

Type 1 vs Type 2 Hypervisors

Bare-metal and hosted hypervisors compared, with real products and when to use each.

01 What it is

A Type 1 hypervisor runs directly on the hardware, so it is called bare-metal. A Type 2 hypervisor runs as an application inside a normal operating system, so it is called hosted. Type 1 is used for production servers, Type 2 for learning, testing and desktops.

02 Why it matters in a UAE IT job

Choosing the right type affects performance, security and cost. Production servers use Type 1, while your laptop lab will probably use Type 2.

This is one of the most common entry-level interview questions.

03 Key terms

Term	Meaning
Type 1 (bare-metal)	Runs directly on hardware. Examples: VMware ESXi, Microsoft Hyper-V, KVM.
Type 2 (hosted)	Runs on top of an OS. Examples: VMware Workstation, Oracle VirtualBox.
Management OS	The parent partition in Hyper-V that manages the VMs.
KVM	Hypervisor built into the Linux kernel.
Nested virtualization	Running a hypervisor inside a VM, useful for labs.
Overhead	Performance lost to extra software layers.
Licence	Some products are free (Hyper-V role, VirtualBox for personal use) and others are paid or subscription based.

04 How it works

With Type 1 the hypervisor owns the hardware, so there is one fewer layer and better performance and isolation. With Type 2 the VM requests go through the host operating system first, which adds overhead but makes setup easy. Hyper-V is sometimes called Type 1 even on Windows because, once enabled, the Windows host itself runs as a special partition on top of the hypervisor.



Type 2 adds an operating system layer between hardware and hypervisor.

05 Hands-on lab

Goal: compare Type 1 and Type 2 using what you already have. A Windows 11 Pro PC with Hyper-V enabled is ideal. Names are fictional.

Step 1. Check which Windows edition you have, because Hyper-V needs Pro, Enterprise or Education.

```
Get-ComputerInfo | Select WindowsProductName
```

```
Administrator: Windows PowerShell

PS C:\Users\LabAdmin> Get-ComputerInfo | Select WindowsProductName
WindowsProductName
-----
Windows 11 Pro
PS C:\Users\LabAdmin> _
```

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

Step 2. Enable Hyper-V from an elevated PowerShell and restart.

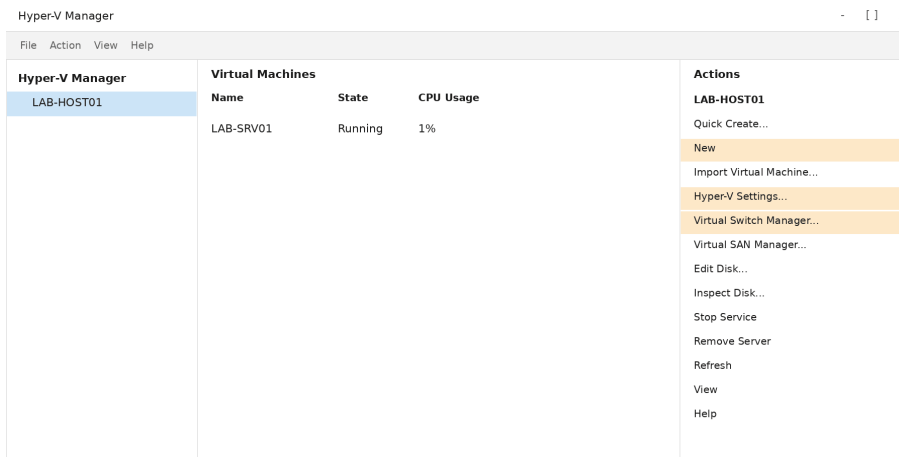
```
Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V -All
```

```
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. After the restart, open Hyper-V Manager and confirm your computer name appears as the host.



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

Step 4. Optional: install VirtualBox or VMware Workstation and note any warnings about running beside Hyper-V.

- Only try this on a machine you own and can restart.
- Note the exact message if the product warns about Hyper-V or Windows virtualization features.
- Record your Windows version and whether the product ran at all alongside Hyper-V.

Step 5. Build a comparison table with columns: type, example, where it runs, best use, main drawback.

- Use the columns type, example product, where it runs, best use and main drawback.
- Include at least two products for each type.
- Add one line explaining how Hyper-V fits, as discussed above.

Step 6. Write a recommendation for a bank server room and for a student laptop.

- Say which type you would choose for each case and give two reasons.
- Consider performance, security, cost and ease of management.
- Mention what would change your answer, such as a very small budget.

06 Common mistakes

- Calling Hyper-V on Windows 11 a Type 2 hypervisor without explaining the architecture.
- Assuming Type 2 is always bad. It is perfect for labs.
- Running two hypervisors that both want virtualization hardware without checking compatibility.
- Trying to enable Hyper-V on Windows Home.
- Forgetting to enable virtualization in BIOS or UEFI.

07 Five interview questions

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

Type 1 runs directly on hardware and is used in production. Type 2 runs as an application on an operating system and is used for testing and desktops.

2. Give two examples of each.

Type 1: VMware ESXi and Microsoft Hyper-V. Type 2: VMware Workstation and Oracle VirtualBox.

3. Why is Type 1 faster?

There is no extra host operating system between the VMs and the hardware.

4. Which would you use for a production file server?

Type 1, because of performance, stability and management features.

5. Can you run Hyper-V on Windows Home?

Not officially. Hyper-V needs Windows Pro, Enterprise or Education.

08 Check yourself

1. Which type runs on bare metal?

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

2. VMware Workstation is?

- a) Type 1
- b) A router
- c) Type 2

3. Best choice for production?

- a) Type 1
- b) Type 2
- c) A browser

4. Which editions support Hyper-V on Windows?

- a) Home only
- b) None
- c) Pro and above

5. What must be on in BIOS or UEFI?

- a) Bluetooth
- b) Virtualization support
- c) Secure Digital

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

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