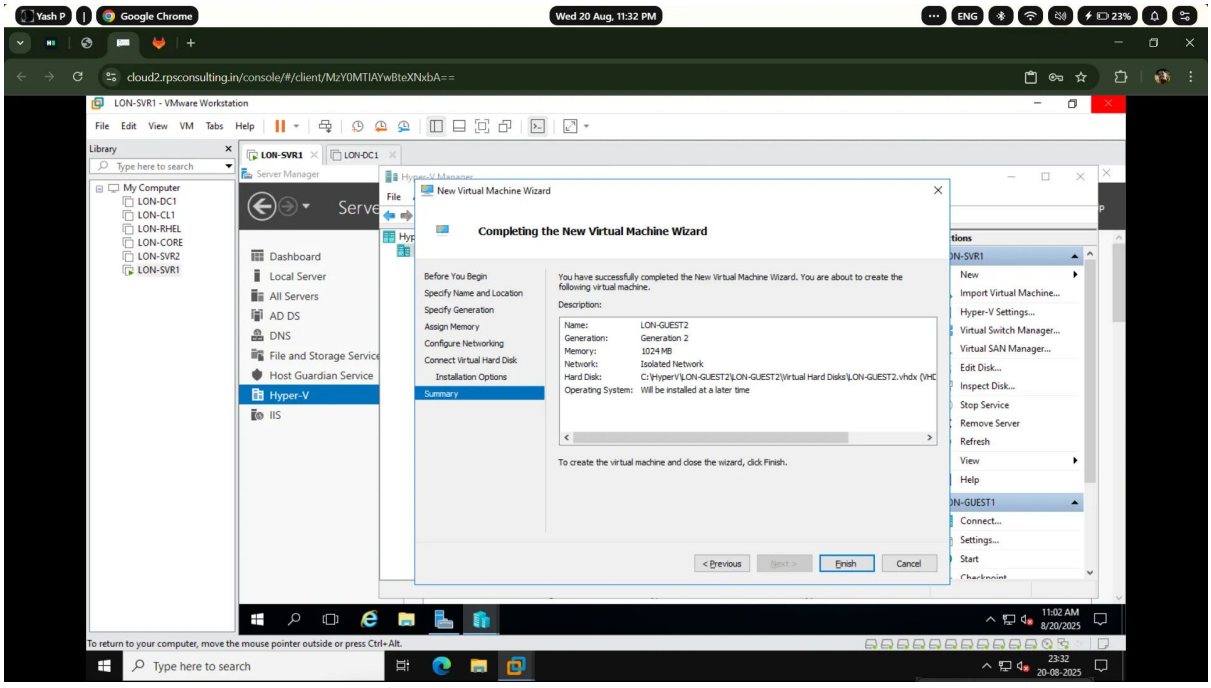


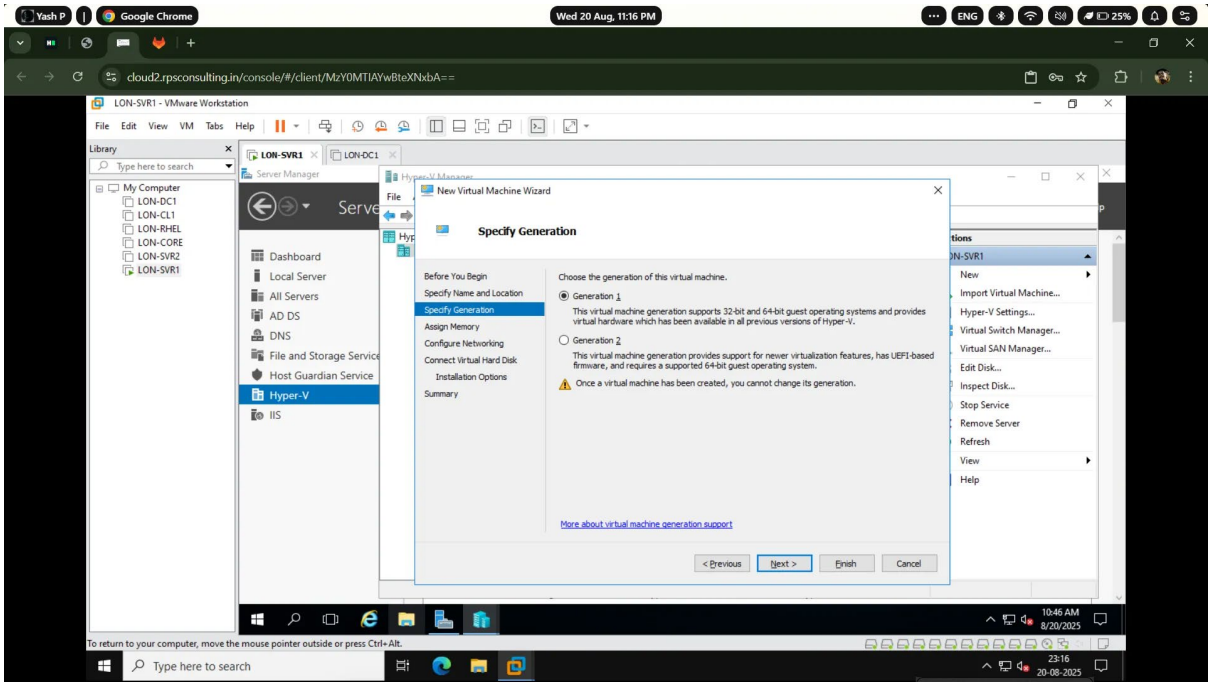
Exercise 3: Creating a Virtual Machine

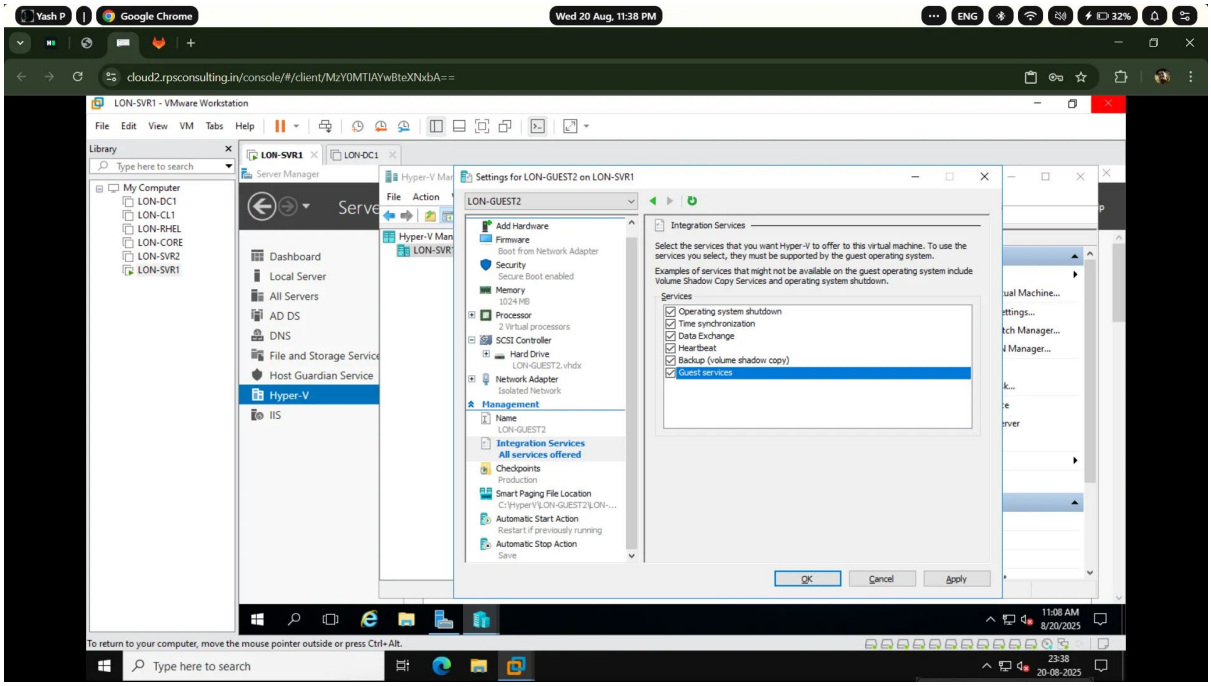
1. In **Hyper-V Manager**, click **New → Virtual Machine**.
2. Assign the name **LON-GUEST1**.
3. Configure VM generation as **Generation 2**.
4. Allocate **2 GB RAM**.
5. Connect the VM to **RPSLAB-Switch**.

6. Attach an ISO image (e.g., Windows Server 2016 ISO) to install the OS.
7. Finish and start the VM.
8. Install the operating system inside the new VM.



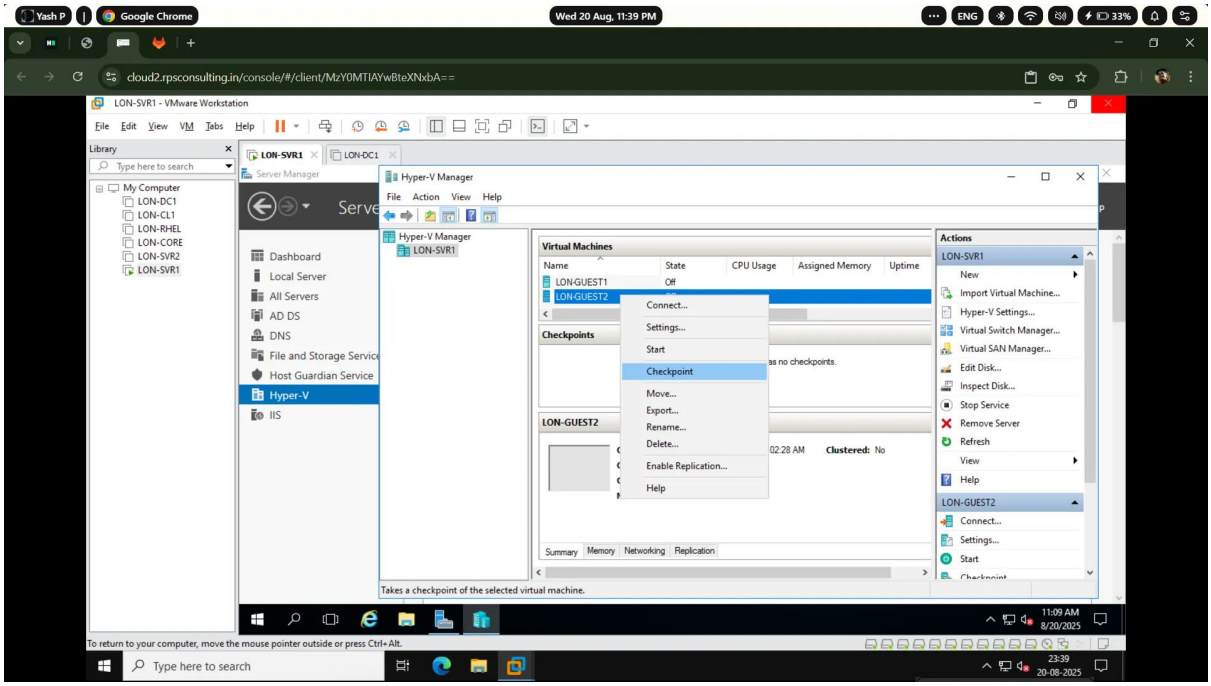


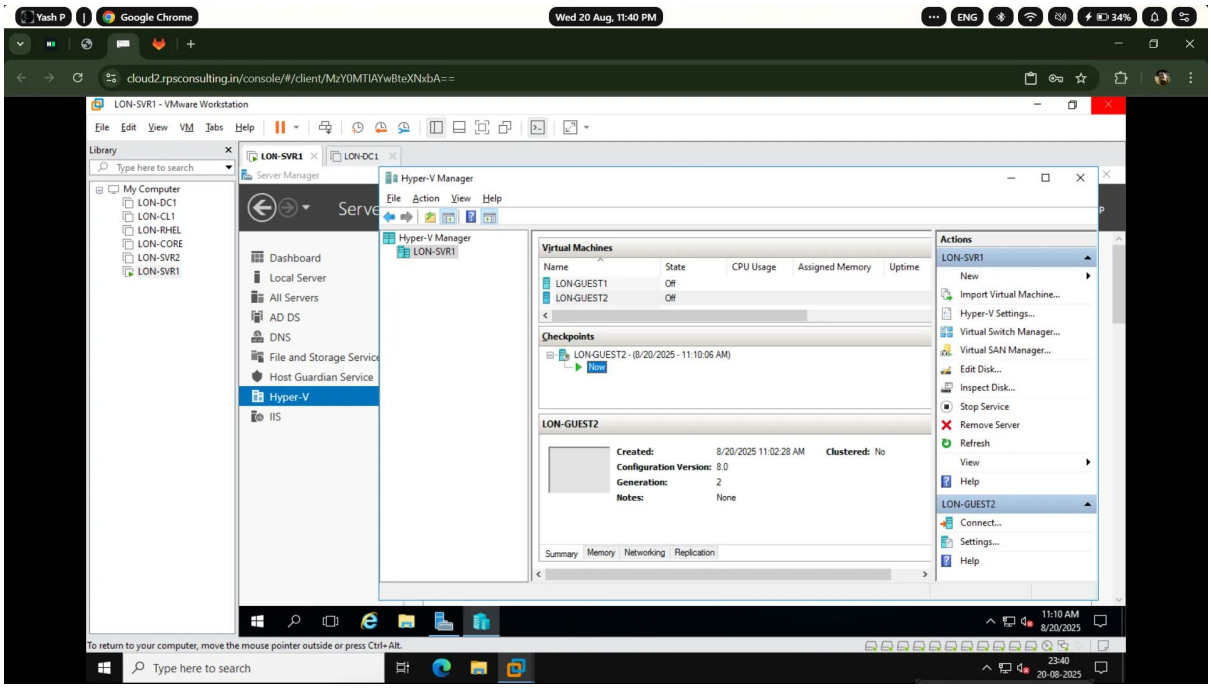




Exercise 4: Managing Checkpoints

1. Once **LON-GUEST1** is installed, right-click the VM in Hyper-V Manager.
2. Select **Checkpoint** to create a snapshot of the current state.
3. Make changes inside the VM (e.g., install a feature).
4. Apply the checkpoint to revert to the previous state.



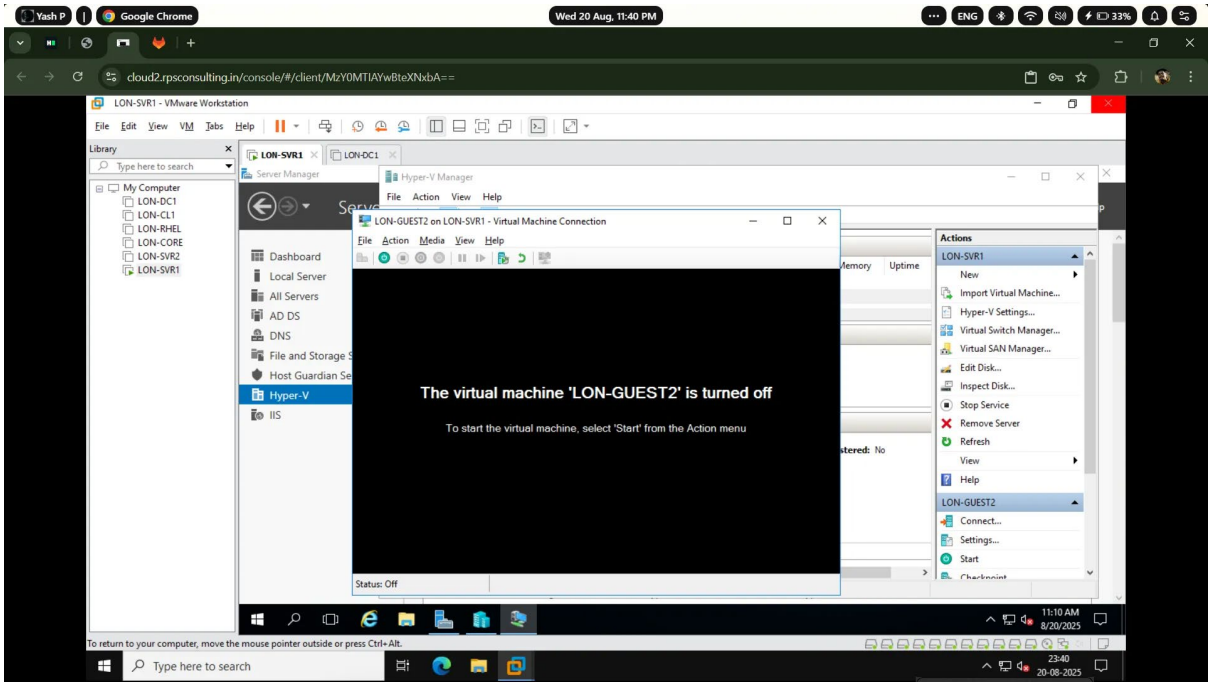


Exercise 5: Configuring Nested Virtualization

1. Shut down the VM (LON-GUEST1).
2. Open **PowerShell** as Administrator on **LON-SVR1**.
3. Run the command:

```
Set-VMProcessor -VMName LON-GUEST1 -ExposeVirtualizationExtensions $true
```

4. Start **LON-GUEST1** and install the **Hyper-V role** inside it to verify nested virtualization.
5. Confirm that another VM can be created inside **LON-GUEST1**.



Conclusion:

In this module, we successfully:

- Installed the **Hyper-V role** on Windows Server 2016.
- Configured a **Virtual Switch** for internal networking.
- Created and installed a virtual machine (**LON-GUEST1**).
- Managed **checkpoints** for VM state recovery.
- Enabled and tested **nested virtualization** within a VM.

This lab demonstrates how Hyper-V provides a robust virtualization platform for deploying and managing virtualized workloads in enterprise environments.