Practical 1: Deploying and Configuring Virtual Machines

Objective:

To access the student desktop, create a virtual machine, install VMware Tools, and copy files to the desktop.

Procedure:

1. Open the **VMware HOL portal** and launch the assigned lab.
2. Log in to the **Student Desktop** using the credentials provided in the lab manual.
3. Open **vSphere Client** from the desktop.
4. Log in to the vCenter Server using administrator credentials.
5. Right-click on the **Datacenter / Host** → Select **New Virtual Machine**.
6. Choose **Create a new virtual machine** and click **Next**.
7. Enter the **Virtual Machine name** and select the **Datacenter**.
8. Select the **Compute Resource (ESXi Host)**.
9. Choose the **Datastore** for VM storage.
10. Select the **Guest OS type and version**.
11. Customize **CPU, Memory, and Disk** settings.
12. Finish the wizard and power on the VM.
13. Right-click the VM → **Install VMware Tools**.
14. Complete the VMware Tools installation inside the guest OS.
15. Copy sample files from shared storage to the VM desktop.

Result:

A virtual machine was successfully created, configured, VMware Tools installed, and files copied to the desktop.

Practical 2: Working with vCenter Server Appliance

Objective:

To configure vCenter Server Appliance, datacenter, hosts, folders, and navigation.

Procedure:

1. Log in to the **vSphere Client**.
2. Navigate to **Administration → Licensing** and assign available licenses.
3. Go to **Administration → Single Sign-On → Configuration**.
4. Create a **Datacenter Object** under vCenter.
5. Right-click Datacenter → **Add Host**.
6. Enter ESXi host IP, credentials, and complete the wizard.
7. Select the host → **Configure → System → Time Configuration**.
8. Enable **NTP Client** and add NTP server details.
9. Create **Host and Cluster folders**.
10. Create **VM and Template folders** for organization.
11. Explore the **vSphere Client navigation pane**.

Result:

vCenter Server Appliance was configured with hosts, datacenter, NTP, and folders.

Practical 3: Users, Groups, and Permissions

Objective:

To integrate Active Directory with vCenter and assign permissions.

Procedure:

1. Navigate to **Administration → System Configuration**.
2. Join the vCenter Server Appliance to **vclass.local domain**.
3. Add **vclass.local** as an **Identity Source**.
4. Browse and view **Active Directory users and groups**.
5. Select a vCenter object → **Add Permission**.
6. Assign permissions to an AD user.
7. Configure **Root-Level Global Permissions**.
8. Log out and log in using **Windows Session Authentication**.
9. Manage a VM using an AD user account.

Result:

Active Directory integration and permission management were successfully completed.

Practical 4: Using Standard Switches

Objective:

To configure standard switches and virtual machine port groups.

Procedure:

1. Select ESXi Host → **Networking → Virtual Switches**.
2. View existing **Standard Switch configuration**.
3. Click **Add Standard Virtual Switch**.
4. Configure uplinks and MTU.
5. Create a **Virtual Machine Port Group**.
6. Edit VM settings → Change network to new port group.

Result:

Standard Switch and VM Port Group were created and attached to virtual machines.

Practical 5: Accessing iSCSI Storage

Objective:

To configure and connect iSCSI storage.

Procedure:

1. Verify existing iSCSI configuration under **Storage Adapters**.
2. Create a **VMkernel Port Group** for iSCSI.
3. Enable **iSCSI Software Adapter**.

4. Add **Dynamic/Static Discovery targets**.
5. Rescan storage adapters.

Result:

iSCSI storage was successfully connected to the ESXi host.

Practical 6: Managing VMFS Datastores

Objective:

To create, extend, expand, and remove VMFS datastores.

Procedure:

1. Navigate to **Storage → New Datastore**.
2. Select **VMFS** and choose the disk.
3. Create VMFS datastore.
4. Expand datastore to consume unused LUN space.
5. Extend VMFS datastore.
6. Remove VMFS datastore safely.
7. Create second shared VMFS datastore using iSCSI.

Result:

VMFS datastores were created and managed successfully.

Practical 7: Accessing NFS Storage

Objective:

To configure and verify NFS storage.

Procedure:

1. Go to **Storage → New Datastore**.
2. Select **NFS**.
3. Enter NFS server IP and shared folder path.
4. Mount the datastore.
5. View NFS datastore details.

Result:

NFS storage was successfully configured and accessed.

Practical 8: Using Templates and Clones

Objective:

To create VM templates and deploy VMs.

Procedure:

1. Power off a VM → Convert to **Template**.
2. Create **Customization Specifications**.
3. Deploy a VM from the template.

Result:

Virtual machines were deployed using templates.

Practical 9: Modifying Virtual Machines

Objective:

To modify VM hardware and settings.

Procedure:

1. Clone a powered-on VM.
2. Increase **VMDK disk size**.
3. Adjust **Memory allocation**.
4. Rename the VM.
5. Add and remove **Raw LUN**.

Result:

Virtual machine configuration changes were successfully applied.

Practical 10: Migrating Virtual Machines (vMotion)

Objective:

To migrate VMs using vSphere vMotion.

Procedure:

1. Create VMkernel port for **vMotion**.
2. Prepare VMs for migration.
3. Perform **vMotion migration**.
4. Perform **compute and storage migration**.

Result:

Virtual machines were migrated successfully using vMotion.

Practical 11: Managing Virtual Machines

Objective:

To manage VM registration and snapshots.

Procedure:

1. Unregister and register VMs.
2. Delete VM from datastore.
3. Take VM snapshot.
4. Modify VM and take another snapshot.
5. Revert to snapshot.
6. Delete individual and all snapshots.

Result:

Virtual machine lifecycle and snapshots were managed successfully.

Practical 12: Managing Resource Pools

Objective:

To create and verify resource pools.

Procedure:

1. Create CPU contention.
2. Create resource pools.
3. Verify resource allocation.

Result:

Resource pools were created and tested successfully.

Practical 13: Monitoring VM Performance

Objective:

To monitor VM CPU performance.

Procedure:

1. Create CPU workload.
2. Use performance charts to monitor CPU.
3. Undo configuration changes.

Result:

Virtual machine performance was monitored successfully.

Practical 14: Using vSphere HA

Objective:

To configure and test vSphere High Availability.

Procedure:

1. Create HA-enabled cluster.
2. Add ESXi hosts.
3. Test HA functionality.
4. View resource usage.
5. Configure slot size.
6. Enable strict admission control.

Result:

vSphere HA cluster was configured and tested successfully.