Triển khai Hyper-V trên Windows Server 2022 CÁC BƯỚC TRIỂN KHAI:

- 1. Cài đặt Hyper-V
- 2. Tạo máy ảo
 - a. Tạo đĩa cứng ảo (Virtual Hard Disk)
 - b. Tạo Switch ảo (Virtual Switch)
 - c. Tạo máy ảo (Virtual Machine)
- 3. Tạo Differencing Disk
- 4. Checkpoint (Backup/Restore trạng thái máy ảo)
- 5. Export/Import máy åo
- 6. Nested Virtualization

CHUẨN BỊ:

Mô hình lab gồm 1 máy thật và 1 máy ảo:

- + SERVER: Windows 11
- + DC-2022: Windows Server 2022 DataCenter Evaluation (Desktop Experience)

THỰC HIỆN:

1. Cài đặt Hyper-V trên Windows 11

B1 – Vào đường dẫn Control Panel – Programs – Programs and Features, chọn Turn Windows features on or off.

← → ↓ ↑ Control Panel → Programs → Programs and Features ↓ ℃ Search Programs and Features ♪ Control Panel Home Uninstall or change a program To uninstall a program, select it from the list and then click Uninstall, Change, or Repair. To uninstall a program, select it from the list and then click Uninstall, Change, or Repair. Image: Turn Windows features on or off Organize ↓ Uninstall Image: Torganize	Programs and Features					- C	ı x
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 $\mathbf{B2}$ – Tích vào Hyper-V và 2 feature .NET Fra

windows reatures	-			×
urn Windows features on or off				?
o turn a feature on, select its check box. To to ox. A filled box means that only part of the f	urn a feature o feature is turne	ff, clea d on.	ar its cheo	:k
+	2.0 and 3.0)			
.NET Framework 4.8 Advanced Server	/ices			
Active Directory Lightweight Direct	tory Services			
Containers				
Data Center Bridging				
🗉 🔲 📒 Device Lockdown				
Guarded Host				
⊒ 🔽 🚞 Hyper-V				
Hyper-V Management Tools				
Hyper-V Platform				
Internet Information Services	LL W-L C-			
Internet Information Services Hosta	able web Core			
Legacy Components				
Microsoft Defender Application Gu	ard			
Microsoft Message Queue (MSMO)) Server			
Microsoft Print to PDF				
	ОК		Cancel	

B3 – Đợi hệ thống máy thiết lập Features vừa thêm, sau đó **Restart** lại hệ thống máy.



B4 – Sau khi máy khởi động lại, vào cửa sổ Search tìm từ khóa Hyper-V Manager. Sau đó click mở chương trình.



B5 – Giao diện Hyper-V Manager sau khi được click mở.

Hyper-V Manager								-	×
File Action View Help									
🗢 🔿 🙍 🖬									
Hyper-V Manager	Virtual Machines						Actions		
SERVER	Name	State	CPU Usage	Assigned Memory	Uptime	Status	SERVER		
							uick Create		
			No virtual macr	ines were found on this :	server.		New		
							🐴 Import Virtual Machine		
							 Hyper-V Settings		
							🚰 Virtual Switch Manager		
	Checkpoints						🛃 Virtual SAN Manager		
			No virt	ual machine selected.			🚄 Edit Disk		
							🔄 Inspect Disk		
							Stop Service		
							🗙 Remove Server		
							🖏 Refresh		
							View		•
							👔 Help		
	Details								
				In New colorised					
			, i	voltem selected.					
Opens the Quick Virtual Machine Cre	ation dialog.								

2. Tạo máy ảo

a. Tạo đĩa cứng ảo

B1 – Tạo thư mục "D:\Windows Server 2022", sau đó lần lượt tạo các thư mục ws2022, ws2022-2 và ws2022-3 trong "D:\ Windows Server 2022".

 $\mathbf{B2}$ – Vào cửa sổ Search tìm từ khóa Hyper-V Manager. Sau đó click mở chương trình.

B3 – Chuột phải vào Tên máy thật, chọn New, chọn Hard Disk.

Hyper-V Manager	Virtual Mac	hines			
Quie	ck Create			State	CPL
New	1	>	Virtual	Machine	
Imp	ort Virtual Machine		Hard D	isk	
Hyp Virtu Virtu	er-V Settings Jal Switch Manager Jal SAN Manager		Floppy	Disk	_

B4 – Màn hình Before you begin, chọn Next

B5 - Màn hình Choose Disk Format, chọn VHDX, chọn Next



B6 - Màn hình Choose Disk Type, chọn Dynamically expanding, chọn Next.

🏝 New Virtual Hard Disk Wizz	ard	×
💄 Choose Disk	Туре	
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	 What type of virtual hard disk do you want to create? Fixed size This type of disk provides better performance and is recommended for servers running applications with high levels of disk activity. The virtual hard disk file that is created initially uses the size of the virtual hard disk and does not change when data is deleted or added. Dynamically expanding This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The virtual hard disk file that is created is small initially and changes as data is added. Differencing This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to the data or operating system without affecting the parent disk, so that you can revert the changes easily. All children must have the same virtual hard disk format as the parent (VHD or VHDX).	
	< Previous Next > Finish Cancel	

B7 - Màn hình Specify Name and Location, ở mục Name, đặt tên ổ cứng: ws2016.vhdx

Mục Location, chọn Browse, trỏ đường dẫn đến thư mục "D:\Windows Server 2022\ws2022", sau đó chọn Next.

🏝 New Virtual Hard Disk Wi	zard		×
📥 Specify Nan	ne and Loca	ation	
Before You Begin	Specify th	e name and location of the virtual hard disk file.	
Choose Disk Format	Name:	ws2022.vhdx	
Choose Disk Type Specify Name and Location	Location:	D:\Windows Server 2022\ws2022\	Browse
Configure Disk Summary			

B8 - Màn hình Configure Disk, chọn Create a new blank virtual hard disk. Ở mục Size, nhập vào dung lượng đĩa cứng ảo, chọn Next.

🚢 New Virtual Hard Disk Wiz	ard	×				
🚢 Configure Di	sk					
Before You Begin	You can create a blank virtual hard disk or copy the contents of an existing physical disk.					
Choose Disk Format	 Create a new blank virtual hard disk 					
Choose Disk Type	Size: 127 GB (Maximum: 64 TB)					
Specify Name and Location						
Configure Disk						
Summary	Physical Hard Disk Size					

B9 - Màn hình Completing the New Virtual Hard Disk Wizard, chọn Finish.

🚢 New Virtual Hard Disk Wi	zard	×
📥 Completing	the New Virtual Hard Disk Wizard	
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	You have successfully completed the New Virtual Hard Disk Wizard. You are about to create the following virtual hard disk. Description: Format: VHDX Type: dynamically expanding Name: ws2022.vhdx Location: D:\Windows Server 2022\ws2022 Size: 127 GB To create the virtual hard disk and close this wizard, click Finish.	
	< Previous Next > Finish Cancel	

b. Tạo Switch ảo

B1 – Tại khung Actions nằm ở góc phải, chọn Virtual Switch Manager.

SER	VER 🔺
۰	Quick Create
	New
P.	Import Virtual Machine
*	Hyper-V Settings
Ě	Virtual Switch Manager
<u>.</u>	Virtual SAN Manager
-	Edit Disk
	Inspect Disk
	Stop Service
×	Remove Server
ច	Refresh
	View
?	Help

B2 - Chọn Card External, sau đó chọn Create Virtual Switch.

Virtual Switches New virtual network switch	😤 Create virtual switch —
Lefault Switch Default Network	What type of virtual switch do you want to create? External
Global Network Settings MAC Address Range 00-15-5D-01-48-00 to 00-15-5D-0	Internal Private
	Create Virtual Switch Creates a virtual switch that binds to the physical network adapter so that virtual machines can access a physical network.

B3 - Mục Name, đặt tên External.

Mục Connection Type: chọn dạng Virtual Switch muốn tạo, chọn External Network, sau đó chọn OK.

Traines
External
Notes:
Connection type What do you want to connect this virtual switch to?
External network:
Realtek Gaming 2.5GbE Family Controller V Image: Allow management operating system to share this network adapter
Internal network Private network
VLAN ID Enable virtual LAN identification for management operating system The VLAN identifier specifies the virtual LAN that the management operating system will use for all network communications through this network adapter. This setting does not affect virtual machine networking.
2
Remove

B4 - Thực hiện tương tự tạo thêm 2 Virtual Switch

+ Internal Network - Connection Type: Internal network



+ Private Network - Connection Type: Private network



c. Tạo máy ảo

Chuẩn bị file ISO: Windows Server 2022

B1 – Chuột phải vào SERVER, chọn New, sau đó chọn Virtual Machine

Hyper-V Mar	Virtual Machines		
	Quick Create	State CPU	U
	New >)	Virtual Machine	
	Import Virtual Machine	Hard Disk	
-	Hyper-V Settings	Floppy Disk	
	Virtual Switch Manager		
	Virtual SAN Manager		

B2 - Màn hình Before you begin, chọn Next.

B3 - Màn hình Specify Name and Location, mục Name, đặt tên cho máy ảo: DC2-2022. Đánh dấu check ô Store the virtual machine in a different location, chọn Browse và trỏ đường dẫn đến "D:\Windows Server 2022\ws2022\DC-2022", sau đó chọn Next

New Virtual Machine Wiz	zard X
Specify Nai	me and Location
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Choose a name and location for this virtual machine. The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload. Name: DC-2022 You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server. ✓ Store the virtual machine in a different location Location: D:\Windows Server 2022\ws2022\DC-2022\ Browse ✓ If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.
	< Previous Next > Finish Cancel

B4 – Chọn Specify Generation cho máy ảo, tùy biến người dùng.

Generation 1: hỗ trợ Windows 32-bit và 64-bit, phù hợp với các phiên bản cũ hơn của HyperV, và cũng phù hợp với các hệ điều hành từ Windows 8 trở xuống hoặc Windows server 2008 trở xuống.

Generation 2: chỉ hỗ trợ các hệ điều hành Windows 8 và Windows Server 2012 64bit, có hỗ trợ BIOS UEFI.

🖳 New Virtual Machine Wizar	d	×
Specify Gene	ration	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	 Choose the generation of this virtual machine. Generation <u>1</u> This virtual machine generation supports 32-bit and 64-bit guest operating systems and provides virtual hardware which has been available in all previous versions of Hyper-V. Generation <u>2</u> This virtual machine generation provides support for newer virtualization features, has UEFI-base firmware, and requires a supported 64-bit guest operating system. More a virtual machine has been created, you cannot change its generation. 	ed
	< Previous Next > Einish Cancel	

B5 - Màn hình Assign Memory, mục Startup memory, thiết lập RAM cho máy ảo : 2048 MB, chọn Next.



B6 - Màn hình Configure Networking, mục Connection, chọn Virtual Switch đã tạo: External, sau đó chọn Next.

🖳 New Virtual Machine Wizar	ď	×
💴 Configure Ne	etworking	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Each new virtual machine includes a network adapter. You can configure the network adapter virtual switch, or it can remain disconnected. Connection: Default Switch Internal Private External	to use a
	< Previous Next > Finish Ca	ancel

B7 - Màn hình Connect Virtual Hard Disk, chọn Use an existing virtual hard disk, chọn Browse và trỏ đường dẫn đến D:\Windows Server 2022\ws2022.vhdx nơi chứa ổ đĩa đã được tạo trước đó, sau đó chọn Next.

🖳 New Virtual Machine Wizard

۲

Connect Virtual Hard Disk



B8 – Tổng hợp lại thông tin, chọn Finish.

🖳 New Virtual Machine Wizard X					
Completing t	the New Virtual Machine Wizard				
Before You Begin Specify Name and Location Specify Generation	You have successfully completed the New Virtual Machine Wizard. You are about to create the following virtual machine. Description:	_			
Assign Memory	Name: DC-2022 Generation: Generation 1				
Connect Virtual Hard Disk	Memory: 2048 MB Network: External				
Summary	Hard Disk: D:\Windows Server 2022\ws2022\ws2022.vhdx (VHDX, dynamically expanding) To create the virtual machine and close the wizard, click Finish.				
	< Previous Next > Finish Cancel				

B9 - Chuột phải máy ảo DC-2022, chọn Settings

Virtual Machines					
Name	State	CPU Usage			
DC-2022	Off Connect Settings Start Checkpoint Move Export Rename Delete Help				

B10 - Bên dưới mục IDE Controller 1, chọn DVD Drive. Khung bên phải, chọn Image File và trỏ đường dẫn đến file ISO cài đặt Windows Server 2022, chọn Apply, chọn OK.



B11 - Chuột phải vào máy ảo vừa tạo đang trong đạng thái Off, chuột phải vào máy ảo chọn Start.

Virtual Machines				
Name	State	CPU Usage	Assigned Memory	Uptime
DC-2022	Off	C St C M B R C H	onnect ettings aart heckpoint love cport ename elete ancel Merge in Progres elp	

B12 – Sau đó chuột phải vào máy ảo trong trạng thái Running, chọn Connect và bắt đầu cài Windows Server 2022.

Virtual Machines				
Name	State	CPU Usage	Assigned Memory	Uptime
E DC-2022	Running	Connect.		0:08
		Settings		

3. Tạo Differencing Disk

B1 – Vào Hyper Manager, chuột phải SERVER, chọn New, chọn Hard Disk.

Hyper-V Mar	ager Virtual Machir	ies		
	Quick Create		State	CPU
	New >	Virt	tual Machine	
_	Import Virtual Machine	Ha	rd Disk	
	Hyper-V Settings Virtual Switch Manager Virtual SAN Manager	Flo	ppy Disk	

B2 – Tại màn hình Before You Begin, chọn Next.

 ${\bf B3}$ - Màn hình Choose Disk Format, chọn định dạng đĩa cứng ảo là VHDX, chọn Next



B4 - Màn hình Specify Name and Location, mục Name, đặt tên cho đĩa cứng ảo: ws2022-2.vhdx. Ở mục Location, chọn Browse và trỏ đường dẫn đến thư mục "D:\Windows Server 2022\ws2022-2\"



B5 - Màn hình Configure Disk, chọn Browse, trỏ đường dẫn đến đĩa Parent (là đĩa ws2022.vhdx được tạo trước đó), chọn Next.

🏝 New Virtual Hard Disk Wiza	rd ×
🛓 Configure Dis	k
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	Specify the virtual hard disk that you want to use as the parent for the new differencing virtual hard disk. Location: D:\Windows Server 2022\ws2022\ws2022.vhdx Browse

B6 – Tổng hợp thông tin, chọn Finish.

🚢 New Virtual Hard Disk Wi:	zard	\times
Letter Completing	the New Virtual Hard Disk Wizard	
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	You have successfully completed the New Virtual Hard Disk Wizard. You are about to create the following virtual hard disk. Description: Format: VHDX Type: differencing Name: ws2022-2.vhdx Location: D:\Windows Server 2022\ws2022-2 Parent: D:\Windows Server 2022\ws2022\ws2022.vhdx To create the virtual hard disk and close this wizard, click Finish.	
	< Previous Next > Finish Cancel	

B7 – Tạo 1 máy ảo DC2-2022, máy ảo này sử dụng ổ đĩa ws2022-2.vhdx vừa tạo trên.



B8 – Tượng tự tạo thêm ổ đĩa ws2022-3.vhdx (Dạng đĩa Differencing) trong đường dẫn "D:\Windows Server 2022\ws2022-3", đĩa cứng này liên kết với đĩa ws2022.vhdx. Đồng thời tạo thêm 1 máy ảo DC3-2022, máy ảo này sẽ sử dụng đĩa ws2022-3.vhdx



B9 - Khởi động 2 máy ảo DC2-2022 và DC3-2022. Sau đó, tạo 1 file tùy ý trên 2 máy Desktop.

Nhận xét: 2 máy ảo này hoạt động độc lập. Dữ liệu của 2 máy được lưu trên 2 đĩa riêng biệt ws2022-2.vhdx và ws2022-3.vhdx, còn đĩa ws2022.vhdx vẫn không thay đổi.

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The DC2-2022 on SERVER V	firtual Machine Connection		_		TC3-2022 on SERVER Virtual Machine Connection		- 0	×
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4. Checkpoint (Backup/Restore trạng thái máy ảo)

B1 – Chuột phải vào máy ảo muốn Backup, sau đó chọn Checkpoint.

Virtual Machines					
Name	State	CPU Usage Assigned Memory			
DC2-2022	Off				
DC3-2022	Off				
DC-2022	Off	Connect			
		Settings			
		Start			
		Checkpoint			

B2 – Sau khi thực hiện chức năng Checkpoint trên máy ảo muốn Backup, sẽ được hiển thị tại khung Checkpoints.

Checkpoints			
□ DC-202	2 - (1/6/2023 v	3 - 2:16:27 PM)	

5. Export/Import máy ảo

B1 - Chuột phải máy ảo cần export, sau đó chọn Export.

Virtual Machines					
Name	State	CPU Usage	Assigned Mem		
DC2-2022	Off				
DC3-2022	Off				
DC-2022	Off	Connect			
		Setting	5		
Checkpoints		Start			
		Checkp	oint 10		
		Move			
		Export.	.]		
		Rename	e		
		Delete			
		Help			

B2 – Tại cửa sổ Export Virtual Machine, chọn Browse để trỏ tới đường dẫn thư mục muốn Export, sau đó chọn Export.

Steport Virtual Machine						
Specify wh	ere you want to save the files.					
Location:	C:\Backup\DC\	E	Browse			
		Export	Cancel			

B3 – Kiểm tra bên trong đường dẫn thư mục được Export, bên trong sẽ có 3 thư mục con: Snapshots, Virtual Hard Disks và Virtual Machines.

This PC > WinToHDD (C:) > Backup > DC > DC-2022 >								
Name	Date modified	Туре	Size					
	1/6/2023 2:33 PM	File folder						
Virtual Hard Disks	1/6/2023 2:33 PM	File folder						
Virtual Machines	1/6/2023 2:33 PM	File folder						

B4 – Để kiểm tra thư mục được Export và thực hiện chức năng Import, quay lại Hyper-V Manager, chuột phải máy ảo DC-2022, chọn Delete.

B5 – Chuột phải vào SERVER, chọn Import Virtual Machine.



B6 - Màn hình Before you begin, chọn Next.

B7 – Tại màn hình Locate Folder, chọn Browse, trỏ đường dẫn đến thư mục chứa máy ảo, chọn Next

Import Virtual Machine

Locate Folder

Before You Begin	Specify the folder containing the virtual machine to import.
Locate Folder	Folder: C:\Backup\DC\DC-2022\ Browse
Select Virtual Machine	
Choose Import Type	
Summary	

 \times

B8 – Màn hình Select Virtual Machine, chọn máy ảo cần Import, chọn Next.

Before You Begin	Select the virtual machine to import:							
Locate Folder	Name Date Created							
Select Virtual Machine	DC-2022	1/5/2023 4·36·42 PM						
Choose Import Type								
Summary								

B9 - Màn hình Choose Import Type, chọn Register the virtual machine in-place, chọn Next.

Before You Begin	Choose the type of import to perform:
Locate Folder	 Register the virtual machine in-place (use the existing unique ID)
Select Virtual Machine	 Restore the virtual machine (use the existing unique ID)
Choose Import Type	 Copy the virtual machine (create a new unique ID)
Summary	

B10 - Màn hình Completing Import Wizard, chọn Finish

Before You Begin Locate Folder	You are about to perform the following operation. Description:				
Select Virtual Machine	Virtual Machine: DC-2022				
Choose Import Type	Import file: C:\Backup\DC\DC-2022\Virtual Machines\7B73CE95-AD5A-48EA-B257-638681DD2B				
Summary	Import Type: Register (keep ID)				
	To complete the import and close this wizard, click Finish.				

6. Nested Virtualization

B1 - Khởi động máy ảo DC-2022. Mở Server Manager, trong Server Roles chọn cài đặt Role Hyper-V. Xuất hiện thông báo lỗi bộ xử lý không có khả năng ảo hóa cần thiết. Tiếp theo, **Shutdown máy ảo**.



B2 – Sau khi **Shutdown máy åo**. Trên máy thật, vảo **Windows PowerShell / Run as administrator**.

Enable Nested Virtualization:

Gõ lệnh: Set-VMProcessor -VMName <Tên máy ảo> -ExposeVirtualizationExtensions \$true

Disable Nested Virtualization:

Gõ lệnh: Set-VMProcessor -VMName <Tên máy ảo> -ExposeVirtualizationExtensions \$false



Để kích hoạt Nested Virtualization (Ảo hóa lồng nhau), gõ lệnh:

Set-VMProcessor -VMName DC-2022 -ExposeVirtualizationExtensions \$true



B3 – Khởi động máy ảo DC-2022 trong Hyper-V. Mở Sever Manager, trong Server Roles chọn cài đặt Role Hyper-V và thành công.



B4 – Restart lại máy ảo và có thể mở Hyper-V.

Hyper-V Manager					_	_			- D X
File Action View Help									
Hyper-V Manager	Virtual Machines						Action	s R	•
	Name DC-2022	State Running	CPU Usage 0%	Assigned Memory 2048 MB	Uptime 00:03:24	Status	2 Q	uick Cr ew	eate
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← ← Ż TO Z TO Hyper-V Manager DC-2022	Virtual Machines Name	State	CPU U No vi	sage Assigned Mer	nory Uptime	Status		^	Actions DC-2022
	< Checkpoints			No virtual machine sel	ected.		> •		Import Virtual Machine Hyper-V Settings Virtual Switch Manager Virtual SAN Manager Edit Dick
	Details			No item selected					Controlsc Controlsc Stop Service Remove Server Refresh
								•	View View View View View
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