

Hyper-V Introduction

Microsoft's built-in hypervisor, its tools, and how to enable and explore it.

01 What it is

Hyper-V is Microsoft's hypervisor. It is included in Windows Server and in Windows 10 and 11 Pro, Enterprise and Education. You manage it with Hyper-V Manager, PowerShell or Windows Admin Center.

02 Why it matters in a UAE IT job

Many UAE companies are Microsoft shops, so Hyper-V is common for file servers, domain controllers and test labs. It costs nothing extra if you already have Windows Server licences.

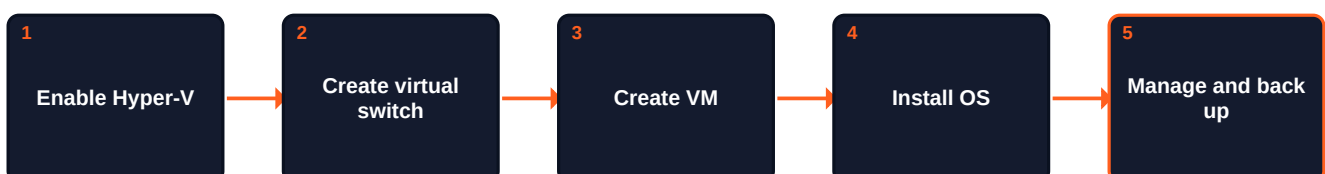
It is also the easiest way for a fresher to build a free home lab.

03 Key terms

Term	Meaning
Hyper-V Manager	The graphical console for creating and managing VMs.
Generation 1 / 2	VM types. Generation 2 uses UEFI, Secure Boot and is preferred for modern operating systems.
Checkpoint	Saved VM state. Production checkpoints are the default and are application consistent.
Integration Services	Components that improve time sync, shutdown, heartbeat and data exchange.
Live migration	Moving a running VM between hosts with no downtime.
Failover cluster	A group of hosts that restart VMs elsewhere if one host fails.
Windows Admin Center	A web-based tool to manage servers and Hyper-V.

04 How it works

Enable the Hyper-V role or feature, restart, and use Hyper-V Manager to create VMs. Each VM is a configuration plus virtual disks. Storage is usually local at home and shared (SMB, iSCSI or cluster storage) in companies. Virtual switches connect VMs to each other and to the physical network.



The standard Hyper-V workflow from empty host to running VM.

05 Hands-on lab

Goal: enable Hyper-V and explore the console. Use a Windows 11 Pro PC or a Windows Server evaluation VM with nested virtualization.

Step 1. Open an elevated PowerShell window and check whether Hyper-V is installed.

```
Get-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V-All
```

```
Administrator: Windows PowerShell

PS C:\Users\LabAdmin> Get-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V-All
FeatureName      : Microsoft-Hyper-V-All
DisplayName      : Hyper-V
Description      : Provides services and management tools for creating and running virtual machines and their
                  resources.
RestartRequired  : Possible
State            : Enabled
CustomProperties :
PS C:\Users\LabAdmin> _
```

Example output from the fictional lab (names and IPs are made up). Yours should look similar.

Step 2. If step 1 showed Disabled, enable it and restart. If it showed Enabled, skip this step.

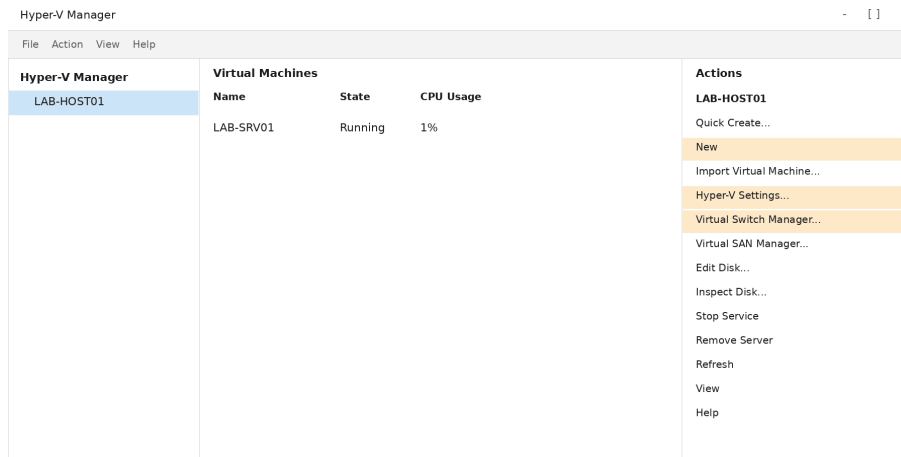
```
Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V -All
```

```
Administrator: Windows PowerShell

PS C:\Users\LabAdmin> Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V -All
Path      :
Online    : True
RestartNeeded : True
PS C:\Users\LabAdmin> _
```

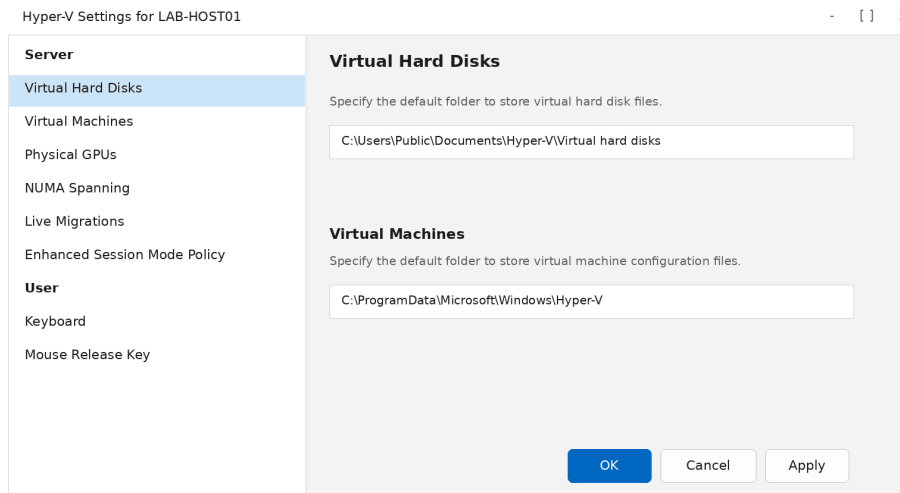
Example output from the fictional lab (names and IPs are made up). Yours should look similar.

Step 3. Open Hyper-V Manager and look at the Actions pane: New, Virtual Switch Manager, Hyper-V Settings.



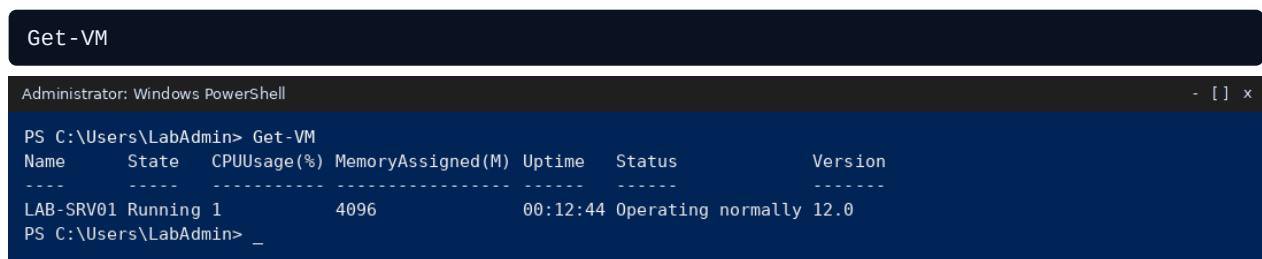
Illustrative mockup of this screen (fictional names). Your screen may look slightly different.

Step 4. Open Hyper-V Settings and note the default folders for virtual machines and virtual hard disks.



Illustrative mockup of this screen (fictional names). Your screen may look slightly different.

Step 5. List the host's VMs with PowerShell.



Example output from the fictional lab (names and IPs are made up). Yours should look similar.

Step 6. Write down five things you can do in Hyper-V Manager and which PowerShell command matches each.

- Pair each task with the PowerShell cmdlet that does it, for example creating a VM with New-VM.
- Use Get-Help followed by the cmdlet name to read its description and examples.
- Mark which tasks you would prefer to script and why.

06 Common mistakes

- Keeping VMs on the C: drive of a small SSD and running out of space.
- Forgetting to enable virtualization in firmware.
- Not running PowerShell as administrator.
- Forgetting that enabling Hyper-V can affect other hypervisors.
- Using Generation 1 for new Windows 11 or modern Linux VMs when Generation 2 is required.

07 Five interview questions

1. What is Hyper-V?

Microsoft's Type 1 hypervisor, included in Windows Server and Pro or Enterprise client editions.

2. What is the difference between Generation 1 and Generation 2?

Generation 1 emulates older BIOS hardware. Generation 2 uses UEFI, Secure Boot and faster synthetic devices.

3. How do you manage Hyper-V?

Hyper-V Manager, PowerShell, Windows Admin Center, and System Center for larger estates.

4. What is live migration?

Moving a running VM between hosts without downtime.

5. What are Integration Services?

Guest components that provide time sync, heartbeat, shutdown and data exchange between the host and the VM.

08 Check yourself

1. What manages VMs graphically?

- a) Notepad
- b) Hyper-V Manager
- c) Task Scheduler

2. Which generation uses UEFI?

- a) Generation 1
- b) Neither
- c) Generation 2

3. Which command lists VMs?

- a) Get-VM
- b) List-VM
- c) Show-All

4. What does live migration do?

- a) Deletes a VM
- b) Resets Windows
- c) Moves a running VM

5. Which edition lacks Hyper-V?

- a) Pro
- b) Home
- c) Enterprise

Answer key: 1-b, 2-c, 3-a, 4-c, 5-b

Take the full free skill quiz at uaeitguy.com/quiz. Next lesson: Creating a Hyper-V VM.