

LAB. 4

VMware vSphere

VMware ESXI(Hypervisor)

**Operations of virtual machine, exploring
cloud storage and configuring databases in the cloud**

Lecturer:

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إعادة تهيئة الـ VIRTUAL MACHINE

The screenshot displays the VMware ESXi web interface. The browser address bar shows the URL <https://192.168.100.111/ui/#/host/vms/2>. The interface shows a virtual machine named 'ABCWSQL01' with the following specifications:

- Guest OS: Microsoft Windows Server 2016 (64-bit) ...
- Compatibility: ESX/7.0 U2 virtual machine
- VMware Tools: Yes
- CPU: 4
- Memory: 8 GB
- Host name: WIN-T933K8B6UNM

The 'Edit settings' option is highlighted in the left-hand menu. A blue text box with white text is overlaid on the interface, stating:

يمكن من خلال هذا الخيار Edit Setting إعادة تعيين متطلبات الـ Virtual machine من موارد جهاز الحاسب المادية مثل CPU, RAM, Hard Disk .

The bottom of the interface shows the 'Hardware Configuration' section with the following details:

Component	Value
CPU	4 vCPUs
Memory	8 GB
Hard disk 1	90 GB
USB controller	1 USB 2.0

Navigator

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 - ve:ESXi111-50G
 - Monitor
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- Networking

ABCWSQL01

Edit settings - ABCWSQL01 (ESXi 7.0 U2 virtual machine)

Virtual Hardware VM Options

Add hard disk Add network adapter Add other device

CPU

Cores per Socket 4 Sockets: 2

CPU Hot Plug ☒ Enable CPU Hot Add

Reservation None MHz

Limit Unlimited MHz

Shares Normal 1000

Hardware virtualization ☐ Expose hardware assisted virtualization to the guest OS

IOMMU ☐ Expose IOMMU to the guest OS

Save Cancel

Recent tasks

من خلال تفعيل هذا الأمر إضافة المعالج مباشرة
عمل الـ Virtual machine ويمكن للألة
ف على إضافة المعالج مباشرة دون الحاجة إلى
تشغيل هذه الألة

esxiucs220 - VMware ESXi x vesxi111 - VMware ESXi x +

https://192.168.100.111/ui/#/host/vms/2

vmware ESXi

root@192.168.100.111 | Help | Search

Navigator

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ABCWSQL01

Edit settings - ABCWSQL01 (ESXi 7.0 U2 virtual machine)

Memory

2 RAM 8 GB

Reservation

None MB

☐ Reserve all guest memory (All locked)

Limit

Unlimited

Shares

Normal

Memory Hot Plug

☒ Enabled

Hard disk 1

90 GB

SCSI Controller 0

LSI Logic SAS

Save Cancel

CPU 1.1 GHz

MEMORY 2.72 GB

Recent tasks

7:55 AM 1/11/2023

يمكن من خلال تفعيل هذا الأمر Memory hot plug إضافة الذاكرة الإضافية مباشرة أثناء عمل ال Virtual machine ويمكن للألة التعرف على إضافة الذاكرة مباشرة دون الحاجة الى إعادة تشغيل هذه الألة

esxiucs220 - VMware ESXi x vesxi111 - VMware ESXi x +

https://192.168.100.111/ui/#/host/vms/2

vmware ESXi

tool@192.168.100.111 Help Search

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 - Monitor
 - More storage...
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Edit settings - ABCWSQL01 (ESXi 7.0 U2 virtual machine)

Virtual Hardware VM Options

Add hard disk Add network adapter Add other device

New standard hard disk 4

Existing hard disk

New persistent memory disk 8 GB

New raw disk 90 GB

SCSI Controller 0 LSI Logic SAS

SATA Controller 0

USB controller 1 USB 3.1

Network Adapter 1 VM Network Connect

CD/DVD Drive 1 Datastore ISO file Connect

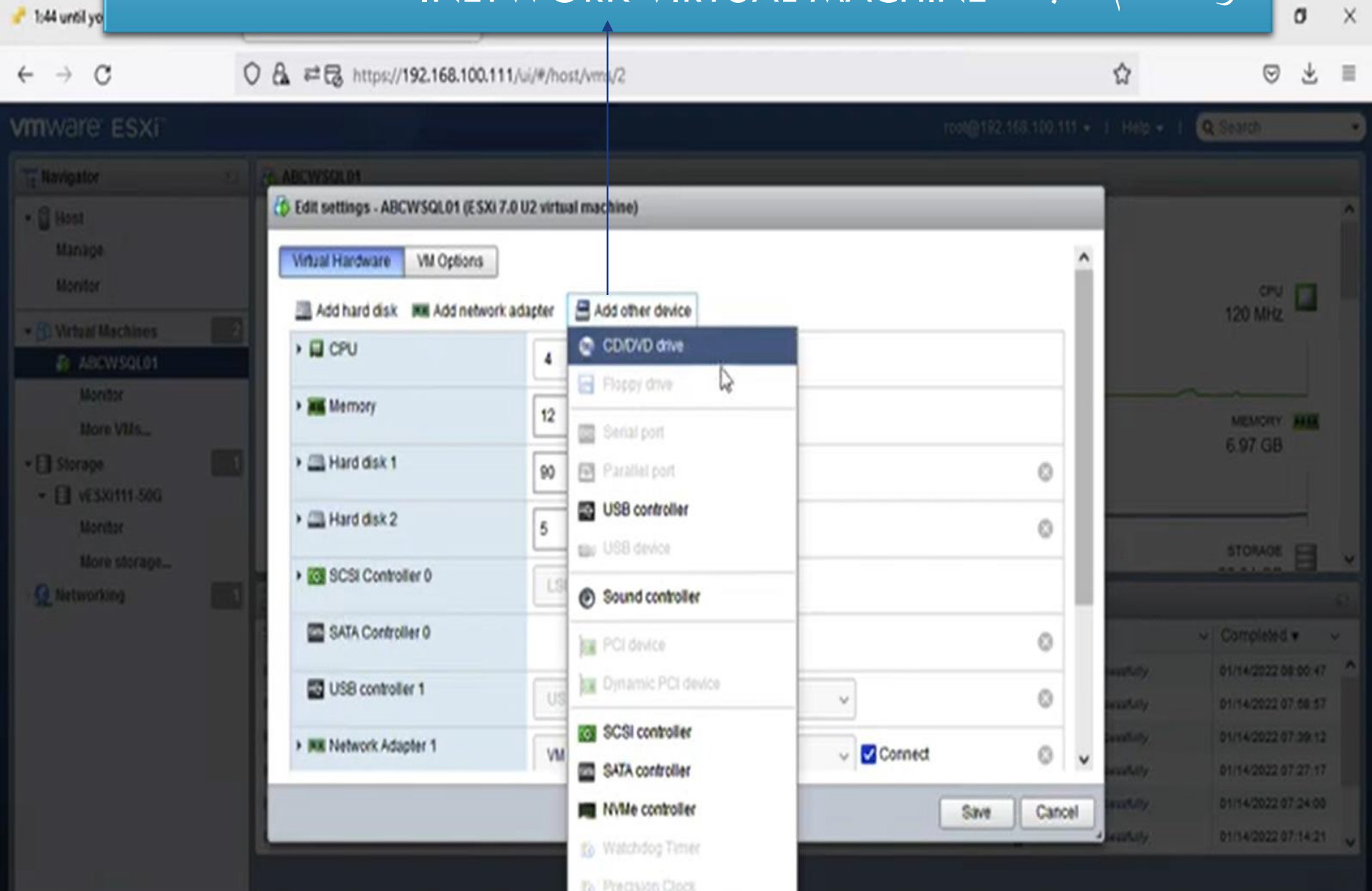
Save Cancel

Recent tasks

STORAGE 22.34 GB

للال هذه القائمة إضافة Hard disk إضافي لل Virtual وتحتوي هذه القائمة على خيارين :
ك من إضافة قرص صلب جديد فيما
لك من توسيع القرص الصلب الحالي.

يمكن إضافة أجهزة أخرى للـ VM وذلك من خلال هذه القائمة مثل CD/DVD DRIVE، أو أجهزة USB أو متحكمات الصوت ونقل البيانات مثل SCSI,SATA، أو متحكم الشبكة NETWORK VIRTUAL MACHINE.



بعد الانتهاء من إضافة متطلبات VIRTUAL MACHINE الإضافية يمكن الاطلاع او ملاحظة هذه الإضافات من خلال اغلاق النافذة السابقة والضغط على اسم ال VM الموجود ضمن قائمة الجرد

esxiucs220

← → ↺ https://192.168.100.111/ui/#/host/vms/2

vmware ESXi™ root@192.168.100.111 | Help | Search

Navigator

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ABCWSQL01

General Information

- Networking
 - Host name: WIN-T933K8B6JNM
 - IP addresses
 - 1. 2001:16a2:ce3e:5200:5d6e:c21e:89f5:4a58
 - 2. fe80:5d6e:c21e:89f5:4a58
 - 3. 192.168.100.172
- VMware Tools: VMware Tools version is compliant.
- Storage: 2 disks
- Notes: Edit notes

Performance summary last hour

- Consumed host CPU
- Ready
- Consumed host memory

Recent tasks

Hardware Configuration

- CPU: 4 vCPUs
- Memory: 8 GB
- Hard disk 1: 90 GB
- Hard disk 2: 5 GB
- USB controller: USB 3.1
- Network adapter 1: VM Network (Connected)
- Video card: 16 MB
- CD/DVD drive 1: ISO [ESXi111-50G] Windows Server 2016 x64 VL with Update December 2018.iso
Select disc image
- Others: Additional Hardware

Resource Consumption

- Consumed host CPU: 111 MHz

STORAGE 22.34 GB

كيفية عمل الـ SNAPSHOT للـ VM

vmware ESXi

root@192.168.100.111 | Help | Search

Navigator

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ABCWSQL01

Guest OS: Microsoft Windows Server 2016 (64-bit) ...

Compatibility: ESX 7.0 U2 virtual machine

Console | Monitor | Power on | Shut down | Suspend | Restart | Edit | Refresh | Actions

ABCWSQL01

CPU: 2 GHz

MEMORY: 4.45 GB

STORAGE: 22.34 GB

General Information

Networking	
Host name	WIN-T933K8B6UNM
IP addresses	1. 2001:16a2:ca3e:5200:5d6e:c21e:89f5:43f9

Hardware Configuration

CPU	4 vCPUs
Memory	8 GB
Hard disk 1	90 GB
RAID controller	1100 3.4

Recent tasks

https://192.168.100.111/ui/#/host/storage/datastores/61c749b4-317d6c2-08a9-005056aa3038

من خلال المحاضرات السابقة لاحظنا انه عندما نقوم بتثبيت الـ VM فإنه يقوم بإنشاء ملف لها بنفس اسمها على الـ Datastore يحتوي على مجموعة من الملفات كما عرفنا سابقا هذه الملفات خاصة بالآلة الافتراضية.

esxiucs220 - VMware ESXi x vesi111 - VMware ESXi x +

https://192.168.100.111/ui/#/host/storage/datastores/61c749b4-317de8c2-08a9-005056aa3038

vmware ESXi root@192.168.100.111 | Help | Search

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vESXi111-50G

Register a VM | Datastore browser | Increase capacity | Refresh | Actions

STORAGE: USED: 28.16 GB, FREE: 21.59 GB, CAPACITY: 49.75 GB, 57%

vESXi111-50G

Type: VMFS6
Location: /vmfs/volumes/61c749b4-317de8c2-08a9-005056aa3038
UUID:
Hosts:
Virtual Machine

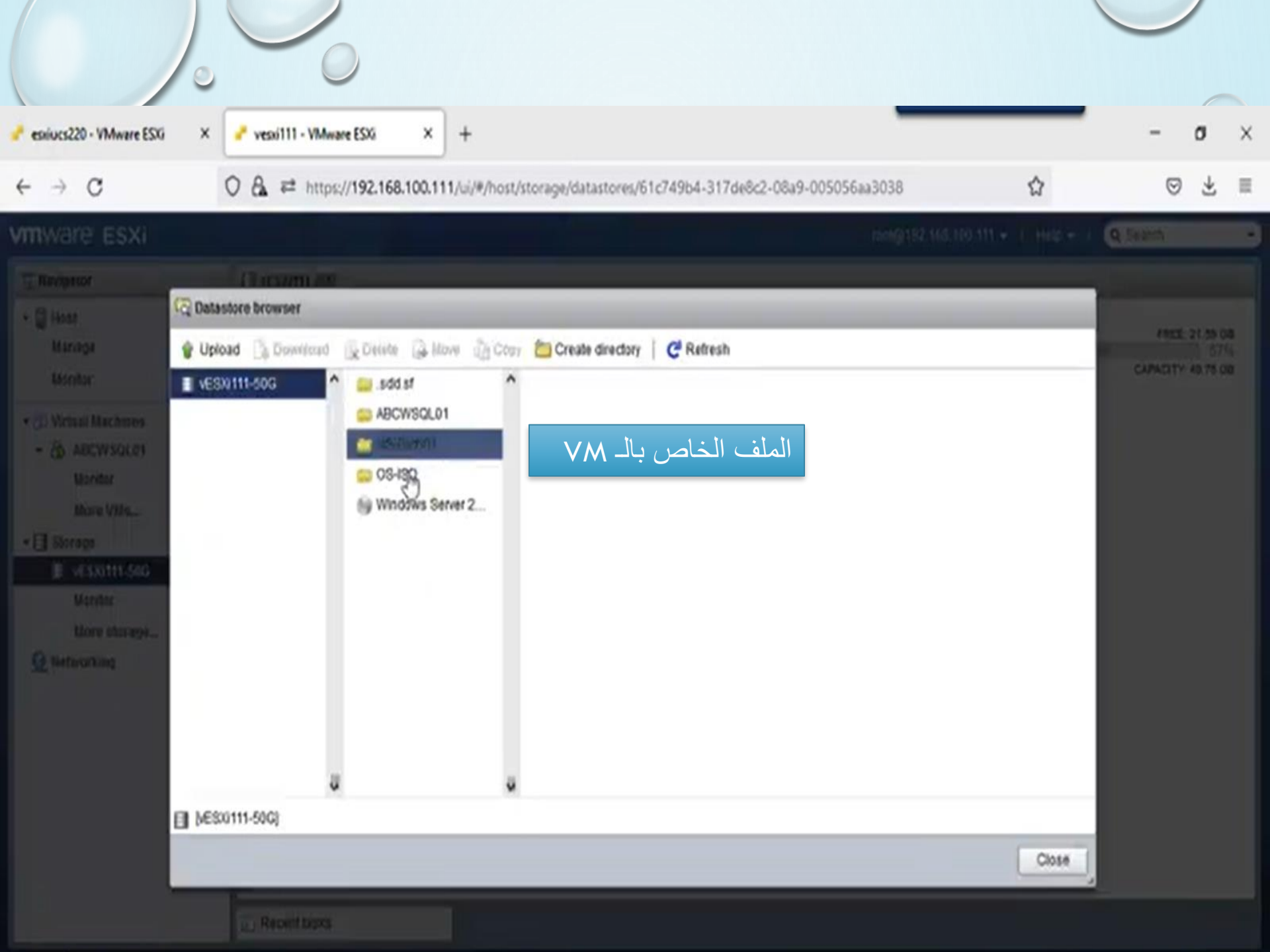
يمكن استعراض الملفات الخاصة بال VM من خلال النقر على اسم ال Datastore ثم نعمل على استعراض ملفات داخل الداتاستور ننقر على Datastore browser

VMFS details

Version	6.82
Local	Yes
Block size	1 MB
UUID	61c749b4-317de8c2-08a9-005056aa3038
Extent 0	mpx.vmhba1:C0:T1:L0, partition 1

Recent tasks

00:00:50 00:47:22



esxiucs220 - VMware ESXi

vesxi111 - VMware ESXi



https://192.168.100.111/ui/#/host/storage/datastores/61c749b4-317de8c2-08a9-005056aa3038



vmware ESXi

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Datstore browser

Upload Download Delete Move Copy Create directory Refresh

vesxi111-50G

.add sf

ABCWSQL01

OS-190

Windows Server 2...

[vesxi111-50G]

Close

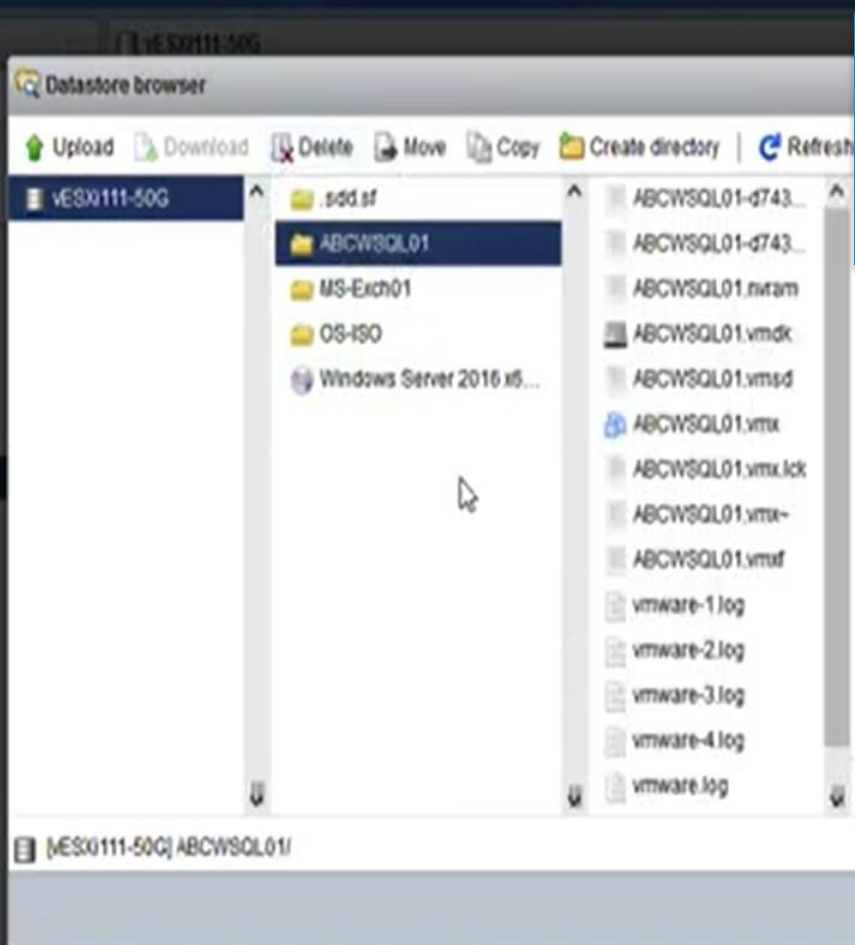
الملف الخاص بالـ VM

FREE: 21.55 GB
57%
CAPACITY: 40.75 GB

Recent boxes



كما تلاحظ من خلال استعراض ملفات الألة الافتراضية هناك ملف يحمل امتداد .vmsd وهو محور الاهتمام هنا لأنه يحتوي على تسجيل متى تم أخذ snapshots للألة الافتراضية.



Log in - VMware ESXi x vesi111 - VMware ESXi x vesi111 - VMware ESXi x +

← → ↻ https://192.168.100.111/ui/#/host/vms/3 ☆ ⚙ ⬇ ☰

vmware ESXi™ root@192.168.100.111 | Help | Search

Navigator

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 - Snapshots
 - Take snapshot
 - Take snapshot
 - Manage snapshots
 - Consolidate disks
 - Console
 - Autostart
 - Upgrade VM Compatibility
 - Export
 - Export With Images
 - Edit settings
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 - Edit notes
 - Rename
 - Answer question
 - Unregister
 - Delete
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 - ABCV
 - More
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 - More
- Networks

MS-Exch01

Monitor | Power on | Power off | Suspend | Reset | Edit | Refresh | Actions

Microsoft Windows Server 2019 (64-bit) ...
ESX/7.0 U2 virtual machine

CPU 0 MHz

MEMORY 0 B

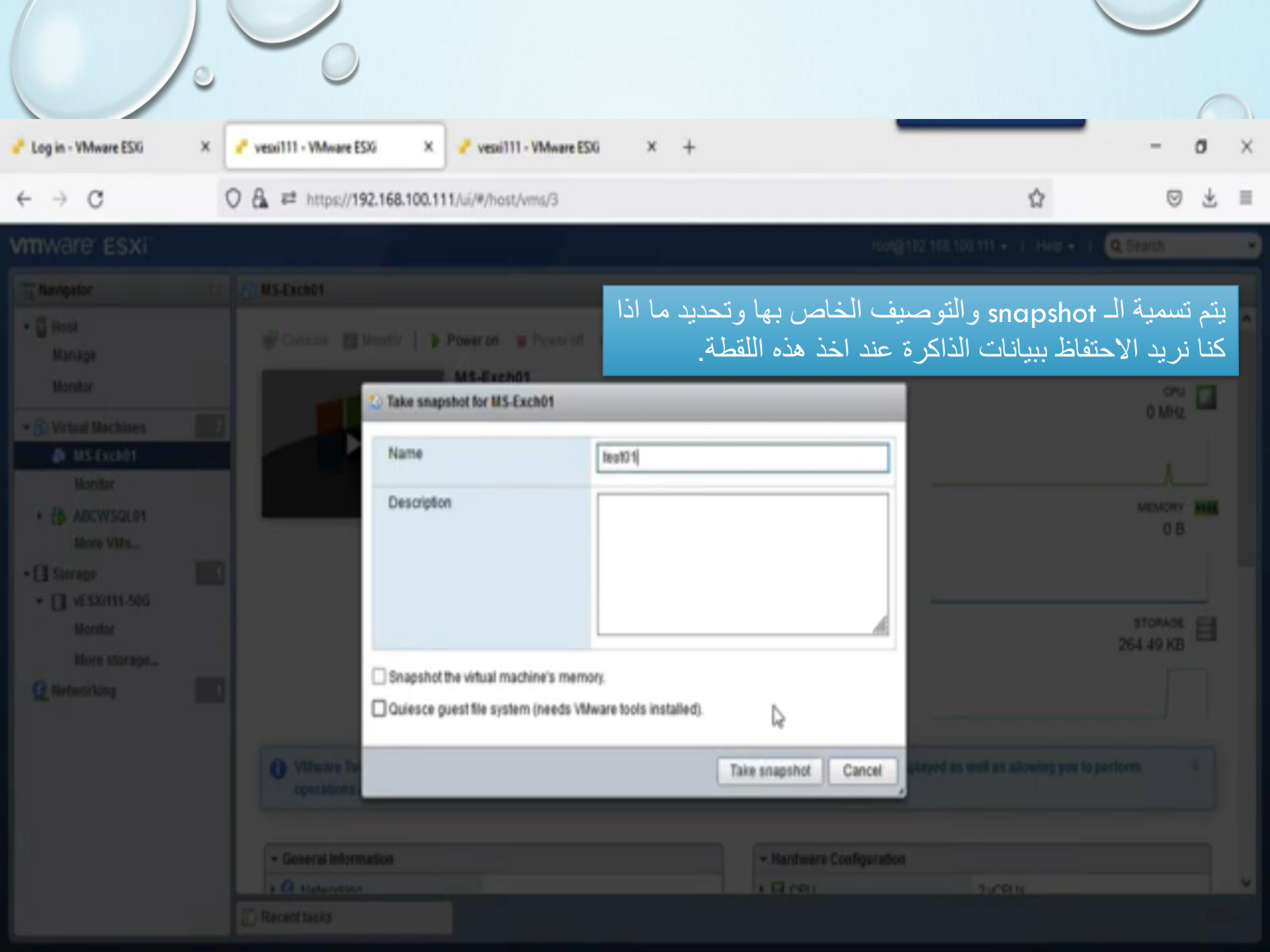
STORAGE 264.49 KB

VMware Tools is not installed in this virtual machine. VMware Tools allows detailed guest information to be displayed as well as allowing you to perform operations on the guest OS, e.g. graceful shutdown, reboot, etc. You should install VMware Tools. Actions

Hardware Configuration

CPU 2 vCPU

يمكن من خلال هذا الخيار اخذ الـ snapshot



يتم تسمية الـ snapshot والتوصيف الخاص بها وتحديد ما اذا كنا نريد الاحتفاظ ببيانات الذاكرة عند اخذ هذه اللقطة.

Log in - VMware ESXi x vesi111 - VMware ESXi x vesi111 - VMware ESXi x +

https://192.168.100.111/ui/#/host/storage/datastores/61c749b4-317de8c2-08a9-005056aa3038

vmware ESXi root@192.168.100.111 Help Search

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- Networking

Datasstore browser

Upload Download Delete Move Copy Create directory Refresh

vESXi111-50G

- .add.sf
- ABCWSQL01
- MS-Exch01
- OS-ISO
- Windows Server 2...

- MS-Exch01-000001.vmdk
- MS-Exch01-Snapshot1.vmsn
- MS-Exch01.nvram
- MS-Exch01.vmdk
- MS-Exch01.vmsd
- MS-Exch01.vmx
- vmware.log

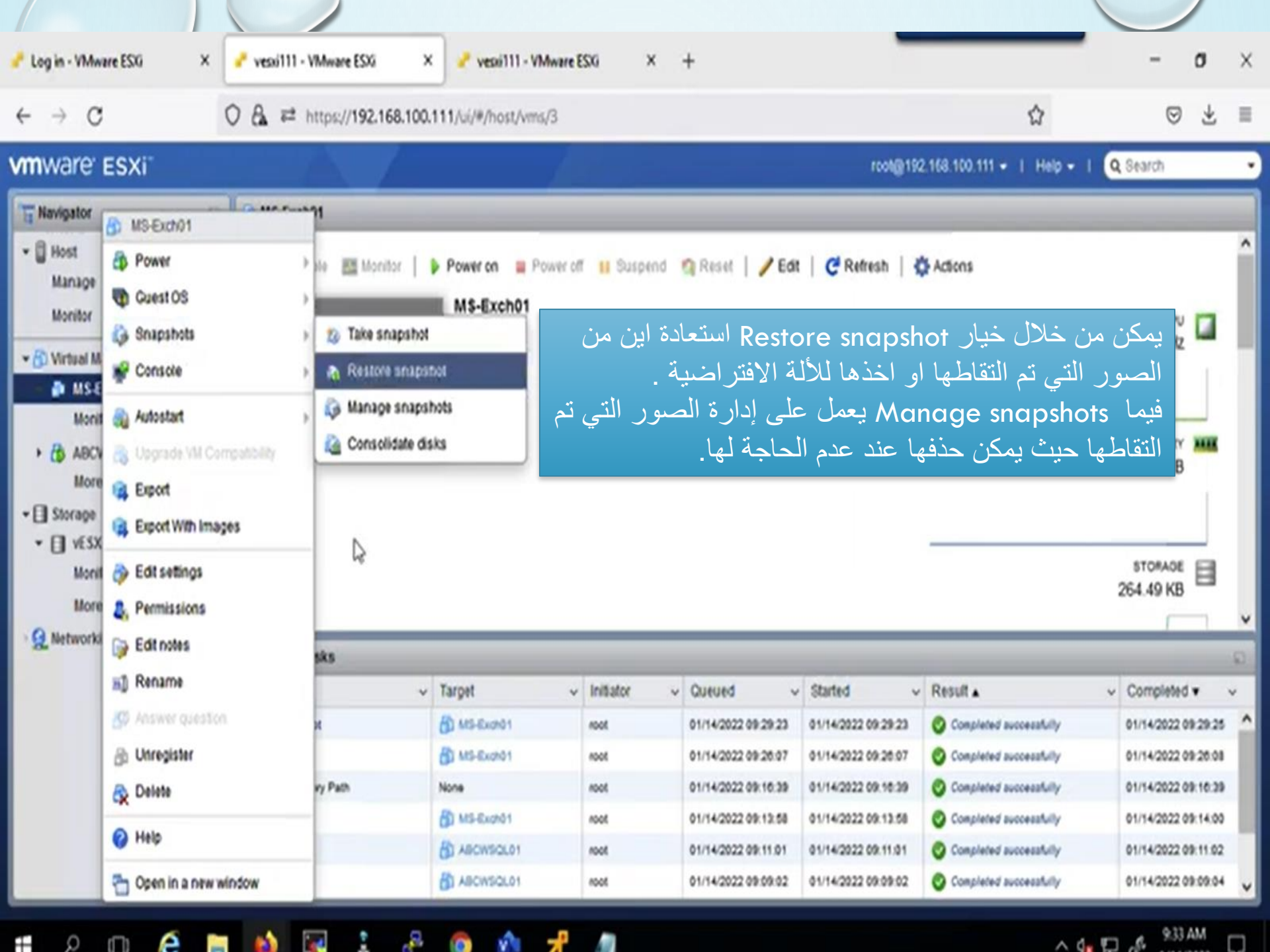
MS-Exch01-Snapshot...
275.85 KB
Friday, January 14, 20...

FREE: 21.92 GB
56%
CAPACITY: 49.75 GB

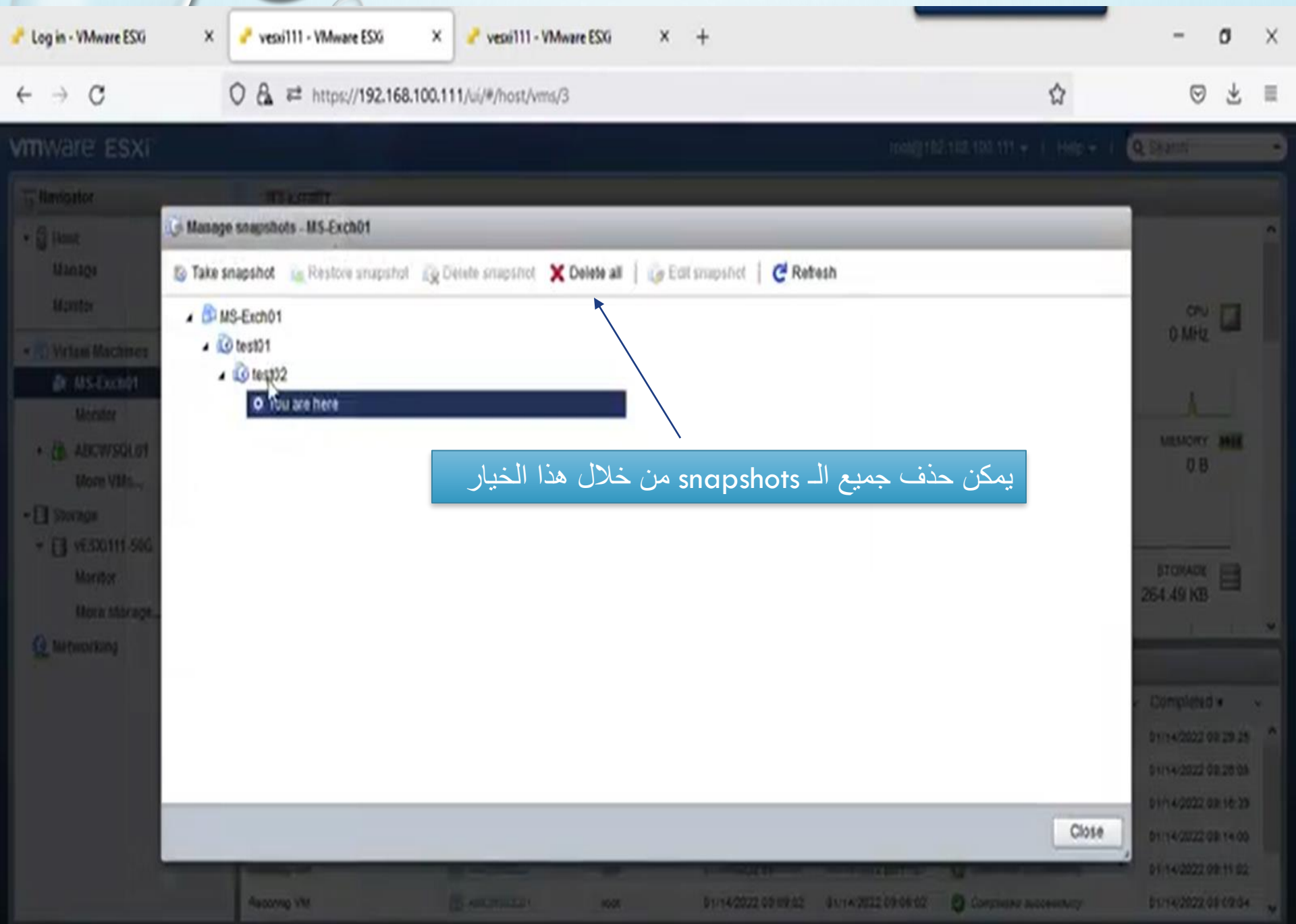
Recent tasks

Close

لو استعرضنا ملفات الـ VM بعد اخذ الـ SNAPSHOT نلاحظ بأنه تم إضافة ملفين بإمتداد .vmdk و .vmsn حيث يعتبر الأول صورة لبيانات datastore والأخر عليه تسجيل بيانات الـ snapshot



يمكن من خلال خيار Restore snapshot استعادة اين من الصور التي تم التقاطها او اخذها للآلة الافتراضية .
فيما Manage snapshots يعمل على إدارة الصور التي تم التقاطها حيث يمكن حذفها عند عدم الحاجة لها.



يمكن حذف جميع الـ snapshots من خلال هذا الخيار

DEPLOY VIRTUAL MACHINE FROM OVF OR OVA

OVA and OVF

OVF Open Virtualization Format

OVA Open Virtual Appliance

OVF is a file format that supports exchange of virtual appliances across products and platforms.

OVA is a single-file distribution of the same file package.



New virtual machine

- 1 Select creation type
- 2 Select OVF and VMDK files
- 3 Select storage
- 4 License agreements
- 5 Deployment options
- 6 Additional settings
- 7 Ready to complete

Select creation type

How would you like to create a Virtual Machine?

- Create a new virtual machine
- Deploy a virtual machine from an OVF or OVA file
- Register an existing virtual machine

This option guides you through the process of creating a virtual machine from an OVF and VMDK files.

vmware

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Next

Finish

Cancel

New virtual machine

- 1 Select creation type
- 2 Select OVF and VMDK files
- 3 Select storage
- 4 License agreements
- 5 Deployment options
- 6 Additional settings
- 7 Ready to complete

Select OVF and VMDK files

Select the OVF and VMDK files or OVA for the VM you would like to deploy

Enter a name for the virtual machine.

Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.

Click to select files or drag/drop

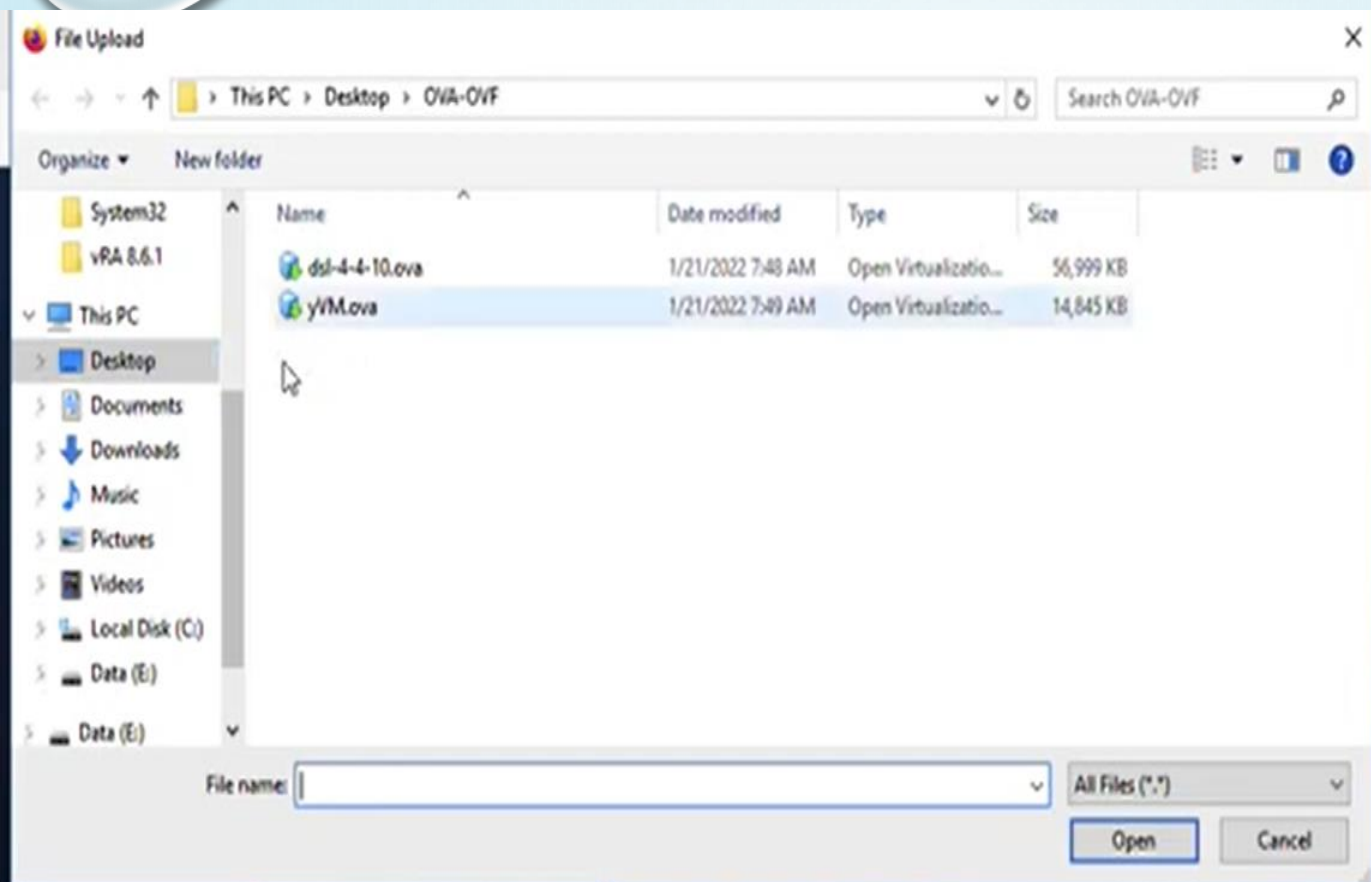
vmware

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Next

Finish

Cancel



Click to select files or drag/drop

vmware

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Next

Finish

Cancel

Recent tasks

New virtual machine - Test-OVA

- ✓ 1 Select creation type
- ✓ 2 Select OVF and VMXK files
- ✓ 3 Select storage
- 4 License agreements
- 5 Deployment options
- 6 Additional settings
- 7 Ready to complete

Select storage

Select the storage type and datastore

Standard

Persistent Memory

Select a datastore for the virtual machine's configuration files and all of its' virtual disks.

Name	Capacity	Free	Type	Thin pr...	Access
vesxi111-50G	49.75 GB	31.13 GB	VMFS6	Supported	Single

1 items

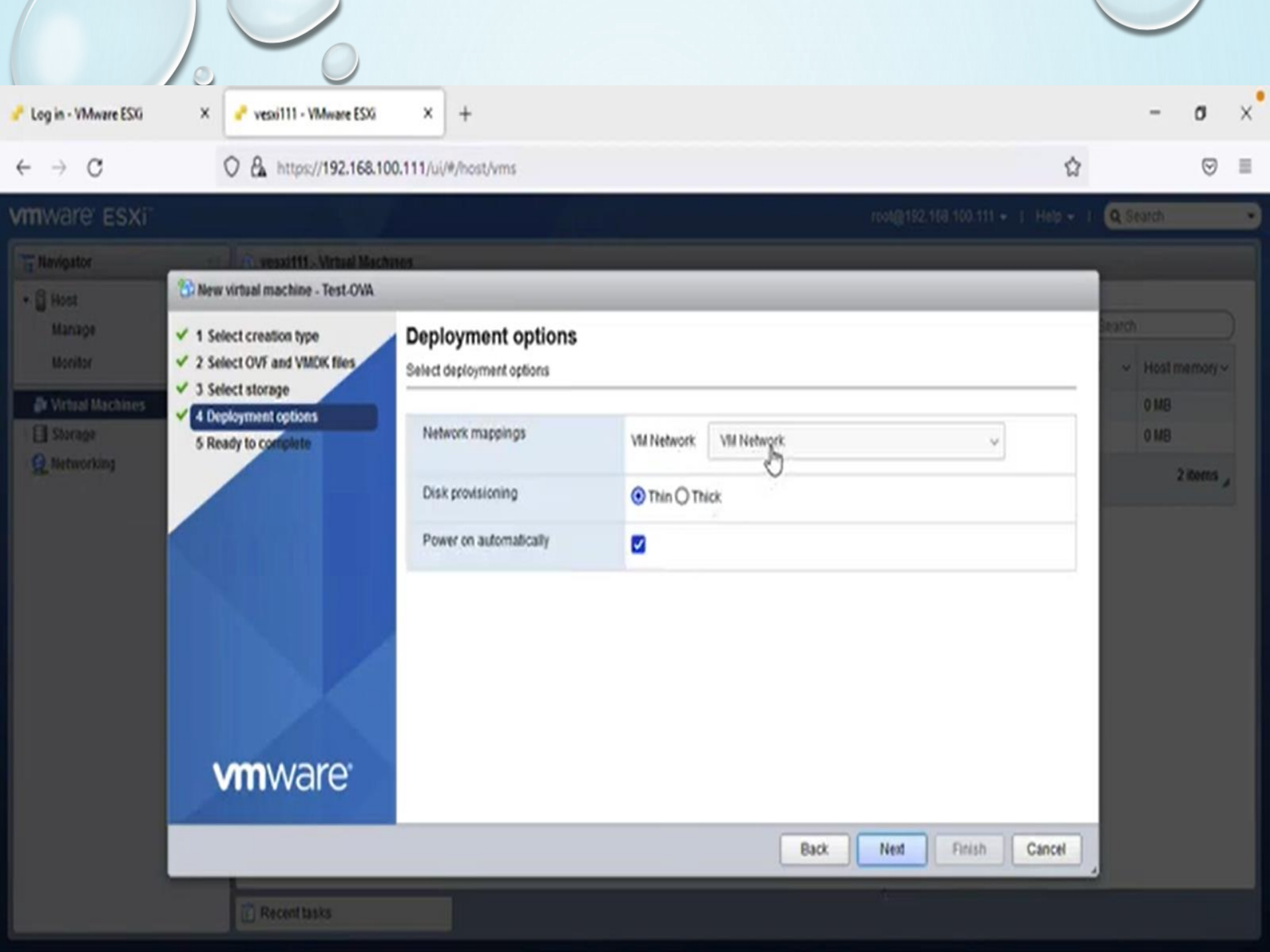
vmware

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Finish

Cancel



Log in - VMware ESXi

vesxi111 - VMware ESXi



https://192.168.100.111/ui/#/host/vms



vmware ESXi

root@192.168.100.111 | Help | Search

Navigator

Host

Manage

Monitor

Virtual Machines

Storage

Networking

New virtual machine - Test-OVA

- ✓ 1 Select creation type
- ✓ 2 Select OVF and VMXK files
- ✓ 3 Select storage
- ✓ 4 Deployment options
- 5 Ready to complete

Deployment options

Select deployment options

Network mappings	VM Network	VM Network
Disk provisioning	<input checked="" type="radio"/> Thin <input type="radio"/> Thick	
Power on automatically	<input checked="" type="checkbox"/>	

vmware

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Finish

Cancel

Recent tasks

New virtual machine - Test-OVA

- ✓ 1 Select creation type
- ✓ 2 Select OVF and VMXK files
- ✓ 3 Select storage
- ✓ 4 Deployment options
- ✓ 5 Ready to complete

Ready to complete

Review your settings selection before finishing the wizard

Product	DSL-4.4.10
VM Name	Test-OVA
Files	DSL-4.4.10-disk1.vmdk
Datastore	vesxi111-50G
Provisioning type	Thin
Network mappings	VM Network: VM Network
Guest OS Name	Other 2.4 x Linux (32-bit)



Do not refresh your browser while this VM is being deployed.

vmware

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Finish

Cancel

Navigator

- Host
- Manage
- Monitor

Virtual Machines 3

Storage 1

Networking 1

vesxi111 - Virtual Machines

Create / Register VM | Console | Power on | Power off | Suspend | Refresh | Actions

Search

<input type="checkbox"/>	Virtual machine	Status	Used space	Guest OS	Host name	Host CPU	Host memory
<input type="checkbox"/>	ABCWSQL01	✓ Nor...	12.61 GB	Microsoft Windows S...	Unknown	0 MHz	0 MB
<input type="checkbox"/>	MS-Exch01	✓ Nor...	498.71 KB	Microsoft Windows S...	Unknown	0 MHz	0 MB
<input type="checkbox"/>	Test-OVA	✓ Nor...	0 B	Other 2.4.x Linux (32-bit)	Unknown	0 MHz	0 MB

Quick filters...

3 items

Recent tasks

Task	Target	Initiator	Queued	Started	Result	Completed
Upload disk - DSL-4.4.10-disk1.vmdk ...	Test-OVA	root	01/22/2022 07:24:56	01/22/2022 07:24:56	<div><div></div></div>	Running... 70 %
Import VApp	Resources	root	01/22/2022 07:24:35	01/22/2022 07:24:35	<div><div></div></div>	Running... 70 %
Create VM	vm		01/22/2022 07:24:35	01/22/2022 07:24:35	✓ Completed successfully	01/22/2022 07:24:38
Destroy	OVAtest0	root	01/22/2022 07:02:33	01/22/2022 07:02:33	✓ Completed successfully	01/22/2022 07:02:36
Power Off VM	OVAtest0	root	01/22/2022 07:02:23	01/22/2022 07:02:23	✓ Completed successfully	01/22/2022 07:02:25
Export Vm	ABCWSQL01	root	01/22/2022 06:58:44	01/22/2022 06:58:44	✓ Completed successfully	01/22/2022 06:58:54

انتهى العمل الخامس