Version 22.9

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## ESXi Installation and Basic Configurations

basic configuration includes:

- Hostname
- Ip addressa (for management traffic)

Which operating system will be installed on this virtual machine?

Guest Op A virt syste	erating Sy ual machine i m. How will y	stem Instal is like a physic ou install the	llation cal computer; quest operation	it needs an o ting system?	perating	
Install from:			-	2.		
	disc:					
No	drives availa	ble		$\sim$		
	disc image f	ile (iso):				
				$\sim$	Browse	

New Virtual Machine Wizard

Select a Guest Operating System

 $\times$ 

Guest operating system O Microsoft Windows

VMware ESXi 7 and later

New Virtual Machine Wizard

Linux
 VMware ESX

Other

Version

New Virtual Machine Wizard

×

#### Name the Virtual Machine What name would you like to use for this virtual machine? Virtual machine name: ESXI01 Location: C:\Users\ahmed\Downloads\VMware Lab\ESXI01 Browse... The default location can be changed at Edit > Preferences.

#### Hardware

Specify Disk Capacity How large do you want this disk to be?
The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.
Maximum disk size (GB):
Recommended size for VMware ESXi 7 and later: 142 GB
$\bigcirc$ Store virtual disk as a single file
Split virtual disk into multiple files
Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Device	Summary
IIII Memory	7.9 GB
Processors	2
💿 New CD/DVD (IDE)	Using file C:\Users\ahmed\D
📃 Network Adapter	Host-only
🚭 USB Controller	Present
Display	Auto detect

VMµare ESXi 7.	0.2 (VMKernel Release Build 17867351)	
VMware, Inc. V	Muare7,1	
2 x Intel(R) X 7.9 GiB Memory	eon(R) E-2276M CPU @ 2.80GHz	
Starting servi	ce vntoolsd	
	Welcome to the VMware ESXi 7.0.2 Installation	
	VMuses ESV: 7.0.2 installs on most sustant but only	
	systems on VMware's Compatibility Guide are supported.	
	Consult the VMware Compatibility Guide at:	
	http://www.vmware.com/resources/compatibility	
	Select the operation to perform.	
	(Esc) Cancel (Enter) Continue	
<b>F11</b> to accept the license	End User License Agreement (EULA)	
·	VMWARE END USER LICENSE AGREEMENT	
	PLEASE NOTE THAT THE TERMS OF THIS END USER LICENSE	
	AGREEMENT SHALL GOVERN YOUR USE OF THE SOFTWARE, REGARDLESS OF ANY TERMS THAT MAY APPEAR DURING THE INSTALLATION OF THE	
	SOFTWARE.	
	IMPORTANT-READ CAREFULLY: BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU (THE INDIVIDUAL OR LEGAL ENTITY)	
	AGREE TO BE BOUND BY THE TERMS OF THIS END USER LICENSE	
	THIS EULA, YOU MUST NOT DOWNLOAD, INSTALL, OR USE THE	
	SOFTWARE, AND YOU MUST DELETE OR RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30)	
	DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, THAT	
	Use the arrow keys to scroll the EULA text	
	(ESC) Do not Accept (F11) Accept and Continue	

enter to add VMware file system (VMFS) to the HD

(any existing * Contains a VMFS # Claimed by VMwan	Select a Disk <sup>.</sup> VMFS-3 will be partition 'e vSAN	to Install or Upgr automatically upg	ade raded to	VMFS-5)
Storage Device				Capacity
Local: Viluare, Viluari Renote: (none)				
(Esc) Cancel	(F1) Details	(F5) Refresh		Cont inve

Please select a keyboard layout
Swiss French Swiss German Turkish US Default US Dvorak Ukrainian United Kingdom
Use the arrow keys to scroll.
(Esc) Cancel (F9) Back (Enter) Continue

set password for **root** user

En	ter a root pa	ssword		
Root password: ********* Confirm password: ********** Passwords match.				
(Esc) Cancel	(F9) Back	(Enter) Continue		

F11 to start ESXi installation



F2 to login using root user.



#### Configure hostname and network settings

Now you can configure the **hostname** and **network** so you can connect remotely using http to manage the server.

System Customization	Configure Management Network
Configure Password Configure Lockdown Mode Configure Management Network Restart Management Network Test Management Network Network Restore Options Configure Keyboard Troubleshooting Options View System Logs View Support Information Reset System Configuration	Hostname: ESX101 IPv4 Address: 200.200.200.1 IPv6 Addresses: fe80::20c:29ff:fe9c:857a/64 To view or modify this host's management network settings in detail, press <enter>.</enter>



Now we can connect and manage both servers from browser

<ul> <li>https://200.200.200.1/ui//</li> <li>ESXI01.localdomain - VMw × 1</li> </ul>	P/host  Certificate error C Search.		ー ロ タ・ 命 ☆ ©
vmware <sup>,</sup> ESXi <sup>°,</sup>		root@200.200.200.1 ▼   Help ▼	Q Search
Navigator	ESXI01.localdomain		
Host Manage Monitor	Image: Construction of the second	CPU USED: 137 MHz MEMORY USED: 1.32 GB STORAGE USED: 1.41 GB	FREE: 5.5 GHz 2% CAPACITY: 5.6 GHz FREE: 6.58 GB 71% CAPACITY: 7.9 GB FREE: 12.34 GB CAPACITY: 13.75 GB

#### Now do the same steps for ESXi02

#### DNS Configuration for all ESXi hosts and vCenter Servers

Through DNS add reverse lookup zone then add reocrds for both ESXI servers and vencter in both forward and reverse lookup zone

	New Host Name (uses parent domain n ESXI01 Fully qualified domain name ( ESXI01.abdelwahed.me. IP address: 200.200.200.201 Create associated pointer Allow any authenticated of same owner name	ame if blank): (FQDN): r (PTR) record user to update DNS records with Add Host Canc	× h the	
<b>A</b>				
👗 DNS Manager			- 0	×
File Action View Help				
🗢 🔿 🙋 📰 🔚 🖄 🎼				
<ul> <li>DNS</li> <li>DC</li> <li>Forward Lookup Zones</li> <li>msdcs.abdelwahed.u</li> <li>abdelwahed.me</li> <li>Reverse Lookup Zones</li> <li>200.200.200.in-addr.a</li> <li>Trust Points</li> <li>Conditional Forwarders</li> <li>DC.abdelwahed.me</li> </ul>	Name (same as parent folder) (same as parent folder) 200.200.200.1 200.200.200.111 200.200.200.200 200.200.200.200 200.200.200.222	Type Start of Authority (SOA) Name Server (NS) Pointer (PTR) Pointer (PTR) Pointer (PTR) Pointer (PTR) Pointer (PTR)	Data [12], dc.abdelwahed.me., dc.abdelwahed.me. ESXI01.abdelwahed.me. vCenter01.abdelwahed.me. ESXI02.abdelwahed.me. DC.abdelwahed.me. vCenter.abdelwahed.me.	Timestam static static static static static 5/27/2021 static

## Configure ESXi host

### Add welcome message during VM boot

<b>vm</b> ware" ESXi"					Q Sear	ch
Navigator	ESXI01.localdomain - Manage					
✓ ☐ Host Manage Monitor	System Hardware Lice	ensing Packages Servic	es Security & users	Q Sea	rch	
> 🗄 Virtual Machines 📃 🚺	Autostart	Key 🔺 🗸 🗸 🗸	Name ~	Value ~	D ~	0 ~
Storage 1	Time & date	Annotations.WelcomeMess	A welcome message i			False
▶ 🔮 Networking 📃 1	Bdit option - Annotations	BufferCache Eluchinterval	Eluch at this interval (	30000 95	30000 95	False False
	New value	Welcome to Ahmed (string)	Lab	50 50 False 1079 items		
		Sa	ve Cancel	onsole User I screen of the D string to reset to	Interfac	ole User t message.

#### Assign ESXi license

Based on license you assign feature will added, trial license working for 60 days.

ø	vSphere - VM01 - Summary 🗙 🤳 ESS	XI01.Iocaldomain - VMware ES 🗙	+		0
←	→ C A Not secure   esxi01/ui/#,	/host/manage/licensing			
vm	ware esxi			root@esxi01 🚽	Help 🗸   🝳 Sea
	ESXI01.localdomain - Manage				
	System Hardware Licensing	Packages Services Se	ecurity & users		
	Assign license 🔗 Remove license	C Refresh   🏠 Actions			
🚺 🔯 🖬 📰 🔝 🚥	Evaluation Mode Key: Expiration date: Features:	00000-00000-00000-00000-00000 Wednesday, July 28, 2021, 03:42 Unlimited virtual SMP H.264 for Remote Console Conn vCenter agent for VMware host vSphere API Content Library Storage APIs vSphere VMotion X-Switch vMotion X-Switch vMotion vSphere HA vSphere Data Protection vShield Endpoint vSphere Replication vShield Zones Hot-Pluggable virtual HW	0 ∵39 +0400 ∋ctions		

#### Lockdown mode and autorestart option



<b>/m</b> ware <sup>,</sup> ESXi <sup>,,</sup>			
Navigator	ESXI01.localdomain - Manage		
▼ 📱 Host Manage	System Hardware Licensin	ng Packages Services	s Security & users
Monitor	Advanced settings	🖋 Edit settings	
> 🗗 Virtual Machines 🛛 🚺	Autostart	Enabled	No
Storage     1       Q     Networking     1	Change autostart configuration		
	Enabled	● Yes ○ No	
	Start delay	120 seconds	
	Stop delay	120 seconds	C Pofros
	Stop action	Shut down	<ul> <li>Q Sear</li> </ul>
	Wait for heartbeat	⊖Yes ●No	hutdo ~ /
		[	Save Cancel

## Add more local users to ESXi host

vn	nv	vare <sup>,</sup> Es	SXI"						root@esxi01 <del>~</del>	Hel
		ESXI01.lo	caldomain - Ma	inage						
		System	Hardware	Licer	nsing Packages	Services	Security &	users		
		Acceptar	nce level		Add user 🥒 Eo	lit user 🛛 🛔 Ren	nove user	C Refresh		
		Authentio	cation		User Name			~	Description	
at or		Users	les		root				Administrator	
Navig		Roles								
8 11		Lockdow	n mode							

\_\_\_\_\_

vm	mware" esxi"						root@esxi01 →   Help →		
	ESXI	)1.localdomain - M	anage						
	System	n Hardware	Licens	ing Packages	Services	Sec	curity & users		
	Acce	ptance level		Add role / Edit	role 🗙 Remo	ve ro	ole C Refresh		
gator	User	ficates s		Administrator			Full access rights		
Vari	Role	5		Anonymous			Not logged-in user (cannot be granted)		
	Lock	down mode		No access			Used for restricting granted access		
				No cryptography admir	nistrator		Full access without Cryptographic operations privileges		
				Read-only			See details of objects, but not make changes		
				View			Visibility access (cannot be granted)		

#### Integrate vSphere with Active Directory



Add Identity Sourc	е					× Smar		
Identity Source Type	Active Dir	ectory (Wi	ndows I	ntegrate	d Ai 🗸			
Domain name	Active Dir Active Dir Open LDA Use ma	Active Directory (Windows Integrated Auth Active Directory over LDAP Open LDAP Use machine account Use Service Principal Name (SPN)			d Auth	entication) in		
Add Identity So	ource					$\times$		
Identity Source Type	Activ	e Directory	(Windo	ws Integr	ated A	~		
Domain name i	abde	lwahed.me						
	<ul> <li>Us</li> <li>Us</li> </ul>	e machine se Service P	account rincipal	Name (SF	PN)			
Administration	Identity Sourc	Active	Director	y Doma	Logir	Messa Sm	nart Card	d Authenticat
Roles ADE	DIDENTITY SOURCE	EDIT	SET AS	DEFAULT	REM	OVE		
Licensing     Licenses	Name 🔻	Server URL	Ŧ	Туре	Ŧ	Domain	Ŧ	Alias
✓ Solutions	vsphere.local					System Domain		
Client Plug-Ins	VCENTER01					Local OS (Defaul	t)	
Customer Experience     Certificates	abdelwahed.me			Active Dir (Windows ated Auth	ectory Integr enticat	External Domain		
Certificate Manageme				ion)				

#### login with domain users and permissions

User name::	it01@abdelwahed.me	VMware®vCenter® Single Sign-On
Password:	······	
	Use Windows session authentication	

now you can login, but you don't have premissions to access vCenter resouces.

① Unable to login because you do not have permission on any vCenter Server systems connected to this client. Back to login screen

#### Now give <u>it01@abdelwahed.me</u> permission (RBAC) Role Based Access Control

vm vSphere Client	Menu 🗸 🛛 🔍 Search	C @~	Administrator@VSPHERE.LOCA
Administration	Polici Identity Sourc Ac	tive Directory Doma Logi	n Messa Smart Card Auth
<ul> <li>Access Control</li> <li>Roles</li> <li>Global Permissions</li> <li>Licensing</li> <li>Licenses</li> </ul>	PASSWORD POLICY LOCKOUT POL A set of rules and restrictions on the fo Password Policy	ICY TOKEN POLICY	I-On user passwords
- Solutions	Description d Permission Global Permissio	n Root X	
Use	rabdelwahed.me	~	
Role	Administrator     Propagate to children	~	
Roles +	/ X		
Global Permissions	er/Group ↑ T	Role	Defined In
- Licensing	ABDELWAHED.ME\IT01	Administrator	Global Permission
Licenses	VSPHERE.LOCAL\Administrator	Administrator	Global Permission
Client Plug-Ins	VSPHERE.LOCAL\Administrators	Administrator	Global Permission
• Deployment	VSPHERE.LOCAL\AutoUpdate	AutoUpdateUser	Global Permission
Customer Experience	VSPHERE.LOCAL\vpxd-2baf9d20-bf6a-11eb	Administrator	Global Permission
Now you have full access as	IT01		
vm vSphere Client Menu	✓ Q Search VCenter01 abdelwabed me Acceleration	C ? ~ IT01@abdelwahed.me	
vCenter01.abdelwahed.me     vServer     vCenter01.abdelwahed.me     vCenter01     esxi01.abdelwahed     esxi02.abdelwahed.     > ● Resource Pool_01     > 器 Abdelwahed_vApp     ⊕ Web_Server	Worker Of abuelwaned.me Acting Monitor Configure Permissions Virtual Machines: 1 Hosts: 2	Datacenters Hosts & Clusters CPU Used: 430 MHz C Memory Used: 2.71 GB Storage Used: 103.84 GB	VMS Dat Free: 10.8 GHz apacity: 11.23 GHz Free: 13.09 GB Capacity: 15.8 GB Free: 1.2 TB Capacity: 1.3 TB

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Connect SSH to ESXi host



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Default command is esxcli

[root@ESXI01:~] esxcli	
Usage: esxcli [options]	{namespace}+ {cmd} [cmd options]
Options:	
formatter=FORMATTER	
	Override the formatter to use for a given command.
	Available formatter: xml, csv, keyvalue
debug	Enable debug or internal use options
version	Display version information for the script
-?,help	Display usage information for the script
Available Namespaces:	
device	Device manager commands
esxcli	Commands that operate on the esxcli system itself
	allowing users to get additional information.
fcoe	VMware FCOE commands.
graphics	VMware graphics commands.
hardware	VMKernel hardware properties and commands for
	configuring hardware.
iscsi	VMware iSCSI commands.
network	Operations that pertain to the maintenance of
	networking on an ESX host. This includes a wide
	variety of commands to manipulate virtual networking
	components (vswitch, portgroup, etc) as well as local
	host IP, DNS and general host networking settings.
nvme	VMware NVMe driver esxcli extensions
rdma	Operations that pertain to remote direct memory access
	(RDMA) protocol stack on an ESX host.
sched	VMKernel system properties and commands for
	configuring scheduling related functionality.
software	Manage the ESXi software image and packages
storage	VMware storage commands.
system	VMKernel system properties and commands for
	configuring properties of the kernel core system and
	related system services.
VM	A small number of operations that allow a user to
	Control Virtual Machine operations.
vsan	VMware vSAN commands

#### Host Profile

You can apply settings to all ESXi servers through host profile. For example, you want to configure ssh for all ESXi servers you can do this through host profile.

First you must take profile reference from one ESXi server

vm vSphere Client	Menu 🗸	Q Search		C	?~	IT01@abdelwahed	.me
Policies and Profiles <sup>™</sup> VM Customization Specific <sup>™</sup> VM Storage Policies <sup>™</sup> Host Profiles <sup>™</sup> Storage Policy Components	<ul> <li>i Home</li> <li>◆ Shortcuts</li> <li>i Hosts and</li> <li>i VMs and T</li> <li>i Storage</li> <li>i Networkin</li> <li>ii Content Lii</li> <li>ii Global Investion</li> <li>iii Policies and</li> </ul>	Clusters Templates g braries entory Lists d Profiles	HOST PROFILE       V     Compliant Hosts	✓ Not Con	ipliant Hosts	<ul> <li>✓ Unknown State H</li> </ul>	osts
vm vSphere Client Mer	vRealize O	perations Search		C 0	)~   іто	)1@abdelwahed.me	~ ©
Policies and Profiles VM Customization Specific VM Storage Policies Host Profiles Storage Policy Components Extract Host Profiles	Host Profiles TRACT HOST PROFI St Profile Name↑	LE IMPORT HOS V C	T PROFILE   Compliant Hosts ~	Not Compliant	Hosts v	Unknown State Hosts	✓ Last Edited
1 Select host 2 Name and Descri	iption	Select a host vCenter Serve	to extract the profi r:vCenter01.abdelv	le settings vahed.me			
Extract Host P	rofile	Name Name an	esxi01.abdelwahed.me esxi02.abdelwahed.me nd Descriptior	e 1			2
1 Select host 2 Name and Descr	ription	Enter the nan Name	ne and description f	or the selecte	ed profile :	settings	
		Description					

Now you can access the host profile and edit it

vm vSphere Client	Menu 🗸 🛛 📿 Search	C ()~	IT01@abdelwahed.me 🗸 🙄
Abdelwahed Host Profile Hosts Clusters O	Abdelwahed Host Profile Summary Monitor Configure H Name: Abdelwahed Description: Created On: Jun 3, 2021 1 Last Modified: Jun 3, 2021 1 Version: 6.7.0	ACTIONS V Hosts I Host Profile :38 AM :38 AM	<ul> <li>NOT COMPLIANT</li> <li>O</li> <li>UNKNOWN</li> <li>O</li> <li>COMPLIANT</li> <li>O</li> <li>TOTAL</li> <li>O</li> </ul>

Now to configure this profile as a standard, uncheck all settings to avoid the conflict then add your customized settings.

Abdelwahed Host Profile	0	🕞 Abdelwahed Host Profile 🛛 Actions ~
Clusters	0	Summary Monitor Configure Hosts
		EDIT HOST PROFILE COPY SETTINGS FROM HOST
		FAVORITES ALL
		Q Filter
		<ul> <li>&gt; Advanced Configuration </li> <li>&gt; General System Settings</li> </ul>
		> Networking configuration
		> Other

In this example I will use host profile to configure ESXi server's password for root user.



## esxi02.abdelwahed.me - Attach Host Profile



#### Now one host attached to that profile, you can also attach cluster

vm vSphere Client	New Virtual Machine	◯ ⑦ ∽ ITO1@abdelwahed.me ∽ 🕃
	New Resource Pool	
✓	🔡 New vApp	onfigure Permissions VMs Datastores Networks
∨ 📑 vServer	Maintenance Mode	VMware ESXi 6 7 0 14320388 CPU Free: 5.5 GHz
Cluster01	Connection	VMware Virtual Platform     Used: 115 MHz     Capacity: 5.62 GHz
esxi02.abdelwah	e Power	e: Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz Free: 6.53 GB
> 🔗 Resource Pool_0	Certificates	sors: 2 Used: 1.36 GB Capacity: 7.9 GB
> 器 Abdelwahed_vA	r Storage	
T wen_server	👲 Add Networking	Used: 95.43 GB Capacity: 991.5 GB
	Host Profiles	Attach Host Profile
	Reconfigure for vSphere HA	Change Host Profile
Recent Tasks Alarms		🙊 Remediate
Task Name v Target	Settings	me↓ ✓ Completion Ti ✓ Server ✓
Attach host esxI02.abc	Move To	2021, 06/03/2021, Check Host Profile Compliance AM 1:56:45 AM vCenter01.abdel
Update host	Tags & Custom Attributes	Reset Host Customizations 2021, 06/03/2021,

vm vSphere Client С Abdelwahed Host Profile Abdelwahed Host Profile ACTIONS -Hosts 1 Clusters 0 Summary Monitor Configure Hosts Clusters T Filter ✓ Cluster ✓ State ✓ Status ~ Co Name 🛧 Cluster01 esxI02.abdelwahed.me Connected ✓ Normal

## Add and manage datastore

Both servers book around 8GB for OS and the rest of HD booked for datastore to save any kind of data including VMs data and OS ISO file .....

🕝 Login	×	ESXI01.localdomain - VMware EX ESXI02.localdomain - VMware EX								
$\leftarrow \   \rightarrow \   {\tt G}$		) 🔓 🕶 https://esxi02.abdelwahed.me/ui/#/host/storage/datastores								
vmware <sup>®</sup> ESXi <sup>®</sup>						root@esxi	02.abdelwahed.me	-   Help -   🤇	<b>Q</b> Search	
° <sup>™</sup> Navigator		ESXI02.localdomain - Storage								
▼ Host Manage Monitor		Datastores         Adapters         Devices         Persistent M           Image: State of the sta	emory a VM 🦳 Datastore	e browser   🥃 Re	fresh   🏠 Action	s		Q Se	arch	
🕨 🛱 Virtual Machines	0	Name ~	Drive Type 🛛 🗸	Capacity ~	Provisioned ~	Free ~	Туре 🗸	Thin provisio $\checkmark$	Access	~
🗉 🧮 Storage	1	datastore1	SSD	13.75 GB	1.41 GB	12.34 GB	VMFS6	Supported	Single	0
• 🧟 Networking	1								1	items

#### Create new local datastore (VMFS) using ESXi

First you must add new hard disk to that server and restart the ESXi server or **rescan the storage without restart** using Vcenter by right click on ESXi server >> storage >> rescan then do the following: Virtual Machine Settings

Hardware Options		
Device Memory	Summary 7.9 GB	Disk file ESXI02-0.vmdk
Hard Disk (SCSI)	2 142 GB	
New Hard Disk (SCSI)	142 GB	Capacity Current size: 17.8 MB
CD/DVD (IDE)	Using file D:\vmware\VMware Host-only Present	System free: 200.5 GB Maximum size: 142 GB
Display	Auto detect	

1 New datastore - DBStore						
<ul> <li>1 Select creation type</li> <li>2 Select device</li> <li>3 Select partitioning options</li> <li>4 Ready to complete</li> </ul>	Select device Select a device on which to create a new VMFS partition Name DBStore The following devices are unclaimed and can be used to be	reate	a new VMFS datas	tore		
	Name	~	Type ~ Disk (SSD)	Capacity 142 GB	Free space	• •
<b>vm</b> ware						1 items
			Back	Next	Finish	Cancel

New datastore - DBStore	
<ul> <li>1 Select creation type</li> <li>2 Select device</li> <li>3 Select partitioning options</li> <li>4 Ready to complete</li> </ul>	Select partitioning options         Select how you would like to partition the device         Use full disk       VMFS 6
<b>vm</b> ware <sup>.</sup>	Before, select a partition Free space (142 GB)
	Back Next Finish Cancel
New datastore - DBStore 1 Select creation type 2 Select device 3 Select partitioning options 4 Ready to complete	Ready to complete Summary
	Warning         The entire contents of this disk are about to be erased and replaced with the specified configuration, are you sure?
	Yes No
<b>vm</b> ware <sup>®</sup>	

\_\_\_\_\_

🕑 Login	×	Log in - VMware ESXi × ESXI02.loca	doma	iin - VMware E×		+					-	đ	
$\leftarrow \   \rightarrow \   {\bf G}$		C & https://esxi02.abdelwahed.me/ui/#/host/storage/datastores									C	) 👱	
<b>vm</b> ware <sup>,</sup> ESXi <sup>**</sup>								root@esxi	02.abdelwahed.me	▼   Help ▼   (	Q Search		
VMFS datastore DBStore s	uccesf	ully created - dismissrain - Storage											>
👻 🗐 Host		Datastores Adapters Devices Persis	tent M	lemory									
Manage										(***			_
Monitor		Mew datastore 🔄 Increase capacity   🔐 Re	gister	a VM 🛛 🟹 Datasto	ore	browser   C Re	tresh   🏠 Actions	5		Q Se	arch		2
> 🔂 Virtual Machines	0	Name	$\sim$	Drive Type	~	Capacity ~	Provisioned ~	Free v	Туре 🗸	Thin provisio V	Access	~	
📃 Storage	2	datastore1		SSD		13.75 GB	1.41 GB	12.34 GB	VMFS6	Supported	Single		^
> 🧕 Networking	1	DBStore		SSD		141.75 GB	1.41 GB	140.34 GB	VMFS6	Supported	Single		~
												2 items	4

\_\_\_\_\_

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#### Extend exiting datastore

In this example we add 200GB HD to use it in this process, you have also o restart the server. We go to extend datastore1



<ul> <li>1 Select creation typ</li> </ul>	,e	Ready to co	omplete							
<ul> <li>2 Select device</li> </ul>		Summary								
<ul> <li>3 Select partitioning</li> <li>4 Roady to complete</li> </ul>	options									
+ Ready to complete		Datastore		datastore1						
		Disk		Local VMware,	Disk (mpx.vmh	ba0:C0:T2:L0	)			
		Partitioning		Use full disk						
		VMFS version		6						
				VMFS	(200 GB)					
VIIIVVC					[	Back	Next	Fini	sh Ci	ancel
crease datastore capac	vity - datastore1 ·	- datastore1								
Select creation type	Re	ady to com	plete							
Select device Select partitioning optic Ready to complete	ons Sun	nmary								
Select device Select partitioning optic Ready to complete	ons Sun	nmary	-	-	-	-				
Select device Select partitioning opti Ready to complete	A Warning	The entire specified of	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the				
Select device Select partitioning opti Ready to complete	A Warning	The entire specified	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the	No			
Select device Select partitioning optic Ready to complete	Ons Sun Warning	The entire specified	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the	No			
Select device Select partitioning optin Ready to complete	ons Sun A Warning	The entire specified	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the	No	Fini	sh C	ancel
Select device Select partitioning optin Ready to complete	ons Sun A Warning	The entire specified	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the rs Back root@ess	No Next	ed me +   He	sh C	Cancel
Select device Select partitioning optin Ready to complete	ons Sun Marning	The entire specified of	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the es Back root@esa	No ) Next	Fini edme • 1 He	sh C sp -   Q Se	ancel Activ
Select device Select partitioning optin Ready to complete	Sun Marning	The entire specified of Storage ers Devices P	e contents of this disk configuration, are you	are about to be e sure?	rased and repla	aced with the es Back root@ess	No Next	Fini edme +   He	sh C	Cancel
Select device Select partitioning optin Ready to complete	ESXI02.localdomain - Datastores Adapte	The entire specified of Storage ers Devices P	e contents of this disk configuration, are you <sup>2</sup> ersistent Memory Register a VM  Q Datasto	are about to be e sure?	rased and repla	aced with the	No Next	Fini edme • 1 He	sh C sp - I Q Se Q Search	Sance! Activ
Select device Select partitioning optic Ready to complete	Sun Warning	The entire specified of Storage ers Devices P I Increase capacity   c	e contents of this disk configuration, are you Persistent Memory Register a VM @ Datasto v Drive Type v	are about to be e sure?	rased and repla	Back root@ess	No Next	edme + 1 He	sh C Q Search Q Search ovisio v Acco	Cancel Activ
Select device Select partitioning optin Ready to complete	Sum Marning A Warning A Wa	The entire specified of Storage ars Devices P Increase capacity	e contents of this disk configuration, are you Persistent Memory Prive Type ↓ SSD SSD	are about to be e sure?	resh   Actions Provisioned ~ 1.41 GB	Back Free ~ 212.09 GB 140.34 GB	No Next 402 abdetwahe VMFS6 VMFS6	edme + 1 He Suppor	sh C sh Sh C sh Sh C sh Sh	Cancel Activ arch
Select device Select partitioning optin Ready to complete	Sun Marning	The entire specified of Storage ers Devices P Increase capacity   6	e contents of this disk configuration, are you Persistent Memory Register a VM Register a SSD SSD	are about to be e sure?	resh   Actions Provisioned ~ 1.41 GB 1.41 GB	Back Free v 212.09 GB 140.34 GB	No Next xi02 abdelwahe vMFS6 vMFS6	Fini ed.me + 1 He Suppor Suppor	sh C cy search cy se	Cancel and and a set of the set o
Select device Select partitioning optic Ready to complete	Sun Marning	The entire specified of Storage ers Devices P Increase capacity   g store1	e contents of this disk configuration, are you Persistent Memory Register a VM @ Datasto V Drive Type & SSD SSD	are about to be e sure?	rased and repla	Back Free 212.09 GB	No Next x02 abdelwahe vMFS6	ed me • 1 He Suppor Suppor	sh C sp + I Q Se Q Search ovisio × Acc ted Sing ted Sing	Cancel Activities arch cess gle 21 FREE 2

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#### Add ISO file to datastore

#### First browse that store

<b>vm</b> ware" ESXi"			root@esxi02.abdelwahed.	me 🗸   Help 🗸   🝳 Search
Navigator	DBStore			
	Register a VM Contractor brows DBStore Type: Location: UUID: Hosts: Virtual Machines:	Ser         Improvement         Control         Refresh         Actions           VMFS6         VMFS6         VMFS/2030d29-ec31a501-0984-000c2959bas         6293bd29-ec31a501-0984-000c2959bas         1           0	STI US	2RAGE FREE: 140.34 GB 1% ED: 1.41 GB CAPACITY: 141.75 GB
> Q Networking	▼ VMFS details			
	Version	6.82		
	Local	Yes		
	Block size	1 MB		
	UUID	6293bd29-ec31a501-0984-000c2959ba95		
	Extent 0	mpx.vmhba0:C0:T1:L0, partition 1		
C Datastore browser	🙀 Delete 🔒 Move 👔 Co	py 👛 Create directory 🕴 🤁 Refresh		
datastore1	▲ 🚰 .sdd.sf	^		
	Mew directory			
	Directory name	OS Source		
	This directory will be cre	ated in [DBStore]/		
			Create directory Cancel	

\_\_\_\_\_

Then upload the iso file inside **OS Source** directory

C Datastore browser		
🛉 Upload 📑 Download	🛃 Delete 🕞 Move 👔 Copy 🎦 Create directory 🛛 🥑 Refresh	1 file(s) 1%
datastore1	▲ 🔄 .sdd.sf 🔹 🔷 🎯 en-us_windows_ser ▲	
📑 DBStore	er OS Source	
词 Datastore browser		
👕 Upload 🛛 📑 Download	🔄 🙀 Delete 📑 Move 📑 Copy 🎽 Create directory   🧲 Refresh	1 file(s) 100%
datastore1	^ isdd.sf ^ i o en-us_windows_ser ^	
I DBStore	🧰 OS Source	

# Create and configure VM through ESXiO2 host VM Creation

🔁 New virtual machine - VM1-H2 (ES)	(i 7.0 U2 virtual machine)			· ·	Host memory		
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>2 Select atoms</li> </ul>	Select a name and guest O Specify a unique name and OS	S		No i	items to displ		
4 Customize settings 5 Ready to complete	Name VM1-H2 Virtual machine names can contain up to 80 of Identifying the guest operating system here a installation	characters and they must be unique within each ESXi insta llows the wizard to provide the appropriate defaults for the	ance. operating system				
	Compatibility	lity ESXi 7.0 U2 virtual machine ~					
	Guest OS family	Windows	ty	×			
	Guest OS version	Microsoft Windows Server 2022 (64-bit)	Makes Hardware virtualization	n, IOMMU, E	EFI, and		
<b>vm</b> ware <sup>®</sup>	Enable Windows Virtualization Based Security () Secure Boot available to th also enable Virtualization B guest OS of this Virtualization B guest OS of t						
		Deels Need	1				

🔁 New virtual machine - VM1-H2 (ESXi	7.0 U2 virtual machine)										
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>3 Select storage</li> <li>4 Customize settings</li> <li>5 Ready to complete</li> <li>Select a datastore for the virtual machine's configuration files and all of its' virtual disks.</li> </ul>											
	Name ~	Capacity 🗸	Free v	Туре ~	Thin pro 🗸	Access	~				
	datastore1	213.5 GB	212.09 GB	VMFS6	Supported	Single	^				
	DBStore	141.75 GB	140.34 GB	VMFS6	Supported	Single	~				
						2 iten	15				
<b>vm</b> ware <sup>®</sup>						Act	tivate \				
				Back	Next	inish C	Cancel				

#### Select CPU Options

🍄 New virtual machine - VM1-H2 (ESXi 7.0 U2 virtual machine)								
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>3 Select storage</li> </ul>	Customize settings Configure the virtual machine hardware and virtual machine additional options							
<ul> <li>4 Customize settings</li> <li>5 Ready to complete</li> </ul>	Virtual Hardware VM Options							
	1 V Sockets: 2							
	CPU Hot Plug	CPU Hot Add						
	Reservation	None ~ MHz ~						
<b>vm</b> ware <sup>®</sup>	Limit	Unlimited ~ MHz ~ Activa	ate					
	Shares	Normal V 1000 V Go to S Back Next Finish Canc	ettin el					

\_\_\_\_\_

#### Select memoy options

1 New virtual machine - VM1-H2 (ESXi	7.0 U2 virtual machine)		
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>3 Select storage</li> </ul>	Customize settings Configure the virtual machine hardwa	are and virtual machine additional options	
✓ 4 Customize settings			^
5 Ready to complete	🔻 🌉 Memory		
	RAM	2 GB ~	
	Reservation	None ~ MB ~	
		Reserve all guest memory (All locked)	
	Limit	Unlimited ~ MB ~	
	Shares	Normal ~ 1000 ~	
vmware	Memory Hot Plug	C Enabled	Activate \
		Back Next Finish	Cancel

HD options

🍄 New virtual machine - VM1-H2 (ESXi 7.0 U2 virtual machine)						
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>3 Select storage</li> </ul>	Customize settings Configure the virtual machine hardware and virtual machine additional options					
✓ 4 Customize settings			^			
5 Ready to complete	▼ 🛄 Hard disk 1	40  GB ~				
	Maximum Size	140.34 GB				
	[DBStore] VM1-H2/ Browse	. 1				
	Disk Provisioning	<ul> <li>Thin provisioned</li> <li>Thick provisioned, lazily zeroed</li> <li>Thick provisioned, eagerly zeroed</li> </ul>	H			
<b>vm</b> ware	Shares	Normal V 1000 V	ivato '			
	Limit - IOPs	Unlimited ~ Go to	o Settina			
		Back Next Finish C	ancel			

\_\_\_\_\_

NIC and DVD options (select iso file from datastore)

🔁 New virtual machine - VM1-H2 (ESXi	7.0 U2 virtual machine)	
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>3 Select storage</li> </ul>	Channy	None         i         Disk sharing is only possible with eagerly zeroed, thick provisioned disks.
✓ 4 Customize settings 5 Ready to complete	SCSI Controller 0	LSI Logic SAS 🗸
	SATA Controller 0	0
	WSB controller 1	USB 3.1 ~ &
	Network Adapter 1	VM Network   Connect
	▶ ⊚ CD/DVD Drive 1	Datastore ISO file
<b>vm</b> ware	▶ 💭 Video Card	Default settings
		Go to Settir Back Next Finish Cancel

🔁 New virtual machine - VM1-H2 (	ESXi 7.0 U2 virtual machine)					
<ul> <li>1 Select creation type</li> <li>2 Select a name and guest OS</li> <li>3 Select storage</li> </ul>	Ready to complete Review your settings selection	before finishing the wizar	d			
<ul> <li>4 Customize settings</li> <li>5 Ready to complete</li> </ul>	Name	VM1-H2				
	Datastore	DBStore				
	Guest OS name	Microsoft W	ndows Server 2022 (64	1-bit)		
	Compatibility	ESXi 7.0 U2	virtual machine			
	vCPUs	2				
	Memory	2 GB				
Network adapters		1				
	Network adapter 1 network	VM Network				
	Network adapter 1 type	E1000e				
vmware	IDE controller 0	IDE 0				Activate
	IDE antrollar 4					Go to Settin
			B	ack Next	Finish	Cancel
				root@esxi02.abdelwahed.me		Search
Navigator	2.localdomain - Virtual Machines					
Manage	eate / Register VM   📝 Console   🕨 Power on	Power off 🔢 Suspend	Refresh 🛛 🏠 Actions		Q Sear	ch
Monitor Vi	irtual machine 🗸 🗸	Status v Used space	✓ Guest OS	<ul> <li>Host name</li> </ul>	✓ Host CPU ✓	Host memory 🗸 🗸
Virtual Machines	D VM1-H2	Normal 0 B	Microsoft Windows Serve.	Unknown	0 MHz	0 MB
Tel:     Storage     2     Quick       Tel:     DBStore	k filters V					1 items 🦼
Monitor More storage 9 😥 Networking	VM1-H2 Guest OS Compatibility	Microsoft Windows Server 2022	(64-bit) VBS			CPU 🔲 0 MHz



#### VM files saved inside selected datastore



## Download and install VMRC

<b>vm</b> ware <sup>®</sup> ESXi <sup>®</sup>				root@esxi
Navigator	🔂 VM1-H2			
Host Manage Monitor Virtual Machines Virtual Machines VM1-H2 Monitor More VMS Storage Storage DBStore Hosion	Console       Monitor       Pov         Open browser console         Open console in new window         Open console in new tab         Launch remote console         Download VMRC	Ver on Power off VM1-H2 Guest OS Compatibility VMvare Tools CPUS Memory	<ul> <li>Suspend Reset   Celt   Celt</li> <li>Microsoft Windows Server 2022 (64-bit) VBS ESXi 7.0 U2 virtual machine</li> <li>No</li> <li>2</li> <li>2 GB</li> </ul>	Refresh   🏠 Actions
	Products and Accounts Knowledge	Communities Su	nnort Learning	$\cap \oplus \square$

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Release Date	2021-06-22				
Туре	Drivers & Tools				
Product Downloads					0
File	Information				
VMware Remote Conso File size: 84.33 MB File type: zip Read More	e 12.0.1 for Windows			DOWNLOAD NC	w
VMware Remote Conso	e 12.0.1 for Linux			DOWNLOAD NO	w
File size: 65.20 MB File type: bundle Read More			Activate Go to Sett	e Windows ings to activate V	Vindows.
	🛃 VMware Remote Console Setup	_	×		
	Installing VMware Remote Console		┦		
	Please wait while the Setup Wizard installs VMware Remote Console.				
	Status: Updating component registration				



You can join that server to domain

$\Theta$	Server Manager • Local Server		• 🕝   🚩 Manage T	ools View He
	System Properties X			
Dashbo	Computer Name/Domain Changes X			TASKS 💌
Local Serv	You can change the name and the membership of this computer. Changes might affect access to network resources.	ACNS46 P	Last installed updates Windows Update Last checked for updates	Never Download updates Never
	Computer name: VM1-H2 Full computer name: VM1-H2		Microsoft Defender Antivirus Feedback & Diagnostics IF Enbanced Security Configuration	Real-Time Protectic Settings On
	Mor Computer Name/Dor Domain:	main Changes X	Time zone Product ID	(UTC-08:00) Pacific Not activated
	Workgroup: WORKGROUP	o the abdelwahed.me domain.	Processors Installed memory (RAM) Total disk space	Intel(R) Xeon(R) E-2 2 GB 39.37 GB
	OK Cancel Administrator: C:\Windows\system32\cmd.exe		1	> TACKC •

#### Install VM tools



If VMtools not appears at this pc area. Edit the CD/DVD VM settings as shown below

^
8
8
8
8
8
~
Cancel

DVD Drive (D:) VMwa	Music	Pictures
💣 Network	Videos	
~	Devices and drives (2)	
	Local Disk (C:)	DVD Drive (D:) VMware Tools 0 bytes free of 140 MB
	28.5 GB free of 39.3 GB	CDFS
		VMware Product Installation
		Preparing 'VMware Tools' for installation
		(20)

#### Now VMtools looks installed



#### Edit VM settings

<b>vm</b> ware <sup>®</sup> ESXi <sup>®</sup>		🔂 VM1-H2	root@esxi0
📲 Navigator	🖥 VM1-H2	👘 Power	>
✓ ☐ Host Manage Monitor	Console 🛃 Monitor	<ul> <li>Guest OS</li> <li>Snapshots</li> <li>Console</li> </ul>	) juspend S Restart   / Edit   C Refresh   Actions
✓      ✓		🙀 Autostart	xi 7.0 U2 virtual machine
Monitor More VMs		Export	SB 11-H2.abdelwahed.me
▼ I Storage	2 Variations 🗈 🕐 🖷	Export With Images	
Monitor		Permissions	
More storage	1	i Edit notes i Rename	

From ESXI01 server you can configure some setting like autostart not from vCenter

← → C ▲ Not secure   esxi01/ui/#/host/vms						
vmware" esxi"			root@esxi01 -	-   Help <del>-</del>	I Q Search -	
E Navigator	🔂 ESXI01.localdomain - Virtual Mach	ines				
✓ ☐ Host Manage Monitor	🚰 Create / Register VM \mid 👹 Col	nsole   🕨 Power on 🗮	Power off 📲 Suspend	C Refres	h Actions	
📲 Virtual Machines 🗾 1	Virtual machine	✓ St ✓ Used space ✓	Guest OS 🗸 Host	name	Power 🕨	
E Storage	🗹 🗄 VM01	✓ 42.08 GB	Microsoft Wind Unkn	nown	Guest OS	
> 🧕 Networking 1	Quick filters	~		ú,	Console	
	a.	VM01	a Enable	6	Autostart	
	North	Guest OS N	Start earlier	6	UI Configure auto start options	
	Execution     Execution	VMware Tools	Configure		Export	

As shown up, managing VMs through ESXI only has limited options so we move on Vcenter to get more managing options like migrate and clone HA options.
# Deploy and configure vCenter

# vCenter Deploy

Insert VCA iso file in DC and run the installer

C > DVD Drive (D:) VMware VCS	GA → vcsa-ui-installer → v	win32 >			
Name	Date mod	lified	Туре	Size	
Files Currently on the Disc (20)					
Iocales	4/21/2021	I 12:54 A	File folder		
resources	4/21/2021	I 12:54 A	File folder		
swiftshader	4/21/2021	I 12:54 A	File folder		
chrome_100_percent.pak	12/29/202	20 2:12 PM	PAK File	177 KB	
chrome_200_percent.pak	12/29/202	20 2:12 PM	PAK File	314 KB	
d3dcompiler_47.dll	12/29/202	20 2:12 PM	Application extens	3,628 KB	
ffmpeg.dll	12/29/202	20 2:12 PM	Application extens	2,565 KB	
📄 icudtl.dat	12/29/202	20 2:12 PM	DAT File	10,272 KB	
🕝 installer	12/29/202	20 2:12 PM	Application	104,283 KB	
🗟 libFGLdll	12/29/202	20 2:12 PM	Application extens	366 KB	
vCenter Server Installer				-	
vmw vCenter Server 7.0 Installer				) En	glish
		VV			
Install	Upgrade	М	igrate	Restore	
Instali a new vCenter Server	Upgrade an existing vCenter Server Appliance or Upgrade and Converge an existing vCenter Server	Migrate f Windows or Migrat- an exis vCenter	rom an existing p vCenter Server a and Converge ting Windows Server with an	testore from a previous vCenter Server Backup	
Center Server Installer iller Install - Stage 1: Deploy vCenter	r Server				8
1 Introduction	Introduction				
2 End user license agreement	The External Platform Se     deprecated	rvices Controlle	er deployment has been	Learn more	
3 vCenter Server deployment target	This installer allows you to in	istall a vCentei	Server 7.0.		
4 Set up vCenter Server VM	Stage 1			Stage 2	
5 Select deployment size	/				
6 Select datastore		1			
7 Configure network settings	B				
8 Ready to complete stage 1	Deploy vCenter	r Server	Set up	vCenter Server	
	Installing the vCenter Server	is a two stage	process. The first stage in	volves deploying a new	
		o trio stuge		Activa	ite \
				CANCEL NE	хт





\_\_\_\_\_

Installer						~		
vmw Install - Stage 1: Deploy vCenter S	lerver							
1 Introduction	Set up vCenter Serv	er VM						
2 End user license agreement	Specify the VM settings for the	vCenter S	ierver to be deplo	yed.				
3 vCenter Server deployment target	VM name	Abdelwał	ned vCenter		0			
4 Set up vCenter Server VM	Set root password				0			
	Confirm root password							
6 Select datastore								
7 Configure network settings								
8 Ready to complete stage 1								
				_	Activ	ate Wind		
				CANCEL	BACK	T		
nter Server Installer								
Install - Stage 1: Deploy vCent	er Server							
	Coloct deals							
1 Introduction	Select the deploy	yme	I IL SIZE	nter Server				
2 End user license agreement								
2 . Carta Cara da la matterest	For more informat	ion on c	leplovment si	izes, refer to	the vSphere	7.0 docur	mentation	
3 VCenter Server deployment target								
4 Set up vCenter Server VM	Deployment size		Tiny				~	
5 Select deployment size	Storage size		Default				~ (i)	
	Resources required	d for dif	ferent deplo	yment sizes				
7 Configure network settings	Deployment Size	vCPUs	Memory (GB)	Storage (GB)	Hosts (up to)	VMs (up t	0)	
8 Ready to complete stage 1	Tiny	2	12	463	10	100		
	Small	4	19	528	100	1000		
	Medium	8	28	748	400	4000		٨
					64		PACK	G
					CA	L	BACK	
Server Installer							-	l
nstall - Stage 1: Deploy vCenter S	Server							
ntroduction	Select datasto	re						
End user license agreement	Select the storage loca	ation fo	r this vCenter	Server				
and door noon to agree ment	Install on an existin	a datas	tore accessib	le from the t	arget bost			
Center Server deployment target		g datas	tore accessio	ie nom tie t	argernost			
	Show only comp	atible d	latastores					
Set up vCenter Server VM								
set up vCenter Server VM						ned T	Thin Provisioning	Т
set up vCenter Server VM	Name Type	e T	Capacity	Free	' Provisio			
Set up vCenter Server VM Select deployment size	Name Type datastore1 VM	e ⊤ FS-6	Capacity	Free 12.34 GB	1.41 GB		Supported	
Set up vCenter Server VM Select deployment size select datastore	Name T Type datastore1 VM	e ⊤ FS-6	Capacity	T Free 12.34 GB	1.41 GB		Supported	item
Set up vCenter Server VM select deployment size select datastore Sonfigure network settings teady to complete stage 1	Name T Type datastore1 VMI	FS-6	Capacity 13.75 GB	T Free	1.41 GB		Supported 1	item
Select deployment size Select deployment size Select datastore Configure network settings Ready to complete stage 1	Name T Typ datastore1 VMI	e T FS-6 : Mode (	Capacity 13.75 GB	7 Free 12.34 GB	1.41 GB		Supported	item
Set up vCenter Server VM Select deployment size Select datastore Configure network settings Ready to complete stage 1	Name T Typ datastore1 VMI	e T FS-6 : Mode (	Capacity 1 13.75 GB	T Free 12.34 GB	1.41 GB		Supported	item



	Construction Instite Invite Install - Stage & Deploy sConter Server			
	Install - Stage 1: Deploy vCe	nter Server	25 CADAGA	
Install - St	age 1: Deploy vCenter Server	Reading of other Senser Read in Visionic and Connegation Science Sense and Annual Sense and Annual Sense Science Senser	Balanter fors a personal of Celan Balanter fors a personal of Celan Barren Balante	
Installed vm	ware-certificate-server-7.0.2.0000	10-8702003.x86_64.rpm	CANCEL	91% CLOSE
Install - Sta	ge 1: Deploy vCenter Server			92%
Installed VMw	vare-Postgres-12.5.0-17385562.x86	}_64.rpm	CANCEL	CLOSE
nstall - Stag ฏ You have si	ge 1: Deploy vCenter Server	Server		
To proceed with s	itage 2 of the deployment process, vCenter n continue with the vCenter Server setup a	r Server setup, click Continue. t any time by logging in to the vCenter	Server Management Interface https://200.200.200	0.222:5480/
		$\bigcirc$		

Loading stage 2...

Cotup Winerd	Introduction		
Setup wizard			
1 Introduction	Starco 1	Ctar	70.0
	Stage i	Stay	9° 2
		-5	~~
4 Configure CEIP	e e	2	
	Deploy new vCenter Server	Set up vCe	nter Server
	Installing the vCenter Server is a two stage proces	s. The first stage has been completed. Click Next, to proceed	with Stage 2, setting up the vCenter
			Activate Windows Go to Settings to <b>SANGEWindowEXT</b>
🛃 vCenter Server Installer			- o
Installer	Center Server		
- This instant Stage 2. Set Op VC			
Setup Wizard	vCenter Server Configuration		
1 Introduction	Time synchronization mode	Synchronize time with the ESXi host	~
2 vCenter Server Configuration	SSH access	Enabled	~
3 SSO Configuration			
4 Configure CEIP			
5 Ready to complete			
			Activate Win <del>dows</del> Go t <b>s ange</b> ys to a <b>rage</b> Windowext
ter Server Installer			
w Install - Stage 2: Set Up vCenter	Server		
tup Wizard	SSO Configuration		
	• Create a new SSO domain		
I Introduction	Single Sign-On domain name	vsphere.local	
2 vCenter Server Configuration	Single Sign-On Username	administrator	
3 SSO Configuration			
1 Configure CEIP	Single Sign On password (1)		
5 Ready to complete	Confirm password		<u></u>
	O Join an existing SSO domain		

°enter Server Installer			— п
ller			- b
mw Install - Stage 2: Set Up vCent	er Server		
Setup Wizard	Configure CEIP		
<ol> <li>Introduction</li> <li>vCenter Server Configuration</li> <li>SSO Configuration</li> <li>Configure CEIP</li> <li>Ready to complete</li> </ol>	VSphere Health     VSAN Online Health     VSAN Online Health     VCenter Server Update Planner     VSAN Performance Analytics     Host Hardware Compatibility     VSAN Support Insight     CEIP collects configuration, feature usage, and     sanitized and obfuscated prior to being receiv     For additional information on CEIP and the dat     Data collection can be enabled or disabled at     Join the VMware's Customer Experience Improve	i performance information. No personally identifiable info ed by VMware. ta collected, please see VMware's Trust & Assurance Cer any time. ment Program (CEIP)	ormation is collected. All data is
			Activate Windows Go t <b>SANGEL</b> S to aBASK WindowEXT
enter Server Installer			- 0
ler			- 0
mw Install - Stage 2: Set Up vCent	ter Server		
etup Wizard	Ready to complete		
1 Introduction	Review your settings before finishing the wizard	d.	
2 vCenter Server Configuration	✓ Network Details		
2 Voenter Server comiguation	Network configuration	Assign static IP address	
3 SSO Configuration	IP version	IPv4	
4 Configure CEIP	IP address	200.200.200.222	
5 Ready to complete	Subnet mask	24	
	Host name	Vcenter01.abdelwahed.me	
	Gateway	200.200.200.100	
	DNS servers	200.200.200.200	
	✓ vCenter Server Details		
	Tima suncheanitation mode	Cunchronize time with the ECVI kart	Activate Windows Go t <b>GANGEL</b> S to aBAGE Wind FJ
	Warning You will not be able to p started. Click OK to continue	ause or stop the install from completine, or Cancel to stop the install.	ng once its

Install - Stage 2: vCenter Server setup is in progress

Starting VMware Authentication Framework...

### Install - Stage 2: Complete

You have successfully setup this vCenter Server.

vCenter Server setup has been completed successfully. Click on the link below to get started. Press close to exit.

vCenter Server Getting Started Page : https://vcenter01.abdelwahed.me:443

$\leftarrow \rightarrow C$	🔿 🔒 https://vcenter01.abdelwahed.me/ui/app/folder;nav=h/urn:vmomi:Folder:group-d1:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/summar 🟠	⊘ ⊻
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES	
vm vSphere Client	Menu V Q Search in all environments C (?) v Administrator@VSPHERE.LC	DCAL V
	Ø vcenter01.abdelwahed.me ▲ CTIONS ✓	
🕑 vcenter01.abdelwahed.me	Summary Monitor Configure Permissions Datacenters Hosts & Clusters VMs Datastores Networks	
	Version: 7.0.2 CPU	Free
	Build: 17920168 Used: 0 Hz	Capacity
	Last Updated. May 20, 2022, 0:55 AM	Free
	Last ne-based backup. Not screduled	Canacity
	Staran	Free
	Clusters: 0	
	Hosts: 0 Used: 0 B	Capacity

4%

( ) Attps://200.200.200.1/ui/#	#/host/vms		- 😵	Certificate error 🖒	Search.		2	• 🖓 🖓 יוֹ
🔮 ESXI01.localdomain - VMw 🗙 📑								
<b>vm</b> ware <sup>,</sup> ESXi <sup>°,</sup>						root@200.200.200.1 👻	Help 🗕   🭳	Search
Navigator	ESXI01.localdomain - Virtual Machines							
▼ Host Manage Monitor	Seate / Register VM	Power of Status	off II Suspend C	Refresh   🏠 Action:	S •	Host name v	Q Searc	h Host memory
Virtual Machines	. pvCenter Server	Normal	18.94 GB	Other 3.x or later Lin	лх (	vcenter01.abdelwahed.me	1.7 GHz	12.07 GB
V Q Networking	Quick filters V							1 items 🦼

Troubleshooting tips: to start Vcenter installations, first you must add vCenter A and PTR record in DNS.

# Add ESXi Servers to vCenter

I will add these servers in a datacenter, laterinside datacenter we will add cluster also to give more options and I can apply bulk of features (like HA) on vSphere servers included in cluster. Add datacenter first.



### Now you can add ESXi hosts $\leftarrow \rightarrow C$ 🔿 🔒 🚭 https://vcenter01.abdelwahed.me/ui/app/datacenter;nav=h/urn:vmomi:Datacenter:datacenter ^ 🕂 There are Actions - vDatacenter MANAGE YOUR 📑 Add Host... vm vSphere Client Menu 🗸 ${\sf Q}$ Search in all env [📑 New Cluster... New Folder 冏 $\otimes$ vDatacenter []] Ξ Distributed Switch ۲ Summary Monitor С sters VMs С vDatacenter 🔂 New Virtual Machine... Hosts: Virtual Mach 🔂 Deploy OVF Template... Clusters: Networks: Storage ۲ Datastores: Edit Default VM Compatibility... 🖳 Migrate VMs to Another Netw...

Note, check new folder options

# Add Host

# 1 Name and location Name and location 2 Connection settings Enter the name or IP address of the host to add to vCenter Server. 3 Host summary Host name or IP address: 6 VM location Image: Context of the location

7 Ready to complete

Add Host			
<ul> <li>1 Name and location</li> </ul>	Connection settings		
2 Connection settings	Enter the host connection details		
3 Host summary			
4 Assign license	User name:	root	
5 Lockdown mode	Password:		
6 VM location	rassword.		

7 Ready to complete

### Add Host

✓ 1 Name and location	Host summary	
<ul> <li>2 Connection settings</li> </ul>	Review the summary for the host	
3 Host summary		
4 Assign license	Name	esxi01.abdelwahed.me
5 Lockdown mode 6 VM location	Vendor	VMware, Inc.
7 Ready to complete	Model	VMware7,1
	Version	VMware ESXi 7.0.2 build-17867351
	Virtual Machines	vCenter Server
Add Host		

# 1 Name and location Assign license

<ul> <li>2 Connection settings</li> </ul>	Assign an existing or a new license to this host
<ul> <li>3 Host summary</li> </ul>	
4 Assign license	License 👻 License Kev 👻 Product 👻 Usage Ca
5 Lockdown mode	
6 VM location	· · · · · · · · · · · · · · · · · · ·
7 Ready to complete	
Add Host	
a diblore and bracking	Specify whether to enable lockdown mode on the nost
<ul> <li>I Name and location</li> </ul>	
<ul> <li>2 Connection settings</li> </ul>	When enabled, lockdown mode prevents remote users from logging directly into this host. The host will only be accessible
3 Host summary	through local console or an authorized centralized management application.

If you are unsure what to do, leave lockdown mode disabled. You can configure lockdown mode later by editing Security Profile in host settings.

Oisabled

7 Ready to complete

4 Assign license

🗸 5 Lockdown mode

6 VM location

O Normal

The host is accessible only through the local console or vCenter Server.

Strict

VM location

🛄 vDatacenter

The host is accessible only through vCenter Server. The Direct Console UI service is stopped.

# Add Host

- 1 Name and location
- 2 Connection settings
- 3 Host summary
- 4 Assign license
- 5 Lockdown mode

6 VM location

7 Deady to complete

Add Host					
<ul><li>1 Name and location</li><li>2 Connection settings</li></ul>	Ready to complete Click Finish to add the host				
<ul> <li>3 Host summary</li> <li>4 Assign license</li> <li>5 Lockdown mode</li> <li>6 VM location</li> <li>7 Ready to complete</li> </ul>	Name Location Version License Networks Datastores Lockdown mode VM location	esxi01.abdelwahed.me	51		
				CANCEL	FINISH
$\leftarrow \rightarrow$ C C	A - https://vcenter01.abdelwahed.me/ui/	app/host;nav=h/urn:vmomi:HostSystem:host-16:02c2f	8d4-ec57-4bdc-a378-e	ebf0b49833E 🏠	⊚ ⊻ ≡
	A There are expired or expi	ring licenses in your inventory. MANAGE YOUR LIC	ENSES		
vm vSphere Client Me	$\mathbf{v}$ <b>Q</b> Search in all environments		C () ~	Administrator@VSPHER	E.LOCAL V
[]] ┣͡J	esxi01.abdelwahed.me           Summary         Monitor         Configure         P	ACTIONS V ermissions VMs Resource Pools Data	istores Networks	s Updates	
<ul> <li>✓ Datacenter</li> <li>✓ sxi01.abdelwahed.me</li> <li> <sup>™</sup> vCenter Server     </li> </ul>	Hypervisor: VMwa Model: VMwa Processor Type: Intel(R Logical Processors: 2 NICs: 1 Virtual Machines: 1	re ESXI, 7.0.2, 17867351 re7,1 )) Xeon(R) E-2276M CPU @ 2.80GHz		CPU Used: 0 Hz Memory Used: 0 B Storage	Free: 5.62 GHz Capacity: 5.62 GHz Free: 16 GB Capacity: 16 GB Free: 118.23 GB
	Uptime: O seco	ond		Used: 37.27 GB	Capacity: 155.5 GB

\_\_\_\_\_

### Do the same to ESXiO2 to add it to our datacenter

\_\_\_\_\_

$\leftarrow \rightarrow C$	🛇 🏠 ବ୍ ଦ୍ୟ https://vcenter01.abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-22:02c2f8d4-ec57-4bdc-a3	8-ebf0b49833⊡ ☆ 😒 🛓 🚍
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES	×
vm vSphere Client	Menu V Q Search in all environments C (?) V	Administrator@VSPHERE.LOCAL ~
	■ esxiO2.abdelwahed.me Actions >	vike Undatos
<ul> <li>Vcenter/U.abdelwahed.me</li> <li>v li vDatacenter</li> <li>esxi01.abdelwahed.me</li> <li>vCenter Server</li> <li>esxi02.abdelwahed.me</li> </ul>	Summary         Momento         Connigure         Permissions         VMs         Resource Pools         Datastores         Network           Hypervisor:         VMware ESXi, 7.0.2, 17867351         Model:         VMware7,1         Processor Type:         Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz         Logical Processors:         2           NICs:         1         1         1         1         1	CPU Free: 1.79 GHz Used: 3.83 GHz Capacity: 5.62 GHz Memory Free: 4.39 GB Used: 3.5 GB Capacity: 7.9 GB
۱۷ ۲۱۰۰۲ بی	Virtual Machines: 1 State: Connected Uptime: 7 hours	Storage Free: 334.48 GB Used: 20.77 GB Capacity: 355.25 GB

Now both hosts are added

# Create VM through vCenter

	Actions - esxi02.abdelwahed	^	There are expired	or expiring licenses in your inventory. MANAGE Yo			
vm vSphere Clien	at New Virtual Machine Ar Deploy OVF Template		h in all anvironments				
vopriere clien			in all environments				
	🥭 New Resource Pool		odelwahed.r				
✓	답 New vApp		nitor Configure	e Permissions VMs Resource Pools			
<ul> <li>✓ Im vDatacenter</li> <li>✓ Im esxi01.abdelwah</li> <li>Im vCenter Server</li> <li>✓ Im esxi02.abdelwah</li> <li>Im VM1-H2</li> </ul>	Import VMs		ypervisor:	VMware ESXi, 7.0.2, 17867351			
	Maintenance Mode	×	lodel: rocessor Type:	VMware7,1 Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz			
	Connection	×	ogical Processors: IICs: 'irtual Machines:	2			
	Power	•		1			
	Certificates	•	tate: ptime:	Connected 30 minutes			
	Storage	×					

# New Virtual Machine

1 Select a creation type	Select a creation type						
2 Select a name and folder	How would you like to create a virtual machine?						
3 Select a compute resource	Create a new virtual machine	^	This option guides you through creating a new				
5 Select compatibility	Deploy from template		virtual machine. You will be able to customize				
6 Select a guest OS	Clone an existing virtual machine		processors, memory, network connections, and				
7 Customize hardware	Clone virtual machine to template		storage. You will need to install a guest operating				
8 Ready to complete	Convert template to virtual machine						

# New Virtual Machine

1 Select a creation type 2 Select a name and folder	Select a name and folder Specify a unique name ar	, nd target location
<ul><li>3 Select a compute resource</li><li>4 Select storage</li></ul>	Virtual machine name:	VM2-H2
5 Select compatibility 6 Select a guest OS	Select a location for the v	virtual machine.
7 Customize hardware 8 Ready to complete	<ul> <li>✓          <sup>™</sup> vcenter01.abdelw</li> <li>&gt;          <sup>™</sup> vDatacenter</li> </ul>	ahed.me

# New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- Select a compute resource

Select the destination compute resource for this operation 3 Select a compute resource  $\sim$ 🕅 vDatacenter > 🗍 esxi01.abdelwahed.me 4 Select storage > 🗟 esxi02.abdelwahed.me **5** Select compatibility 6 Select a guest OS 7 Customize hardware 8 Ready to complete Compatibility Compatibility checks succeeded.

### New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource

# 4 Select storage

- 5 Select compatibility
- 6 Select a guest OS
- 7 Customize hardware

### 8 Ready to complete

### Select storage

Select the storage for the configuration and disk files

VM Storage Policy		Datastore D	efault	~	
Disable Storage DRS fo	or this virtual mach	ine			
Name <b>T</b>	Storage Con 🔻	Capacity <b>T</b>	Provisione <b>T</b>	Free	т Туре
🔘 🗏 datastore1		213.5 GB	1.41 GB	212.09 GB	VMFS
<ul> <li>datastore1</li> <li>BBStore</li> </ul>		213.5 GB 141.75 GB	1.41 GB 48.85 GB	212.09 GB 124.47 GB	VMFS VMFS
<ul> <li>datastore1</li> <li>DBStore</li> </ul>		213.5 GB 141.75 GB	1.41 GB 48.85 GB	212.09 GB 124.47 GB	VMFS VMFS

# New Virtual Machine

 1 Select a creation type 2 Select a name and folder

### Select compatibility

Compatible with: ESXi 7.0 U2 and later

Select compatibility for this virtual machine depending on the hosts in your environment

~ i

3 Select a compute resource

The host or cluster supports more than one VMware virtual machine version. Select a compatibility for the 4 Select storage virtual machine. 5 Select compatibility

- 6 Select a guest OS
- 7 Customize hardware 8 Ready to complete

This virtual machine uses hardware version 19, which provides the best performance and latest features available in ESXi 7.0 U2.

operating system installation.

## New Virtual Machine

<ul> <li>1 Select a creation type</li> </ul>	Select a guest OS
<ul> <li>2 Select a name and folder</li> </ul>	Choose the guest OS that will be installed on the virtual machine

- 2 Select a name and folder
- ✓ 3 Select a compute resource
- 4 Select storage
- ✓ 5 Select compatibility
  - 6 Select a guest OS

7 Customize hardware

8 Ready to complete

Guest OS Family:	Windows 🗸
Guest OS Version:	Microsoft Windows Server 2022 (64-bit) 🗸 🗸 🗸
	Enable Windows Virtualization Based Security

Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the

Compatibility: ESXi 7.0 U2 and later (VM version 19)

# New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Select storage
- 5 Select compatibility
- 6 Select a guest OS

7 Customize hardware

8 Ready to complete

> New Hard disk \* 20 GB ∨ > New SCSI controller \* LSI Logic SAS 🗹 Connect... > New Network \* VM Network ~ > New CD/DVD Drive \* **Client Device**  $\sim$ **Client Device** > New USB Controller Host Device Datastore ISO File > Video card \* Content Library ISO File > Security Devices Not conngured

# New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Select storage
- 5 Select compatibility
- ✓ 6 Select a guest OS
  - 7 Customize hardware

8 Ready to complete

> New Hard disk *	20 GB V	
> New SCSI controller *	LSI Logic SAS	
> New Network *	VM Network V	✓ Connect
> New CD/DVD Drive *	Datastore ISO File 🗸 🗸	🗋 Connect
> New USB Controller	USB 3.1 🗸	
> Video card *	Specify custom settings $$	
> Security Devices	Not Configured	

Ready to complete

# New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Select storage
- 5 Select compatibility
- 6 Select a guest OS
- 7 Customize hardware
   8 Ready to complete

Click Finish to start creation.					
Virtual machine name	VM2-H2				
Folder	vDatacenter				
Host	esxi02.abdelwahed.me				
Datastore	DBStore				
Guest OS name	Microsoft Windows Server 2022 (64-bit)				
Virtualization Based Security	Disabled				

vm vSphere Client Menu				? ~ Ad
	🔀 VM2-H2	トロ 🖬 続 ACTIONS Y		
✓      ✓      ✓ vcenter01.abdelwahed.me     ✓	Summary Mo	Launch Console	×	Updates
vCenter Server	1997 - 19	• Web Console		
✓ ☐ esxi02.abdelwahed.me ☐ VM1-H2	vmware	○ VMware Remote Console (VMRC) INSTALL VMRC		
답 VM2-H2	▷ Powered On	Remember my choice		
	LAUNCH WEB CO LAUNCH REMOTE		CANCEL	
		is not installed on this virtual machine.		

Server core 2022 now is installed.



	🕂 There are expi	red or expiring lic	enses in your inventory.	MANAGE YOU	JR LICENSES			
vm vSphere Client Menu	$\mathbf{v} \mid \mathbf{Q}$ Search in all environm	nents			С	<b>?</b> ~	Administrator@VSPHERE.L	ocal V
[]] [P] [=] (Q)	♂ VM2-H2							
✓ 🗗 vcenter01.abdelwahed.me	Summary Monitor Confi	gure Permiss	sions Datastores	Networks	Snapshots	Updates		
<ul> <li>Image: vDatacenter</li> <li>Image: esxi01.abdelwahed.me</li> </ul>							SWIT	CH TO NEW VIEW
♂ Center Server ✓ asxi02.abdelwahed.me		Guest OS: Compatibility: VMware Tools:	Microsoft Windows Ser ESXi 7.0 U2 and later (\ Not running, not installe	ver 2022 (64-b /M version 19) ed	it)			CPU USAGE <b>84 MHZ</b>
団 VM1-H2 卧 VM2-H2	Powered On	DNS Name:	MORE INFO				E	memory usage 1,013 MB
	LAUNCH WEB CONSOLE	Host:	esxi02.abdelwahed.me					storage usage <b>21.08 GB</b>

# Edit VM Settings from vCenter

Through VM setting you can change some vm settings, in this example we going to extend HD size (some setting require power off)

					r	ot@esxi02
Navigator	ESXI02.locald	omain - Virtual Machines				
✓ Host Manage	🚰 Create / Re	egister VM   📝 Console 📗 🕨	Power on Power off	🔢 Suspend 🕴 🤁 Re	efresh 🛛 🏠 Actions	
Monitor	Virtual ma	achine	∽ Status ∽ l	Jsed space v	Guest OS 🗸	Host nar
- 🗗 Virtual Machines	2 🖸 🚰 VM1-	H2	Normal 1	10.7 GB	Microsoft Windows Serve	Unknown
▼ 🖆 VM1-H2	✓	H2	Normal 2	20 GB	Microsoft Windows Serve	Unknowr
Monitor	0.111.54					
		🕤 Edit settings - VM2-H2	(ESXi 7.0 U2 virtual	machine)		
	-	Vistori Handoren VM	Onting			
		Virtual Hardware VM	Options			
		🔜 Add hard disk 🛛 📖	Add network adapter	🚍 Add other devi	ice	
		🕨 🖬 CPU 🧘	1	~ ()		
		🕨 🏧 Memory 🛕	Warning		*	
		) 🔜 Hard disk 1 🛕	As this host's resou vCenter Server, son	rces are being man ne configuration opt	aged by ions are	
		► 😪 SCSI Controller 0	disabled. If you wish settings, please do	n to change this VM's so from vCenter Se	s resource rver.	
ill extend VM HD from	vCenter we 20 to 22 GB	SATA Controller 0				
		🖶 USB controller 1	U	JSB 3.1		```
		Network Adapter				

$\leftarrow \rightarrow G$	A and b https://vcenter01.abdelwahed.me/ui,	/app/vm;nav=h/urn:vmomi:VirtualMachine:vm-26:02c2f8	ld4-ec57-4bdc-a378-ebf0b498
<b>vm</b> vSphere Client	Edit Settings VM2-H2		×
	> Memory	1	
	> Hard disk 1*	22 GB ~	
<ul> <li>vcenter01.abdelwahed.me</li> <li>vDatacenter</li> </ul>	> SCSI controller 0	LSI Logic SAS	
<ul> <li>✓ ■ esxi01.abdelwahed.me</li> <li></li></ul>	> Network adapter 1	VM Network	✔ Connect
<ul> <li>Esxi02.abdelwahed.me</li> <li>ExxM142</li> </ul>	> CD/DVD drive 1	Datastore ISO File 🗸 🗸	Connect
☐ VM1-H2 급 VM2-H2	> USB xHCl controller	USB 3.1	
	> Video card	Specify custom settings 🗸	
	> Security Devices	Not Configured	
	VMCI device		
	SATA controller 0	AHCI	~
Recent Tasks     Alarms       Task Name     Targ	et		CANCEL

\_\_\_\_\_

### Now HD extended to 22GB

vm vSphere Client Menu	ullet Q Search in all envi	vironments		C	? ~	Administrator@VSPHERE.	
Image: state	⊡ VM2-H2 ▷     □     Summary Monitor C	🗆 🛃 😽 🐼 🛛	ACTIONS 💙 ions Datastores Networks	Snapshots	Updates		
<ul> <li>✓          ✓</li></ul>						swi	TCH TO NEW VIEW
		Guest OS: Compatibility: VMware Tools:	Microsoft Windows Server 2022 (64-b ESXi 7.0 U2 and later (VM version 19) Not running, not installed	it)			CPU USAGE O HZ
급 VM1-H2 급 VM2-H2	Powered Off	DNS Name:	MORE INFO			<u>ت</u>	MEMORY USAGE
	LAUNCH WEB CONSOLE	Host:	esxi02.abdelwahed.me				storage usage <b>22 GB</b>

# Add ISCSI disk to both ESXi servers using vCenter

First, I configure **dc.abdelwahed.me** as ISCSI storage and allow both ESXI servers to connect this storage through network. In this scenario I use **500GB** SCSI disk. Now ISCSI software (ISCSI intiator)

$\leftarrow$ $\rightarrow$ C	🗘 🔒 🖻 https://vcenter01.abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-16:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/c	্ৰ ক্ল
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES	
vm vSphere Client	Menu V Q Search in all environments C ? V Administ	trator@VS
[] Þ 🖹 🖉	sxi01.abdelwahed.me	
✓ ₽ vcenter01.abdelwahed.me	Summary Monitor Configure Permissions VMs Resource Pools Datastores Networks Upda	ates
	Storage Adapters	0.140
<ul> <li>esxi02.abdelwahed.me</li> </ul>	Storage Devices     Adapter     T     Type     T     Storage Devices	Targ
词 VM1-H2	Host Cache Configuration Model: PIIX4 for 430TX/440BX/MX IDE Controller	
団 VM2-H2	Protocol Endpoints	0
	I/O Filters 🔶 vmhba64 Block SC Unknown –	1
	Networking V Model: PVSCSI SCSI Controller	
	Virtual switches	

# Note: FCoE option for SAN storage

Add Software Adapte	er esxi01.abdelwahed	I.me	×
• Add software iSCSI adapter			^
A new software iSCSI adapter wil	be added to the list. After it has k	been added, select the adapter and use the Adapte	r
Details section to complete the co	onfiguration.		
○ Add software NVMe over RDMA a	dapter		
Enable software NVMe adapter o	n the selected RDMA device.		
○ Add Software FCoE Adapter			
Discover software FCoE adapters	associated with the following phy	rsical network adapter.	
Physical Network Adapter:	vmnicO	~	
VLAN ID:	0	Range: 0 - 4094	
Priority Class:	3	Range: 0 - 7	
Controller MAC Address:	00:0c:29:9c:85:7a		~
			_
		CANCEL	ĸ

$\leftarrow \rightarrow $ G	🗘 🍐 न्ध https://vcenter01.abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-16:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/cc 🏠
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES
vm vSphere Client	Menu V Q Search in all environments C (?) V Administrator@VSPHERE.L
<ul> <li>Image: Provide the service of the ser</li></ul>	Summary Monitor Configure Permissions VMs Resource Pools Datastores Networks Updates          Storage       Storage Adapters         Storage Devices       + Add Software Adapter @ Refresh @ Rescan Adapter × Remove         Adapter       Type ¥ Status ¥ Identifier       ¥ Remove         Model: ISCSI Software Adapter       0       0         Working       ¥       Model: PIIX4 for 430TX/440BX/MX IDE Controller       0       0         Virtual switches       Virtual switches       © Category       0       0
$\leftarrow \rightarrow $ G	🛇 🗟 ब्य https://vcenter01.abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-16:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/cc 🏫
	⚠ There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES
vm vSphere Client	Menu V Q Search in all environments C (?) V Administrator@VSPH
E     P	Image: sexiO1.abdelwahed.me       ACTIONS V         Summary       Monitor       Configure         Permissions       VMs       Resource Pools       Datastores       Networks       Updates
<ul> <li>✓ asxi01.abdelwahed.me</li> <li>☆ vCenter Server</li> <li>✓ asxi02.abdelwahed.me</li> </ul>	Storage       Adapters         Storage Devices

 <sup>1</sup> Biock SC... Unknown <sup>1</sup> Model: PliX4 for 4301X/440BX/MX IDE Controller

 <sup>1</sup> Wodel: PliX4 for 4301X/440BX/MX IDE Controller

 <sup>1</sup> Protocol Endpoints

 <sup>1</sup> VOL

 <sup>1</sup> VOL

 <sup>1</sup> Material Adapter

 <sup>1</sup> Material Adapter

### Assign ISCSI software you added to network card

	esxi01.abdelwahed.me	
Center01.abdelwahed.me	Summary Monitor Configure Permissions VMs Datastores Networks	
✓ ☐ Cluster01	<ul> <li>Storage Adapters</li> </ul>	
esxi01.abdelwahed	Storage Adapters	
esxi02.abdelwahed	Storage Devices	
	Host Cache Configur Adapter 🔻 Type 🔻 Status 🔻 Identifier	
	Protocol Endpoints Addel: ISCSI Software Adapter	4
	I/O Filters	11
	▼ Networking	-
	Virtual switches	
	VMkernel adapters 🕒 Copy All 🛛 4 iter	ms
	Physical adapters	
	TCP/IP configuration	ice.
	✓ Virtual Machines	
	VM Startup/Shutdo	
	Agent VM Settings	

# Bind vmhba65 with VMkernel Adapter esxi01.abdelwahed.me

Only VMkernel adapters compatible with the iSCSI port binding requirements and available physical network adapters are listed.

		Port Group T		VMkernel Adapter	Ŧ	Physical Network Adapter	Ŧ
	<ul><li>✓</li></ul>			ᡂ vmk0		👜 vmnic0 (10 Gbit/s,	Full)
	iSCSI S	Server:	dc.abd	elwahed.me			1 Items
	Port:		3260			$\hat{\mathbf{v}}$	
	🗹 Inhe	erit authentica	tion settings fro	m parent			
sxi01.abde	elwahe	ed.me	CTIONS 🗸				

Summary	Monitor	Conf	igure	Permis	sions	VMs	Resource Pools	Datasto	ores Net	works	Jpda	tes			
Storage		~	^										Copy All	.	4 it
Storage A	dapters		e.	Properties	Devices	Paths	Dynamic Discovery	y Statio	c Discovery	Network	Port I	Binding	Advanced C	ptior	าร
Storage [	)evices			+ Add	× Remove	i) Viev	v Details	_							
Host Cach	ne Configurati	on		Port Gr	roup	T	VMkernel Adapter	T	Port Group P	olicy	T	Path Statu	ar	T	Ρ
Protocol I	Endpoints			_ ⊗м	lanagement	Networ	🖭 vmk0		🔗 Complia	ant		🔷 Not u	used		í
I/O Filters															

esxi01.abdelw	ahe	d.m						
Summary Monitor	Conf	igure	Permissions VM	Is Resource F	Pools [	Datastores	Networks	Updates
Storage	~	^	<rp>← vmhba1</rp>	Block SC	Unknown	-		(
Storage Adapters		6.		Block SC	Unknown	-		1
Storage Devices								
Host Cache Configuration	n		Properties Devices F	Paths Dynamic	Discovery	Static Disc	covery Netwo	ork Port Bind
Protocol Endpoints			+ Add × Remove A	Authentication Ac	dvanced			
I/O Filters			ISCSI server	-				
Networking	$\sim$		dc.abdelwahed.me:3260					
Virtual switches		~						

# sesxi01.abdelwahed.me

Summary	Monitor	Configure	e Permissions	VMs	Resource Pools	Datastores	Networks	Upda	tes
Storage		~ ^	Storage Ada	apters	S			_	
Storage A	dapters			configura	ition changes, a resca	n of "vmhba65" is	recommended.		
Storage D	evices								
Host Cach	ne Configuratio	on	+ Add Software Ada	apter 🖯	Refresh 🔤 Rescan S	Storage 🤇 🗟 Re	escan Adapter $~ imes$	Remo	ve
Protocol E	Endpoints		Adapter	Ŧ	Type 🔻 Status	▼ Identifier		Ŧ	Targ 🔻
I/O Filters			♦ vmhba1		Block SC Unkn	iown			0
Networking		~	♦ vmhba64		Block SC Unkn	iown			1

# Now ISCSI Disk appears

esxi01	I.abdelw	/ahec	d.m		ions 🗸											
Summary	Monitor	Config	gure	Permiss	ions	VMs	Resource P	ools	Da	tastores	S	Networks	Updates			
Storage		~	^	Properties	Devices	Paths	Dynamic [	)iscove	ry S	Static D	isco	very Netwo	rk Port Binding	g Advanced	Opti	ons
Storage Ac	lapters			🗟 Refresh	🗟 Atta	ich 🗒 🛙	Detach 🖉 Re	ename								
Storage De	evices			Name				~ L	~	Туре	$\sim$	Capacity 🗸	Datasto 🗸	Operational S	$\sim$	Hardwa
Host Cache	e Configuratio	on		MSFT iSCSI	Disk (naa.)	60003ff44	ldc75adc94fdc	0		disk		499.82 GB	Not Cons	Attached		Not su
Protocol Er	ndpoints															

### Now you can add this disk as datastore

😰 vSphere - esxi01.abdelwahed.m	× Jog in - VMware ESXi	× +
$\leftarrow$ $\rightarrow$ G	○ A == https://vcente	01. abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-16:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/cc 🏠
	Actions - esxi01.abdelwahed	ere are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES
	🔂 New Virtual Machine	
vm vSphere Client	😚 Deploy OVF Template	all environments C O Administrator@VSPHERE_LOCAL
	Aww Resource Pool	
✓	🚦 New vApp	r Configure Permissions VMs Resource Pools Datastores Networks Updates
∽ 🗈 vDatacenter	Import VMs	
✓	Maintenance Mode	
✓	Connection •	Name V L V Type V Capacity V Datasto V Operational S V
급 VM1-H2	Power	uration MSFT ISCSI Disk (naa.60003ff44dc75adc94fdc 0 disk 499.82 GB Not Cons Attached
団 VM2-H2	Certificates •	
	Storage 🔹	E New Datastore
	🔮 Add Networking	🖟 Rescan Storage
Recent Tasks Alarms	Host Profiles	
Tools Manage	Export System Logs	

# New Datastore

2 Name and device selection

3 Partition configuration

4 Ready to complete

1 Type

# Туре

Specify datastore type.



Create a Virtual Volumes datastore on a storage container connected to a storage provider.

### New Datastore

### Name and device selection

Specify datastore name and a disk/LUN for provisioning the datastore.

1	Туре	Name:	Datastore								
2	Name and device selection	itanici									
3	VMFS version	Name	Ŧ	LUN	T	Capacity <b>T</b>	Hardware <b>y</b>	Drive Typ 🔻	Sector Fo	T	Clus
4	Partition configuration		)isk (naa.600	0		499.82 GB	Not suppo	HDD	512e		No
5	Ready to complete										
		1									3



- 1 Type
- 2 Name and device selection
- 3 VMFS version
- 4 Partition configuration
- 5 Ready to complete

✓ General	
Name:	Datastore
Type:	VMFS
Datastore size:	499.82 GB
$\checkmark$ Device and Formatting	
Disk/LUN:	MSFT iSCSI Disk (naa.60003ff44dc75adc94fdc2b8b8c3c3e6)
Partition Format:	GPT
VMFS Version:	VMFS 6

CANCEL

FINISH

васк

$\leftarrow \rightarrow C$ $\bigcirc E$	តខំ https://vcenter01.abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-16:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/d ដំ
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES
vm vSphere Client Menu	✓ Q Search in all environments C ② ✓ Administrator@VSPHERE.LOCAL ✓
Voatacenter	Image: Summary Monitor Configure Permissions VMs Resource Pools       Datastores       Networks       Updates
<ul> <li>▼ esxi01.abdelwahed.me</li> <li>☆ vCenter Server</li> <li>▼ esxi02.abdelwahed.me</li> <li>☆ VM1-H2</li> <li>☆ VM2-H2</li> </ul>	Name ↑       ×       Status       ×       Type       ×       Datastore Clu       ×       Capacity       ×       Free         □       Datastore       ✓       Normal       VMFS 6       499.75 GB       498.34 GB         □       datastore1       ✓       Normal       VMFS 6       155.5 GB       117.74 GB

------

# now do the same for ESXiO2 without adding new datastore we will connect it we just want to connect it

$\leftarrow \rightarrow C$	) 🔓 🖻 https://vcenter01.abdelwahed.me/ui/app/host;nav=h/urn:vmomi:HostSystem:host-22:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/d 🏠 😒										
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES										
vm vSphere Client	Menu V Q Search in all environments C ? V Administrator@VSPHERE.LOCAL V										
	■ esxi02.abdelwahed.me Actions ∨										
✓	Summary Monitor Configure Permissions VMs Resource Pools Datastores Networks Updates										
<ul> <li>esxi01.abdelwahed.me</li> </ul>	Filter										
VCenter Server	Name ↑         ∨         Status         ∨         Type         ∨         Datastore Clu         ∨         Capacity         ✓         Free										
	■ <b>Datastore</b> ✓ Normal VMFS 6 49975 GB 498.34 GB										
D VM1-H2	Gatastoret (1) ✓ Normal VMFS 6 213.5 GB 212.09 GB										
jj vM2-H2	☑ DBStore         ✓ Normal         VMFS 6         141.75 GB         102.57 GB										

# now add some files to the iscsi storage

A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES											
vm vSphere Client Menu	✓ Q Search in all environments       C     ⑦ ✓     Administrator@VSPHERE.LOCAL	~									
Image: Constraint of the second se	BBStore     ACTIONS V       Summary     Monitor     Configure     Permissions     Files     Hosts     VMs										
✓  ↓ vDatacenter  □ Datastore	Q Search in the entire datastor	e									
datastore1	Filter by a folder name           Y         NEW FOLDER         UPLOAD FILES         UPLOAD FOLDER         REGISTER VM         DOWNLOAD         COPY TO         MOV	/Е ТО									
BBStore	▶ ⊡. sdd.sf         Name         ▼         Size         ▼         Modified         ▼         T           T         □         ▷         VM1-H2         05/30/2022, 3:13:41 PM         F	ype older									
	> Cos Source         Cos	older									
	> C VM1-H2 vmware-vsphere-install-configure-manage-v70.p 41,534.78 05/30/2022, 10:21:37 PM F	ile									
	Folders per page 1000 V I										

# Select Destination



 $\times$ 

$\leftarrow \rightarrow$ G	https://vcenter01.abdelwahed.me/ui/app/datastore;nav=s/urn:vmomi:Datastore:datastore-27:02c2f8d4-ec57-4bdc-a378-ebf0b49। 🏠 🕞										
	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES										
vm vSphere Client	Menu V Q Search in all environments O 2 Administrator@VSPHERE.LOCAL V										
D 🖻 🗎 🔮	Datastore Actions V										
<ul> <li>vcenter01.abdelwahed.me</li> </ul>	Summary Monitor Configure Permissions Files Hosts VMs										
✓ In vDatacenter	Q Search in the entire datastore										
datastore	Filter by a folder name T NEW FOLDER UPLOAD FILES UPLOAD FOLDER REGISTER VM DOWNLOAD COPY TO MOVE T	0									
	V 🖹 Datastore	ð									
	> □         .sdd.sf         05/30/2022, 10:00:43 P         Fold	ler									
	> □         Test ISCSI         □         □         Test ISCSI         05/30/2022, 10:13:08 PM         Fold	ler									
	vmware-vsphere-install-configure-manage-v70.p 41,534.78 05/30/2022, 10:24:58 PM File										
	Folders per page 1000 V										

# Migrate VM to another the iscsi datastore

without enabled vMotion we can't move VMs during power on state only you can move while VM is turned off. Which is named Cold Migration while Hot Migration running with vSphere vMotion.



1 Select a migration type	Sele	ect a migration type VM origin ①	
2 Select a compute resource	Cha	nge the virtual machines' compute resource, storage, or both.	
3 Select storage	~		
4 Select networks	0	Change compute resource only	
5 Select vMotion priority		Migrate the virtual machines to another nost or cluster.	
6 Ready to complete	0	Change storage only	
		Migrate the virtual machines' storage to a compatible datastore or datastore cluster.	
	۲	Change both compute resource and storage	
		Migrate the virtual machines to a specific host or cluster and their storage to a specific datastore or datastore cluster.	
	0	Cross vCenter Server export	
		Migrate the virtual machines to a vCenter Server not linked to the current SSO domain.	J
			Ŧ

### CANCEL

BACK

# Migrate | VM1-H2

	1 Coloret a minution true a		^
×.	I Select a migration type	Select a compute resource VM origin (1)	
	2 Select a compute resource	Select a cluster, host, vApp or resource pool to run the virtual machines.	
	3 Select storage		
	4 Select networks	✓ @ vcenter01.abdelwahed.me	
	5 Select vMotion priority	✓ IPI vDatacenter	
	6 Ready to complete	> esxi01.abdelwahed.me	
		esxi02.abdelwahed.me	
			$\checkmark$
		CANCEL BACK NEXT	ſ

### Migrate | VM1-H2

Select a compute resource	Select storag	ge estination stora	age fo	or the virtual	machine mi	gratior	۱.					VM origin ①
3 Select storage 4 Select networks 5 Select vMotion priority	BATCH CO Select virtua VM Storage	NFIGURE CO al disk format Policy	ONFIG	URE PER DIS Same form Kee	K at as source p existing	y VM s	↓ torage policie	s ×				
	Nam	e <b>T</b>	Sto	rage Cor 🔻	Capacity	Ŧ	Provision 🛛 🔻	Free	Ŧ	Туре	Ŧ	Cluster
	•   😫	Datastore			499.75 G	В	1.45 GB	498.3 GB		VMFS 6		
	0 e	datastore1			213.5 GB		1.41 GB	212.09 GB		VMFS 6		
		DBStore			141.75 GB		71.96 GB	102.57 GB		VMFS 6		
									СА	NCEL	вас	K NE

### 1 Select a migration type

2 Select a compute resource

3 Select storage

### 4 Select networks

5	Select	vM	lotion	priority
6	Ready	to	comp	lete

elect networks										
Select destination networks	for the virtual machine migra	ation.								
ligrate VM networking by :	electing a new destination n	etwork for all VM netv	work adapters attached to the same sou	irce						
network.										
Source Network	Used By		Destination Network							
VM Network	1 VMs / 1 Network	adapters	VM Network	~ ^						
				~						
/M Network is in use at:										
VM		ork Adapter	Network							
VM1-H2	Netv	work adapter 1	VM Network	^						
				~						

CANCEL ВАСК

### Migrate | VM1-H2



### Migrate | VM1-H2

- 1 Select a migration type
- 2 Select a compute resource
- 3 Select storage
- 4 Select networks
- ✓ 5 Select vMotion priority 6 Ready to complete

Ready to complete Verify that the information	VM origin ③	
Migration Type	Change compute resource and storage	
Virtual Machine	VM1-H2	
Host	esxi02.abdelwahed.me	
vMotion Priority	High	
Storage	Datastore	
	CAI	

$\leftarrow \rightarrow $ G	○ 🖾 🔤	https://vcenter01.abde	wahed.me/ui/app/	vm;nav=	h/urn:vmomi:VirtualM	achine:vm-25	:02c2f8d4-ec57-4b	dc-a378-ebf0	b49833b4/s 🟠		${igvar}$	⊻ =	=
		🕂 There	are expired or expir	ing licen	nses in your inventory.	MANAGE	YOUR LICENSES						×
vm vSphere Client	Menu 🗸	Q Search in all e	environments				С	? ~	Administrator@\	VSPHERE.LOC4	AL 🗸	C	)
Image: Description of the sector of the s	Sum	VM1-H2   > mary Monitor	Configure P	ermissio	CTIONS V Datastores Microsoft Windows Se	Network	s Snapshots	Updates		switch 1	TO NEW V	IEW	^
<ul> <li>esxi02.abdelwahed.me</li> <li>VM1-H2</li> </ul>			Compatik VMware	ility: I Tools: I	ESXi 7.0 U2 and later Running, version:11333	(VM version (Current)	19)			: ب ب	786 M	Hz	~
Recent Tasks Alarms													≷
Task Name Ta	rget	▼ Status		Ŧ	Details	Ŧ	Initiator		T Queued F	T Start Time	е	ψ Ψ	
Relocate virtual machine	〕 VM1-H2		35 % 😒		Migrating Virtual Mach tate	ine active s	VSPHERE.LOCAL	Administrator	28 ms	05/31/20	22, 8:11:30	AM	

A There are expire	ed or expiring licenses in y	our inventory. MANAGE	YOUR LICENSES			
vm vSphere Client Menu v Q Search in all environme	ents		C	? ~ Ad	ministrator@VSPHE	
□ 🗗 🖹 👰 💣 VM1-H2   ▷ 🗆 🛱	ACTIONS	~				
✓ @ vcenter01.abdelwahed.me Summary Monitor Config	jure Permissions	Datastores Networks	s Snapshots	Updates		
<ul> <li>✓ ■ vDatacenter</li> <li>✓ ■ esxi01.abdelwahed.me</li> </ul>						SWITCH TO NEW VIEW
Conter Server  Conter Server Conter Server  Conter Server  Conter Server  Conter Server  Conter Server  Conter Server  Conter Server  Conter Server  Conter Server  Conter Server  Conter	Guest OS: Microso Compatibility: ESXi 7.0 VMware Tools: Running	ft Windows Server 2022 (6 U2 and later (VM version , version:11333 (Current)	i4-bit) 19)			CPU USAGE 168 MHz
Recent Tasks Alarms	MODE	150.				MEMORY HEACE
Task Name 🔻 Target <b>y</b> Status	<b>▼</b> Details	Ŧ	Initiator	Ŧ	Queued F 🔻	Start Time $\downarrow$ $\checkmark$
Relocate virtual machine 🗇 VM1-H2 🛛 O Completed	Migrati tate	ng Virtual Machine active s	VSPHERE.LOCAL\Ad	dministrator	28 ms	05/31/2022, 8:11:30 AM

# Working with Snapshot

i have one VM include test snapshot folder saved on desktop





Now I will revert that VM and see the changes

🚱 vSphere - VM1-H2-Cl	one - Sum X New Tab		×	Log in	- VMware ESXi	× 🤳 Log in - VMv	ware ESXi ×
$\leftarrow \  \  \rightarrow \  \   G$	○ 🔓 ≕	https://	vcenter01.abdelv	vahed.mo	e/ui/app/vm;nav	=h/urn:vmomi:VirtualMac	chine:vm-29:02c2f8d4-(
	Actions - VM1-H2-Clone	Â	\land There ar	e expire	d or expiring lice	nses in your inventory.	MANAGE YOUR LICE
vm vSphere	Power Guest OS		Search in all en	vironme	nts		
vcenter01.abde	Snapshots	ڭ م	Take Snapshot Manage Snapsh	ots	] 🛃 🖓	Cons Datastores	Networks Spar
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✓  ☐ esxi01.abc ☆ vCenter	Clone	•	Consolidate		est OS:	Microsoft Windows Ser	ver 2022 (64-bit)
✓ 🖡 esxi02.ab¢	Fault Tolerance	•	Delete All Snaps	hots	mpatibility:	ESXi 7.0 U2 and later (\	VM version 19)
ि VM1-H2	VM Policies	•			jware roois:	MORE INFO	(Current)
	Template	•	On .		DNS Name: IP Addresses:	VM1-H2.abdelwahed.me 200.200.200.20	e
	Compatibility	► 16	B CONSOLE			VIEW ALL 2 IP ADDRES	SES
	Export System Logs	E	MOTE CONSOLE	í	Host:	esxi02.abdelwahed.me	

### Revert to latest snapshot

 $\times$ 

The current state of this virtual machine will be lost unless it is saved in a snapshot. Are you sure you want to revert the current state of the virtual machine to snapshot 'VM Snapshot 5%2f31%2f2022, 5:01:44 PM'?

Suspend this virtual machine when reverting to selected snapshot



🔁 vSphere - VM1-H2-Clone - Sum ×	New Tab	× 🚽 Log in - VMwar	e ESXi X 🥜 Log in - VMware ESXi	×
$\leftarrow \rightarrow C$	○ 🔓 🗝 https://vo	ym1-H2-Clone - VMware Rer	mote Console	
		VMRC - 🖬 - 🚭 📋		
vm vSphere Client	Menu 🗸 🛛 🔍	Recycle Bin		
<ul> <li>P</li> <li>Vcenter01.abdelwahed.me</li> <li>vDatacenter</li> <li>sxi01.abdelwahed.me</li> <li>vCenter Server</li> <li>sxi02.abdelwahed.me</li> <li>VM1-H2</li> </ul>	Summary	Test Snapshot		
	P Powered O			

\_\_\_\_\_

# the new added folder is deleted

# VM clone and template

# Create VM Template

First you must power off vm, so you can convert to template



Recent Tasks		Alarms											
Task Name	~	Target	~	Status	~	Initiator	~	Queued For	~	Start Time ↓	~	Completion Ti 🗸	Server
Mark virtual machine as template		凸 VM01		✓ Completed		VSPHERE.LOCA	<b>\</b>	undefined		05/29/2021, 9:47:47 PM		05/29/2021, 9:47:48 PM	vCenter01.abdel
											/	ctivate Windo	MIC

# Deploy VM from template

# Deploy From Template

### 1 Select a creation type 2 Select a template

### Select a creation type

How would you like to create a virtual machine?

# 4 Select a compute resource

5 Review details

3 Select a name and folder

- 6 Select storage
- 7 Ready to complete

# Create a new virtual machine Deploy from template Clone an existing virtual machine Clone virtual machine to template

Clone template to template Convert template to virtual machine This option guides you through the process of creating a virtual machine from a template. A template is a golden image of a virtual machine that lets you easily create ready-for-use virtual machines. You must have a template to proceed with this option.

# Deploy From Template

1 Select a creation type

### 2 Select a template

- 3 Select a name and folder
- 4 Select a compute resource
- 5 Select storage
- 6 Select clone options
- 7 Ready to complete

Select	a	template
--------	---	----------

Content Library

-
∨ 🗗 vCenter01.abdelwahed.me
✓ III vServer
> Discovered virtual machine

Data Center

# VM01 - Deploy From Template

1 Select a creation type

### 2 Select a template

### Select a name and folder

2 Select a template

### Specify a unique name and target location

# 3 Select a name and folder

- 4 Select a compute resource
- 5 Select storage
- 6 Select clone options
- 7 Ready to complete

Virtual	machine	name:	Server01

### Select a location for the virtual machine.

✓ I vServer

🚞 Discovered virtual machine

# VM01 - Deploy From Template

### Select storage

- 1 Select a creation type 2 Select a template
- 3 Select a name and folder
- 4 Select a compute resource

### 5 Select storage

6 Select clone options 7 Ready to complete

			Confi	gure per disk 📿		
Select virtual dis	k format:	Same format as s	ource 🗸			
VM Storage Policy:		Keep existing VM	storage policies	~		
Name		Capacity	Provisioned	Free		
<ul> <li>Storage Cor</li> </ul>	npatibility: Compatible	9			*	
🗐 DataSi	tore03_local	149.5 GB	7 GB	142.5 GB		
🗐 Datast	ore04_local	499.5 GB	49.22 GB	452.49 GB		
🗐 datast	ore1_local	192.5 GB	1.41 GB	191.09 GB		

Select the datastore in which to store the configuration and disk files

# VM01 - Deploy From Template

- 1 Select a creation type
- 2 Select a template
- 3 Select a name and folder

6 Select clone options

7 Ready to complete

- 4 Select a compute resource
- 5 Select storage

Customize the operating system

Customize this virtual machine's hardware (Experimental)

Select clone options Select further clone options

Power on virtual machine after creation

### I create 4 server 2 vms in each host

Recent Tasks		Alarms												*	
Task Name	~	Target	~	Status		~	Initiator ~	Queued For	~	Start Time ↓	~	Completion Ti ~	Server	~	
Cione virtuai	ione virtuai 岳 VM01			41%		0	VSPHERELOCA	undefined		05/29/2021,	vCenter0		vCenter01 ab	del	
machine						•		NE.LOOA Underined		9:56:08 PM					
Clone virtual		<b>屋</b> Marca		_	4.40/	~				05/29/2021,				1.1	
machine					44%	×	VSPHERE.LOCA	undefined		9:55:35 PM		Activato Minda	vCenter01.ab	dei	
Clone virtual		_		_		-				05/29/2021,		Activate Winde	7VV5		
		凹 VM01			52%	$\otimes$	VSPHERE.LOCA	undefined		0.54.00.014	(	so to Settings to ac	UV/Center01.6b	del	

# **Clone Exiting VM**

clone running VM will save the VM source, while convert VM to template will remove the VM source. And give new UUID, you can check VM UUID by running wmic path win32\_computersystemproduct get uuid

# **Clone Existing Virtual Machine**



# Clone Existing Virtual Machine

### 1 Select a creation type Select a virtual machine

2 Select a virtual machine	Select a virtual machine to clone
3 Select a name and folder	
4 Select a compute resource	✓
5 Select storage	✓ 🗎 vDatacenter
6 Select clone options	Center Server
7 Ready to complete	员 VM1-H2
	CANCEL BACK NEXT
### VM1-H2 - Clone Existing Virtual Machine



#### i will move to another ESXI host

#### VM1-H2 - Clone Existing Virtual Machine

- 1 Select a creation type
- 2 Select a virtual machine

# 3 Select a name and folder 4 Select a compute resource

5 Select storage

- 6 Select clone options
- 7 Ready to complete

#### Select a compute resource Select the destination compute resource for this operation

✓ I vDatacenter

Select storage

> 🔒 esxi01.abdelwahed.me	
> 🗍 esxi02.abdelwahed.me	

### VM1-H2 - Clone Existing Virtual Machine

#### 1 Select a creation type

- 2 Select a virtual machine
- 3 Select a name and folder

6 Select clone options

7 Ready to complete

4 Select a compute resource
 5 Select storage

#### Select the storage for the configuration and disk files BATCH CONFIGURE CONFIGURE PER DISK Select virtual disk format Same format as source VM Storage Policy Keep existing VM storage policies $\sim$ Disable Storage DRS for this virtual machine Storage Con 🔫 Name Capacity Provisione **T** Free Туре Datastore 499.75 GB 43.57 GB 485.45 GB VMFS 6 datastor.. 155.5 GB 448.03 GB 117.64 GB VMFS 6 ()< > 2 items CANCEL васк NEXT

if you want to customize VM hardware select second option

#### VM1-H2 - Clone Existing Virtual Machine

~	1	Select	а	creation	type
---	---	--------	---	----------	------

#### 2 Select a virtual machine

- 3 Select a name and folder
- ✓ 4 Select a compute resource
- 5 Select storage

Select clone options Select further clone options

- Customize the operating system
- 6 Select clone options

7 Ready to complete

Customize this virtual machine's hardware

Power on virtual machine after creation

### VM1-H2 - Clone Existing Virtual Machine

- 1 Select a creation type
- 2 Select a virtual machine
- 3 Select a name and folder
- 4 Select a compute resource
- 5 Select storage

#### ✓ 6 Select clone options 7 Ready to complete

		_			-	
Ready to complete						
Click Finish to start	creation.					
Source virtual machine	VM1-H2					
Virtual machine name	VM1-H2-Clone					
Folder	vDatacenter					
Host	esxi01.abdelwahed.me					
Datastore	Datastore					
					`	1
		С	ANCEL	ВАСК	FINISH	

	$\underline{\Lambda}$ There are expired or expir	ring licenses in your inve	entory. MANAGE	YOUR LICENSES			
vm vSphere Client Menu	✓ Q Search in all environments			C	? ∨ Admir	iistrator@VSPI	HERE.LOCAL V
Image: Constraint of the second se	esxi01.abdelwahed.me	ACTIONS V ermissions VMs	Resource Pools	Datastores	Networks U	pdates	
<ul> <li>esxi01.abdelwahed.me</li> <li>center Server</li> <li>cesxi02.abdelwahed.me</li> </ul>	Name ↑ ☐ Datastore	~	Status V Vormal	Type ~ VMFS 6	Datastore Clu V	Capacity 499.75 GB	Filter <b>Free</b> 485.45 GB
Recent Tasks Alarms		▼ Details	··· ·	Initiator	•	Queued F	Evnort 2 item
Clone virtual machine	H2 9 % 😵	Creating snaps ine	thot of Virtual Mach	VSPHERE.LOCAL\A	T dministrator	11 ms	05/31/2022, 8:37:42 AM

	▲ There are expired or expiring licenses in your invi	entory. MANAGE	YOUR LICENSES			
vm vSphere Client Menu	✓ Q Search in all environments		C	? v Admin	istrator@VSPHERE.L	.ocal 🗸
□ ₽ ≘ ◊	sxi01.abdelwahed.me					
<ul> <li>✓          <sup>™</sup> vcenter01.abdelwahed.me</li> <li>✓          <sup>™</sup> vDatacenter         </li> </ul>	Summary Monitor Configure Permissions VMs	Resource Pools	Datastores	Networks Up	odates	
esxi01.abdelwahed.me					_	Filter
Center Server	Name ↑ 🛛 🗸	Status ~	Туре 🗸	Datastore Clu 🗸	Capacity ~	Free
VMI-H2-Clotte	Datastore	✓ Normal	VMFS 6		499.75 GB	474.74 GB
WM1-H2	datastore1	✓ Normal	VMFS 6		155.5 GB	117.64 GB

after clone, everything kept as it, only IP and UUID changed

0	🔁 Server Manager					- 🗆 X
Recycle Bin	Server M	anager • Local Ser	ver	• ③	)   🚩 Manage	Tools View Help
	Dashboard	PROPERTIES			Network Connection Deta	ails ×
test	Local Server     All Servers     File and Storage Services ▷	Computer name Domain	VM1-H2 abdelwahed.me	Last install Windows I Last check	Network Connection Details Property Connection-specific DN Description Physical Address DHCP Enabled	: Value Intel(R) 82574L Gigabit Network Connect 00-50-56-89-14-B3 No
		Microsoft Defender Firewall Remote management Remote Desktop NIC Teaming Ethernet0	Public: On Enabled Disabled Disabled Multiple IPv4 addresses, IPv6 enabled	Microsoft Feedback IE Enhance Time zone Product ID	Autoconfiguration IPv4 IPv4 Subnet Mask Autoconfiguration IPv4 IPv4 Subnet Mask IPv4 Default Gateway IPv4 DNS Server IPv4 WINS Server	169.254.181.194 255.255.0.0 200.200.200.20 255.255.255.0 200.200.200.200
		Operating system version Hardware information	Microsoft Windows Server 2022 Standard VMware, Inc. VMware7,1	Processors Installed n Total disks	Invelocity over ropp En Link-local II/V6 Address IPv6 Default Gateway IPv6 DNS Server	Tes fe80::e929:1f13:3503.b5c2%6

## OVF and OVA Template (Open Virualization Format and Appliance)

Preconfigured VM, no need to ask about RAM, CPU or HD. By default, you can't import VM from another vCenter or another ESXi server, to do that you have to export VM as a OVF template so you can use it in different environment like vCenter or ESXi server or VMware workstation

#### First power the VM off

vm vSphere Client	Actions - Web_Server	C ? ~ Administrator@VSPHERE.LOCAL ~ 😜
	Power 🕨	
	Guest OS 🕨	ACTIONS -
✓	Snapshots 🕨	onfigure Permissions Datastores Networks
V III vServer	聲 Open Remote Console	Jest OS: Microsoft Windows Server 2016 or later CPU USAGE
Cluster01	🚔 Migrate	(64-bit) O Hz
esxi02.abdelwah	Clone •	Mwate Tools: Not running, version:10346 (Current)
B Web_Server	Fault Tolerance	NS Name: STOPAGE LISAGE
	VM Policies	Addresses: 940 GB
	Template	Convert to Template
	Compatibility •	🙀 Export OVF Template
	🔂 Edit Settings	Custom Attributes

VM will DOWNLOADED then you can use it for another environment

# Export OVF Template

Name	Server_OVF
Format	Folder of files (OVF)
Annotation	
Advanced	Enable advanced options
	<ul> <li>Include BIOS UUID</li> <li>Include MAC addresses</li> <li>Include extra configuration</li> </ul>

 $\times$ 

Recent Tasks	Alarms												
Task Name 🗸 🗸	Target	~	Status	~	Initiator	~	Queued For	~	Start Time 🤳	~	Completion Ti 🗸	Server	~
Export OVF	port OVF		0			9 mc	06/02/2021,			vContor01 abdal			
template		vei	0./6	~	VSFHERE.LOCA.	SPHERELUCA		01115				vCenter01.db	Jel
Export OVF	- Fundamental Series		0%	0			176 mc		06/02/2021,			vContor01 ab	lol
package	Ch web_sei	vei	0./6	~	vspilele.localva	-	170 115		4:48:43 AM	A	Activate Windo	)WS	Jel

#### Now you import to the same environment or different one through the following steps

<b>vm</b> vSphere Client	Actions - esxi01.abdelwahed.me	C <sup>1</sup> (?) ~ Administr
_	🚹 New Virtual Machine	
	🎁 Deploy OVF Template	
✓	Wew Resource Pool	onfigure Permissions VMs Datast
∨ 📑 vServer	New vApp	
✓ ☐ Cluster01 ☐ esxi01.abdelwahe	Maintenance Mode	Issue Type Trigge
esxi02.abdelwahe	Connection	•
🗄 Web_Server	Power	•

### Deploy OVF Template

#### 



## **Content Library**

Centeralized store for template, ISO, files and folders and more so you can used later many times without duplication. This library stored on datastore.

vm vSphere Client	Menu 🗸 🛛 📿 Search	C	? ~ Ad	ministrator@
✓ ♥ vCenter01.abdelwahed.me ✓ ♥ vServer ✓ □ Cluster01	<ul> <li>Home</li> <li>Shortcuts</li> <li>Hosts and Clusters</li> <li>Nite and Templates</li> </ul>	ed.me Action	NS 🗸	Datastores
esxi01.abdelwahed	<ul> <li>VMs and Templates</li> <li>Storage</li> <li>Networking</li> <li>Content Libraries</li> <li>Global Inventory Lists</li> </ul>	Issue y 1	Гуре 🔻	Trigger Time
$\leftarrow$ $\rightarrow$ C O $\triangle$ $=$	https://vcenter01.abdelwahed.me/ui/app	o/content-libraries		
vm vSphere Client Menu v	Q Search in all environments			C
New Content Library	ontent Libraries Advanced + Create me↑ ~ Type ~ Publishin	✓ Password ✓ Automatl	✓ vCenter Ser✓	Templates N
1 Name and location 2 Configure content library 3 Add storage	Name and location Specify content library name and loc	ation.		
4 Ready to complete	Name:	Abdelwahed_local_Lib		_
	Notes:			
	vCenter Server:	vCenter01.abdelwahed.me ~	-	

You can publish this library and another vCenter can connect it to use these reources.

#### New Content Library

<ul> <li>1 Name and location</li> <li>2 Configure content library</li> </ul>	Configure content library Local libraries can be published externally and optimized for syncing over HTTP.
3 Add storage	Subscribed libraries originate from other published libraries.
4 Ready to complete	
	Local content library
	Publish externally
	Optimize for syncing over HTTP
	Once published, it cannot be reverted back to a local library and cannot be
	used to deploy virtual machines.
	Enable authentication
	O Subscribed content library

Subscription URL: Example: https://server/path/lib.isor

#### New Content Library

1 Name and location
 2 Configure content library
 3 Add storage
 4 Ready to complete

#### Add storage

Select a storage location for the library contents. Use a file system backing for published content libraries to store the uploaded OVF packages. Use a datastore backing for local and subscribed content libraries to store content optimized for cloning.

	Filter								
Name ↑	$\sim$	Status 🗸	Type v	Datastore 🗸					
DataStore03_local		🗸 Normal	VMFS 6		-				
Datastore04_ISCSI		🗸 Normal	VMFS 6						
datastore1_local		✓ Normal	VMFS 6						
datastore2_local		✓ Normal	VMFS 6						
Datastore5-ISCSI		🗸 Normal	VMFS 6						



Now you can				There are expired or	expiring licenses in your inventory.	MANAGE YOUR LICENS
ıpload lifferent type	<b>vm</b> vSph	ere Client	Menu 🗸 🛛 Q Se			(
of data to it	i Abdelwahed ① Other Types ④ OVF & OVA 1 ④ VM Template	_Local_Lib Femplates 25	<ul> <li>Abdelv</li> <li>Summary</li> </ul>	vahed_Local_Li Templates Other Ty Type: Storage: Size: Items: Streaming optimized: Created: Last modified: Last sync:	ib ACTIONS ✓ rpes Actions - Abdelwahed_Loc Local Datasti 0 B 0 Edit Settings 0 B 0 Edit Notes No 06/05/ Tags X Delete	sal_Lib
4	Abdelwa	ahed_loo	cal_Lib	Import Library	y Item	
s	ource file			E	inter URL.	
			<ul> <li>Local</li> </ul>	file	UPLOAD FILE	
Recent Tasks	Alarms					
Task Name 🗸	Target ~	Status ~	Initiator ~	Queued For ~	Start Time 🧅 🗸 Completion Ti	i V Server
Upload Files to a Library Item	en_windows_s	20% 🚫	VSPHERE.LOCA	undefined	06/02/2021, 5:28:56 AM	vCenter01.abde
Create Library	Abdelwahed_lo	✓ Completed	vsphere.local\A	undefined	06/02/2021, 06/02/2021, 5:28:56 AM	vCenter01.abd

You can convert this local library to subscriped library (web)

	$\underline{\Lambda}$ There are expired or expiring licenses in your inventory. MANA								
vm vSphere Client	Menu	~   Q							
Abdelwahed_Local_Lib     Other Types     OVF & OVA Templates	0	🗊 Abde	elwahed_Local_L Templates Other T	jb ypes	ACTIONS V				
🖻 VM Templates	0		Type: Storage:	Local Dataste	引 Import item ど Edit Settings				
			ltems: Streaming optimized:	0 No	Edit Notes				
			Created: Last modified: Last sync:	06/05/ 06/05/	Rename Tags 🕨				
			-		🔀 Delete				

Edit Settings Abdelwahed_local_Lib								
Publishing option	✓ Publish this content libr	ary externally						
Subscription URL	https://vCenter01.abdelwai 8c0677259803/lib.json COPY LINK	hed.me:443/cls/vcsp/lib/a241bb75-bb88-4cd1-83c7-						
Authentication	<ul> <li>Enable user authentica</li> <li>Password</li> </ul>	tion for access to this content library						
	Confirm Password							

This link you can use for another vCenter as a local library.

Now you can use the uploaded ISO in the library to install new VM.

#### New Virtual Machine > New Hard disk 16 GВ ^ 1 Select a creation type > New SCSI controller \* VMware Paravirtual 2 Select a name and folder 3 Select a compute resource > New Network \* Connect... VM Network ~ ✓ 4 Select storage ✓ 5 Select compatibility New CD/DVD Drive \* Content Library ISO File 🗸 ✓ 6 Select a guest OS Status Connect At Power On 7 Customize hardware 8 Ready to complete CD/DVD Media BROWSE ... [contentLib] /Abdelwahed Device Mode Passthrough CD-ROM 🗸 Virtual Device Node

CANCEL

васк

NEXT

### Using Alarms

Create alarms to monitor VMs events and conditions

Jug in Million ECVi V	Jog in Whiters ECVi	Y Duchas With H1 Transmit Y
$\leftarrow \rightarrow C$	Cog in a vinware essit ○ A a= https://vcenter0	<ul> <li>abdelwahed.me/ui/app/vm;nav=h/urn:vmomi:VirtualMachine:vm-1006:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/mi</li> </ul>
< 1/2 >	🛱 Migrate	A There are expired or expiring licenses in your inventory.
	Clone •	
vm vSphere Client	Fault Tolerance	il environments
	VM Policies	> 🗆 📅 🖓 🔯 🔺 ACTIONS 🗸
✓ I vcenter01.abdelwahed.me	Template 🕨	Configure Permissions Datastores Networks Snapshots Updates
∽ 🖹 vDatacenter	Compatibility •	
✓ []] Cluster01	Export System Logs	Triggered Alarms
esxi01.abdelwahed.m esxi02.abdelwahed.n	🖓 Edit Settings	ACKNOWLEDGE RESET TO GREEN
🔂 vCenter Server	Move to folder	
ि VM1-H2 ⊡ VM1-H2-Clope	Rename	Alarm Name · Object · type Sevi
	Edit Notes	
	Tags & Custom Attrib 🕨	
5 IT I II	Add Permission	-
Task Name Task Same	Alarms	New Alarm Definition.
Enter maintenance mode	Remove from Invento	Enable Alarm Actions VSPHERELOCAL Administrator (2005)
<ul> <li>▲II</li></ul>	Delete from Disk	Disable Alarm Actions

New Alarm Definition	Name and Targets		$\times$
1 Name and Targets	Alarm Name *	CPU Monitoring	
2 Alarm Rule 1	Description		
3 Reset Rule 1			
4 Review			11.
	Target type *	Virtual Machine ~	
		CANCEL	EXT
New Alarm Definition	Alarm Rule 1		$\times$
1 Name and Targets		v is shown v DE A % for 20 soc v	^
2 Alarm Rule 1	ADD ADDITIONAL TRIGGER		
3 Reset Rule 1			
4 Review	THEN		
	Trigger the alarm and *	Show as Critical	~
	ADD ANOTHER RULE		
		CANCEL BACK NE	хт

You can set actions once your conditions met

New Alarm Definition Alarm Rule 1  $\times$ 1 Name and Targets Send email notifications 2 Alarm Rule 1 Send SNMP traps Run script Select an advanced action ~ REMOVE 4 Review Select an advanced action Migrate VM Power off VM REMOVE RULE ICATE RULE Power on VM Reboot guest on VM Reset VM васк CANCEL Shutdown guest on VM Suspend VM Activate Windov Alarm Rule 1 New Alarm Definition 3 1 Name and Targets Send email notifications 2 Alarm Rule 1 Send SNMP traps Run script Power off VM  $\sim$ REMOVE 4 Review ADD ADVANCED ACTIONS ADD ANOTHER RULE DUPLICATE RULE CANCEL васк New Alarm Definition Review  $\times$ Alarm Name CPU Monitoring 1 Name and Targets Description 2 Alarm Rule 1 🗇 VM1-H2 Targets 3 Reset Rule 1 4 Review Alarm Rules IF VM CPU Usage is above 85 % for 30 sec THEN Trigger the alarm as () Critical Power off VM Enable this alarm 🏾 🚺 CANCEL васк

### Networking

It's recommended to use two types of networks, one for ESXI management and another for VM. To do that you have to add 2 standard virtual switch (connected to two uplink which is NIC connected to two physical switch) and at first switch add one port group for VM connection and for another switch add VM kernel port for ESXI management connection.

Note: IP for VMkernel port added to the uplink (NIC). While port group ip assigned to the VM.

Default settings is you have one standard virtual switch (comes once you finish ESXi installation) named VSwitch0 with one port group named VM Network and one VMKernel port named management Network.

$\leftarrow$ $\rightarrow$ C	C 🗛 🖻 https://esxi02.abdelwahed.me/ui/#/host/networking/adapters	
vmware" ESXi"	root@esxi02.abdelwahe	d.me ়   Help ়   🝳 Search
📲 Navigator 🗆	SXI02.localdomain - Networking	
▼ ☐ Host Manage Monitor	Port groups Virtual switches Physical NICs VMkernel NICs TCP/IP stacks Firewall rules	Q Search
> Image: Storage     1       ▼ Image: Storage     3       ▼ Image: DBStore Monitor More storage       Image: Motive Storage	Name       Driver       MAC address       Auto-negotiate         Image: manage of the state of the stat	✓ Link speed 10000 Mbps, full duplex
🕑 vSphere - VM1-H2 - Summa	y × - ESX102.localdomain - VMware E× +	
$\leftarrow \rightarrow $ C	C 🔓 🕫 https://esxi02.abdelwahed.me/ui/#/host/networking/vswitches	٤
<b>vm</b> ware <sup>®</sup> ESXi <sup>™</sup>	root	@esxi02.abdelwahed.me 👻   Help 🗸
r <mark>ta Navigator</mark> ▼ ☐ Host Manage	ESXI02.localdomain - Networking     Port groups     Virtual switches     Physical NICs     VMkernel NICs     TCP/IP stacks     Firewall rules	
Monitor	🎦 Add standard virtual switch 🛛 Add uplink 🧪 Edit settings 🛛 🤁 Refresh 🛛 🏠 Actions	
<ul> <li>Difference of the second second</li></ul>	Name     Port groups     Uplinks       vSwitch0     2     1	Type Standard vSwitch

🗗 vSphere - esxi01.abdelwahed.me 🗙 🥊	Log in - VMware ESXi x + • • • • • • • ×
← → C ▲ Not secure   vcenter	11.abdelwahed.me/ui/#?extensionId=vsphere.core.host.manage.networking.virtualSwitchesView&objectId=urn:vmomi:HostSystem:host-11:639e7bd0-63ce-4 🛠 😩 🗄
♪	There are vCenter Server systems with expired or expiring licenses in your inventory. MANAGE YOUR LICENSES DETAILS X
vm vSphere Client Menu	✓     Q     Search     C <sup>1</sup> ⑦ ~     Administrator@VSPHERE_LOCAL ~     ☑
Center01 abdelwahed.me VServer Center01 abdelwahed.me Center01 Esxi01 abdelwahed. Esxi02 abdelwahed. Ev VM01	esxiO1.abdelwahed.me ACTIONS ~ mmary Monitor Configure Permissions VMs Datastores Networks Storage Adapters Storage Adapters Storage Devices Host Cache Configuri Protocol Endpoints I/O Filters Networking Virtual switches Virtual switches Virtual switches Physical adapters TCP/IP Configuration Virtual switchies VM Startup/Shutdo. Agent VM Settings Default VM Compati. Swap File Location
Classifier Server W VM1-H2-Clone (inaccessil.)	Summary Monitor Configure Permissions VMs Datastores Networks Updates          Storage       Virtual Switches         Storage Adapters       Storage Adapters         Storage Devices       ADD NETWORKING         Host Cache Configuration       Protocol Endpoints         I/O Filters       VManagement Network         VMkernel adapters       VMkernel Ports (1)         VMkernel adapters       VM Network         Physical adapters       VIrtual Matchines (1)

### Add new NIC to ESXiO2 using vCenter

#### Add second NIC through ESXi VM setting and restart the server

Virtual Machine Settings		
Hardware Options		
Device	Summary	Memory
ee Memory	10 GB	Specify the amount of memory allocated to this virtual
Processors	2	size must be a multiple of 4 MB.
Hard Disk (SCSI)	142 GB	Mamony for this virtual machines 10240 A MD
Hard Disk 2 (SCSI)	142 GB	
Hard Disk 3 (SCSI)	200 GB	
💿 CD/DVD (IDE)	Using file D:\vmware\VMware	128 GB -
Provide Network Adapter	Host-only	64 GB
Potwork Adapter 2	Host-only	32 GB -
🔄 USB Controller	Present	16 GB Maximum
Display	Auto detect	8 GB (Memory s

As shown below, you have two option to add network adapter through add Networking direct or through settings.



### esxi02.abdelwahed.me - Add Networking

1 Select connection type	Select connection type					
2 Select target device	Select a connection type to create.					
3 Add physical network ad						
4 Ready to complete	O VMkernel Network Adapter					
	The VMkernel TCP/IP stack handles traffic for ESXi services such as vSphere vMotion,					
	iSCSI, NFS, FCoE, Fault Tolerance, vSAN and host management.					
	O Virtual Machine Port Group for a Standard Switch					
	A port group handles the virtual machine traffic on standard switch.					
	• Physical Network Adapter					
	A physical network adapter handles the network traffic to other hosts on the network.					

Select connection type Select target device Add physical network ad	Select target device Select a target device for the ne	ew connection.
Ready to complete	• Select an existing switch	
	vSwitch0	BROWSE
	O New standard switch	
	MTU (Bytes) 150	0
sxi02.abdelwahe	d.me - Add Network	ing
<ul> <li>1 Select connection type</li> <li>2 Select target device</li> </ul>	Add physical network ada Assign physical network ad	oter lapters to the switch.
3 Add physical network ac 4 Ready to complete	Assigned adapters	
	Active adapters	^
	ت vmnic0	
	Standby adapters	
Add Physical A	Unused adapters	
Network Adapters	All Properties CDP L	LDP
wnici	Adapter Name Location Driver	VMware Inc. vmxnet3 Virtual Ethernet Controller vmnic1 PCI 0000:13:00.0 nvmxnet3
	Status Status Actual speed, Duplex Configured speed, Duplex Networks	Connected 10 Gbit/s, Full Duplex 10 Gbit/s, Full Duplex No networks
	Network I/O Control Status	Allowed
	SR-IOV Status	Not supported
	Cisco Discovery Protocol (i) Cisco Discovery Protocol	is not available on this physical network adapter

#### esxi02.abdelwahed.me - Add Networking

1 Select connection type2 Select target device

Add physical network adapter

Assign physical network adapters to the switch.



2 Select target device

2 Select target device

Review your settings selections before finishing the wizard.

3 Add physical network ad...

4 Ready to complete

Standard switch Assigned adapters vSwitch0 vmnic1

	A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES																
vm vSphere Client Menu	✓ Q Search in all e	nvironmer	nts			С	?	) 🗸 🛛 Admin	istrato	@VSPHERE.LOCAL	~						
	esxi02.abdelv	vahed	.me Actio	NS 🗸	December	Deck. Detector	- N-	de constante de la	-1-4								
<ul> <li>CenterOLabdelwahed.me</li> <li>         VDatacenter         Sitiol.abdelwahed.me         VCenter Server     </li> </ul>	Protocol Endpoints I/O Filters	Contigure Permissions VMs  Physical adapters  & Add Networking   Refr			resh   🖉 Ed	it	:5 146	etworks Op	uates								
VM1-H2-Clone	Virtual switches		- 1	- 1	- 1	- 1	- 1	- 1	Device	⊤ Act	ual Speed	T Configured Spec	d T	Switch	Υ	MAC Address	Ŧ
a UNI-H2 (disconnected)	VMkernel adapters Physical adapters TCP/IP configuration		ساندن س vmnic1		10 G	pit/s 10	Gbit/s	민 vSwitch0		00:0c:29:59:ba:95							
	Virtual Machines	$\sim$	<														

#### Add standby physical adapter for vSwitch0 (standard switch)

First you have to add new NIC adatpter to tha VM then follow the following steps

vm vSphere	e Client	Menu 🗸	${\sf Q}$ Search in all e	nvironi	ments	C	? <b>~</b>	Administrate	or@VSPH	iere.local 🗸		
	3 Ø	🔮 esxi02.	abdelwahe	d.me								
✓ 🗗 vcenter01.abo	lelwahed.me	Summary N	Monitor Config	jure	Permissions VM	s Da	atastores 1	Networks	Upda	ates		
<ul><li>✓ I vDatacente</li><li>✓ [] ClusterO</li></ul>	er 1	Storage	~	^ V	'irtual switches	;	Ļ	(	ADD NE	TWORKING	REFRESH	
🗐 esxi01	.abdelwahed	Storage Adap	pters	•	Standard Switch: vSw	itch0	ADD NETWO		EDIT	MANAGE PHYSI	ICAL ADAF	^
esxi02	2.abdelwahe	Storage Devi	ces									
✓	irce Pool_01	Host Cache C	Configuration									
ලි RH	(inaccessible)	Protocol End	points		🕺 Management Ne	etwork				✓ Physical A	Adapters	
🔂 vCent	er Server	I/O Filters			VLAN ID:					属 vmnic0	10000 Full	L
<u>ت</u> ۷M1-H	12 (inaccessi	Networking	~		✓ VMkernel Ports (1)							~
ြ VM1-F	12-Clone (ina			< <							>	

1 Select connection type	Select connection type				
2 Select target device	Select a connection type to create.				
Add physical network ad					
4 Ready to complete	○ VMkernel Network Adapter				
	The VMkernel TCP/IP stack handles traffic for ESXi services such as vSphere vMotion,				
	iSCSI, NFS, FCoE, Fault Tolerance, vSAN and host management.				
	O Virtual Machine Port Group for a Standard Switch				
	A port group handles the virtual machine traffic on standard switch.				
	• Physical Network Adapter				
	Physical Network Adapter     A physical network adapter bandles the network traffic to other bosts on the network				

2 Select target device	Select a target device for the new connection.				
Add physical network ad					
Ready to complete	<ul> <li>Select an existing</li> </ul>	switch			
	vSwitch0			BROWSE	
	🔵 New standard swi	tch			
	MTH (Dytee)	1500			

Network Adapters	All Properties CDP L	LDP				
	Adapter	VMware Inc. vmxnet3 Virtual Ethernet Controller				
	Location	PCI 0000:13:00 0				
	Driver	nvmxnet3				
	Status					
	Status	Connected 10 Gbit/s, Full Duplex 10 Gbit/s, Full Duplex				
	Actual speed, Duplex					
	Configured speed, Duplex					
	Networks	0.0.0.1-255.255.255.254				
	Network I/O Control					
	Status	Allowed				
	SR-IOV					
	Status	Not supported				
	Cisco Discovery Protocol					
	() Cisco Discovery Protocor	U Cisco Discovery Protocol is not available on this physical network adapter				
	Link Layer Discovery Protocol					
	(i) Link Layer Discovery Prot	cocol is not available on this physical network adapter				
~			Acti			

- 1 Select connection type
- 2 Select target device

Add physical network adapter

Assign physical network adapters to the switch.

3 Add physical network ad	A				
4 Ready to complete	Assigned adapters		All Properties CDP LLI	)P	
	$+   \otimes \uparrow \downarrow$	Adapter			
	Active adapters	^	/ depter	Controller	
	wmnic0 Standby adapters		Name	vmnic1 PCI 0000:13:00.0	
			Location		
			Driver	nvmxnet3	
	(New) vmnici		Status		
	Unused adapters		Status	Connected	
			Actual speed, Duplex	10 Gbit/s, Full Duple	
			Configured speed, Duplex	10 Gbit/s, Full Duple	
			Networks	0.0.0.1-255.255.255	
			Network I/O Control		
			Status	Allowed	
			SR-IOV		
			Status	Not supported	
			Cisco Discovery Protocol	~	
		$\mathbf{\mathbf{v}}$	<	<b>≫</b> ctiva	

if you set both NIC under active the Loadbalancing will applied

	<u> </u>				
✓ 1 Select connection type	Ready to complete				
<ul> <li>2 Select target device</li> </ul>	Review your settings selections before finishing the wizard.				
<ul> <li>3 Add physical network ad</li> </ul>					
4 Ready to complete	Standard switch	vSwitchO			
	Assigned adapters	vmnic1			

<b>vm</b> vSphere Client	Menu ✔ Q Sea		C ? ~ Administra	tor@VSPHERE.LOCAL V
<ul> <li>□</li> <li>□</li></ul>	Summary Monitor	ahed.me ACTIONS V Configure Permissions VMs	Datastores Networks	Updates
✓ ➡ vDatacenter ✓ ➡ Cluster01 E esxi01.abdelwa	Storage	<ul> <li>Virtual switches</li> <li>Standard Switch: vSwitch0</li> </ul>	ADD NETWORKING EDIT	ADD NETWORKING REFRESH
esxi02.abdelwa	Storage Devices Host Cache Configuration			]
뮵 RH (inaccess 급 vCenter Server	Protocol Endpoints I/O Filters	<ul> <li>⊘ Management Networ</li> <li>∨LAN ID:</li> <li>∨ VMkernel Ports (1)</li> </ul>	k	Physical Adapters     vmnic0 10000 Full     vmnic1 10000 Full
ලා VM1-H2 (macce 큔 VM1-H2-Clone (	Networking	<b>v c</b>		×

Now disconnect fist NIC A There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES C  $(\mathbf{i})$ vm vSphere Client Menu 🗸  ${\sf Q}$  Search in all environments []] B, Ē esxi02.abdelwahed.me Monitor Configure Permissions VMs Datastores Updates Summarv Networks ✓ 🔄 vDatacenter HOST CACHE CONTIGURATION ^ Virtual switches ADD NETWORKING... REFRESH ✓ []] Cluster01 Protocol Endpoints ✓ Standard Switch: vSwitch0 ADD NETWORKING EDIT esxi01.abdelwa... I/O Filters tor: C:\Windows\system32\cmd.exe - ping esxi02 -t \_  $\times$ 200.200.200.2: bytes=32 time=16ms TTL=64 200.200.200.2: bytes=32 time=1ms TTL=64 Physical Adapters × 🔲 vmnic0 🔲 vmnic1 10000 Full 00.200.200.2: bytes=32 time<1ms TTL=64 200.200.200.21 bytes=32 time<1ms TTL=64 200.200.200.22 bytes=32 time<1ms TTL=64 200.200.200.22 bytes=32 time=1ms TTL=64 200.200.200.22 bytes=32 time<1ms TTL=64 200.200.200.2: bytes=32 time<1ms TTL=64 200.200.200.2: bytes=32 time<1ms TTL=64 200.200.200.2: bytes=32 time<1ms TTL=64 200.200.200.2: bytes=32 time<1ms TTL=64 Initiator T Activate Windows

G

>

ESXI02 still working

#### Add VMkernel port for management

- 1- Add new NIC for both ESXi servers eith Host-only profile. (Restart network management so the new NIC appears) without adding ip address.
- 2- For both ESXi servers add new switch to assign VMKernel port

ملحوظة كل VMKernel يفضل ان تؤدى وظيفة واحدة ويكون ليها IP لحاله وتكون في VLane مختلفة

vm vSphere Client	Menu 🗸 🛛 📿 Search	C ? ~ Administrator@VSPHERE.LOCAL ~				
	esxi01.abdelwahed.	Me Actions -				
✓	Summary Monitor Configu	ure Permissions VMs Datastores Networks				
✓ <u>III</u> vServer ✓ III Cluster01	✓ Storage	tual switches				
esxi01.abdelwahed	Storage Adapters	Add Networking 🚱 Refresh 🛛 🖳 Migrate VMkernel Adapter				
esxi02.abdelwahed.	Storage Devices	lanage Physical Adapters 🖉 Edit 🗙 Remove				
	Protocol Endpoints Swit	tch y Discovered Issues				
	I/O Filters	vSwitch0				

### esxi01.abdelwahed.me - Add Networking

<ul> <li>1 Select connection type</li> <li>2 Select target device</li> </ul>	Select target device Select a target device for the new connection.	
3 Create a Standard Switch 4 Port properties 5 IPv4 settings	Select an existing network	
6 Ready to complete		BROWSE
	<ul> <li>Select an existing standard switch</li> </ul>	
	vSwitchO	BROWSE
	New standard switch	
	MTU (Bytes) 1500	

## esxi01.abdelwahed.me - Add Networking

<ul> <li>1 Select connection type</li> <li>2 Select target device</li> </ul>	Port properties Specify VMkernel port settings.					
<ul> <li>3 Create a Standard Switch</li> <li>4 Port properties</li> <li>5 IPv4 settings</li> </ul>	VMkernel port settings Network label	VMkernel				
6 Ready to complete	VLAN ID MTU	None (0)     •       Get MTU from switch v     1500				
	Available services					
	Enabled services					
		Fault Tolerance logging Management				
		VSphere Replication				
		□ vSphere Replication NFC				
		VSAN				

because we add kernel port so ask for IP. If we add port group not ask for IP because IP you add direct to the VM.

### esxi01.abdelwahed.me - Add Networking

<ul> <li>1 Select connection type</li> <li>2 Select target device</li> <li>3 Create a Standard Switch</li> </ul>	IPv4 settings Specify VMkernel IPv4 settings.					
<ul> <li>4 Port properties</li> <li>5 IPv4 settings</li> <li>6 Ready to complete</li> </ul>	<ul> <li>Obtain IPv4 settings automatically</li> <li>Use static IPv4 settings</li> </ul>					
	IPv4 address Subnet mask Default gateway	192.168.100.1 255.255.255.0 Override default gateway for this adapter				
	DNS server addresses	200.200.200				

### esxi01.abdelwahed.me - Add Networking

1 Select connection type

#### Ready to complete

- 2 Select target device
- 3 Create a Standard Switch
- 4 Port properties
- ✓ 5 IPv4 settings
  - 6 Ready to complete

Review your settings selections before finishing the wizard.			
New standard switch	vSwitch1		
Assigned adapters	vmnic1		
Switch MTU	1500		
New port group	VMkernel		
VLAN ID	None (0)		
vMotion	Disabled		
Provisioning	Disabled		
Fault Tolerance logging	Disabled		
Management	Enabled		
vSphere Replication	Disabled		
vSphere Replication NFC	Disabled		
vSAN	Disabled		
NIC settings			
MTU	1500		
TCP/IP stack	Default		
IPv4 settings			
IPv4 address	192.168.100.1 (static)		
Subnet mask	255.255.255.0		

vm vSphere Client	Menu 🗸 🔍 Search	C ()~ A	Administrator@VSPHERE.LOCAL ✓
<ul> <li>Cluster01.abdelwahed.me</li> <li> VServer Cluster01 Cluster01 esxi01.abdelwahed esxi02.abdelwahed VM01 </li> </ul>	<ul> <li>esxiO1.abdelwa</li> <li>Summary Monitor</li> <li>Storage</li> <li>Storage Adapters</li> <li>Storage Devices</li> <li>Host Cache Configur</li> <li>Protocol Endpoints</li> <li>I/O Filters</li> <li>Networking</li> <li>Virtual switches</li> <li>VMkernel adapters</li> <li>Physical adapters</li> <li>TCP/IP configuration</li> <li>Virtual Machines</li> </ul>	hed.me ACTIONS ~ Configure Permissions VMs Virtual switches Add Networking Refresh Prime Manage Physical Adapters Content Switch Content Switch Switch Standard switch: vSwitch1 Port Groups Properties Polici Details Content Content Content Content Configure Permissions VMs Configure Permissions VM	Datastores Networks Migrate VMkernel Adapter X Remove Discovered Issues es
	VM Startup/Shutdo Agent VM Settings	Port Group     Y     VLAN ID     Y	Active Po y Uplinks



#### (=) - https://192.168.100.2/ui/#/host ▼ Search... ESXI01.localdomain - VMware ... 🥜 ESXI02.localdomain - VMwa... 🗙 📑 vmware<sup>,</sup> ESXi root@192.168.100.2 - | Help - | Q Search ESXI02.localdomain 📲 Navigator 🛛 🔤 Host 🕝 Manage with vCenter Server \mid 🎁 Create/Register VM 📔 🛅 Shut down 🛛 🗞 Reboot 🔋 🧲 Refresh 🕴 🐗 Actions Manage ESXI02.localdomain CPU FREE: 5.4 GHz Monitor Version: 6.7.0 Update 3 (Build 14320388) USED: 210 MHz CAPACITY: 5.6 GHz Normal (connected to vCenter Server at... 🔂 Virtual Machines State: Uptime: 0.71 davs MEMORY FREE: 6.58 GB Storage USED: 1.32 GB CAPACITY: 7.9 GB **Q** Networking STORAGE FREE: 689.18 GB USED: 2.82 GB CAPACITY: 692 GB

Edit VMkernel port to support vMotion (vMotion for migrating storage and VMs)

vm vSphere Client	Menu 🗸 🛛 🔍 Search	C ? ~ Administrator@VSPHERE.LOCAL ~	C
v Center01.abdelwahed.me	Summary Monitor	Configure Permissions VMs Datastores Networks	
<ul> <li>Vserver</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> </ul>	<ul> <li>✓ Storage</li> <li>Storage Adapters</li> <li>Storage Devices</li> </ul>	<ul> <li>VMkernel adapters</li> <li>Add Networking</li></ul>	Â
	Host Cache Configur Protocol Endpoints I/O Filters	Device     Y     Network Label     Y     IP Addre       Image: wmk0     Image: Management N     Image: Witch0     200.20(*)       Image: wmk1     Image: Witch1     192.168;	
	<ul> <li>Networking</li> <li>Virtual switches</li> <li>VMkernel adapters</li> </ul>		

### vmk1 - Edit Settings

Port properties		
Pv4 settings	VMkernel port setting	S
n ve settings	TCP/IP stack	Default
	MTU	1500
	Available services	
	Enabled services	✓ vMotion
		Provisioning
		Fault Tolerance logging
		🗹 Management
		vSphere Replication
		VSphere Replication NFC
		VSAN

Note, to complete storage or VM migration (hot migration) between different ESXi hosts. You must either add VMKernel for vMotion traffic or add vMotion option to exiting VMKernel for both ESXi01 and ESXi02.

### VMware Cluster

For the following labs you must add VMware cluster inside vCenter and move the ESXi servers to it

#### VMware vSphere<sup>®</sup> Distributed Resource Scheduler<sup>™</sup> (DRS) – Power of Cluster

DRS only available with vCenter cluster, once you enable this service the monitor CPU and memory utilization will start monitored on each ESXi host and if utilization increase at one node will migrate included vms to another ESXi host.

VMware DRS is a feature used for balancing resources of virtual machines across ESXi hosts in a cluster. The purpose of DRS is to balance CPU and memory across clusters. It can be set to automatically move VMs based off of its algorithms, or be set to manual and give recommendations for manually moving VMs.

Try to enable it, you will aske about the automation level



Edit Cluster Settings Cluster01					
vSphere DRS O Automation Additional Opt	tions Power Management Advanced Options				
Automation Level	Fully Automated     v       Manual     vsts at VM power-on, and       Partially Automated     one host to another to       Fully Automated     optimize resource utilization.				
Migration Threshold $i$	Conservative Aggressive DRS provides recommendations when workloads are moderately imbalanced. This threshold is suggested for environments with stable workloads. (Default)				
Predictive DRS $i$	Enable				
Virtual Machine Automation $i$	Enable				

if you set to **manual DRS** will suggest you to migrate and you have to accept or no. while **partialy automated** will migrate the VMs and inform you that the vms moved to diffrent host based on these criteria. **Fully automated** migrate without notification because as administrator I only care that VMs up and running on any host.

Even if it migrated automated, we can add some roles (DRS Rules) for its action. For example:

- 1- If there is two servers one DC and another ADC I can set rules that these vms must be always separated.
- 2- If there is two servers one App and another App DB I can set rule to force DRS to keep these servers always at the same server so if one server move will move the other also.
- 3- In some cases you can set collection of ESXi servers togother in one compute rack and add them to one group then I can force DRS to prevent moving some servers to another ESXi at another rack in case of power disconnect.
- 4- We can set rule also for migrate to start migration before CPU and memory utilization going high based on historical information like last time the CPU utilization going high If there is two servers one there was specific behaviuor runs on the server so if the same behaviour repeated will start direct the migration. (Predictive DRS)

Edit Cluster Sett	
vSphere DRS O	Options Power Management Advanced Options
VM Distribution	□ For availability, distribute a more even number of virtual machines across hosts.
Memory Metric for Load Balar	ncing Load balance based on consumed memory of virtual machines rather than active memory. This setting is only recommended for clusters where host memory is not over-committee
CPU Over-Commitment $i$	Over-commitment ratio: 0 :1 (vCPU:pCPU)
vSphere DRS O Automation Addition	nal Options Power Management Advanced Options
dpm i	Enable
Automation Level	Manual ~
DPM Threshold	Conservative Aggressive vCenter Server will apply power-on recommendations produced to meet vSphere HA requirements or user-specified capacity requirements. Power-on recommendations will also be applied if host resource utilization becomes higher than the target utilization range. Power-off recommendations will be applied if host resource utilization becomes very low in comparison to the target utilization range.
Contraction Cluster Set	al Options Power Management Advanced Options
Edit Cluster Set	al Options Power Management Advanced Options
Control Cluster Set	Advanced Options  Power Management  Advanced Options  Value

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vm vSphere Client	Menu 🗸 🛛 📿 Search	C	? ✓ Administrator@VSPHERE.LOCAL ✓
	Cluster01 AC	TIONS V	
<ul> <li>VCenter01.abdelwahed.me</li> <li>vServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> </ul>	Summary Monitor ▼ Services vSphere DRS	vSphere DRS is Turned ON	Hosts VMs Datastores Networks           RESTORE RESOURCE POOL TREE         EDIT.
esxi02.abdelwahed     vSphere Availability     vM01     Configuration     General     Licensing     VMware EVC	> DRS Automation     > Additional Options     > Power Management	Manual Expand for policies Off	
	VM/Host Groups VM/Host Rules VM Overrides	> Advanced Options	None

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any recommendation comes here, and you can apply it.

vm vSphere Client	Menu 🗸	Q Search		C (	?) ~ 🛛 Adn	ninistrator@VSF	Phere.local V	$\odot$
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>VM01</li> </ul>	<ul> <li>Cluster</li> <li>Summary</li> <li>Issues and All Issue Triggere</li> <li>Performar Overvie Advance</li> <li>Tasks and Tasks Events</li> <li>vSphere E Recomm</li> </ul>	erO1 ACTIO Monitor Con d Alarms ed Alarms nce w ed d Events DRS mendations	INS - Infigure F DRS Rec RUN DRS NO Apply	Permissions COMMENC W Priority	Hosts dations Recommen	VMs Data	istores Network: Reason	5
	History CPU Uti	ilization						

#### Creat VM/Host Groups

Like each group of VMs inside one compute rack add them to one group or based any other criteria.

\_\_\_\_\_

vm vSphere Client	Menu 🗸	Q Search	C	?~	Administrat	or@VSPHERE.LOCAI
		ster01 Action	NS 🗸			
<ul> <li>✓ P vCenter01.abdelwahed.r</li> <li>✓ ■ vServer</li> <li>✓ □ Cluster01</li> </ul>	me Summary • Service	Monitor Cor	nfigure Permission VM/Host Grout	ns Hosts	s VMs	Datastores
<ul> <li>esxi01.abdelwah</li> <li>esxi02.abdelwah</li> <li>Server01</li> <li>Server02</li> <li>Server03</li> <li>Server04</li> </ul>	ed vSph ned vSph Configu Gene Licer VMw VM/I VM/I VM/I VM/I	ere DRS ere Availability uration eral ising vare EVC Host Groups Host Rules Overrides	Add X Delete Name		Туре	T Filter
	Name: Type:	R	M Group			
	+ Add X Rem	iove H	lost Group			
	Server01					
	Create	VM/Host G	roup cluster(	01		>
	Name:		R2			
	Type:	Remove	VM Group V VM Group Host Group			
	Members					
	🗗 Server	03				A
	🔂 Server	)4				

#### Create VM/Host Rules

To control DRS behavior.

vm vSphere Client	Menu 🗸	Q Searcl	h	C	?~	Administra	tor@VSPHERE.L(	DCAL ∨
V Center01.abdelwahed.me	Clus Summary	ter01	ACTIONS ~	Permission	is Hos	ts VMs	Datastores	Networl
Cluster01	✓ Service vSph vSph	s ere DRS ere Availability	VM/Ho	ost Rules 🧪 Edit 🗙	Delete			
<ul> <li>esxi02.abdelwaned</li> <li>Server01</li> <li>Server02</li> <li>Server03</li> <li>Server04</li> </ul>	✓ Configu Gene Licen VMw VM/H	iration ral sing are EVC lost Groups	Name	Туре		Enabled	Conflicts	Defined By
	VM/H VM C Host	lost Rules Overrides Options	4					

# Create VM/Host Rule Cluster01

Name	DC-ADC Rule	Enable rule.
Туре	Separate Virtual Machines	*

 $\times$ 

Description:

The listed Virtual Machines must be run on separate hosts.

🕂 Add 🗙 Remove	
Members	
🗗 ADC	<b>^</b>
🔂 DC	

Name	App-AppDB Rule	Z Enable rule.	
Туре	Keep Virtual Machines	Together	~
escription:			
he listed Virtual Machines mu	st be run on the same host.		
🕂 Add 🗙 Remove			
Members			
🗗 App			-
AppDB			
reate VM/Host F	Rule Cluster01		×
reate VM/Host F	Rule Cluster01	Enable rule.	×
reate VM/Host F <sub>Name</sub> <sub>Type</sub>	Rule Cluster01	Enable rule.	×
Create VM/Host F Name Type	Cluster01       R1 VMs Rule       Virtual Machines to Host	Enable rule.	×
Create VM/Host F Name Type escription:	Rule Cluster01	_ Enable rule.	×
Create VM/Host F Name Type escription: Hect cluster host group M Group:	Cluster01         R1 VMs Rule         Virtual Machines to Host	_ Enable rule.	×
Create VM/Host F Name Type escription: elect cluster host group M Group:	Rule Cluster01	Enable rule.	× •
Ereate VM/Host F Name Type escription: elect cluster host group M Group:	Rule Cluster01	Enable rule.	× •
Ereate VM/Host F Name Type escription: elect cluster host group M Group: 1	Rule Cluster01	Enable rule.	× •

Name	R1-R2 Rule 🗹 Enable rule.
Туре	Virtual Machines to Virtual Machines
escription:	
escription: 'irtual machines in the Clu	ster VM Group R1 must have the dependency restart
escription: 'irtual machines in the Clu ondition met before vSph	ster VM Group R1 must have the dependency restart ere HA proceeds with restarting the VMs in group R2.
escription: 'irtual machines in the Clu ondition met before vSph he VM dependency resta	ster VM Group R1 must have the dependency restart ere HA proceeds with restarting the VMs in group R2. rt condition must be met before continuing to:

\_\_\_\_\_

#### VM Overrides

To override DRS configuration and more for specific VM, enable the following option during DRS configuration.

Edit Cluster Setting	JS Cluster01	
vSphere DRS O Automation Additional Opt	tions Power Management A	dvanced Options
Automation Level	Manual	<u> </u>
Migration Threshold $i$	DRS generates both power-on placem recommendations for virtual machines applied or ignored. Conservative	nent recommendations, and migration s. Recommendations need to be manually Aggressive n workloads are moderately imbalanced.
	This threshold is suggested for enviro	nments with stable workloads. (Default)
Predictive DRS $ i$	Help	*
Virtual Machine Automation $i$	<ul> <li>Override for individual virtual machines of set from the VM Overrides page.</li> </ul>	can be

Once you enable it you can configure from

ľ			<u> </u>	📋 Clust	er01 🛛	CTIONS -					
∕ 🗗 ∨ ∽ 🗎	Center01.al	bdelwahe	ed.me	Summary	Monitor	Configure	Permissions	Hosts	VMs	Datastores	Ne
~	Cluster	01 D1.abdelv D2.abdelv	vahed wahed	vSpher vSpher	e DRS e Availability	✓M O + Add	Verriaes	Delete			
	ADC			<ul> <li>Configura</li> <li>Genera</li> <li>Liconsi</li> </ul>	ation I	Name	Ŧ	vSphere DRS	Automa 🝸	vSphere HA Re	start P.
	🗗 App	DB		VMwar VM/Ho	re EVC st Groups						
				VM/Ho VM Ov	st Rules errides						
				Host O	ptions						

First you must select the VM you want to run different DRS options

#### Add VM Override Cluster01

Select a VM				
Filter Selected (1)				
			T Filter	
□ Name ↑	~ State ~	Status ~	Provisioned Space	~ U
🗋 🔓 ADC	Powered On	🗸 Normal	42.08 GB	4 ^
🗋 🔓 Арр	Powered On	✓ Normal	42.08 GB	4
AppDB	Powered On	✓ Normal	42.08 GB	4
🔽 🔓 DC	Powered On	🗸 Normal	42.08 GB	4
	Select a VM Filter Selected (1)  Name ↑  ADC  App  AppDB  C DC  C DC	Select a VM         Filter       Selected (1)         Image: Se	Select a VM         Filter       Selected (1)         Name ↑       ✓       State       ✓         ADC       Powered On       ✓       Normal         App       Powered On       ✓       Normal         AppDB       Powered On       ✓       Normal         DC       Powered On       ✓       Normal         DC       Powered On       ✓       Normal	Select a VM         Filter       Selected (1)         ▼       Filter         Name ↑       ×       State       ×       Provisioned Space         ▲ ADC       Powered On       ✓       Normal       42.08 GB         ▲ App       Powered On       ✓       Normal       42.08 GB         ▲ AppDB       Powered On       ✓       Normal       42.08 GB         ▲ DC       Powered On       ✓       Normal       42.08 GB         ▲ DC       Powered On       ✓       Normal       42.08 GB

#### Add VM Override Cluster01

2 Add VM Override	Add VM Override			
	vSphere DRS			
	DRS automation level	Override	Manual ~	
			Disabled	
	vSphere HA		Manual	
	VM Restart Priority	Override	Partially Automated Fully Automated	
	Start next priority VMs	Override	Resources allocated	~

#### VMware HA

- you have to use network storage to save VM data
- HA not zero down time, HA reduce the down time because the machine will restart (reboot) from another server.
- To keep machine running without down time you have to use fault torrelance (FA)
- Heartbeat between servers smarter because working in different levels, like storage, Application, network
- If vCenter is going down HA will continue work
- In case vCenter down HA will continue work because vCenter just build the HA and select one ESXI server as a master node this master node will manage the HA because it has a connection to HA configuration file at a network storage, this configuration file included all information about HA clutser like how many hosts we have and how many numbers of VMs inside each host, if any node is down this master will move all vms included to another ESXi hosts. Incase this master server is down ESXi server will vote to select another master whis is the highest resource server, if all same resources will vote based on build number.
- In case you have two ESxXi srevers if one host is down all VMs will move to another host, but what if another host doen't has enough resources?

To solve this case, during design there is admission control which will reserve resources from beginning the for HA. This control will apply rule to the HA for example preserve 50% of each host resource to use it in this case or the rule is to preserve one empty host as a standby server for this case. Also admission can ask for decrease VMs resources to move it to another host in case another host doesn't has enough resource which is named (VM degregation) and you have to accept this rule or no if you accept VMs resources will decreased if no the server will go down in case host is down.

#### HA requirments:

- 1- At least 2 shared datastore (ISCSI) to detect the actual problem in datastore or on SAN storage.
- 2- Default gateway configured on network cards to detect the failuar in network or at host.

#### Configure HA

Add two ISCSI disk to both servers then add datastore

	esxi01.abdelwahed.me
vCenter01.abdelwahed.me	Summary Monitor Configure Permissions VMs Datastores Networks
<ul> <li>VServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>ADC</li> <li>App</li> <li>AppB</li> <li>DC</li> </ul>	<ul> <li>Storage</li> <li>Storage Adapters</li> <li>Storage Devices</li> <li>Host Cache Configur.</li> <li>Protocol Endpoints</li> <li>I/O Filters</li> <li>Networking</li> <li>Virtual switches</li> <li>VMkernel adapters</li> <li>Physical adapters</li> <li>TCP/IP configuration</li> <li>Virtual Machines</li> <li>VM Startup/Shutdo</li> <li>Agent VM Settings</li> <li>Default VM Compati</li> <li>Swap File Location</li> <li>Sustam</li> </ul>
<ul> <li>VCenter01.abdelwahed.me</li> <li>VServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>App</li> <li>AppB</li> <li>AppDB</li> <li>DC</li> </ul>	Image: Storage       Actions ✓         Storage       Storage Adapters         Storage Devices       + Add Software Adapter         Host Cache Configur.       Protocol Endpoints         I/O Filters       Model: ISCSI Software Adapter         Virtual switches       Winhba65         Virtual switches       Model: ISCSI Software Adapter         VMkernel adapters       Pro         Pro       P         Pro       P         Virtual Machines       Wistartup/Shutdo         Agent VM Settings       Attach         Default VM Compati       Swap File Location
For datastore we already configure one ISCSI datastore with 500GB size now we will add another 300GB iSCSI datastore

vSphere - esxi01.abdelwahed.me	🗙 🥜 Log i	n - VMware ESXi	×   +					•	- 6	) ×
← → C ▲ Not secure	vcenter01.abc	delwahed.me/ui/#?exten	sionId=v	sphere.co	re.host	t.relatedData	astoresTab&objectId	d=urn:vmomi:H	☆	<b>.</b> :
A There are vCent	Actions - esx	ki01.abdelwahed.me	ıg licens	es in you	inven	tory. MAN	AGE YOUR LICENSE	ES DETAILS		×
vm vSphere Client	🚡 New Virtua	al Machine /F Template			С	?~	Administrator@\	VSPHERE.LOCA	l V	
	🏀 New Resou	urce Pool	ed.me	e   A	стіон	S 🗸				
✓   vCenter01.abdelwahed.me ✓   n vServer	Maintenan	ce Mode	nfigure	Perr	nissior	ns VMs	Datastores	Networks		
└── ✓ [] Cluster01 □ esxi01.abdelwahed	Connectior	n 🕨						T Filter		
esxi02.abdelwahed	Power	•	~	Status	~	Туре	∽ Datastore ∽	Capacity ~	Free	
	Certificates	s 🕨		V Nori	mal	VMFS 6		149.5 GB	142.5	GB
	Storage	Þ	🔁 Nev	v Datasto	re	VMFS 6		499.5 GB	284.17	GB
🔂 DC	<u> A</u> dd Netwo	orking	la Res	ican Stora	ge	VIVIES 6		192.5 GB	191.09	GB
1 Type 2 Name and device s 3 VMFS version 4 Partition configurat 5 Ready to complete	Peconfigur Peconfigur T election S 	<ul> <li>Perfor vSnhere HA</li> <li>ype</li> <li>pecify datastore typ</li> <li>VMFS</li> <li>Create a VMFS datastore</li> <li>NFS</li> <li>Create an NFS datastore</li> <li>VVol</li> <li>Create a Virtual Virtual</li></ul>	e. atastore datastore /olumes	e on a di e on an N s datasto	sk/LU NFS sh	JN. hare over t h a storage	he network.	ected to a sto	prage	
2 Name and device se 3 VMFS version		elect a name and a d	isk/LUN	N for pro	visio	ning the da	atastore.			
4 Partition configurati	on	atastore name. Data	astores	13631		_				
5 Ready to complete		Name	~	LUN	~	Capacity	✓ Hardware	✓ Drive T.		s
		MSFT ISCSI Disk (naa.	60	1		299.71 (	GB Not suppor	r HDD		E 🔶

<ul> <li>1 Type</li> <li>2 Name and device sele</li> <li>3 VMFS version</li> <li>4 Partition configuration</li> <li>5 Ready to complete</li> </ul>	ection	VMFS version Specify the VMFS version VMFS 6 VMFS 6 enables a VMFS 5 VMFS 5 enables 2	sion for the o advanced for 2+TB LUN su	Jatastore mat (512	e. ?e) and aut	omatic spa	ice reclamatio	on support.
New Datastore								
<ul> <li>1 Type</li> <li>2 Name and device selection</li> <li>3 VMFS version</li> <li>4 Partition configuration</li> <li>5 Ready to complete</li> </ul>	Partitio Review Partiti Datasi Block Space Space	on configuration y the disk layout and spec on Configuration tore Size size Reclamation Granularity Reclamation Priority	I MB I MB Low: Delete on the LUN	able part	ion details. tions O ~ apped bloc riority	299.71 ks are recla	GB O imed	
			Empty:	299.7 GB				

### Now I have two iSCSI datastore connected to both hosts

		9	<u> </u>	🗌 esxiO	1.abdelw	/ahed.m		IS 🗸					
∨ 🗗 ∨Ce	enter01.a vServer	bdelwahe	d.me	Summary	Monitor	Configure	Permissio	ns VMs	Datastores	Network	(S		
$\sim$ [	Cluster	01 01.abdelw	ahed							T_FI	ter		
	esxi	02.abdelv	vahed	Name ↑		~	Status ~	Type ~	Datastore V	Capacity	~	Free	
	🗗 ADC	2		DataSto	re03_local		✓ Normal	VMFS 6		149.5 GB		142.5 GB	*
	🗗 App			Datastor	re04_ISCSI		✓ Normal	VMFS 6		499.5 GB		284.17 GB	
	E App	DB		datastor	e1_local		✓ Normal	VMFS 6		192.5 GB		191.09 GB	
				Datastor	re5-ISCSI		✓ Normal	VMFS 6		299.5 GB		298.09 GB	

vm	vSpher	e Client		Menu 🗸	Q Search		С	?~	Administrator@\	VSPHERE.LOCAL	- ~ 🛛 😳
Ľ)	₽	9	<u>@</u>	🛯 esx	i02.abdelwa	hed.m	ре Астіої	NS 🗸			
vC	enter01.ab	delwahed	.me	Summary	Monitor C	onfigure	Permissio	ns VMs	Datastores	Networks	
	vServer										
✓ III Cluster01											
$\sim$	Cluster	)1 1 abdelwa	hed							<b>T</b> Filter	
$\sim$	Cluster esxi0	01 11.abdelwa 12.abdelwa	hed	Name ↑		~	Status ~	Туре	✓ Datastore ✓	₹ Filter Capacity ~	Free
~ [	Cluster esxi0 esxi0	01 1.abdelwa 2.abdelwa	hed ahed	Name ↑	store04_ISCSI	~	Status ~	Type ·	✓ Datastore ✓	<ul> <li>▼ Filter</li> <li>Capacity ~</li> <li>499.5 GB</li> </ul>	Free 284.17 GB
~ [	Cluster esxi0 esxi0 esxi0 ADC	01 I1.abdelwa I2.abdelwa	hed ahed	Name ↑	store04_ISCSI	~	Status ~ Normal	Type · · · · · · · · · · · · · · · · · · ·	✓ Datastore ✓	<ul> <li>▼ Filter</li> <li>Capacity ~</li> <li>499.5 GB</li> <li>192.5 GB</li> </ul>	Free 284.17 GB 191.09 GB

Add pingable DF for both hosts (in this case I will use IP for vCenter)

IPv4 Configuration	
This host can obtain network settings automating includes a DHCP server. If it does not, the find specified:	tically if your network following settings must be
( ) Disable IPv4 configuration for management ( ) Use dynamic IPv4 address and network conf (o) Set static IPv4 address and network conf	t network Figuration iguration:
IPv4 Address	[ 200.200.200.1 ]
Subnet Mask	[ 255.255.255.0 ]
Default Gateway	[ 200.200.200.111_ ]
<pre><up down=""> Select <space> Mark Selected</space></up></pre>	<pre></pre>

Now you can enable HA

vm vSphere Client	Menu 🗸	Q Search		C	?~	Administrat	tor@VSPHERE.LC		
	🗂 Clus	ster01 🛛 🗚	CTIONS 🗸						
VCenter01.abdelwahed.me     ✓ ■ vServer	Summary	Monitor	Configure	Permissions	Hosts	VMs	Datastores	Networks	
Cluster01	✓ Service vSph	es ere DRS	vSphe Runtime in	ere HA is Tu	u <mark>rned</mark> here HA is	OFF reported un	der vSphere HA	EDIT Monitoring	כ
📄 esxi02.abdelwahed. 🌇 ADC	vSph ▼ Config	ere Availability uration	Proac	tive HA is T	Furnec	OFF		EDIT	
	Gene	eral	Failure	e condition	s and	respon	ses		

Failures and responses	Admission Control	Heartbeat Datastores	Advanced Options
/ou can configure how vSpl	here HA responds to the	failure conditions on this clus	ster. The following failure conditions are
supported: host, host isolati	ion, VM component prote	ection (datastore with PDL an	nd APD), VM and application.
nable Host Monitoring			
Enable Host Monitoring $i$			
Enable Host Monitoring 1		Restart VMs 🗸	
Enable Host Monitoring <i>i</i> > Host Failure Response > Response for Host Isoli	ation	Restart VMs 🗸	~
Enable Host Monitoring <i>i</i> > Host Failure Response > Response for Host Isola	ation	Restart VMs 🗸	▼
Enable Host Monitoring <i>i</i> > Host Failure Response > Response for Host Isola > Datastore with PDL	ation	Restart VMs  Disabled Disabled	<ul> <li>✓</li> <li>✓</li> </ul>

- Response for host isolation, means VM not pingable there is network problem. You have to take care about this option because sometimes VM temporary unaviable due to backup process or any heavy traffic running now on VM

> Response for Host Isolation	Disabled 🗸
	Disabled
> Datastore with PDL	Power off and restart VMs Shut down and restart VMs
> Datastore with APD	Disabled

#### PDL, datastore that store the VM is down

<ul> <li>Datastore with PDL</li> </ul>	
Datastore with PDL Failure Response	Allows you to configure the cluster to respond to PDL Datastore failures.
	Disabled No action will be taken to the affected VMs.
	<ul> <li>Issue events</li> <li>No action will be taken to the affected VMs; events will be generated.</li> </ul>
	<ul> <li>Power off and restart VMs</li> <li>All affected VMs will be terminated and vSphere HA will attempt to restart the VMs on hosts that still have connectivity to the datastore.</li> </ul>

#### APD, all path is down that all datastore is down mean SAN problem

All Paths Down (APD) Failure Response

Allows you to configure the cluster to respond to APD Datastore failures

Disabled

No action will be taken on the affected VMs.

O Issue events

No action will be taken on the affected VMs. Events will be generated.

- Power off and restart VMs Conservative restart policy
   A VM will be powered off, if HA determines the VM can be restarted on a different host.
- O Power off and restart VMs Aggressive restart policy

A VM will be powered off, If HA determines the VM can be restarted on a different host, or if HA cannot detect the resources on other hosts because of network connectivity loss (network partition).

#### VM Monitoring

Enable heartbeat monitoring

VM monitoring resets individual VMs if their VMware tools heartbeats are not received within a set time. Application monitoring resets individual VMs if their in-guest heartbeats are not received within a set time.

- Disabled
- O VM Monitoring Only

Turns on VMware tools heartbeats. When heartbeats are not received within a set time, the VM is reset.

O VM and Application Monitoring

Turns on application heartbeats. When heartbeats are not received within a set time, the VM is reset.



Failures and responses	Admission Contr	rol Heartbeat Datastores Advanced Options
Admission control is a polic	cy used by vSphere H	A to ensure failover capacity within a cluster. Raising the number of potential
host failures will increase th	he availability constra	ints and capacity reserved.
Host failures cluster tolerat	ies	1
		Maximum is one less than number of hosts in cluster.
Define host failover capaci	ty by	Dedicated failover hosts
Define host failover capaci	ty by	Dedicated failover hosts  Add X Remove  Failover Hosts
Define host failover capaci	ty by	Dedicated failover hosts ✓ ♣ Add X Remove Failover Hosts
ere HA	ty by	Dedicated failover hosts ✓ ♣ Add X Remove Failover Hosts

vSphere HA uses datastores to monitor hosts and virtual machines when the HA network has failed. vCenter Server selects 2 datastores for each host using the policy and datastore preferences specified below.

Heartbeat datastore selection policy:

- Automatically select datastores accessible from the hosts
- Use datastores only from the specified list
- Use datastores from the specified list and complement automatically if needed

#### Available heartbeat datastores

	Name	Datastore Cluster	Hosts Mounting Datastore $\downarrow$	
□.	Datastore5-ISCSI	N/A	2	-
0.	Datastore04_ISCSI	N/A	2	

vSphere HA				
Failures and responses	Admission Control	Heartbeat Datastores	Advanced Options	
	_			
<ul> <li>Host Failure Response</li> </ul>				
Failure Response		Allows you to configure hos	t monitoring and failove	r on this cluster.
		<ul> <li>Disabled</li> <li>Host Monitoring is turn failures.</li> <li>Restart VMs</li> <li>When a Host failure is determined by their rest</li> </ul>	ed off. vCenter will not i detected, VMs will be re start priority.	respond to host estarted in the order
Default VM restart Pri	ority	Medium 🗸		
VM dependency resta	art condition	After the condition has been next VM restart priority. Resources allocated	n met, vSphere HA will p	roceed with the
		Additional delay: VM dependency restart condition timeout:	0 600	seconds 🚯



### Testing

I have one VM named AppDB hosted on ESXiO2, I will be disconnected ESXiO2 from network and AppDB will move to ESXiO1, because I set HA for network if down will restart VM on another host.



### vCenter Proactive HA (need plugins)

vCenter can monitor hardware through vmware tool plugins,

vm vSphere Client	Menu 🗸 🛛 📿 Search	C	? V Administrator	®VSPHERE.LOCAL ∨
	Cluster01	ons 🗸		
✓	Summary Monitor C	onfigure Permissions	Hosts VMs	Datastores Networks
V VServer	✓ Services	VSphore UA is T		
	vSphere DRS			EDIT
esxi02.abdelwahed	vSphere Availability	Droactivo LLA is		
	<ul> <li>Configuration</li> </ul>	Produtive HA IS		EDIT
App	General	Failure condition	ns and response	S
AppDB	Licensing	Failure	Response	Details

this plugin provided by vendor, we install it at vCenter and will appear at provider area so we can monitor health degregation not hardware failuar.

Edit Proactive HA cluster01				
Status				
Failures & Responses Providers				
Enable providers and select rows to view/edit	the failure conditions supported by the p	provider.		
Proactive HA provider	Status	Failure conditions blocked		

If you set it manual will notify you at DRS with recommendations, but if you set it to automatic will take actions automatic.

Edit Proactive H	A Cluster01	$\times^{\leq}$
Status		
Failures & Responses	Providers	
You can configure how Proac failure of that host. In the eve host.	tive HA responds when a provider has notified its health degradation to vCenter, indicating a part ont of a partial failure, vCenter Server can proactively migrate the host's running VMs to a healthier	ial r
Automation Level	Automated ~	
	Virtual machines will be migrated to healthy hosts and degraded hosts will be entered into quarantine or maintenance mode depending on the configured Proactive HA automation level.	
Remediation $i$	Quarantine mode v	
	Balances performance and availability, by avoiding the usage of partially degraded hosts as long as VM performance is unaffected.	9

Remedation determine the action (for HA) in case server marked as hardware degregation:



- Quarantine mode, if the server marked as the server in quarantine so not selected for any HA role. Like moving servers to it or voted as master.

\_\_\_\_\_

Failures & Responses	Providers	
You can configure how failure of that host. In t host.	Proactive HA responds when a provider has notified its health degradation to vCenter, indicating a part he event of a partial failure, vCenter Server can proactively migrate the host's running VMs to a healthier	ial r
Automation Level	Automated ~	
	Virtual machines will be migrated to healthy hosts and degraded hosts will be entered into quarantine or maintenance mode depending on the configured Proactive HA automation level.	
Remediation $i$	Quarantine mode V	
	Balances performance and availability, by avoiding the usage of partially degraded hosts as long as VM performance is unaffected.	9
Maintanance mo	de, will move all included VMs to another host	
ediation $i$	Maintenance mode v	
	Ensures VMs do not run on partially failed hosts.	
Mixed mode, mo	ve VMs to another host and mark as quarantine	
	Mixed mode	
ediation $i$		

### HA Summary and Heartbeat

voted master serve

	Cluster01 Actions -	
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>ADC</li> <li>App</li> <li>AppDB</li> <li>DC</li> </ul>	Summary       Monitor       Configure       Permissions       Hosts       VMs <ul> <li>vspriere DKS</li> <li>Recommendations</li> <li>Faults</li> <li>History</li> <li>CPU Utilization</li> <li>Memory Utilization</li> <li>Network Utilization</li> <li>Vsphere HA</li> <li>Summary</li> <li>Hosts</li> <li>Hosts connected to master</li> <li>Hosts not connected to master</li> <li>Nothere HA agent not reachable</li> <li>Vsphere HA agent configuration error</li> <li>Vsphere HA agent configuration error</li> <li>Hosts failed</li> <li>Network isolated</li> <li>Network isolated</li> <li>Network partitioned</li> <li>Network partitioned</li> </ul>	Datastores Ne
✓ I vCenter01.abdelwahed.me ✓ I vServer ✓ I Cluster01 I esxi02.abdelwahed I esxi02.abdelwahed I ADC I App I App I App I DC Fault down	Summary       Monitor       Configure       Permissions       Hosts       VMs       Datastores       Networks         Tasks Events       Vsphere DRS       A       Heartbeat       Datastore Server for heartbeating.       Datastores selected by vCenter Server for heartbeating.       Name       Datastore Cluster       Hosts Mounting Datastore         Faults       History       CPU Utilization       N/A       2       Datastore5-ISCSI       N/A       2         Wemory Utilization       Network Utilization       Network Utilization       Latastore5-ISCSI       N/A       2       Use the server for heartbeat         Fleartbeat       Configure Permissions       Latastore6-ISCSI       N/A       2       Use the server for heartbeat         Configure Permission       Vsphere HA       Summary       Latastore6-ISCSI       N/A       2       Use the server for heartbeat         Configure Permission       Configure Permission       Latastore6-ISCSI       N/A       2       Use the server for heartbeat         Configure Permission       Configure Permission       Latastore6-ISCSI       N/A       2       Use the server for heartbeat         Configure Permission       Configure Permission       Latastore6-ISCSI       Latastore6-ISCSI       Latastore6-ISCSI       Latastore6-ISCSI	Tolerance (0 time)

### down

To maintain 0 down time, the VM will duplicated at datastore one run as primary and another run as secondary, and everything (including storage and any data in memory) in primary VM will updated to secondary one at the same time. And there is heartbeat between the servers if primary one doen the secondary server will act as primary.

### Requirments

- 2 dedicated NIC with 1GB/sec speed for each server. -
- Datastore run on SSD disk. \_
- FT lecence.
- HA Enabled \_

### Configuration

First add 2 NIC on each ESXi servers and restart the management network for both servers to detect the new cards. Then go to vCenter to start FT configuration.

vm vSphere Client	Menu 🗸 🛛 📿 Search	C O v Administrator@VSPHERE.LOC
	esxi01.abdelwahed.m	NE ACTIONS -
✓	Summary Monitor Configure	e Permissions VMs Datastores Networks
<ul> <li>vServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>ADC</li> <li>App</li> <li>AppDB</li> <li>DC</li> </ul>	<ul> <li>✓ Storage</li> <li>Storage Adapters</li> <li>Storage Devices</li> <li>Host Cache Configur.</li> <li>Protocol Endpoints</li> <li>I/O Filters</li> <li>✓ Networking</li> <li>✓ Virtual switches</li> <li>✓ VMkernel adapters</li> </ul>	ual switches d NetworkIng th T Discovered Issues /Switch0 /Switch1
esxi01.abdelwahed.r	ne - Add Networking	

1 Select connection type	Select connection type
2 Select target device	Select a connection type to create.
3 Port properties	
4 IPv4 settings	NMkarnal Natwork Adaptar
5 Ready to complete	
	The VMkernel TCP/IP stack handles traffic for ESXi services such as vSphere vMotion

iSCSI, NFS, FCoE, Fault Tolerance, vSAN and host management.

### esxi01.abdelwahed.me - Add Networking

<ul> <li>1 Select connection type</li> <li>2 Select target device</li> </ul>	Select target device Select a target device for th	ne new connection.	
3 Create a Standard Switch 4 Port properties		ork.	
5 IPv4 settings 6 Ready to complete		лк	BROWSE
	Select an existing stand	ard switch	
			BROWSE
	💽 New standard switch		
	MTU (Bytes)	1500	

Add both adapters we added to ESXi in the virtual switch

### esxi01.abdelwahed.me - Add Networking

 1 Select connection type Create a Standard Switch 2 Select target device Assign free physical network adapters to the new switch. 3 Create a Standard Switch Assigned adapters All Properties CDP LLDP 4 Port properties 5 IPv4 settings Adapter 6 Ready to complete Name vmnic3 Active adapters PCI 0000:1b:00.0 Location 飅 (New) vmnic2 Driver nvmxnet3 🗾 (New) vmnic3 Status Status Connected Standby adapters Actual speed, Duplex 10000 Mb, Full Duplex 10000 Mb, Full Duplex Configured speed, Unused adapters Duplex Networks No networks Network I/O Control A 11 ----- -1 C1-1---

1 Select connection type 2 Select target device	Port properties Specify VMkernel port settings.			
3 Create a Standard Switch 4 Port properties	VMkernel port settings			
5 IPv4 settings	Network label FT_Network			
6 Ready to complete	VLAN ID	None (0)		
	MTU	Get MTU from switch $ \!$		
	TCP/IP stack	Default 🗸		
	Available services			
	Enabled services	□ vMotion		
		Fault Tolerance logging		
		🗌 Management		
		□ vSphere Replication		
		□ vSphere Replication NFC		
		□ vsan		

### configure any different IP rang

# esxi01.abdelwahed.me - Add Networking

<ul><li>1 Select connection type</li><li>2 Select target device</li></ul>	IPv4 settings Specify VMkernel IPv4 settings.			
<ul> <li>3 Create a Standard Switch</li> <li>4 Port properties</li> </ul>				
5 IPv4 settings	<ul> <li>Obtain IPv4 settings autom</li> </ul>	atically		
6 Ready to complete	<ul> <li>Use static IPv4 settings</li> </ul>			
	IPv4 address	172.16.0.100		
	Subnet mask	255.255.255.0		
	Default gateway	Override default gateway for this adapter		
		200.200.200.111		
	DNS server addresses	200.200.200.200		

esxi01.abdelwahed.me - Add Networking 1 Select connection type Ready to complete 2 Select target device Review your settings selections before finishing the wizard. ✓ 3 Create a Standard Switch ✓ 4 Port properties New standard switch vSwitch2 Assigned adapters vmnic2, vmnic3 ✓ 5 IPv4 settings 1500 Switch MTU 6 Ready to complete FT\_Network New port group VLAN ID None (0) vMotion Disabled Provisioning Disabled Fault Tolerance logging Enabled Management Disabled vSphere Replication Disabled vSphere Replication NFC Disabled vSAN Disabled NIC settings MTU 1500 TCP/IP stack Default IPv4 settings IPv4 address 172.16.0.100 (static) Subnet mask 255.255.255.0 Activate Windo

CANCED to SeBAGKto

tiFINISHir

Repeat the same for EXSiO2 with ip 172.16.0.101

#### Now enable FT for App server

Web\_Server hosted in ESXi01 and atored in iSCSI4 dtarstore

<u> </u>	🔂 Web_Server	r ACTIONS ~				
✓	Summary Monitor	Configure F	<sup>o</sup> ermissions Datasto	res Networks		
<ul> <li>VServer</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>Web_Server</li> </ul>	7:39 Trive West console Launch Web Console Launch Remote Console	Guest OS: M b Compatibility: E VMware Tools: R M DNS Name: V IP Addresses: 2 Host: e	icrosoft Windows Server : it) SXI 6.7 and later (VM versi unning, version:10346 (Cur tore info 'M01.abdelwahed.me 00.200.200.20 sxi02.abdelwahed.me	2016 or later (64- ion 14) rrent)	CPU US, 28 M MEMOR <sup>1</sup> 225 N STORAG 42.08	AGE HZ Y USAGE MB BE USAGE B GB
✓ Center01.abdelwahed.me	Web_Server	ACTIONS ~ Configure P	Permissions Datastr	pres Networks		
√ [] Cluster01					T Filter	
esxi01.abdelwahed	Name ↑	✓ Status	s v Type v	Datastore V Ca	pacity ~	Free
App AppDB	Datastore04_ISCSI	~ 1	Normal VMFS 6	49	9.5 GB	286.23 GB
Web_Server						

#### Now enable FT for that server in different iSCSI datastore

🕂 There are vCe	Actions - Web_Server	ring licenses in your inventory. MANAGE YOUR LICENSES	DETAILS
vm vSphere Client	Power	C ? Administrator@VS	
	Snapshots	ACTIONS ~	
✓	🛃 Open Remote Console	Configure Permissions Datastores Network	KS
✓ in vServer ✓ in Cluster01 ☐ esxi01.abdelwah	Aligrate	uest OS: Microsoft Windows Server 2016 or later (64- bit)	CPU USAGE 28 MHz
ロートロート ロート	Fault Tolerance	Turn On Fault Tolerance progress	MEMORY USAGE
AppDB	VM Policies Template	Turn Off Fault Tolerance	STORAGE USAGE 42.08 GB
Web_Server	Compatibility	Suspend Fault Tolerance	
	<b>—</b> — … <b>–</b> …		

### Web\_Server - Turn On Fault Tolerance

1 Select datastores	Select datastores			
2 Select host	Select datastores to place th	e secondary VM disk	s and configuratio	on files.
3 Ready to complete			Cor	nfigure per disk 🔘
	Name	Capacity 🔻	Provisioned <b>T</b>	Free 🔻
	Datastore5-ISCSI	299.5 GB	1.41 GB	298.09 GB
	Datastore04_ISCSI	499.5 GB	217.68 GB	286.23 GB

### Web\_Server - Turn On Fault Tolerance

1 Select datastores 2 Select host	Select host Select host for the secondary VI	M.				
3 Ready to complete	Show all hosts				T Filter	
	Name ↑	~	State	~	Status	~
	esxi01.abdelwahed.me		Connected		🗸 Normal	
Web_Server - Tu	rn On Fault Tolerance					
✓ 1 Select datastores	Ready to complete					
✓ 2 Select host	Review your selections and cli	ick Finish	to turn on fault tol	erance o	n this virtual mach	nine.
3 Ready to complete	Placement details for the Sec	ondary V	M			
	Host: Configuration File Location: Tie Preaker File Location:	esxi01.a Datasto	bdelwahed.me pre5-ISCSI			
	The breaker File Location.	Datasto	160-19091			

D D		<u>@</u>	🚳 Web	_Server	ACTION	NS 🗸					
🗗 vCenter01.ab	delwahed.	me	Summary	Monitor	Configur	re Permissi	ons Datas	tores	Networks		
✓ Interver vServer √ Interver ClusterC Interverting esxi0	)1 1.abdelwał	ned			Guest OS:	Microsoft bit)	Windows Serve	er 2016 or	later (64-		CPU USAGE 28 MHz
esxiO	2.abdelwal _Server (pri	hed ima	7:39		VMware 1	fools: Running, v More info	version:10346 (0	Current)		<b>B</b> 1	MEMORY USAGE
			Launch Web	Console	DNS Nam IP Addres	e: VM01.abd ses: 200.200.2	lelwahed.me 200.20 delwahed me				STORAGE USAGE
			Laanon Kon		ັ 灯						
			Virtual	machine Fau	It Tolerance s	state changed			Acknowle	<u>edge</u>	<u>Reset To Green</u>
ecent Tasks	Alarms		Virtual	machine Fau	It Tolerance s	state changed			Acknowle	edge	<u>Reset To Green</u>
ecent Tasks sk Name V	Alarms Target	~	Virtual Status	machine Fau	It Tolerance s	state changed Queued For	✓ Start Time	<b>↓</b> ~	<u>Acknowle</u> Completion T	i v	Reset To Green Server
ecent Tasks sk Name V art Fault lerance scondary VM	Alarms Target	_Server	Status	machine Fau V Initiat Syste	t Tolerance : or v	Queued For	<ul> <li>Start Time</li> <li>06/01/20:</li> <li>6:56:00 A</li> </ul>	↓ ~ 21, M	Acknowle Completion T	<u>edge</u> i ~	Reset To Green Server vCenter01.abde

Ű			<u> </u>	📔 esxi01.abd	elwahed.m	e 🛛 🔺	CTION	IS 🗸					
✓ 🔁 v( ✓ 🛄	Center01.a vServer	bdelwahe	d.me	Summary Monito	or Configure	Per	missio	ns VN	/IS	Datastores	Netw	orks	
$\sim$	Cluster	01 D1.abdelw D2.abdelw	vahed	Virtual Machines	VM Templates						T	Filter	
	🚮 Web	_Server (	prima	Name 个	~	State	~	Status	~	Provisioned Space	~	Used Space	~
				Web_Server (seco	ndary)	Powered	d On	✓ Norn	nal	40.24 GB		40 GB	

### Tesing, Disconnect ESXI02 which is the primary server

vm vSphere Client if vCenter down FT will continu work because its esxi01.abdelwahed.me þ ₽ Q Summary Monitor Configure Permissions VMs Datastores Networks ∨ 📑 vServer ∨ 🚺 Cluster01 Virtual Machines VM Templates esxi01.abdelwahed... esxi02.abdelwahed. T Filter 💑 Web\_Server (prima... ✓ State V Used Space ✓ Status Provisioned Space Name 🛧 web\_Server (primary) Powered On Alert 40.08 GB 40.08 GB

based-on HA

### Migrate the VM without failuar



### **Resource Pool**

For cluster, I can add some of VMs inside one resource pool then I can reserve specific resources for this pool like 20GB RAM and give high perioty for this pool. Change normal to high in below screenshot.



Name	Resource Pool_01
Scale Descendant's Shares	s 🕕 🗹 Yes, make them scalable
✓ CPU	
Shares	Normal ~ 4000
Reservation	1000 v MHz v
	Max reservation: 5,348 MHz
Reservation Type	Z Expandable
Limit	Unlimited 🗸 MHz 🗸
	Max limit: 5,348 MHz
✓ Memory	
Shares	<b>Normal</b> ~ 163840
Reservation	6 v GB v
	Max reservation: 17.39 GB
Reservation Type	✓ Expandable
Name	เรื่องกันเอาการ:
Scale Descendant's Shares (	1 If this option is selected, the shares allocated
~ CPU	to each descendant resource pool shall be adjusted to ensure that the relative shares
Shares	allocated to the VMs are maintained
	-



#### Tesing, I have one RedHat VM with 1GHZ CPU speed





I will increase the CPU usage using dd if=/dev/zero of=/dev/null and monitor CPU change

	🕂 There a	are expired or expiring I	licenses in your inventory.	MANAGE YOUR LIC	ENSES	
vm vSphere Client Menu	✓ Q Search in all e	nvironments			C   ?~	Administrator@VSPHERE.LOCAL $\checkmark$
[] Þ e Ø	🕆 RH 🗁 🗖	🖗 🐼 🗛 АСТІО	NS Y			
✓	Summary Monitor	Configure Permi	issions Datastores	Networks Sna	apshots Update	'S
<ul> <li>✓ I vDatacenter</li> <li>✓ I Cluster01</li> </ul>	Triggered Alarms	Utilization				
sxi01.abdelwahed.me	Performance 🗸			_		
esxi02.abdelwahed.me	Overview	Virtual Machine CPU	J	^	Virtual Machine I	Memory
⊖ Resource Pool_01	Advanced	<b></b>		- T	-	
ि RH	Tasks and Ev 🗸					
🔂 vCenter Server	Tacks	0.GHz		1.6Hz	0.GB	2.05.GB
団 VM1-H2	Fuente		000 1/11	1 GHZ		2.03 08
窗 VM1-H2-Clone	Utilization	Active - Deservation	982 MHZ 982 MHz 0 Hz		VM Consume VM Overhead	d Consumed 56 MB

Now drag and drop RH VM inside the newly created resource pool



We can also create sub pool,

If I delete resource pool does not affect VMs included only will disconnect these VMs from that pool.

### vApp

same concept as resource pool with one more option which is you can give one VM more priority than another. Like one VM start early and another will delay (start order). Another more option, you can power off or power on all VMs in the vApp.



New vApp	Resource allocat	ion	×
1 Select creation type	How do you want to allocate	e CPU and memory for the vApp?	
2 Select a name and location	✓ CPU		·
3 Resource allocation	Shares	High ~ 8000	
4 Review and finish	Reservation	300 MHz V Max reservation: 4,728 MHz	
	Reservation Type	Expandable	
	Limit	Unlimited  MHz  MHz  MHz  MHz  MHz  MHz  MHz  MHz	<b>•</b>
New vApp	Review and fin	ish	>
1 Select creation type	Name	Abdelwahed_vApp	
2 Select a name and location	Location	vServer	
2. Descurse allocation	Resource	Cluster01	
3 Resource allocation	CPU allocation	300 - Unlimited MHz	
4 Review and finish	Memory allocation	2048 - Unlimited MB	
	elwahed_vApp	ACTIONS 🗸	
∨ ♥ vCenter01.abdelwahed.me     vServer	Figure	Permissions Resource Pools \	/Ms Datastores Netwo
✓ [] Cluster01	Machine	ver Off	
🥃 esxi01.abdelwahed 🦉 esxi02.abdelwahed 🔡 New Child v.	App	pond	MEMORY USAGE
Resource Pool 01	ce Pool	t Down	ОВ
B Abdelwahed_vApp	•		
OVF Templa	te 🕨	∧ Notes	^
🗊 Deploy OVF	Template	Edit Notes	
😽 Edit Settings	ormal	Custom Attributes	^

\_\_\_\_\_

\_\_\_\_\_

Edit vAp	Apde d	elwahed_vAp	0				
Resources	Start Order	IP Allocat	tion Deta	ails			
Name	▼ Order	⊤ Starte	up action	Startup delay (s)	VM tools	Shutdown action	Shutdown delay (s)
							0 VMs
Order			Startup			Shutdown	
Group		~	Action		~	Action	~
			Delay (s)			Delay (s)	

### Virtual Distributed switch (datacenter level)

Manage switches centrally. Better than we create separate switch for each ESXi server. From here we carete it one time for all servers inside Datacenter.



#### First, add NIC for both ESXi servers



### New Distributed Switch

1 Name and location	Name and locati	on	
2 Select version	Specify distribute	ed switch name and location.	
3 Configure settings			
4 Ready to complete	Name	DSwitch	
	Location	VServer	

Select the lowest ESXi server version, in case you have different ESXi versions. Also, you can't downgrade this selection.

✓ 1 Name and location	Select version
2 Select version	Specify a distributed switch version.
3 Configure settings	
4 Ready to complete	● 6.6.0 - ESXi 6.6 and later
	🔘 6.5.0 - ESXi 6.5 and later
	🔘 6.0.0 - ESXi 6.0 and later
	Features per version (j)
	Features per version (j)

uplinks refer to number of NIC, later you can increase or decrease number of uplinks. You can increase number

of links for example you have only 2 uplinks in each server you can add here 4

<ul> <li>1 Name and location</li> <li>2 Select version</li> </ul>	Configure settings Specify number of upli	nk ports, resource allocation and default port group.
3 Configure settings 4 Ready to complete	Number of uplinks	1
	Network I/O Control	Enabled ~
	Default port group	Create a default port group
	Port group name	DProduction

### New Distributed Switch

<ul> <li>2 Select version</li> </ul>	Review your settings selection	ons before finishing the wizard.		
<ul> <li>3 Configure settings</li> </ul>				
4 Ready to complete	Name	DSwitch		
	Version	6.6.0		
	Number of uplinks	1		
	Network I/O Control	Enabled		
	Default port group	DProduction		
	Suggested next actions An New Distributed Po Add and Manage H	rt Group osts		
	These actions will be	e available in the Actions menu of the new	v distributed switch.	
	VServer Actions ~			
vCenter01.abdelwahed.me	Summary Monitor Config	gure Permissions Hosts & Clusters	VMs Datastores Netw	
VServer				
		· · · · · · · · · · · · · · · · · · ·		
		ELCANIC		
✓ 🗗 vCenter01.abdelwahed.me	Summary Monitor	Configure Permissions Ports	Hosts VMs Net-	
✓  vCenter01.abdelwahed.me ✓  vServer	Summary Monitor	Configure Permissions Ports	Hosts VMs Net	
✓	Summary Monitor	Configure Permissions Ports urer: VMware, Inc.	Hosts VMs Net	
✓	Summary Monitor Manufactr Version:	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	
✓ Center01.abdelwahed.me ✓ I vServer ✓ VM Network ✓ DSwitch	Summary Monitor Manufactu Version:	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	
✓ Center01.abdelwahed.me ✓ I vServer ✓ DSwitch ▲ DProduction	Summary Monitor Manufactu Version:	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	
<ul> <li>✓ Center01.abdelwahed.me</li> <li>✓ VCenter01.abdelwahed.me</li> <li>✓ VServer</li> <li>✓ VM Network</li> <li>✓ DSwitch</li> <li>✓ DProduction</li> <li>✓ DSwitch-DVUplinks</li> </ul>	Summary Monitor Manufactiversion: Actions - DSwitch Distributed Port Group	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	
<ul> <li>✓ CenterO1.abdelwahed.me</li> <li>✓ IVServer</li> <li>✓ DSwitch</li> <li>✓ DSwitch</li> <li>✓ DProduction</li> <li>✓ DSwitch-DVUplinks</li> </ul>	Summary Monitor Manufactiversion: Actions - DSwitch Distributed Port Group	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	
<ul> <li>VCenter01.abdelwahed.me</li> <li>VServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> </ul>	Summary Monitor Manufactiversion: Actions - DSwitch Distributed Port Group	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	N
<ul> <li>VCenter01.abdelwahed.me</li> <li>VServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> </ul>	Summary Monitor Manufactive Version: Actions - DSwitch Distributed Port Group	Configure Permissions Ports urer: VMware, Inc. 6.6.0	Hosts VMs Net	N
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> <li>Cluster01</li> </ul>	Summary Monitor Manufacti Version: Actions - DSwitch Distributed Port Group Add and Manage Hosts Edit Notes Networks Distributed Switch	Configure Permissions Ports urer: VMware, Inc. 6.6.0 Features ches Distributed Port Groups Upli	Hosts VMs Net	N
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> <li>Cluster01</li> <li>exxi01.abdelwahed</li> </ul>	Summary Monitor Manufacti Version: Actions - DSwitch Distributed Port Group Add and Manage Hosts Edit Notes Networks Distributed Switch	Configure Permissions Ports urer: VMware, Inc. 6.6.0 Features ches Distributed Port Groups Uplin	Hosts VMs Net	N
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> </ul>	Summary Monitor Manufacti Version: Actions - DSwitch Distributed Port Group Add and Manage Hosts Edit Notes Networks Distributed Switch	Configure Permissions Ports urer: VMware, Inc. 6.6.0 Features ches Distributed Port Groups Uplin	Hosts VMs Net	N
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>esxi02.abdelwahed</li> <li>Resource Pool 01</li> </ul>	Summary Monitor Manufactiversion: Actions - DSwitch Distributed Port Group Add and Manage Hosts Edit Notes Networks Distributed Switch	Configure Permissions Ports urer: VMware, Inc. 6.6.0 Features ches Distributed Port Groups Uplin	Hosts VMs Net	N
<ul> <li>VCenter01.abdelwahed.me</li> <li>VV Network</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>Resource Pool_01</li> <li>Abdelwahed vApp</li> </ul>	Summary Monitor Manufact Version: Actions - DSwitch Distributed Port Group Add and Manage Hosts Edit Notes Networks Distributed Switch	Configure Permissions Ports urer: VMware, Inc. 6.6.0 Features ches Distributed Port Groups Upline VLAN ID	Hosts VMs Net	N iders
<ul> <li>vCenter01.abdelwahed.me</li> <li>vServer</li> <li>VM Network</li> <li>DSwitch</li> <li>DProduction</li> <li>DSwitch-DVUplinks</li> <li>Cluster01</li> <li>esxi01.abdelwahed</li> <li>Resource Pool_01</li> <li>Abdelwahed_vApp</li> <li>N</li> </ul>	Summary Monitor Manufactive Version: Actions - DSwitch Distributed Port Group Add and Manage Hosts Edit Notes Networks Distributed Switch lame ↑	Configure Permissions Ports urer: VMware, Inc. 6.6.0 Features ches Distributed Port Groups Uplin VLAN ID	Hosts VMs Net	No Iders

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#### DSwitch - Add and Manage Hosts

1 Select task	Select task
2 Select hosts	Select a task to perform on this distributed switch.
3 Manage physical adapters	
4 Manage VMkernel adapt	Add hosts
5 Migrate VM networking	Add new hosts to this distributed switch.
6 Ready to complete	O Manage host networking
	Manage networking of hosts attached to this distributed switch.
	O Remove hosts
	Remove hosts from this distributed switch.

### DSwitch - Add and Manage Hosts

✓ 1 Select task	Select hosts			
2 Select hosts	Select hosts to add to this distributed s	witch.		
3 Manage physical adapters				
DSwitch - Add and Ma	nage Hosts			
✓ 1 Select task	Manage physical adapters			
✓ 2 Select hosts	Add or remc 🕂 ysical network adapters	to this distributed swite	:h.	
3 Manage physical adapt 4 Manage VMkernel adap	🖨 Assign uplink 🕼 Reset changes 🚯	View settings		
5 Migrate VM networking	Host/Physical Network Adapters	In Use by Switch	Uplink	Uplink Port Group
6 Ready to complete	ymnic2	vSwitch2		

vmnic3	vSwitch2	 	
1 vmnic4		 	
🔺 👕 esxi02.abdelwahed.me			
On this switch			
On other switches/unclaimed			
💌 vmnic0	vSwitch0	 	
💌 vmnic1	vSwitch1	 	
💌 vmnic2	vSwitch2	 	
Minic3	vSwitch2	 	
3 vmnic4		 	

Select an Uplink	vmnic4	
Uplink	Assigned Adapter	
Uplink 1		
(Auto-assign)		

### Now NIC assigned to DSwitch

1 Select task 2 Select hosts	Manage physical adapters Add or remove physical network adap	ters to this distribute	ed switch.	
3 Manage physical adapters 4 Manage VMkernel adapt	📹 Assign uplink 🕼 Reset changes	View settings		
5 Migrate VM networking	Host/Physical Network Adapters	In Use by Switc	h Uplink	Uplink Port Grou
6 Ready to complete	🖌 🖺 esxi01.abdelwahed.me			
	On this switch			
	💌 vmnic4 (Assigned)		Uplink 1	DSwitch-DVUplin
	On other switches/unclaimed			
	vmnic0	vSwitchO		
	🐖 vmnic1	vSwitch1		
	🐖 vmnic2	vSwitch2		
	vmnic3	vSwitch2		
	esxi02.abdelwahed.me			
	• On this switch			
	wmpic4 (Assigned)		Liplink 1	DSwitch DVI Inlin
	On other switches (unclaimed)		Uplink 1	DSwitch-DVUplin
DSwitch - Add ✓ 1 Select task ✓ 2 Select hosts	and Manage Hosts Manage and assign VMkernel networ	 rk adapters to the distrik	Uplink 1	DSwitch-DVUplir
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> </ul>	and Manage Hosts Manage VMkernel adapters Manage and assign VMkernel networ Adapters A Assign port group in Reset cha	 rk adapters to the distrib anges ① View setting:	Uplink 1 buted switch.	DSwitch-DVUplir
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne</li> <li>5 Migrate VM network</li> </ul>	and Manage Hosts  Anage VMkernel adapters  Anage and assign VMkernel network  Anage Assign port group  Reset chi  Host/VMkernel Network Adapters	rk adapters to the distrik anges 🚯 View setting In Use by Switch	Uplink 1 buted switch.	DSwitch-DVUplin
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne</li> <li>5 Migrate VM network</li> <li>6 Ready to complete</li> </ul>	and Manage Hosts Manage VMkernel adapters Manage and assign VMkernel network Manage and assign VMkernel network Manage and assign VMkernel network Manage and assign VMkernel network Manage Assign port group Manage Assign port group Manage Assign port group Manage Mkernel Network Adapters Manage Mkernel Network Adapters Man	rk adapters to the distrib anges ① View setting In Use by Switch	Uplink 1	DSwitch-DVUplin
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne 5 Migrate VM network</li> <li>6 Ready to complete</li> </ul>	Assign port group Reset cha Host/VMkernel Network Adapters Assign port group Reset cha Host/VMkernel Network Adapters Reset cha Host/VMkernel Network Adapters	rk adapters to the distrib anges ① View setting In Use by Switch	Uplink 1	DSwitch-DVUplin
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne</li> <li>5 Migrate VM network</li> <li>6 Ready to complete</li> </ul>	Adapters Assign port group Reset cha Assign port group Reset cha Assign port group Reset cha Adapters	rk adapters to the distrik anges 🚯 View setting In Use by Switch	Uplink 1	DSwitch-DVUplin
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne</li> <li>5 Migrate VM network</li> <li>6 Ready to complete</li> </ul>	and Manage Hosts Manage VMkernel adapters Manage and assign VMkernel networ Manage and assign Port group Manage	rk adapters to the distrib anges ① View setting In Use by Switch	Uplink 1 Duted switch. Source Port Group Management Net	DSwitch-DVUplin
DSwitch - Add • 1 Select task • 2 Select hosts • 3 Manage physical 4 Manage VMkerne 5 Migrate VM netw 6 Ready to complete	And Manage Hosts and Manage Hosts Manage Adapters Manage and assign VMkernel network Adapters A ada	rk adapters to the distribution of the setting: anges	Uplink 1  Duted switch.  Source Port Group  Management Net  VMkernel	DSwitch-DVUplin
DSwitch - Add • 1 Select task • 2 Select hosts • 3 Manage physical • 4 Manage VMkerne 5 Migrate VM netwo 6 Ready to complet	And Manage Hosts  Anage VMkernel adapters Manage and assign VMkernel network  Adapters  Assign port group  Reset cha  Host/VMkernel Network Adapters  Assign port group  Reset cha  Host/VMkernel Network Adapters  A Sesion.abdelwahed.me  On this switch  On this switch  On other switches/unclaimed  Rev mk0  Rev mk1  Rev mk2	rk adapters to the distrib anges () View settings In Use by Switch VSwitch0 vSwitch1 vSwitch2	Uplink 1 Upl	DSwitch-DVUplin
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne</li> <li>5 Migrate VM network</li> <li>6 Ready to complete</li> </ul>	And Manage Hosts and Manage Hosts adapters adapters adapters tadapters te Assign port group Reset cha Assign port group Reset cha Host/VMkernel Network Adapters A Solution Adapters Assign port group Reset cha Assign port group	rk adapters to the distrik anges O View setting In Use by Switch vSwitch0 vSwitch1 vSwitch2	Uplink 1  Duted switch.  Source Port Group  Management Net  VMkernel  FT_Network	Destination Port Gr
DSwitch - Add <ul> <li>1 Select task</li> <li>2 Select hosts</li> <li>3 Manage physical</li> <li>4 Manage VMkerne</li> <li>5 Migrate VM netw.</li> <li>6 Ready to complete</li> </ul>	And Manage Hosts and Manage Hosts adapters Adapters Adapters Adapters Adapters Assign port group Reset cha Assign	rk adapters to the distrik anges ① View setting: In Use by Switch vSwitch0 vSwitch1 vSwitch2	Uplink 1  buted switch.  Source Port Group  Management Net  VMkernel  FT_Network	Destination Port Gr Do not migrate Do not migrate
DSwitch - Add • 1 Select task • 2 Select hosts • 3 Manage physical • 4 Manage VMkerne 5 Migrate VM netw 6 Ready to complet	And Manage Hosts and Manage Hosts Manage Adapters Manage and assign VMkernel network Adapters A adapter A	rk adapters to the distrik anges	Uplink 1  Duted switch.  Source Port Group  Management Net  VMkernel  FT_Network	Destination Port Gr Destination Port Gr Do not migrate Do not migrate
DSwitch - Add • 1 Select task • 2 Select hosts • 3 Manage physical • 4 Manage VMkerne 5 Migrate VM netw 6 Ready to complet	And Manage Hosts  Anage VMkernel adapters  Manage and assign VMkernel network  Adapters  Adapters  Assign port group  Assign po	rk adapters to the distrik anges    View settings	Uplink 1  Duted switch.  Source Port Group  Management Net  VMkernel  FT_Network  Management Net	Destination Port Gr Destination Port Gr Do not migrate Do not migrate Do not migrate

Now move VM network to new production DSwitch (in our case we only have Web-Server on ESXi01)

DSwitch - Add and	Manage Hosts				
<ul><li>✓ 1 Select task</li><li>✓ 2 Select hosts</li></ul>	Migrate VM networking Select virtual machines or netwo	ork adapters to migrate	to the distributed swite	ch.	
<ul> <li>3 Manage physical adapter</li> <li>4 Manage VMkernel adapt.</li> </ul>	s 🐣 Assign port group 🔊 Rese	et changes   🚯 View se	ttings		
5 Migrate VM networking	Host/Virtual Machine/Network A	dapter NIC Count	Source Port Group	Destination Port Group	
6 Ready to complete	esxi01.abdelwahed.me				*
	🖌 🎰 Web_Server	1			
	Network adapter 1		VM Network	Do not migrate	
D.C. Stala Astala and	Manager Handa				Ē
DSwitch - Add and	Manage Hosts				
✓ 1 Select task ✓ 2 Select hosts	elect Network		×	:h.	
✓ 3 Manage physica					
5 Migrate VM netv		T Filt	er	Destination Port Group	
6 Ready to comple	ime	Distributed Switch			
é		DSwitch	*		
				Do not migrate	

#### DSwitch - Add and Manage Hosts

~ ~	1 Select task 2 Select hosts	Migrate VM networking Select virtual machines or network adapte	rs to migrate	to the distributed swite	ch.	
~	3 Manage physical adapters 4 Manage VMkernel adapt	Assign port group 🛛 🔊 Reset changes	View se	ttings		
	5 Migrate VM networking	Host/Virtual Machine/Network Adapter	NIC Count	Source Port Group	Destination Port Group	
	6 Ready to complete	🔺 👕 esxi01.abdelwahed.me				*
		🖌 🚰 Web_Server	1		Reassigned	
		📜 Network adapter 1		VM Network	DProduction	

#### DSwitch - Add and Manage Hosts

✓ 1 Select task	Ready to complete	
✓ 2 Select hosts	Review your settings select	ions before finishing the wizard.
<ul> <li>3 Manage physical adapters</li> </ul>		
✓ 4 Manage VMkernel adapt	Number of managed host	ts
✓ 5 Migrate VM networking	Hosts to add	2
6 Ready to complete	Number of network adapt	ters for update
	Physical adapters	2
	Virtual machine	1
	adapters	

Wind       Image: Status	Network	VMs	Hosts	Ports	ons	e Permissio	Configur	ummary Monitor	nter01.abdelwahed.me	
✓ □ DSwitch       ✓ □ DProduction         ☑ □ DSwitch-DVUplinks       □ esx101.abdelwahed.me       Connected       ✓ Normal       □ Clust         □ esx102.abdelwahed.me       C       ② ✓       Administrator@VSPHERE.LOCAL ✓         □ esx101.abdelwahed.me       ✓       ○       ▲ dministrator@VSPHERE.LOCAL ✓         □ esx101.abdelwahed.me       ✓       ▲ search       C       ② ✓         ✓ ♥ vServer       ✓       ●       Search       Actions ✓         ✓ ♥ vServer       ✓       ▲ sexio1.abdelwahed.me       ✓       ■         ● esxi01.abdelwahed.me       ✓       ●       ■       ●         ● esxi02.abdelwahed.me       ✓       ●       ■       ●         ● esxi02.abdelwahed.me       ✓       ●       ●       ●         ● esxi02.abdelwahed.me       ✓       ●       ●       ●         ● esxi02.abdelwahed.me       ✓       ●       ●									VM Network	
Mame ↑       ✓       State       ✓       Status       ✓       Cluster         Image: DSwitch-DVUplinks       Image: esxt01.abdelwahed.me       Connected       ✓       Normal       Image: Cluster         Image: DSwitch-DVUplinks       Image: esxt01.abdelwahed.me       Connected       ✓       Normal       Image: Cluster         Image: DSwitch-DVUplinks       Image: Menu ✓       Image: Cluster       Image: Cluster       Image: Cluster       Image: Cluster         Image: Image: DSwitch-DVUplinks       Image: Menu ✓       Image: Cluster       Image: Cluster       Image: Cluster       Image: Cluster       Image: Cluster         Image: Image: DSwitch-DVUplinks       Image: Menu ✓       Image: Cluster	Filter	Т							DSwitch	
Image: Single System of S		Cluster	~	Status	$\sim$	State	~	Name ↑		
Image: sext02.abdelwahed.me       Connected       ✓ Normal       Image: sext02.abdelwahed.me         Image: sext02.abdelwahed.me       C       Image: sext02.abdelwahed.me       C       Image: sext02.abdelwahed.me         Image: sext02.abdelwahed.me <th i<="" td=""><td>uster01</td><td>C C</td><td>nal</td><td>V Norn</td><td></td><td>Connected</td><td></td><td>esxi01.abdelwahed.me</td><td>📇 DSwitch-DVUplinks</td></th>	<td>uster01</td> <td>C C</td> <td>nal</td> <td>V Norn</td> <td></td> <td>Connected</td> <td></td> <td>esxi01.abdelwahed.me</td> <td>📇 DSwitch-DVUplinks</td>	uster01	C C	nal	V Norn		Connected		esxi01.abdelwahed.me	📇 DSwitch-DVUplinks
vm       vSphere Client       Menu       Q       Search       C <sup>1</sup> O       Administrator@VSPHERELOCAL         Image: Construction of the second secon	uster01	ГС	nal	✓ Norn		Connected		esxI02.abdelwahed.me		
✓ 🔂 vCenter01.abdelwahed.me         ✓ 🔂 vServer         ✓ 🗍 Cluster01         🔤 esxi01.abdelwahed         🔤 esxi02.abdelwahed         Percurso Pool 01	~	ere.locai	trator@VSPHE	Administ	?~	C		nu 🗸 🛛 🔍 Search	m vSphere Client	
✓ □ Cluster01         ✓ □         Filter           □ esxi01.abdelwahed         ■	~	ERE.LOCAL	trator@VSPHE	Administ	?~	C	ACTIONS	nu 🗸 🔍 Search	m vSphere Client	
□ esxi01.abdelwahed       Name ↑       ✓       Type       ✓       VMs         □ esxi02.abdelwahed       ●       Pasedures       >       <	~	ere.local	trator@VSPHE Networks	Administ	⑦∨ s Data	C • Permissions	ACTIONS	nu 🗸 🔍 Search	m vSphere Client	
	~	T Filter	trator@VSPHE Networks	Administ	? ∨ Data	C Permissions	ACTIONS	nu 🗸 🔍 Search	vSphere Client vCenter01.abdelwahed.me vServer vServer vServer vSuster01	
V Resource Pool_of A DProduction Distributed bort droup	~	▼ Filter ∨ VMs	Networks	Administ astores	? ~ Data	C Permissions Type	ACTIONS Configure	nu ✓ Q Search	vSphere Client	
# Abdelwahed_vApp	*	▼ Filter VMs	Network	Administ astores	⑦ ✓ s Data	Permissions     Type Distributed port or	ACTIONS Configure	Nu ✓ Q Search Description	vSphere Client  vCenter01.abdelwahed.me vServer  Cluster01 esxi01.abdelwahed esxi02.abdelwahed Resource Pool_01	

### Lifecycle Manager

vSphere Lifecycle Manager is a service that runs in vCenter Server and uses the embedded vCenter Server PostgreSQL database. No additional installation is required to start using that feature. Upon deploying the vCenter Server appliance, the vSphere Lifecycle Manager user interface becomes automatically enabled in the HTML5-based vSphere Client.

