

HPE VM Explorer

Software Version: 6.7

HPE VM Explorer User Guide

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HPE VM Explorer User Guide

Get Started

HPE VM Explorer is a low-cost, easy-to-use and reliable backup solution for VMware vSphere and Microsoft Hyper-V environments. Within minutes you can start centrally managing your backups to disk, tape and cloud through an intuitive and easy-to-navigate web interface.

Advanced backup capabilities include incremental backups and replication, snapshot integration and native cloud support for leading Cloud platforms. With instant VM recovery, direct file level restore from the cloud, encryption, and verification, HPE VM Explorer delivers resiliency, efficiency and agility in your virtual environments.

The following documentation explains the main tasks required for configuration and daily use of HPE VM Explorer. All services hereinafter are brought to you by HPE.

For more information on which HPE VM Explorer version is best suited to your needs, consult our website: https://software.microfocus.com/en-us/products/vm-server-backup/overview.

Requirements

In order to install and operate HPE VM Explorer, you need to meet the system requirements on your computer. For more information, see the HPE VM Explorer Support Matrix.

Browser prerequisites

You need to have one of these browsers installed on your system to download and run HPE VM Explorer:

- Mozilla Firefox
- Google Chrome
- Microsoft Edge
- Opera
- Internet Explorer 11

Operating System and .NET version prerequisites

HPE VM Explorer has been designed to work with the following operating systems:

- Windows Server 2016
- Windows Server 2012 R2
- Windows Server 2012
- Windows Server 2008 R2

The required Microsoft .NET Framework version is 4.6.2.

Hardware prerequisites

In order to install and run HPE VM Explorer 6.7, your local computer needs to meet the following hardware requirements:

- CPU 2 GHz x64 or higher
- 8 GB RAM
- 1 GB free disk space for installation
- Broadband network connection (100 MB/s or higher)

Supported ESXi versions

HPE VM Explorer supports the following versions of ESXi:

- VMware ESXi 6.5
- VMware ESXi 6.0
- VMware ESXi 5.5

Supported Microsoft Hyper-V versions

HPE VM Explorer supports the following Microsoft Hyper-V versions:

- Hyper-V Server 2016
- Hyper-V Server 2012 R2
- Hyper-V Server 2012
- Hyper-V Server 2008 R2 (SP1)

NOTE: .NET Framework 4.6.2 must also be installed on your Hyper-V host.

Supported tape libraries/autoloaders

HPE VM Explorer supports the following tape libraries/autoloaders:

- HPE StoreEver 1/8 G2 Tape Autoloader
- HPE StoreEver MSL2024
- HPE StoreEver MSL4048
- HPE StoreEver MSL6480
- HPE StoreEver MSL8096
- HPE StoreOnce VTL
- Dell PowerVault 124T

NOTE: HPE VM Explorer requires barcodes on every tape (which means, no support for standalone tape drives, or libraries without labeled media). HPE VM Explorer does not currently work with mixed media partitions. HPE VM Explorer does not support WORM media. HPE VM Explorer does not currently support Cleaning tapes.

Supported storage systems

HPE VM Explorer supports the following virtual storage systems:

- HPE 3PAR StoreServ, OS Version 3.1.3
- EMC ScaleIO 1.32
- HPE StoreVirtual VSA 12.6
- HPE StoreOnce Catalyst 3.16

Supported Microsoft Exchange Server releases

HPE VM Explorer supports Microsoft Exchange Server versions 2013 and 2016 for the granular Exchange e-mail item recovery feature.

Installation and Configuration

After downloading HPE VM Explorer, we recommend that you go to your browser's download folder and transfer the HPE-VMExplorer-6.7.xxx.exe file to a folder of your convenience. Then:

- 1. Run *HPE-VMExplorer-6.7.xxx.exe*. Step Result: The HPE VM Explorer Setup wizard screen is displayed.
- 2. In the Welcome to the HPE VM Explorer Setup wizard screen, click Next.
- 3. In the End User License Agreement wizard screen, read the terms and conditions, select the I accept the terms in the License Agreement checkbox and click Next.
- 4. In the **Destination Folder** wizard screen, click **Change** if you want to select a different destination folder than the default one, or click **Next**.
- 5. Click Install.
- 6. In the **Completed the HPE VM Explorer Setup Wizard** screen, the **Launch HPE VM Explorer now** checkbox is selected by default, but you can clear it if you want to run HPE VM Explorer at a later date. Click **Finish** to exit the installation wizard and start HPE VM Explorer.

Important! You need to have SSL 3.0 or earlier deactivated on the computer on which you are installing HPE VM Explorer. See the Microsoft Knowledge Base Article dedicated to restricting the use of certain cryptographic algorithms and protocols in this respect, available here.

Starting HPE VM Explorer

If the Launch HPE VM Explorer now checkbox is selected by default in the Completed the HPE VM Explorer Setup Wizard screen at the end of your installation process, HPE VM Explorer will start as soon as the installation is complete.

To start HPE VM Explorer independently from the installation process, go to *Start > All Programs > HP Enterprise > HPE VM Explorer* or double-click the HPE VM Explorer icon on your desktop.

- If this is your first time using HPE VM Explorer, the HPE VM Explorer WebServer Settings window is displayed, where you can configure the web settings for the application. For more information, see Configuring HPE VM Explorer, on the next page.
- If this is not your first HPE VM Explorer installation and you want to preserve your previous settings (and your previous installation directory is intact), click the green Earth icon in the HPW HPE VM Explorer® - Starter screen. To modify your previously saved configurations, click Web Settings. For more information, see Configuring HPE VM Explorer, on the next page.



HPE VM Explorer Starter screen

Next, you need to log on to the application. For more information, see Running the HPE VM Explorer web interface, on page 18.

Configuring HPE VM Explorer

If you have not configured the HPE VM Explorer web server or if the HPE VM Explorer web server is not running, once you run HPE VM Explorer for the first time, you need to configure the web server settings. To do so, click **WebServer Settings** in the **HPE VM Explorer® – Starter** screen.

1. In the HPE VM Explorer – Web Server settings window, configure the boxes, as follows:

In the Web Interface Address section:

Hostname or IP

Change your local computer hostname or IP, if different from the default one.

Listening Port

Change the listening port, if different from the default one.

Enable HTTPS

Select this checkbox to make the web interface accessible using the HTTPS protocol. This causes the web address to change accordingly. Not enabling HTTPS will require you to change the listening port from the default 443. Also, depending on your selection, the UI options available to you at this stage may vary.

Certificate

Displays the HTTPS certificate. A self-signed HTTPS certificate for HPE VM Explorer is automatically installed on your local computer, in the Personal store. To find out more information about your certificate, click the hyperlink and then read the **Certificate** dialog box.

Important! When using your personal certificate, make sure it is valid (not expired), that it has a private key and that the Enhanced Key Usage has already been set. The Enhanced Key Usage is an option you need to add in your Personal Certificate to make it valid for HPE VM Explorer.

HPE VM Explorer® - WebServer Settings	- 🗆 ×
	Hewlett Packard Enterprise
Please configure the WebServer and press Start in order to use it.	
Web Interface Address	
Hostname or IP: localhost	Listening Port: 442
Enable https Certificate: <u>HPE VM Explorer HTTPS Certificate</u> Enable automatic redirect from http port 80 to https Open Windows firewall Security recommendations: None Start Stop Running on: <u>https://localhost:442/</u>	Browse New
Administration	
New Administrator password:	Login usemame: admin
Confirm new password:	Change password
	Start and Save Cancel

WebServer Settings

The **Friendly Name** (or the **Issuer By** name, if the first is not available) of the current HTTPS certificate is displayed in the **Details** tab, otherwise HPE VM Explorer will display *Certificate not found*.

NOTE: You can use only certificates already installed in the following folders of your local computer:

- Personal
- Trusted Root Certification Authorities
- Intermediate Certification Authorities
- Trusted Publishers
- Untrusted Certificates
- Third-Party Root Certification Authorities
- Trusted People
- Other People

When finished, click **OK** to return to the **HPE VM Explorer- WebServer Settings** window. **Browse...**

Click this button to add a new certificate. If you already have one available on your computer, select the desired certificate in the **Windows Security** dialog box and then click **OK**.

New

Click this button to generate and install a new HPE VM Explorer HTTPS certificate after clicking **OK** in the **Create new https certificate** confirmation dialog box.

Enable automatic redirect from http port 80 to https

Select this checkbox to enable automatic redirection from the default HTTP port 80.

Open Windows firewall

Select this checkbox to enable Windows Firewall to allow access for HPE VM Explorer.

SSL protocols status: Disabled/Enabled

HPE VM Explorer needs all SSL protocols (3.0, 2.0) to be disabled to function properly. For more information, see Microsoft KB Article 187498.

Start

Click to start the web server, if not started already.

Stop

Click to stop the web server, if needed.

Running on:

Displays the localhost. Note that, depending on the settings, your browser could display a warning message when opening HTTPS links, as the HTTPS certificate is self-signed and not issued by a trusted certificate authority. To select a user trusted certificate, click **Browse...** See earlier in this publication for the options available to you at this stage.

In the Administration section:

New Administrator password

Type your administrator password before entering the web interface for the first time. The default login user name is *admin*. Your password must comply with the HPE VM Explorer security policy and must observe the following requirements whenever you create or modify a user:

- A minimum of 10 and a maximum of 20 characters
- At least one lower case letter [a-z]
- At least one upper case letter [A-Z]
- 2 digits (0-9)
- At least 1 special character (such as: % & ?;:!-._*@#+\$=)

To recover a lost password, see Recovering your password, on page 126.

Confirm new password

Confirm your administrator password.

Change password

Click if you need to change your existing password.

 When finished, click Start and Save. Step Result: If you have correctly configured all settings, HPE VM Explorer opens in your default browser. For the list of supported browsers, see Browser prerequisites, on page 10.

Disabling SSL protocols

For security purposes, we recommend that you disable SSL protocols versions 2.0 and 3.0 to force the use of Transport Layer Security (TLS) when using HPE VM Explorer.

To disable SSL protocol 2.0:

- 1. Go to *Start > regedit.exe*, right-click it and point to **Run as administrator** on the shortcut menu.
- In the Registry Editor window, expand the tree to HKEY_LOCAL_ MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\Schannel\Protocols\SSL 2.0\.
- 3. If, under **Protocols**, the keys from the subpaths **SSL 2.0/Server/Enabled** and **SSL 2.0/Client/DisabledByDefault** do not exist, create them, as follows:
 - a. Right-click **Protocols** and, in the shortcut menu, click **New > Key** and name the key **SSL 2.0**.
 - b. Right-click the SSL 2.0 key, point to *New > Key* and then name the key Client.
 - c. Under SSL 2.0, right-click Client, point to New > DWORD (32-bit) Value and name the value DisabledByDefault.
 - d. Right-click the SSL 2.0 key, point to New > Key and name the key Server.
- 4. Under SSL 2.0, right-click Server, point to New > DWORD (32-bit) Value and name the value Enabled.
- 5. Under SSL 2.0, select Client and then, in the right pane, double-click the DisabledByDefault REG_DWORD value.
- 6. In the Edit DWORD (32-bit) Value dialog box, in the Value Data box, change the value to 1 and click OK.
- 7. Under SSL 2.0, select Server and then, in the right pane, double-click the Enabled REG_ DWORD value.
- 8. In the Edit DWORD (32-bit) Value dialog box, in the Value Data box, leave the value at 0 and then click OK.
- 9. Restart your Windows server.

To disable SSL protocol 3.0:

- 1. Go to *Start > regedit.exe*, right-click it and point to **Run as administrator** on the shortcut menu.
- In the Registry Editor window, expand the tree to HKEY_LOCAL_ MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\Schannel\Protocols\SS L 3.0\.
- 3. If, under **Protocols**, the keys from the subpath **SSL 3.0/Server/Enabled** do not exist, create them, as follows:
 - a. Right-click **Protocols** and, on the shortcut menu, point to *New > Key* and name the key SSL 3.0.
 - b. Right-click the **SSL 3.0** key, point to *New > Key* and name the key **Server**.

- c. Under SSL 3.0, right-click Server, point to *New > DWORD (32-bit) Value* and name the value **Enabled**.
- 4. Under **SSL 3.0**, select **Server** and then, in the right pane, double-click the **Enabled DWORD** value.
- 5. In the Edit DWORD (32-bit) Value dialog box, in the Value Data box, leave the value at 0 and then click OK.
- 6. Restart your Windows server.

For more information, visit the Microsoft support page: https://support.microsoft.com/en-us/kb/245030.

Disabling 3DSCipher

To avoid a security issue, you must also disable 3DSCipher on the system where you have installed HPE VM Explorer. To do so:

- 1. Open your Group Policy Editor. To do so, go to *Start > Run*, type *gpedit.msc* and press Enter.
- 2. In the Local Group Policy Editor screen, expand *Administrative Templates>Network* and click SSL Configuration Settings.
- 3. Under Setting, open SSL Cipher Suite Order and then, in the SSL Cipher Suite dialog box, click Enabled. The SSL Cipher suites are displayed below **Options**, delimited by "," (comma).
- 4. Copy and paste the SSL Cipher suites in a text editor, then search and remove ciphers containing the *3DES* occurrence. Then, replace the SSL Cipher suites in the **SSL Cipher Suite** dialog box with the edited string and click **Apply**.
- 5. When finished, restart your computer to apply the new settings with the disabled 3DSCipher.

Configuring TCP ports

HPE VM Explorer uses different TCP ports to communicate with hosts or enable communication between hosts:

Server	Required Port Number	Observations
ESXi Servers	443 (HTTPS)	Enabling Use HPE VM Explorer Agent on ESXi requires ports 22 (SSH), 443 (HTTPS) and 62000-65000. Using VDDK requires port 902.
vCenter	443 (HTTPS)	-
Hyper-V Servers	9000, 9001, 62000-65000	-
Linux and FreeBSD	22 (SSH), 2500-3000 and 62000-65000	-

Running the HPE VM Explorer web interface

After configuring HPE VM Explorer, you need to log on using the credentials you selected during the configuration stage. For more information, see Configuring HPE VM Explorer, on page 13.

To run HPE VM Explorer, go to *Start > RUN > HPE VM Explorer* and, in the HPE VM Explorer® - **Starter** window, click the green Earth icon and type your login credentials.

The administrator login name is **admin** and the password has to be previously configured in the web interface settings. If your credentials are correct, you can access the HPE VM Explorer interface.

Hew Ente] lett Packard rprise
	VM Explorer
Domain	\Username
Passwo	rd
	Login
Reset Pas	sword

Web logon

If you have not selected your language of choice yet, you can choose which localization to use in the **HPE VM Explorer language selection** screen.

VM Explorer language selection
No language has been configured yet.
Please, select VM Explorer web interface language.
Please select your language 🔻
Save
This option can be also changed in Settings->Language.

Language selection (first time access)

The languages currently available to you are:

- English
- French
- German
- Italian
- Spanish
- Japanese

- Russian
- Chinese—simplified
- Portuguese—Brazilian

HPE VM Explorer	DATACENTER	TASKS +	MANAGEMENT + STORAGE SYSTEMS +	Tasks 0	💄 admin 🗸
My Datacenter					
Add a new Server Search VM Expand All Collapse All Refresh All Expand All Collapse All Refresh All Expand All Collapse All Refresh All Expand Total Servers The Servers Expanded Servers Expan	q		Wizard	Graphs Datacenter Overview VCenter Hyper-V Server Microsoft Azure ESX/ESX/ 4/5/6	
Hewlett Packard			Statistics Overview of scheduled tasks result in the last 24h. Output Success Failed D Warning Aborted	10 days Scheduled Task Results	
Enterprise			© Copyright 2017 Hewlett P	ackard Enterprise Development LP	

HPE VM Explorer Datacenter view

HPE VM Explorer license

HPE VM Explorer 6.7 features two types of licenses which function concurrently: the legacy license and the HPE AutoPass license.

NOTE: When opening HPE VM Explorer for the first time, you are granted a 15 days evaluation version of the Enterprise Edition by default. You will then need to manually add your license key following the procedure described later in this document. When the free trial period expires, HPE VM Explorer's features will be reduced to the Free edition capabilities until a new license is installed. To purchase an HPE VM Explorer license, visit https://software.microfocus.com/buy/vm-server-backup.

To activate your HPE VM Explorer license:

- 1. In the Settings view, click License Manager and then click Activate New License.
- In the License Manager wizard, select which type of license you want to activate: HPE AutoPass or Legacy (Trilead). The next screen varies depending on your selection at this stage.

NOTE: If you have an existing license with HPE VM Explorer, there is no need for you to

change your license at this time. To get an HPE AutoPass License, log on to the HPE
Entitlement site, at http://www.hpe.com/software/entitlements.

ense Activation Manager					×
Select License Type	Select a licensing m	nethod:			
Add License Key	IPE AutoPass				
Activation Summary	 Legacy 				
		Previous	Next	Finish	Cancel

License Activation Manager wizard - Select License Type screen

- 3. In the Add License Key wizard screen:
 - For HPE AutoPass—Click Browse to upload a valid license or you can paste the activation code in the License Key section. When finished, click Activate.

ense Achvanon Manager			
Select License Type	If you do not have an HPE VM Explorer license obtain one.	e, use the <u>HPE Licensing for s</u>	oftware link to
Add License Key	Host ID (you will be asked to provide this):	AGOSTIND3	
Activation Summary	Install your license using one of the following) methods:	
	License File:		
	Ent_SP_6_CPU.dat	\odot	Browse
	License Key:		

License Activation Manager wizard - Add License Type for HPE AutoPass screen

• For Legacy—Paste the license key you have received from your vendor and then click Activate.

ense Activation Manager		>
Select License Type	Please insert the license key including the BEGIN/END lines:	
Add License Key	BEGIN TRILEAD LICENSE AAAA/gAAAAAAAAAPSW5jbHVkZWRTb2NrZXRzAAAAAAzEwMAAAAA	Ø
Activation Summary	dWZXJraWSuAAAAATEAAAAAUHJvZHVidAAAAAUJemisZWEHEZM WAAAAAMcZWEQdXJcwAAABEFbmRicnByaXNIRWRpdisZWEHEZM WAAAAANCGUVQAAAAZTaWTwbGuAAAHU3VwcG9ydAAAAAVC VXNpYwAAAATvcGdyYWRicTvuGisAAAACIwWTgtmDimTUAAA AlQ3VzdG9rZXIAAAALV2hpdGVFYWdsZXMAAAACSUQAAAAAVC YxNYWYYNTAzNiO0YzhmLTbiZlitM2UIHzJiNTQIOTYXAAABAF YRva8T6DLzwigJP8sfE1OLJdOJXkhanl6q400h+rNBRi3tDrp urR7F7IQ8P47b+TUvzfZzVds2Uwy29wwpg1W2Raz1f0zXAEMQU 60zkdmv2H1fsiLCGSYglv8bodf2zKDaxOw+tBBmESJJV0s029 M8ekFx9r2UILEMG6m0azcXa77Tg9U/7iLan/IXFY2GmwRLi3WR HA2R5z+6u2xeGW7WLb35LTTgAnp406EBH56BE13+cg6D7AXAig P611jeK3iZ43rXUxstg2Jw8hnmVJAvvyKM3w4XdCA= END_TRILEAD_LICENSE	
	Previous Activate Finish	Cancel

License Activation Manager wizard - Add License Type for Legacy screen

4. In the **Activation Summary** screen, you can see the status of your License Key. Click **Close** to return to the **License Manager** section.

cense Activation Manager					×
Select License Type	Activation Status:	Succes	s		\odot
Add License Key		Checking	the new license		
Activation Summary		Installing	the new license		
	Congratulations, the lice	nse is now activa	ted!		
	P	revious	Next	Close	Cancel

License Activation Manager wizard - Activation Summary screen

- 5. In the **License Manager** section you can see the number of sockets purchased. The following license options are available to you:
- HPE VM Explorer Professional Starter Pack license provides 4 sockets by default.
- HPE VM Explorer Additional Socket Pro Edition license provides a custom number of sockets.
- HPE VM Explorer Enterprise Starter Pack license provides 6 sockets by default.
- HPE VM Explorer Additional Socket Enterprise Edition license provides a custom number of sockets.

NOTE: Contact your vendor if you need additional socket licenses for your environment.

Setting Up Your Storage Environment in HPE VM Explorer

You can set up a variety of storage targets in HPE VM Explorer. For more information, see:

- Adding hypervisor servers, on page 24
- Adding storage target servers, on page 35
 - Adding an Amazon S3 storage target, on page 35
 - Adding OpenStack, HPE Helion, Rackspace and Azure cloud storage targets, on page 1

- Adding Linux and FreeBSD servers, on page 37
- Configure the SAN Infrastructure, on page 43
- Configure tape infrastructure, on page 52

Working with Servers in HPE VM Explorer

You can add a large variety of servers to the HPE VM Explorer Datacenter, from hypervisors to public/private clouds, which you can later modify or delete.

Visual representations of the supported servers and VM status

To make navigation easier for you, every supported server is represented by a dedicated icon in the datacenter, as follows:





Adding hypervisor servers

Before you can start using HPE VM Explorer, you need to add your hypervisor hosts.

There are two ways to add a hypervisor server.

- 1. Click the Add a New Server link on the intro page of HPE VM Explorer.
- 2. Click Add Server.

OR

- 1. Right-click My DataCenter.
- 2. Click Add Server.

Both methods start the Add Server Wizard.

3. In the Add Server wizard screen, select the type of server you want to add.

Add Server		
Please choose the type of server you want	to add:	
VMware	Microsoft —	
ESX/ESXI VCenter	Server	Cluster
Cloud Storage Targets		Unix —
		Ê
Amazon S3 S3 Compatible	Microsoft Azure	Linux Server
OpenStack Rackspace		FreeBSD Server

Add Server screen

4. Configure the Add Server <Server Name> wizard screen, as required. During the configuration process, you can navigate through the previously completed wizard screens at any time. Depending on your server selection at this stage, the procedures available to you may vary. Read later in this publication for more information.

NOTE: Before adding servers to HPE VM Explorer, we recommend that you integrate your host (s) into a folder structure to increase your efficiency. To do so, right-click a host on the **My Datacenter** view, point to **Add Folder** and then type a meaningful name for your folder. Note that you can only add one child level folder to the root.

Initializing Virtual Disk Service (VD Service)

When enabled, the Virtual Disk service uses the VMware VDDK (Virtual Disk Development Kit) to perform backups. This will leverage VMware's VADP (vStorage API's for Data Protection) enabling enhanced features, including Change Block Tracking, which results in more efficient backups. This is only available for paid editions of VMware ESXi, it is not supported in ESXi Free.

To enable the Virtual Disk Service in HPE VM Explorer

1. Go to <User Name> Manuals > Enabling Virtual Disk Service (VD Service).

ŀ	HPE VM Explorer	DATACENTER	R TASKS -	MANAGEMENT -	STORAGE SYSTEMS -
Set	tings				
۵	General	-	User Manual		
•	Export / Import config file		HPE VM Explorer U	Iser Guide (PDF)	
R	License Manager				
4	Network Drives	Γ.	Guides		
	E-Mail Default Settings		Enabling SSH access (†	ech mode) on the ESXi	
L.	Reporting API	<u> </u>	Enabling Virtual Disk S	ervice (VD Service)	
8	Instant Recovery Service				
1	Active Directory				
-	Users				
*	Groups				
	Password Recovery Settings				
۲	Language				
	Event Logs				
Х	Support				
?	Manuals				

Settings - Manuals

2. In the **How to Enable Virtual Disk Service (VD Service)** screen, install the VDDK package on the computer where HPE VM Explorer is running from the manufacturer's website http://www.vmware.com/download/download.do?downloadGroup=VDDK65.



How to enable Virtual Disk Service (VD Service)

3. After installing the VDDK package, click Initialize VD Service in HPE VM Explorer.

Adding an ESXi server

You can add an ESXi server to HPE VM Explorer in the **Add Server (ESXi)** screen, which you can complete by clicking **Next** after filling in the required information. Note that, unless otherwise stated, these procedures are shared across the application when adding various servers and storage environments.

 In the Add Server wizard, click ESXi and then, in the Add Server (ESXi) screen, select a display name for your server and browse to the desired location to store the server in the HPE VM Explorer Datacenter.

NOTE: This action only organizes the server in different folders in the HPE VM Explorer Datacenter and will not influence backups or replication in any way.

ld Server (ESXi)					
Name & Location	Display Name	New Server			
Connection Settings	Location				
Port Settings	Root				
SSH / HPE VM Explorer Agent					
Advanced Settings					
Test Connection					
Default Folders					
Summary					
		Previous	Next	Finish	Cancel

Add Server - Name & Location

2. In the **Connection Settings** screen, type the hostname (or IP), the username and the password, and the root password if you choose to connect to the host using a different user than the root.

NOTE: If you connect to the host using a different user than "root", type the root password in the **Root Password** box.

Name & Location	Specify the full DNS	name or IP addres	s of the server.		
Connection Settings	Hostname				
Port Settings	Specify the account	that will be used to	connect to the se	erver. Please note tha	t in order to
SSH / HPE VM Explorer Agent	like Snapshots, Pow SSH.	er On/Off, register/u	unregister VM, bro	wse datastores and a	iccess through
Advanced Settings	Username	root			
Test Connection	Password				
Default Folders	The root password i the server will be ma	s only used to eleva ade using the config mand	ate privileges with gured credentials,	in the SSH console. C and root password w	onnection to rill be used
Summary	Root Password				

Add Server - Connection Settings

3. In the **Port Settings** screen, configure a port for SSH (if different from the default 22) and an HTTPS port for the ESXi Management Console (if different from the default 443).

NOTE: : This procedure only applies to the ESXi host.

Name & Location	The default por	t number for SSH is 22.	If the connection o	ver this port cannot	t be
Connection Settings	established, ple	ase check for possible p	port customization i	n the server setting	js.
Port Settings					
SSH / HPE VM Explorer Agent	The default por over this port of server settings.	t number for VMware V annot be established, p	Veb Service commu lease check for pos	nications is 443. If t sible port customiza	he connection ation in the
Advanced Settings	HTTPS Port	443			
Test Connection					
Default Folders					
Summary					

Add Server - Port Settings

4. In the SSH / HPE VM Explorer Agent wizard screen, select one of the following checkboxes.

NOTE: This procedure only applies to the ESXi host. The HPE VM Explorer Agent is an automatically deployed wrapper over the Hypervisor API and it is used for performing various operations, such as creating, replicating, restoring backups and so on.)

- a. **Enable SSH and use HPE VM Explorer agent automatically**. For ESXi 5.5 (or later), you can enable SSH and use the HPE VM Explorer agent automatically.
- b. Use SSH (SCP) to transfer files. You can enable SSH to transfer files from your ESXi hosts. Click the link in the wizard screen to see how you can change your ESXi server into tech mode to enable SSH.

NOTE: SSH is not faster than the normal ESXi API, but it is more stable for uploading files to your ESXi server.

c. **Try to use the HPE VM Explorer agent on ESXi**. HPE VM Explorer usually deploys an agent to the server so that backups are faster and more stable. ESXi does not support SSH by default, so no agent will be deployed. By selecting this option, HPE VM Explorer will deploy an agent to your ESXi server. We recommend that you activate this feature, as the performance will be much better than when using the official API.

NOTE: Activating this feature is recommended, as the performance will be much better than when using the official API. Make sure the TCP ports 62000-65000 are available.

d Server (ESXi)	
Name & Location	☑ Enable SSH and use HPE VM Explorer Agent automatically
Connection Settings	Use SSH (SCP) to transfer files.
Port Settings	Click here to learn how to enable SSH on the ESXi Try to use the HPE VM Explorer agent on ESXi. Requires TCP ports 62000 - 65000.
SSH / HPE VM Explorer Agent	Faster and more stable than ESXI API.
Advanced Settings	
Test Connection	
Default Folders	
Summary	

Add Server - SSH / HPE VM Explorer Agent

5. On the **Advanced Settings** tab, configure the following settings:

a. When using the backup agent, do not dynamically open the firewall.

This option only refers to Linux or ESXi 5.5 (or later) servers. HPE VM Explorer will configure the firewall automatically for your Linux or ESXi 5.5 (or later) server. You can open the ports yourself (for more information, see the HPE VM Explorer Practitioner Forum) and disable this option. In this case, the HPE VM Explorer Agent will not make any changes to your Linux or ESX firewall.

b. Use vmkfstools to locally copy virtual disks

This option is enabled by default and allows HPE VM Explorer to use the vmkfstools to copy virtual disks when the target host is the same as the source host. The use of vmkfstools increases the local copy speed but sometimes uses more system resources.

Disable this option if you notice performance problems during your backups or replication from an ESXi host to the same ESXi host.

c. Enable VD Service automatically

This feature is enabled by default if VD service is already installed. Follow the on-screen instructions in the **Click here to learn how to install and initialize VD Service** section and configure the VD Service in the **How to Enable Virtual Disk Service (VD Service)** screen. For more information, see Initializing Virtual Disk Service (VD Service), on page 25.

d. Use VD Service. If you enable this feature, you will be able to create incremental backups.

To use the VD Service interface, you need to make a one-time installation and initialization of the VD libraries. For more details, follow the **Click here to learn how to install and initialize VD Service** link.

NOTE: Licensed ESXi 5.5 / 6.0 / 6.5 is required. This feature does not work on the free editions of ESXi 5.5 / 6.0 / 6.5.



Add Server - Advanced Settings

6. In the **Test Connection** wizard screen, you can test your connectivity status. This is where you are notified of any errors.

Name & Location	Test Connection Result		Running			
Connection Settings		🕑 т	est ESXi Manage	ement Servio	e	
Port Settings		o o	heck ESXi versio	n		
		Ø E	nable SSH			
SSH / HPE VM Explorer Agent		Gт	est SSH/SCP Ca	pability		
		Ст	est VM Explorer	Backup Age	ent	
Advanced Settings		Ст	est VD Service (VDDK)		
Test Connection	Abort					
Default Folders						
Summary						

Add Server - Test Connection

- 7. In the **Default Folders** wizard screen, configure a default directory for backup/replication. This folder will be suggested to you in the setup dialog box when the current server is selected as a target server. You can also use the following placeholders:
 - a. In the first box, configure a default directory which will appear on the backup/replication setup dialog when the current server is selected as a target server. You can use the {DATETIME}, {DATE} and {VM} placeholders in the path. Placeholders will be replaced with the following values:

{DATETIME}: the current date/time, will write the date using the following format: YYYY-MM-DD-hhmmss {DATE}: the current date, will write the date using the following format: YYYY-MM-DD

{VM}: the display name of the virtual machine.

b. In the second box, configure a default directory, which is used as the start directory when HPE VM Explorer File Explorer is selected. In File Explorer, when you start to navigate a specific server or when you click **Home**, you will be redirected to the configured directory.

Add Server (ESXi)		×
Name & Location	When this server is selected as a target for backup, propose this directory as defa	iult:
Connection Settings		Browse
Port Settings	Note. You can use the following placeholders:	
SSH / VM Explorer Agent	(DATETIME) will be replaced by the current date/time. e.g. 2015-01-30-12590 (DATE) will be replaced by the current date. e.g. 2015-01-30 DOUD will be replaced by the current date. e.g. 2015-01-30	1
Advanced Settings	(VM) will be replaced by the display name of the virtual machine.	
Test Connection		
Default Folders	When you browse this server, start browsing in the following directory as default:	
Summary		Browse
	Previous Next Finish	Cancel

Add Server - Default Folders

8. The **Summary** tab displays the summary of your ESXi settings. Click **Save** to add your settings to your Datacenter.

Name & Location	Summary	Display Name: New Server	*
Connection Sottings		Location: Root	
connection Sernings		ID address: yvy yv yv yv	
Dent Cettine		Username: root	
fort Settings		Password: ******	
SH / VM Explorer Agent		SSH Port: 22	
		HTTPS Port: 443	
Advanced Settings			
	-	Enable SSH and use VM Explorer agent automatically: true	
Test Connection		Use SSH (SCP) to transfer files: true	
		Use VM Explorer Agent: true	
Default Folders			
		Do not dynamically open the firewall: false	
ummary		Use vmkfstools to locally copy virtual disks: true	
	-	Use VD Service: true	
		Default backup directory:	
		Default browse directory:	
			•
		Description Newbork Court	Control

Add Server - Summary

Adding a Hyper-V server

This section covers the differences between adding an ESXi host and a Hyper-V host in the **Add Server** wizard of HPE VM Explorer. You can find information on the tabs not explained here earlier in this publication. For more information, see also Adding an ESXi server, on page 26.

To add a Hyper-V server

 In the Connection Settings (Hyper-V Server) wizard screen, configure the credentials for connecting to the Hyper-V host. Make sure you have a valid account with the Hyper-V host. Select the Start Hyper-V Agent using configured credentials checkbox to start the Hyper-V Agent with these credentials, not as the local system's user, if such credentials exist. If not, the system will use the local system user's credentials as default.

Name & Location					
Name & Location	Specify the full DI	NS name or IP address	of the server.		
Connection Settings	Hostname				۲
Advanced Settings		The Hostnäme is r	equired.		
Test Connection	Specify the accou	nt that will be used to	connect to the se	rver.	
	Username	Administrato	r		
Default Folders	Password				
Summary	Domain	WORKGROUI	>		
	Start Hyper-	/ Agent using configu	red credentials		

Add server (Hyper-V) - Connection settings

2. In the Advanced Settings (Hyper-V Server) wizard screen, selecting the Write data directly to the disk without being buffered checkbox solves performance issues in applications and services when the system file cache consumes most of the physical RAM in certain services, as documented in the Microsoft KB Article 976618.

NOTE: This option could slow down the backup process if target is set to **Local Computer**.

d Server (Hyper-V Server)		
Name & Location	I/O Caching	
Connection Settings	Write data directly to the disk without being buffered	
Advanced Settings	Use this option only if you experience the issue described in Microsoft kb 976618 < <u>http://support.microsoft.com/kb/976618</u> >	
Test Connection		
Default Folders		
Summary		

Add server (Hyper-V) - Advanced settings

3. In the **Test Connection (Hyper-V Server)** wizard screen, you can deploy the HPE VM Explorer Agent Manager Service to your server. In case of errors, the Agent Manager button is displayed; clicking it opens the Hyper-V Agent Manager window where you can manually deploy it. You can also choose to remove the HPE VM Explorer Agent Manager from the server. The HPE VM Explorer Agent Manager verifies if your HPE VM Explorer Agent is up-to-date and will install the latest version on your Hypervisor, if needed.

Edit Server (Hyper-V Server)					×	
Name & Location	Test Connection result	Error			۲	
Connection Settings	c	Test Hyper	-V Connectivity			
Advanced Settings	c	Check .Net	Framework vers	ion		
Test Connection	0	Check DNS	reverse lookup			
Default Folders	ų	J lest irilea	3 Backup Agent			
Summary	Trilead Backup Agent Error: Cannot establish connection(Error initializing HyperV agent (Could not connect to net.tcp://XXX.XXX:Y001/VMXAgentManagerService. The connection attempt lasted for a time span of 00:00:21002/108, TCP error code 1006:0. A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond XXX.XXXXXX.)) Is Trilead Agent Manager service running on your Hyper-V Server?					
	Agent Manager					
	Retry Test Connection					
	Pre	vious	Next	Finish	Cancel	

Add server (Hyper-V) - Test connection

You can also access this screen when selecting the server in the HPE VM Explorer Datacenter.



Add Server (Hyper-V) - Hyper-V Agent Manager

Adding a vCenter server

This section covers the differences between adding an ESXi host and a vCenter host in the Add Server wizard. You can find information on the wizard screens not explained here earlier in this publication. For more information, see also Adding an ESXi server, on page 26.

To add a vCenter

1. In the **Connection Settings (vCenter):** wizard screen, type the hostname (or IP), the username and the password for the vCenter server.

Add Server (vCenter)					
Name & Location	Specify the full DN	IS name or IP address	of the server.		
Connection Settings	Hostname				۲
Port Settings		The Hostname is r	equired.		
Test Connection	Specify the accour	nt that will be used to	connect to the ser	ver.	
Summary	Username	root			
,	Password				
		Previous	Next	Finish	Cancel

Add server (vCenter) - Connection settings

2. In the **Port Settings (vCenter)** wizard screen, configure an HTTPS port for the ESX Management Console (if different from the default 443).

Name & Location	The default part of	the second se			
	over this port can	not be established, ple	ase check for pos	sible port customiza	ation in the
Connection Settings	server settings.				
Port Settings	HTTPS Port	443			\odot
Test Connection					
Summary					

Add server (vCenter) - Port settings

After you have added the server, HPE VM Explorer displays all the hosts belonging to your vCenter.

To use the hosts, you must configure every host by right-clicking and selecting **Edit Server**. For configuration details, see Add an ESX/ESXi Server.

NOTE: You cannot set ESXi servers to Lockdown mode because of permission issues. If ESXi servers are already in Lockdown mode, you must remove Lockdown. To do so, open the Direct Console User Interface (DCIU) on the host, press F2 for Initial Setup, and then select **Configure Lockdown Mode** and disable Lockdown mode.

To remove the lockdown mode

- 1. Open the Direct Console User Interface (DCIU) on the host.
- 2. Press F2 for Initial Setup.
- 3. Select Configure Lockdown Mode and disable lockdown mode.

Adding storage target servers

In HPE VM Explorer, you can add the following storage targets: Amazon S3, OpenStack, Rackspace and Microsoft Azure cloud, as well as Linux and FreeBSD servers.

NOTE: You cannot use any of the cloud storage or Unix servers as targets for VM replication.

Adding an Amazon S3 storage target

This section covers the differences between adding an ESXi host and adding an Amazon S3 Cloud host in the Add Server wizard. You can find information on the wizard screens not explained here earlier in this publication. For more information, see also Adding an ESXi server, on page 26.

To add an Amazon S3 storage target, in the **Connection Settings (Amazon S3 Cloud)** wizard screen, add your credentials to connect to the Amazon S3 Cloud as well as the region with which you want to work. Make sure you have access to an Amazon S3 server and to your cloud account's Access Key ID and Secret Access Key and type this information in the Connection Settings wizard screen. For more information, click here. You can select All Regions or just one of them from the list. If you select a specific region, the region-specific bucket will become visible.

Name & Location	Specify the access	keys to connect to AWS service	S.	
Connection Settings	Access Key ID			۲
Test Connection	Secret Key	The Access Key ID is required.		
Default Folders				
Summary	Specify the Region.	All Regions	n can reduce data latenc	v •

TIP: Choosing a specific region will reduce data latency.

Add server (Amazon S3) - Connection settings

Once finished, you can schedule your backups to the Amazon S3 server. For more information, see Creating a scheduled task, on page 106.

Adding OpenStack, Rackspace, Microsoft Azure and Amazon S3 Compatible Cloud storage targets

This section covers the differences between adding a hypervisor host and adding an OpenStack, Rackspace, Microsoft Azure cloud or Amazon S3 Compatible storage target in the **Add Server** wizard. You can find information on the wizard screens not explained here earlier in this publication. For more information, see also Adding an ESXi server, on page 26.

You can choose between making backups directly to the cloud or to a local storage and then uploading the backup to the cloud.

NOTE: You cannot use any of the cloud storage or Unix servers as targets for VM replication.

In the **Connection Settings** wizard screen, type the credentials you need to connect to the selected cloud. For OpenStack, HPE Helion and Rackspace, you can also select if you want to access to the **Tenant Name** or the **Tenant ID** and you can specify which one(s).

NOTE: Earlier versions used the term Project instead of Tenant.
Name & Location	Specify the full URL of	the Cloud Identity Service API Endpoint.	
Connection Settings	Identity Endpoint		8
Test Connection		The Identity Endpoint is required.	
Region	Specify the account th	at will be used to connect to the server.	
Default Folders	Username Password		
Summary			
Summary	Specify either the Ten "Project" instead of "Te	ant Name or ID to authenticate. Earlier versions used th enant".	ne term
Summary	Specify either the Ten "Project" instead of "Te Tenant	ant Name or ID to authenticate. Earlier versions used th enant". Tenant Name	ne term T
Summary	Specify either the Ten "Project" instead of "Te Tenant	ant Name or ID to authenticate. Earlier versions used th enant". Tenant Name	ne term T
Summary	Specify either the Ten "Project" instead of "To Tenant	ant Name or ID to authenticate. Earlier versions used th enant". Tenant Name	e ferm v

Add server (OpenStack, HPE Helion, Rackspace, Azure, S3 Compatible) - Connection settings

Adding Linux and FreeBSD servers

The procedure for adding Linux and FreeBSD servers are similar to adding an ESXi host, except for the **SSH/HPE VM Explorer Agent** and **Advanced Settings**, which are only used by ESXi hosts. For more information, see also Adding an ESXi server, on page 26.

Modifying a server

Depending on your needs, you can easily modify the settings of an existing server in HPE VM Explorer. To do so, go to the **Datacenter** view, right-click the server you want to modify and then point to **Edit Server...** on the shortcut menu. Then, configure the **Edit Server (ESXi)** wizard accordingly. For more information on how to configure a server, see Adding a Hyper-V server, on page 32.

Refreshing one or all servers

To refresh a single server, go to the **Datacenter** view, right-click the desired server and then point to **Refresh** on the shortcut menu. To refresh multiple servers, go to the **Datacenter** view and click **Refresh All**.

NOTE: Creating a task or running a process involving one or several servers will cause the server(s) to refresh automatically.

Viewing server or Virtual Machine information

In HPE VM Explorer, you can always check whether your server or Virtual Machine settings are compliant with your needs.

Server overview

In the **Overview** tab of the **<server name>** screen, you can see general information about the host, the type of server and the number of sockets:

10.14.5.122				
C Refresh	📂 Browse 🕜 Edit	圃 Remove		
Overview	Scheduled Backups	Instant Recovery Status		
General Hostname: Type: VMwa Sockets: 2 Storage	10.14.5.122 are ESXi 6.0.0 build-505054	93		
Name	Туре	Use	d Space	Used Percentage
datastore	VMFS	11.96	GB / 32.50 GB	37/%
datastore2	VMFS	1.42	GB / 19.75 GB	7%

Server - Overview

Inbound/Outbound view

In the **Scheduled Backups** tab of the **<server name>** screen, you can view all the tasks connected to the current server:

Type	Virtual Machine	Source Server	Task	Next execution
Replication	Exchange	Hyper-V 2008	Task 3	Monday, 22 May 2017 at 12:00
Outgoing Tas	ks			
Outgoing Tas	ks	Target Server	Task	Next execution
Outgoing Tas Type Backup	ks Virtual Machine vCenter	Target Server ESX-Europe	Task 1	Next execution Monday, 22 May 2017 at 12:00

Inbound/Outbound view

Instant Recovery status

In the **Instant Recovery Status** tab of the *server name* screen, you can check the connection status between the Hypervisor and HPE VM Explorer's NFS server (this feature is only available for ESXi):

Verview Instant Recovery	Status
Instant Recovery Service Teste	r
Fhrough this page it is possible t	to test the Instant Recovery functionalities and unmount any Recovery Datastore on the host.
Check Status: Reads the Instant F	Recovery Service configuration and status.
Fest Service: Tries to mount the F	Recovery Datastore in the host and informs on the result.
Jnmount Recovery DS: Tries to u	inmount the Recovery Datastore from the host and informs on the result.
Jnmount Recovery DS: Tries to u	inmount the Recovery Datastore from the host and informs on the result.
Jnmount Recovery DS: Tries to u	Instant Recovery Datastore from the host and informs on the result.
Jnmount Recovery DS: Tries to u Check Status	Instant Recovery Service status:
Jnmount Recovery DS: Tries to u Check Status	Instant Recovery Service status: Instant Recovery Service status:
Inmount Recovery DS: Tries to u Check Status Test Service	Instant Recovery Datastore from the host and informs on the result. Instant Recovery Service status: Instant Recovery Service correctly configured. Recovery Datastore Status:
Inmount Recovery DS: Tries to u Check Status Test Service	Instant Recovery Datastore from the host and informs on the result. Instant Recovery Service status: Instant Recovery Service correctly configured. Recovery Datastore Status:
Inmount Recovery DS: Tries to u Check Status Test Service	Inmount the Recovery Datastore from the host and informs on the result. Instant Recovery Service status: Instant Recovery Service correctly configured. Recovery Datastore Status:
Inmount Recovery DS: Tries to u Check Status Test Service Unmount Recovery DS	Inmount the Recovery Datastore from the host and informs on the result. Instant Recovery Service status: Instant Recovery Datastore Status: Instant VM Recovery Status:

Server - Instant recovery status

The Instant Recovery Status tab provides you with the following options:

• Check Status updates the status of the data and gives you an overview of the possible and current operations.

You can read the information of the datastore registered through the HPE VM Explorer NFS Server and if any backup test is running.

- Test Service mounts the HPE VM Explorer NFS datastore (used for automated backup test) to the host and check if basic communication is possible.
- **Unmount Recovery DS** runs the unmounts of the HPE VM Explorer NFS datastore. If any backup test is running, this command will fail as the host will refuse it.

NOTE: You can use the **Unmount Recovery DS** feature only if you have enabled the Instant Recovery Service, in the *<user name> > Settings > Instant Recovery Service* section.

Viewing Virtual Machine information

To have an overview of a Virtual Machine, expand the servers on the **Datacenter** view, click the desired Virtual Machine and then see all the desired information in the *Virtual Machine Name>* screen.

/indowsServer2012R2		
General Screen		
<u>S Type:</u> Microsoft Windows Serv	er 2012 (64-bit)	
Virtual Hardware 4 CPUs 8192.00 MB RAM 2 Virtual disks 1 Ethernet Interfaces	Active Mem: 245 MB Refresh Host Mem: 2201 MB CPU Usage: 43 MHz	Guest Info Hostname: WIN-LKBQU7FQE45 IP Address: 172.17.0.208
Disks		
[datastore1] WindowsServer201	2R2/WindowsServer2012R2.vmdk	
	zkz/windows5erverz012kz_1.vmak	
Notes		

Virtual Machine information

You can also request a screenshot of the VM in the Screen tab. Just press Refresh to update.

You can right-click a VM in the **Datacenter** tree and then, in the **Snapshots for** *<Virtual Machine Name>* screen, you can run VM related actions, such as power on/off, backup/replication, locate VM files or manage the snapshots.

WindowsSer	rver2012R2	
General	Screen	
	Refr	esh
Recycle Bin		
HOTE VAA Explorer Pulsee		
	Windows Server 2012 R2	
	• 10 T/ (S 👘 2010)	I

VM screenshot

Clicking **Snapshots Manager** enables you to see the snapshot tree of the selected VM. Here you can navigate through and delete one or more snapshots.

Click **Create Snapshot** to take a new snapshot. You can set the option for *quiesce* and *memory snapshot*. Give your snapshot a name and a meaningful description.

Currently define Currently define BaseCo CYou Construction Construction Currently defined BaseCo Currently defined Currently defined Current	d snapshots for Window nfig (a are here) -2016-03-21-1059	rsServer2012R2:	
Description:			
Go to		Remove Snapshot	Remove All Snapshots
 New Snapsh 	ot		
Name	Snap-2016-03-21-1	203	
Description			
	 Snapshot the vir Quiesce the file s tools are installe 	tual machine's memory system in the virtual machine (d)	only when VMware

VM Snapshot Manager

When selecting the **Snapshot Manager** option, a new dialog will appear, showing the snapshot tree of the selected VM. You can navigate through the snapshots, delete a specific snapshot or both.

Upload Manager

The **Upload Manager** tab of the **<server name>** screen is only available for Amazon S3. Here you can have an overview of the multipart uploads currently active with the Amazon S3 cloud:

okyo-Amazo	n				
Overview	Upload	Manager			
bort all in-pr	rogress Mul	tipart Uploads	on Amazon S3 Abort All		
Current M	ultipart Up	oads			
Sta	art time	Bucket	Descriptor File	С	reator
21.03.20	016 10:16:39	vmx-ireland	WindowsServer2012R2_2.vmdk.delta	Admin	
				Abort	Refresh

Server - Upload Manager

Abort All stops and deletes all multi-part upload jobs currently running.

The **Current Multipart Uploads** form displays a list of all running, uploaded jobs. If you select one or more jobs, you can stop them without influencing the other jobs. This allows you to stop a job that may be blocked or malfunctioning.

Refresh is not automatic and must be activated by clicking Refresh, even the first time.

Deleting a server

In HPE VM Explorer, you can delete a server you no longer need. To do so, go to the **Datacenter** view, right-click the server that you want to delete and then point to **Remove** on the shortcut menu. Then, in the **Confirm** dialog box, click **OK**.

CAUTION: Removing and then adding the same host (with the same parameters and server name) will require you to refresh all Scheduled Tasks related to that server. For more information, see Scheduling Tasks, on page 106.

Configure the SAN Infrastructure

If your network has EMC² ScaleIO, HPE StoreVirtual VSA or HPE 3PAR StoreServ systems installed, you can add references to these Storage Area Network (SAN) infrastructures to check infrastructure information and execute backups with Storage Snapshot. For more details, see Backing Up One or Multiple Virtual Machines, on page 77.

You can add a SAN infrastructure and you can modify or delete an existing one. For more information, see Modify a SAN infrastructure, on page 52, and Delete a SAN infrastructure, on page 52.

Add a SAN infrastructure

To add a SAN infrastructure:

 Go to Storage Systems, point to SAN Infrastructure and then, in the Welcome to the SAN Infrastructure Manager screen, click Add new SAN. You can also click Add new SAN on the SAN Infrastructure view or right-click a free area in the SAN Infrastructure view and point to Add new SAN on the shortcut menu.



Welcome to the SAN Infrastructure Manager screen

2. In the **Add a new SAN** screen, select whether you want to add a new ScaleIO, an HPE StoreVirtual or an HPE 3PAR StoreServ storage system. Depending on your selection at this stage, the procedures available to you differ.



Add new SAN system

HPE VM Explorer supports the following SAN infrastructures:

- EMC Scale IO—for more infromation, see Working with EMC ScaleIO SAN storage, below
- HPE StoreVirtual—for more infromation, see Working with HPE StoreVirtual VSA SAN systems, on page 46
- HPE 3PAR StoreServ—for more infromation, see Working with HPE 3PAR StoreServ storage, on page 47

Working with EMC ScaleIO SAN storage

With HPE VM Explorer, you can perform backup&restore operations to EMC ScaleIO, which enables you to convert direct-attached storage into shared block storage.EMC ScaleIO uses existing host-based internal storage to create a scalable SAN.

Add an EMC ScaleIO SAN storage

To add an EMC ScaleIO SAN system, in the **Add a new SAN** screen, click **ScaleIO** and configure the **Add a new SAN** wizard.

1. In the Add a new SAN wizard, in the Name & Connection Settings screen, complete the boxes, as required. When finished, click Next.

Add a new SAN					
	1				
Name & Connection Settings	Display Name	New ScaleIO			
Test Connection	Connection Settings				
Summary	Specify the full DNS nam	ne or IP address			
	Gateway Hostname				
	MDM Username				
	MDM Password				
		Previous	Next	Finish	Cancel

Add ScaleIO system - Name & Connection Settings

- 2. In the **Test Connection** wizard screen, you can test the connectivity and uniqueness of your newly configured ScaleIO system. If the test is successful, click **Next**.
- 3. In the **Summary** wizard screen, you can see the summary of your newly configured ScaleIO system. At this stage, you can always go back and reconfigure the details of your SAN infrastructure. When finished, click **Save**. Your newly added SAN infrastructure is available in the **SAN infrastructure** view.

You can also modify and delete your existing EMC ScaleIO SAN SAN infrastructure. For more information, see Modify a SAN infrastructure, on page 52 and Delete a SAN infrastructure, on page 52.

View EMC ScaleIO SAN storage details

To view the EMC ScaleIO SAN storage details:

- 1. Go to Storage Systems > SAN Infrastructure.
- In the SAN Infrastructure view, click the desired EMC ScaleIO SAN storage. All the information related to your EMC ScaleIO SAN storage is displayed in the <*EMC ScaleIO SAN server* name> screen. You can see the general information of your storage, as well as the system capacity, and you can also modify and remove the selected EMC ScaleIO SAN storage.

View EMC ScaleIO SAN SDC details

To view the EMC ScaleIO SAN SDC details:

- 1. Go to Storage Systems > SAN Infrastructure.
- 2. In the **SAN Infrastructure** view, expand the EMC ScaleIO SAN storage and the **SDC** knot and click the desired SDC to view its details.

View EMC ScaleIO SAN volume details

To view the EMC ScaleIO SAN volume details:

- 1. Go to Storage Systems > SAN Infrastructure.
- 2. In the **SAN Infrastructure** view, expand the EMC ScaleIO SAN storage and the **Volumes** knot and then click the desired volume to view its details.

Working with HPE StoreVirtual VSA SAN systems

With HPE VM Explorer, you can perform backup&restore operations to HPE StoreVirtual VSA SAN systems, which provide you with affordable storage for your virtualized infrastructure. HPE StoreVirtual VSA transforms your server's internal or direct-attached storage into a scalable, shared storage array, without dedicated storage.

Add an HPE StoreVirtual VSA SAN system

To add an HPE StoreVirtual VSA SAN system, in the **Add a new SAN** screen, click **HPE StoreVirtual** and configure the **Add a new SAN** wizard.

NOTE: For the 6.7 release of HPE VM Explorer, the HPE StoreVirtual implementation only supports ESXi systems. Hyper-V systems will be supported at a future date.

 In the Name & Connection Settings wizard screen, type a meaningful name for your new HPE StoreVirtual system in the Display Name box. Also, type the full DNS name or IP address of your HPE StoreVirtual system in the Cluster Hostname box, as well as your HPE StoreVirtual VSA username and password. When finished, click Next.

Add a new SAN					×
Name & Connection Settings	Display Name	New StoreVirtual SAM	4		
Test Connection	Connection Settings				
Summary	Specify the full DNS name	e or IP address			
	Cluster Hostname	16.51.181.235			
	Username	administrator			
	Password	•••••			
		Previous	Next	Finish	Cancel
					concer

Add HPE StoreVirtual VSA system – Name & Connection Settings

- 2. In the **Test Connection** wizard screen, wait until the system checks if you can connect to HPE StoreVirtual and makes sure there is no duplicate Management Group. If the test is successful, click **Next**.
- In the Summary wizard screen, you can see the summary of your newly configured HPE StoreVirtual system. At this stage, you can always go back and reconfigure the details of your SAN infrastructure. When finished, click Save. Your newly added SAN infrastructure is available in the SAN infrastructure view.

NOTE: Whenever you store a VM on HPE StoreVirtual VSA storage, storage snapshots are made automatically and no additional action is needed from your side.

You can also modify and delete your existing HPE StoreVirtual VSA SAN storage. For more information, see Modify a SAN infrastructure, on page 52 and Delete a SAN infrastructure, on page 52.

View HPE StoreVirtual VSA storage details

To view the HPE StoreVirtual VSA storage details:

- 1. Go to Storage Systems > SAN Infrastructure.
- In the SAN Infrastructure view, click the desired HPE StoreVirtual VSA storage. All the information related to your HPE StoreVirtual VSA storage is displayed in the <HPE StoreVirtual VSA server name> screen. You can see the general information of your storage, as well as the system capacity, and you can also modify and remove the selected HPE HPE StoreVirtual VSA storage system.

View HPE StoreVirtual VSA server information

To view the HPE StoreVirtual VSA server details:

- 1. Go to Storage Systems > SAN Infrastructure.
- 2. In the **SAN Infrastructure** view, expand the HPE StoreVirtual VSA SAN storage and the **Servers** knot and then click the desired server to view its details.

View HPE StoreVirtual VSA cluster information

To view the HPE StoreVirtual VSA cluster details:

- 1. Go to Storage Systems > SAN Infrastructure.
- 2. In the **SAN Infrastructure** view, expand the HPE StoreVirtual VSA SAN storage and the **Clusters** knot and then click the desired cluster to view its details.

Working with HPE 3PAR StoreServ storage

VM Explorer can perform storage snapshot backup operations from HPE 3PAR StoreServ Storage.

HPE 3PAR StoreServ Storage leverages multi-tenant design and uses hardware for deduplication, all in a single, tier-1 storage system especially designed for data security and availability.

Add an HPE 3PAR StoreServ storage

To add an HPE 3PAR StoreServ storage, in the **Add a new SAN** screen, click HPE 3PAR StoreServ and configure the **Add a new SAN** wizard.

NOTE: To enable communicaton with HPE VM Explorer, make sure HPE 3PAR StoreServ WSAPI HTTPS communication is enabled.

In the **Name & Connection Settings** wizard screen, type a meaningful name for your new HPE 3PAR StoreServ system in the **Display Name** box. Also, type the hostname of your server, as well as your HPE 3PAR StoreServ username and password. When finished, click **Next**.

Name & Connection Settings	Display Name	New HPE 3PAR		
Test Connection	Connection Settings			
Summary	Specify the full DNS name	e or IP address		
	Hostname			
	Username			
	Password			

- 2. In the **Test Connection** wizard screen, wait until the system checks if you can connect to your newly added HPE 3PAR StoreServ storage system. If the test is successful, click **Next**.
- 3. In the Summary wizard screen, you can see the summary of your newly added HPE 3PAR StoreServ system. At this stage, you can always go back and reconfigure the details of your SAN infrastructure, if needed. When finished, click Save. Your newly added HPE 3PAR StoreServ storage is available in the SAN infrastructure view.

View the HPE 3PAR StoreServ storage details

To view the HPE 3PAR StoreServ storage details:

- 1. Go to Storage Systems > SAN Infrastructure.
- In the SAN Infrastructure view, click the desired HPE 3PAR StoreServ storage. All the information related to your HPE 3PAR StoreServ storage is displayed in the <HPE 3PAR StoreServ server name> screen. You can see the general information of your storage, as well as the system capacity, and you can also modify and remove the selected HPE 3PAR StoreServ

storage system.



View the HPE 3PAR StoreServ host details and exports

To view the HPE 3PAR StoreServ hosts details and exports:

- 1. Go to Storage Systems > SAN Infrastructure.
- Browse the desired HPE 3PAR StoreServ storage and expand the Hosts knot. Then, click the Host the information of which you want to see. All the information related to your HPE 3PAR StoreServ host storage and the existing exports is displayed in the HPE 3PAR StoreServ
 hostname> screen, in the respective tabs.

ESXi_V65	
C Refresh	
-	
Verview Exports	
General	
Name: ESXi_V65	
Host Set: Backup_Host_Set	
Domain: Backup	
Location: New York	
IP Address: 187.31.023.119	
OS Type: VMware (ESXi)	
Persona: 8 - VMWare	
Comments: N/A	
Contact: john.smith@microfocus.com	
- Paths	
MANNUSCEI Norro	Surters Dante (NUS-D)
1311197619761113	System Ports (N.S.P)
ESXI_V65	
ESX1_V65	
ESXI_V65	
ESXi_V65 Cverview Exports	
ESXI_V65 Refresh Overview Exports General	
ESX1_V65 CRefresh Overview Exports General Number of Exported Volumes: 1	
ESX1_V65 Cverview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0	
ESX1_V65 Refresh Overview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0	
ESX1_V65 C Refresh Overview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs VLUNs	
ESX1_V65 Cverview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs LUN Host Type Host Set Ex	:port Type Volume Name Volume Set
ESXI_V65 CVerview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs ULUN Host Type Host Set Ex O Host - Vol	iport Type Volume Name Volume Set ume <u>3PAR Storage V</u>
ESXi_V65 Creview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs LUN Host Type Host Set Ex 0 Host - Vol	port Type Volume Name Volume Set ume <u>3PAR Storage Y</u>
ESX1_V65 Creater Content of Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs VLUNs UNN UNN UNN VLUNS VLUN VLUN VLUN VLUN VLUN VLUN VLUN VLUN	port Type Volume Name Volume Set ume <u>3PAR Storage V</u>
ESX1_V65 Cverview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs VLUNs UN Host Type Host Set Ex 0 Host - Vol	sport Type Volume Name Volume Set ume <u>3PAR Storage V</u> -
ESXI_V65 Cverview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs VLUNs LUN Host Type Host Set Ex 0 Host - Vol	:port Type Volume Name Volume Set ume <u>3PAR Storage Y</u> -
ESXLV65 Cverview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs UN Host Type Host Set Ex O Host - Vol	iport Type Volume Name Volume Set ume <u>3PAR Storage V</u>
ESXLV65 Cverview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs UUN Host Type Host Set Ex 0 Host - Vol	iport Type Volume Name Volume Set ume <u>3PAR Storage Y</u> -
ESX1_V65 Crefresh Overview Exports General Number of Exported Volumes: 1 Number of Exported Volume Sets: 0 VLUNs VLUNs UN LUN Host Type Host Set Exported Volume Vo	:port Type Volume Name Volume Set ume <u>3PAR Storage V</u> -

View the HPE 3PAR StoreServ volume details, exports and snapshots

To view the HPE 3PAR StoreServ volume details, exports and snapshots:

- 1. Go to Storage Systems > SAN Infrastructure.
- Browse the desired HPE 3PAR StoreServ storage and expand the Volumes knot. Then, click the Volume the information of which you want to see. All the information related to your HPE 3PAR StoreServ Volume details, exports and snapshots is displayed in the <HPE 3PAR StoreServ volume name> screen, in the respective tabs.

3PAR Storage Volume	
Nerresh	
Overview Exports Snapshots	
General	State
10: 3085	Volume State: Normal
Name: SPAR_Storage_Volume	Number of Copies: 1
Volume Set: -	Size: IU (GB)
	Creation Time: 1/2//2017 4:41:07 PM
B 11 117 7505	Dia it T
Base Identifier: 3585	Retention Time: -
Volume Type: Base	Policies
Copy of: -	✓ Stale SS
Provisioning: IPVV	One Host
Permission: KW	✓ Zero Detect
User CPG: FC_r1	System
Snapshot CPG: FC_r1	Caching
ZDAD Stores Velume	
SPAR_Storage_volume	
C Refresh	
Overview Exports Snapshots	
VLUNs	
LUN Export Type Volume Set E	xported To Host Name Host Set System Po
0 Volume - Hos	it <u>ESXi V65</u>
4	4
3PAR_Storage_Volume	
C Refresh	
Overview Exports Snapshots	
Sidpsilois	Vistual Star (CiD)
3PAR Storage VV Snap1 RW	10 Copies Exports
Snap-2017-11-27-163505 RW	10 0 0
4	Þ

You can also modify and delete your existing HPE 3PAR StoreServ storage SAN infrastructure. For more information, see Modify a SAN infrastructure, below and Delete a SAN infrastructure, below.

Modify a SAN infrastructure

To modify your SAN infrastructure (ScaleIO, HPE StoreVirtual or HPE 3PAR StoreServ), right-click your SAN System host entry in the SAN Infrastructure tree, point to **Edit SAN**... on the shortcut menu and then modify the SAN Infrastructure settings accordingly. You can also click the SAN system you want to modify in the **SAN Infrastructure** view and then click **Edit** in the **SAN system name**> screen. The procedure is the same as adding a SAN infrastructure. For more information, see Add a SAN infrastructure, on page 43.

Delete a SAN infrastructure

To delete your SAN infrastructure (ScaleIO, HPE StoreVirtual or HPE 3PAR StoreServ), right-click your SAN System host entry in the SAN Infrastructure tree and point to **Remove SAN** on the shortcut menu. In the confirmation message, click **Yes**.

Configure tape infrastructure

With HPE VM Explorer you can copy your backups to tape. See Supported tape libraries/autoloaders, on page 11 for a full list of supported tape devices.

	Device Manager
File Action View Help	
Disk drives	
Display adapters	
D and DVD/CD-ROM drives	
P Per Emulex PLUS	
Fight Human Interface Devices	
D Carlos ATAVATAPI controllers	
Keyboards Madium Changes devices	
Meaning Changer devices Heinlett Deckerd 1/9 G2 subsleader (v64 based)	
Hewlett Packard MSL 6000 Series library (v64 based)	
Hewlett Packard MSL 6400 Series library (x64 based)	
Hewlett Packard MSL 6400 Series library (x64 based)	
Hewlett Packard MSL G3 Series library (x64 based)	
Mice and other pointing devices	
Manitars	
Network adapters	
h Print queues	
Processors	
Software devices	
Storage controllers	
Storage volumes	
b System devices	
4 System management	
HP ProLiant iLO 4 Management Controller (CHIF)	
HP ProLiant iLO 4 Management Controller (CORE)	
A 📲 Tape drives	
Hewlett Packard LTO Ultrium-4 drive	
🚟 Hewlett Packard LTO Ultrium-4 drive	
🚟 Hewlett Packard LTO Ultrium-5 drive	
🚟 Hewlett Packard LTO Ultrium-5 drive	
🚟 Hewlett Packard LTO Ultrium-6 drive	
🚟 Hewlett Packard LTO Ultrium-6 drive	
🚟 Hewlett Packard LTO Ultrium-6 drive	
🚟 Hewlett Packard LTO Ultrium-7 drive	
🚟 Hewlett Packard LTO Ultrium-7 drive	
🚟 Hewlett Packard LTO Ultrium-7 drive	
🚟 Hewlett Packard LTO Ultrium-7 drive	
Universal Serial Bus controllers	

Windows Device Manager

HPE VM Explorer automatically recognizes tape devices visible to the Windows computer on which they are installed. In Windows Device Manager, you can find tape libraries under the **Medium Changer devices** and tape drives under the **Tape drives** group.

We recommend that you install the latest device drivers from your hardware provider, especially if HPE VM Explorer does not detect the tape library and Windows Device Manager displays it as Unknown Medium Changer.



Unknown Medium Changer in Windows Device Manager

Before running a tape backup for HPE VM Explorer, you need to set up the libraries (with drives, media and media pools). You can find the latest drivers for HPE StoreEver tape library/autoloader/drive family

and HPE D2D Virtual Tape Libraries (VTL) by clicking here. Also, make sure your tape backup environment is set up.

To access the **Tape Infrastructure** screen, go to **Storage Systems > Tape Infrastructure** and click **Rescan Infrastructure**.



Rescan Tape Infrastructure

About tape libraries

On the left hand side, the **Tape Library** view displays the detected devices composing your infrastructure. The tape library is divided into:



🖭 Media

📕 Media Pools

Tape infrastructure		
C Rescan Infrastructure		
xpand All Collapse All	Tape Library	
Tape Libraries	Refresh Rename RAdd new Media Pool 👔 R	
Tape Backups	Device Information	Library Properties
Group by Virtual Machine	Device Model: Tape Library	Number of Drives: 5
Group by Scheduled Task	Location: Bus Number 0, Target Id 0, LUN 0	Number of Slots: 20
	Serial Number: B1153500C0	Number of Import/Export Ports: 4
		Number of Transports: 1
		Ports Dimport All Media
_		
ewlett Packard terprise	© Copyright 2016 Hewlett F	Packard Enterprise Development LP

Tape Library overview

About drives

A drive is the physical part of a tape library that enables you to read and write data from/to a tape media. Clicking this item enables you to see some information about the drive and to enable/disable it, which will cause HPE VM Explorer to include/exclude it from the pool of drives usable in the backup procedures.

About tape media

The media item shows all the tape media/cartridges recognized by this tape library. There are:

- 🥅 Online media: list of media currently and physically present in the tape library.
- 🖭 Offline media: list of known media present in the tape library, but not inserted.

You can perform the following operations on the media:

Operation	Description
Move to media pool	You can logically include a tape in a media pool. You can move the media in the free or custom media pools. For more information, see About media pools, on the next page.
Inventory	Prepare new media for use with HPE VM Explorer or check if new media is already recognized.
Catalog	Makes the inventory of the tape media and scans all its contents for existing backups. HPE VM Explorer reads the entire tape to catalog all the backups copied in it. This operation can take some time.

Import	If the media is in an I/E port, you can import it and HPE VM Explorer will move the media to the first available empty slot.
Export	Use this option to move the tape media from its slot to an I/E port, if you want to physically remove media from the library.
Eject	Enables you to move media from the drive to the first available empty slot.
Erase	Click to delete all data written on the tape. You can choose between Short erase (fast) or Long erase (slow). Warning: Clicking Erase removes all the backups on the tape media and from the catalog.
Mark as Free	Click to mark the media ready to use and to overwrite its content. Warning: All the backups on this tape media will be deleted from the catalog. If you use the Catalog action before reusing the media, you can still recover the existing backups.
Remove from catalog	If your media is offline, you can remove it from the catalog. Warning: All the backups on this tape media will be deleted from the catalog. If you later decide to re-import the media, you can use the Catalog action before reusing the media to recover existing backups.
Details	Click to see information about the media and which HPE VM Explorer backups are saved on it.

About media pools

A media pool is a container that helps to organize the media included in a tape infrastructure.

HPE VM Explorer defines 3 types of system media pools that can neither be modified nor used as targets for your backups:

- JS Free-This pool contains all the media from the system, marked as free and usable. You can move the media to populate other custom media pools.
- JUnrecognized—This pool consists of unrecognized tape media the content of which is still unknown. You can perform the Inventory operation to make the media usable in the Free Media Pool or the Catalog operation, in case you want to recover existing HPE VM Explorer backups.
- **Imported**–This media pool consists of tape media containing existing backups recognized during a **Catalog** operation (for example, media previously removed from the catalog or previously used by another Tape Library).

NOTE: In order to perform backups on tape, you can create custom media pools.

• **Solution** Custom—In this custom media pool you can define the list of media and the specific retention rules for the backups.

Creating a custom media pool

You can create a new custom media pool by right-clicking **Media Pools** and pointing to **Add Media Pool**. Then, complete the **Add new Media Pool** wizard, as follows: 1. In the **Name** wizard screen, type a name and a meaningful description for your pool. When finished, click **Next**.

Name	Please select the Me	edia Pool name and optic	onal description	
Media List	Name	MyPool		Ø
Retention	Description			Ø
Summary				

Add Media Pool - Name

2. In the Media List wizard screen, click Add to select the free tape media from the Free media pool. You can also remove existing media and move it to the free media pool by selecting it and clicking Remove. Select the Automatically add media from the 'Free' Media Pool when required checkbox if you want HPE VM Explorer to include the first free tape from the free media pool if a backup needs space that is unavailable in the media already present in this pool. When finished, click Next.

	Here below there is the list of	f Media currently in the N	4edia Pool You can ado	d media taken from the
Media List	'Free' Media Pool by clicking Pool by clicking on 'Remove'	on 'Add' Selected media	a can be removed and p	put in the 'Free' Media
Retention	Name	Capacit	y Free	Add
	CB0005L3	-	-	Remove
Summary	CB0006L3	-	-	

Add Media Pool - Media List

- 3. In the **Retention** wizard screen, set the rules for using/reusing the media, as follows. When finished, click **Next**.
 - Under **Media reutilization**-select whether you want to reuse the same media in subsequent scheduled backup sessions or if you want to use different media every session.
 - Under Data retention policy-select the desired media overwrite policy.

Name	Media Pool	Capacity	Free
CB0005L3	Free	-	-
CB0006L3	Free	-	-
CB0001L3	Free	-	-

Add Media Pool - Free pool

4. The Summary wizard screen displays the details of your newly configured media pool. At this stage, you can go back and make any necessary changes. When finished, click Save to add your media pool to your Tape Infrastructure tree. You can change your media pool settings at any time by right-clicking your media pool host entry in the Tape Infrastructure tree and pointing to the Edit menu.

Name	Summary of the Media Pool
Media List	Name: MyMediaPool
Retention	Description:
Summary	Automatically add media from the 'Free' media pool when required: true
	Media reutilization: Continue using the last used media
	Data retention policy: Cyclically overwrite media as required
	Media List. - CB0005L3 - CB0006L3

Add Media Pool - Summary

Tape backup copies

You can find all your backups saved with HPE VM Explorer in your Tape Infrastructures. You can show them grouped by:

- L Virtual Machine
- Scheduled Task
- 鱦 Media Pool

Right-clicking the desired backup enables you to view its details or to start a restore procedure by selecting **Restore backup from Media...** and then completing the **Tape Restore** wizard.

Target options	The tape backup will be restored on	n the target server and pa	ath selectable here below.
Summary	Once completed, the restored backu could be handled like other regular	up will be visible in the 'B backup entries.	ackup Explorer' panel and
	Please select the destination server	where to restore the tap	e backup
	Target Server Local Con	nputer	0
	Please select the destination path w	where restored files will b	e saved
	Target Location E:\Backup	s\20160304_2\	Browse

Tape Restore - Target options

Configure Network Drives

As the HPE VM Explorer service runs within a different account than the logged on account, it has no direct access to the shares mounted to your account. Therefore, network drives (used as a backup target) must be configured within **VM Explorer** to let the service mount them automatically.

To configure Network Drives:

- 1. Go to Settings.
- 2. Click Network Drives from the User menu.
- 3. Open the Network Drives screen.

Set	tings		Add Edit Remove			
٥	General	Drive	Path	Username	Password	Status
P	Export / Import config file	A:\	\\xxx.x.xx.xxx\transfer\			The network drive is connected
•		Ε\	\\xxx.xx.x.xxx\ISO	administrator	•••••	The network drive is connected
N.	License Manager					
.	Network Drives					
\bowtie	E-Mail Default Settings					
8	Instant Recovery Service					
Ŧ	Active Directory					
4	Users					
쓭	Groups					
۲	Language					
Ê	Event Logs					
Х	Support					
?	Manuals					
1	Suggest new feature (ext. link)					
He En	wlett Packard terprise		C	Copyright 2016 Hewle	ett Packard Enterprise	Development LP

Network Drives screen

4. On the **Network Drives** screen, click **Add** to add a new network drive. Click **Edit** to edit an existing network drive.

The Add a network drive wizard opens.

- 5. On the **Location** tab, select a drive letter for the network drive. If you have already mapped some network drives with letters, those letters are not available.
- 6. Enter the correct network drive path in the **Path** box.

\dd a network drive					×	
Location	Select the drive L	etter you want to use	:			
Credentials Test Connection	Drive Letter Write the path of	Z:\ your network drive:	Ŧ			
Summary	Path	Path \\172.100.101\transfer				
		Previous	Next	Finish	Cancel	

Network Drive - Location

7. Click Next and then, on the Credentials tab, provide user credentials if the network drive uses

Location	Enter your crede	entials to connect to \\	,172.17.1.100\transfe	er:	
Credentials	🕑 Do not use c	redentials			
Test Connection	Username				ତ
Summary	Password				ତ
		Show pas	sword		

them. If it does not, select **Do not use credentials**.

Network Drive - Credential

8. Click Next.

The **Test Connection** tab opens. A connection test with the network drive is performed, using your parameters.

Add a network drive					×
Location	Test Connection result	Success			Ø
Credentials		Test if the Z	.∵\ is available		
Test Connection		Try to map	the new drive		
Summary		Try to unma	ap the new driv	e	
	Congratulations, the test o	ompleted succes	ssfully!		
	Pre	evious	Next	Finish	Cancel

Network Drive - Test Connection

9. Click Next. In the Summary tab, verify all the parameters and click Save.

Location	Summary of the Network Drive you want to add	í
Credentials	Drive Letter:	
Test Connection	UNC Path: 	
Summary	Username:	
	Password:	

Network Drive - Summary

Working with deduplicating storage target

With HPE VM Explorer you can use HPE StoreOnce Catalyst as a deduplicating storage target. This enables you to eliminate duplicate copies of repeating data and to optimize storage space.

Adding an HPE StoreOnce Catalyst storage target

To add HPE StoreOnce Catalyst as a storage target:

 Click Storage Systems, point to Deduplicating Storage and then, in the Welcome to the Deduplicating Storage Manager screen, click Add a new HPE StoreOnce Catalyst storage. You can also click Add a new HPE StoreOnce Catalyst in the Deduplicating Storage view.



Welcome to the Deduplicating Storage Manager screen

2. In the **Name & Connection Settings** wizard screen, type the name of the HPE StoreOnce Catalyst storage target you want to add, as well as the address, client user name and password (the connection can be established through an Ethernet adapter or through a Fiber Channel adapter/address). Also, select whether you want your connection to the HPE StoreOnce Catalyst storage target to be of the WAN (Wide Area Network) type, which is used to enable payload checksum. Payload checksums are recommended when the HPE StoreOnce Catalyst server resides on a different network segment, for example in a remote data center. You can add the same HPE StoreOnce Catalyst server multiple times using different HPE StoreOnce Catalyst Client Permissions. For more information on HPE StoreOnce Catalyst Client Permissions, see the HPE StoreOnce Catalyst documentation. When finished, click **Next**.

Add Server (HPE Store	Once Catalyst)	×
Name & Connection Settings Test Connection Summary	Display Name Connection Settings Specify the FQDN (Fully Qualified Domain Name). IP or Fibre Channel address of the HPE StoreOnce Catalyst device HPE StoreOnce Catalyst address Username Password Image: Wide Area Network (WAN) connection to HPE StoreOnce Catalyst	e.
	Previous Next Finish Cance	

The Name & Connection Settings wizard screen

NOTE: If HPE StoreOnce Catalyst Client Permissions are not set up, you gain access by default to the stores that have **All Clients** access.

3. In the **Test Connection** wizard screen, you can see whether the connection test to your deduplicating storage target is successful. When finished, click **Next**.

Add Server (HPE Store	Once Catalyst)				×
Name & Connection	Test Connection Result	Success			\odot
Settings		Test HPE StoreOnce Catal	lyst Connectivity		
Test Connection	c	Test HPE StoreOnce Catal	lyst License		
Summary	C	Test Stores			
	Congratulations, the test completed s	successfully!			
		Previous	Next	Finish	Cancel

The Test Connection wizard screen

4. In the **Summary** wizard screen, you can see the details of your newly configured HPE StoreOnce Catalyst storage target. When finished, click **Save**. Your newly added HPE StoreOnce Catalyst storage target is available in the **Deduplicating Storage** view.

Add Server (HPE Store	Once Catalyst)	×
Name & Connection	Summary of the HPE StoreOnce Catalyst Infrastructure	
Settings	Display Name:	
Test Connection	John Doe Hre StoreOnce Catalyst HPE StoreOnce Catalyst address: 1221230.52	
Summary	Username: admin	
	Password:	
	Using Wide Area Network (WAN) connection: false	
	Previous Next Save	Cancel

The Summary wizard screen

NOTE: If no Client Permission settings are set, adding an HPE StoreOnce Catalyst storage target will automatically add all its existing stores to HPE VM Explorer by default. If Client Permissions are set, only the stores assigned to you will be added. To see the updated information of your HPE StoreOnce Catalyst storage system(s) and store(s) created via HPE VM Explorer, you can use the catalog feature. For more information on the catalog feature, see Rebuilding the list of HPE StoreOnce Catalyst backups, on page 71.

Once you have completed adding an HPE StoreOnce Catalyst storage target, you can perform backups, restores and copies.

Performing a backup on HPE StoreOnce Catalyst

To perform a backup on an HPE StoreOnce Catalyst storage target:

- 1. Go to the **Datacenter** view and, in the **Welcome to HPE VM Explorer** screen, click **Backup a Virtual Machine**.
- In the Virtual Machine Backup dialog box, in the Source section, select the desired Host and VM and then, in the Target section, select the desired HPE StoreOnce Catalyst (deduplicating storage) backup target. Then, configure the desired backup options accordingly. For more information on performing a backup, see Backing Up One or Multiple Virtual Machines, on page 77.

NOTE: HPE StoreOnce Catalyst also supports both full and incremental backups, but not encrypted or compressed backups. For more information on incremental backups, see Performing an incremental backup, on page 86.

Copying an HPE VM Explorer StoreOnce Catalyst backup

HPE StoreOnce Catalyst is provided with an advanced copy backup capability (Catalyst copy) that optimizes the transfer of deduplicated data. The copy backup process is performed asynchronously in a bandwidth efficient way, ensuring that only unique data is transmitted between StoreOnce devices. You can also copy backups from other storage to an HPE StoreOnce Catalyst storage target and vice versa.

To copy an HPE StoreOnce Catalyst backup, follow the normal HPE VM Explorer backup copy procedures. For more information on how to copy a backup in HPE VM Explorer, see Copy a backup, on page 90. For more information on the capabilities of copying a backup between HPE StoreOnce Catalyst targets, see the HPE StoreOnce Catalyst documentation.

NOTE: HPE StoreOnce Catalyst does not support copying encrypted or compressed backups.

Restoring an HPE StoreOnce Catalyst backup

To restore an HPE StoreOnce Catalyst backup:

1. Go to the **Datacenter** view and, in the **Welcome to HPE VM Explorer** screen, click **Restore a Virtual Machine**, or go to **Management > Backup Explorer**.

- In the Backup Explorer screen, expand the desired Virtual Machine name to view the backups performed so far and wait for the backup entries to HPE StoreOnce Catalyst to be refreshed. For more information, see Viewing HPE StoreOnce Catalyst backup status details, below. Then, right-click the backup entry you want to restore and select **Restore** on the shortcut menu.
- 3. In the **Virtual Machine Restore** screen, configure the desired VM restore details. For more information, see Restoring a VM Backup, on page 98.

NOTE: You can only restore successful (consistent) backups. Also, performing a file level restore or an Instant VM Recovery is not currently supported from HPE StoreOnce Catalyst backups.

Viewing HPE StoreOnce Catalyst backup status details

To view the status and history of the backups to HPE StoreOnce Catalyst, go to **Management > Backup Explorer**. In the **Backup Explorer** view, expand the desired Virtual Machine and click the desired backup entry to view its details. Successful backup entries are marked with a green check icon, while failed backup entries due to inconsistent files are marked with an X" red icon.

NOTE: You can only perform the operations available on the right-click menu (restore, remove from inventory and remove from disk, refresh information and view the details) after the status of the entry has been displayed.

Modifying HPE StoreOnce Catalyst storage settings

To modify HPE StoreOnce Catalyst storage settings, go to **Storage Systems > Deduplicating Storage**, click the desired storage target in the tree and then, in the *storage target name>* screen, click **Edit** and perform the desired changes. For more information, see Adding an HPE StoreOnce Catalyst storage target, on page 63.

🔗 Edit 🏾 🍣 Refresh 🛍 Ren	move 📰 Catalog			
General				
HPE StoreOnce Catalyst address: 172.17.30.52				
Type: HPE StoreOnce Catalyst				
Serial Number: F2671F0F1B				
Software Revision: 3.13.5-1633.6				
Total Space: 1.01 TB				
Free Space: 987.75 GB				
Used Space: 23.64 GB	2%			
Stores				
Stores	Status	User Data Stored		
Stores Name John Doe 1	Status ONLINE	User Data Stored O B		
Stores Name John Doe 1 Jane Doe 02	Status ONLINE ONLINE	User Data Stored O B 202.09 KB		
Stores Name John Doe 1 Jane Doe 02 01264	Status ONLINE ONLINE ONLINE	User Data Stored O B 202.09 KB O B		
Stores Name John Doe 1 Jane Doe 02 01264 Store Lab01	Status ONLINE ONLINE ONLINE ONLINE	User Data Stored 0 B 202.09 KB 0 B 102.56 MB		
Stores Name John Doe 1 Jane Doe 02 01264 Store Lab01 Store Lab02	Status ONLINE ONLINE ONLINE ONLINE ONLINE	User Data Stored 0 B 202.09 KB 0 B 102.56 MB 119.06 MB		
Stores Name John Doe 1 Jane Doe 02 01264 Store Lab01 Store Lab02 Store Lab03	Status ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	User Data Stored 0 B 202.09 KB 0 B 102.56 MB 109.06 MB 0 B		

HPE StoreOnce Catalyst storage settings

NOTE: You can only modify an HPE StoreOnce Catalyst storage target, not the stores.

Modifying an HPE StoreOnce Catalyst store

HPE VM Explorer allows you to modify HPE StoreOnce Catalyst storage targets, not stores. You can only modify stores from the HPE StoreOnce User Interface. For more information, see the HPE StoreOnce documentation.

Deleting an HPE StoreOnce Catalyst storage target

To delete an HPE StoreOnce Catalyst storage target, click the desired deduplicating storage target in the **Deduplicating Storage** tree and then, in the **storage target name**> screen, click **Remove**. In the confirmation message, click **OK**.

Deleting an HPE StoreOnce Catalyst store

In HPE VM Explorer you can only delete HPE StoreOnce Catalyst storage targets, not stores. You can only delete a store from HPE StoreOnce User Interface. For more information, see the HPE StoreOnce documentation.

Viewing HPE StoreOnce Catalyst storage target or store information

To view an HPE StoreOnce Catalyst storage target or store information, go to the **Deduplicating Storage** view and click the desired storage target or store. The information is displayed in the *<storage target name>* screen or *<store name>* screen.

HPE StoreOnce Catalyst Server_23				
🖋 Edit 📿 Refresh 🛍 Remove 🔳	Catalog			
General				
HPE StoreOnce Catalyst address: 172.17.21	1.187			
Type: HPE StoreOnce Catalyst				
Serial Number: 6B9E334B9D				
Software Revision: 3.16.2-1712.1				
Total Space: 2.08 TB				
Free Space: 2.03 TB				
Used Space: 46.56 GB	2%			
Stores				
Name	Status	User Data Store		
CatalogStore	ONLINE	4.91 GB		

HPE StoreOnce Catalyst storage target information screen

AllClientStore	
🔁 Refresh 🛛 🔲 Catalog	
Details	Store Info
Name: AllClientStore	User Data Stored: 100 MB
Status: ONLINE	Free Space: 1.00 GB
Description:	Size on Disk: 7.09 MB
All Client Store Here you can see the description you added in HPE	Deduplication Ratio: 0
StoreOnce Catalyst.	Store Encryption: Disabled

HPE StoreOnce Catalyst store information screen

Viewing HPE StoreOnce Catalyst backup entry details

To view HPE StoreOnce Catalyst backup entry details:

- 1. Go to *Management > Backup Explorer* and expand the desired Virtual Machine name backed up on HPE StoreOnce Catalyst.
- 2. Click the desired backup entry to view its details. For more information, see Viewing HPE StoreOnce Catalyst backup status details, on page 67. Then, right-click the updated backup entry and, on the shortcut menu, point to **Details**. The backup entry information is displayed in the **Backup Details** screen.

ackup Details	
Backup Status —	
Verified	YES
Status	OK (All relevant files exist)
Details	
Dealers Trees	
Васкир Туре	
Creation	Scheduled Task: Backup of Windows2012R2(Incremental ToCataly
Туре	Incremental Backup
Version	1
Source	
VM Name	Windows2012R2
Server Name	10.14.6.150
Server Type	ESX 4, ESXi 4/5/6
Destination	
Backup date	Wed, 24.05.2017
Backup Time	11:41:08
Server Name	CatalystESX
Destination Path	[VMXStore]

Rebuilding the list of HPE StoreOnce Catalyst backups

In the event you moved and re-added an HPE StoreOnce Catalyst device, or connected it to a fresh install f HPE VM Explorer, you can refresh and get the updated list of existing backups on the HPE StoreOnce Catalyst storage. To do so, go to **Storage Systems > Deduplicating Storage**, click the desired storage target or store and then click **Catalog** in the HPE StoreOnce Catalyst **<storage target name>** or **<store name>** screen. The system will then retrieve the entire list of existing HPE VM Explorer backups stored on the device. Depending on your infrastructure and number of backups, this operation may take some time.

HPE StoreOnce Catalyst file level restore

You can restore a single or multiple files of your choice stored on HPE StoreOnce Catalyst using the same procedure as for other storage targets.

File Explorer enables you to browse a disk image file and recover individual files. Just select a disk image file and click, wait for the information to refresh to be able to navigate its content and view all its files and directories. To recover a single file or a whole directory, right-click the file and select **Download**, then choose the destination.

HPE VM Explorer supports the following file systems on disk image files for file level recoveries:

- NTFS
- FAT
- Windows Dynamic Disks (simple, spanned, striped, mirrored volumes)
- Linux—EXT (2 and 3, and EXT 4 is supported for both 32 and 64 bits versions)
- Linux LVM—Logical Volume Manager (linear, striped, mirrored volumes)
- Linux—XFS

If the EXT partition in the selected image disk is not 100% consistent, you will be notified in this respect, however, you can continue navigating the image disk. To generate consistent disk images, we recommend that you enable the quiesce option for the backups.

Disk imag	Disk image warning		
⚠	An ext partition in the selected image disk is not 100% consistent and it may not be browsable. Please enable the quiesce option for the backup to generate consistent disk images.		
	ок		

Disk image warning

You can recover single or multiple files either from the File Explorer or from Backup Explorer.

To recover one or multiple files from File Explorer:

- 1. Go to **Management > File Explorer** and navigate to the backup entry from which you want to recover one or more files.
- Select which file(s) you want to restore, either by choosing an individual file or multiple files while holding the **Ctrl** key pressed. Then, right-click and point to **Download** on the shortcut menu to download the file(s) as a ZIP archive using the regular browser download procedure.

To recover one or multiple files from **Backup Explorer**:

- 1. Go to *Management* > *Backup Explorer*, expand the desired backup entry and wait for the information to refresh. After refresh, successful backup entries are marked with a ^O green check icon, while failed backup entries due to inconsistent files are marked with an "X" ^I red icon.
- 2. Right-click the valid backup entry you want to restore and point to **Locate Files...** on the shortcut menu. The various files on the VM are displayed.
- Select which file(s) you want to restore, either by choosing an individual file or multiple files while holding the **Ctrl** key pressed. Then, right-click and point to **Download** on the shortcut menu to download the file(s) as a ZIP archive using the regular browser download procedure.

NOTE: Depending on the number and size of the files inside a folder that you want to restore, the operation can take some time.

HPE StoreOnce Catalyst granular recovery from Microsoft Exchange Server

With the Exchange Server granular recovery for e-mail message(s), HPE VM Explorer enables you to recover e-mails (with or without attachments) from a VM backup that contains a valid Microsoft Exchange Server installation. The procedure for performing a Microsoft Exchange Server e-mail granular recovery from an HPE StoreOnce Catalyst backup is identical to other storage targets.

This feature currently applies to the Enterprise Edition of HPE VM Explorer.

NOTE: HPE VM Explorer supports Microsoft Exchange Server versions 2013 and 2016.

To recover an Exchange Server item:

- 1. Go to *Management > Backup Explorer* and then navigate to the VM of your choice by expanding the list of available backups.
- Right-click the VM that you want to recover the Exchange Server item from and point to Recover Exchange Server Items... on the shortcut menu. The Exchange Server Items Recovery wizard is displayed.
- 3. In the **Exchange Server Location** wizard screen, select the location of the Exchange Server installation. You can either:
 - a. Let HPE VM Explorer scan the available disks automatically, or
 - b. Select a location manually by clicking the **Please Select** button and choosing the desired folder in the **Choose Directory** dialog box.

NOTE: Make sure you have enough disk space on your computer to accommodate the entire Exchange Server database you are retrieving. You can configure the Exchange Recovery data path in the **Settings** section of HPE VM Explorer. For more information, see Configuring General settings, on page 117.

When finished, click **OK** to return to the **Exchange Server Items Recovery** wizard and then click **Next**.
Exchange Server Location	Select the Exchange Serv	er location inside	the backup		
Database Selection	Automatically scan d Manually select insta	isk(s) in default in llation folder	stallation folder(s)		
Database Preparation	Virtual Disk Volume				
Exchange Items Selection	Path Please Select				

Exchange Server Recovery wizard – select location

- 4. In the **Database Selection** wizard screen, you can see the database detected by HPE VM Explorer as well as its recovery status:
 - Not Ready—Before the extraction of the temporary recovery data from the backup.
 - Ready—When extraction is successful.

You can delete the temporary recovery data on the local machine by clicking the **Close** button. If you want to manually select another Exchange Server database, click **Add Exchange database** and then choose the desired one in the **Select File...** dialog box. When finished, click **OK** to return to the **Database Selection** wizard screen and click **Next**.

xchange Server	Name	File path	Status	
_ocation	Mailbox Database 0799584852.edb	[Exchange_Server_2013-000003.vmdk] VLP:VPD:DS00	🕑 Ready	×
Database Selection				
Database Preparation				
Exchange Items				
Selection				
		А	dd Exchange data	abase

Exchange Server Recovery wizard – Select database

5. In the Database Preparation wizard screen, you can see the process of extracting and consolidating the Exchange database for recovery. The temporary recovery data is automatically saved in the location configured in the Settings>General section. For more information, see Configuring General settings, on page 1. If the operation is not successful, click Refresh to verify your Exchange Server settings and then go back in the Exchange Server Items Recovery wizard to make the necessary changes. If the operation is successful, click Next.

Exchange Server Items R	ecovery				
Exchange Server Location	Prepare database result	Success			\odot
Database Selection Database Preparation Exchange Items Selection		Download configuration f Download mailbox datab Consolidate database Check database version	files ase files		
	Database ready!	innanze recovery dara			
		Previous	Next	Finish	Cancel

Exchange Server Recovery wizard – Prepare database

- 6. In the **Exchange Item Selection** wizard screen, you can see the mailboxes of all the users in the selected Exchange Server database.
 - a. If you want to restore individual e-mails, expand the user name(s), navigate to the desired mailbox folder and select the e-mail you want to recover.
 - b. If you want to restore all the e-mails associated to certain users, select the checkboxes next to the user names.

You can select/clear all the users whose e-mail mailboxes you want to recover by clicking the respective buttons. Also, you can collapse all expanded user accounts by clicking **Collapse All**. You can recover any types of e-mails irrespective of their folder or whether or not they have one or multiple attachments. When finished, click **Start Recovery**.

Exchange Server Items Re	covery	×
Exchange Server Location Database Selection	Select which item(s) to recover:	
Database Preparation	Control Contro Control Control Control Control Control Control Control Control Co	
Exchange Items Selection		
	Ip Amy Adams Ip Amy Klein Ip Andres Mathis Ip Andres Mathis	
	Implementation Implemen	Ŧ
	Collapse All Select All Deselect All	
	Previous Next Start Recovery	Cancel

Exchange Server Recovery wizard – Select Exchange Server items

7. When the process is complete, you can download the recovered item(s) as a .*ZIP* file. In order to copy back one or more e-mails to production, simply drag-and-drop them into your Microsoft Outlook mailbox. Then, you can continue the recovery process by clicking **Yes** in the confirmation message or you can click **No** to exit the **Exchange Server Items Recovery** wizard.

NOTE: Make sure your browser allows pop-ups from HPE VM Explorer.

HPE StoreOnce Catalyst Instant VM Recovery

With HPE VM Explorer, you can power on a backup directly on an ESX/ESXi server from an HPE StoreOnce Catalyst storage using the Instant VM Recovery feature, without the need of restoring or copying any file.

NOTE: The instant VM recovery of a Microsoft Exchange Server may take a bit longer depending on whether the server is configured as a domain controller

To do so:

 Go to *Management* > *Backup Explorer*, filter through the available backups, if needed, then expand the backups' tree to get to the desired VM. Then, right-click the VM and select **Instant VM** *Recovery*. An NFS server will mount a temporary datastore on your host. The actual disk is preserved on your local disk.

backup status. OK	FIGHL TOKYO	TO, LOCAl Machine
 LinuxServer - 22.03 	.2016	
22.03.2016 15:25	:33 (Incremental) (Full) (To: Local Mac	:hine)
21.03.2016 14:51:	08 (Incremental) (Full) (To: Local Mac	hine)
(2) 21.03.2016 14:49	:37 (Incremental) (Version 1) (To: Loca	al Machine)
 WindowsServer - 21 	.03.2016	
21.03.2016 15:07:	37 (To: Local Machine)	
Restore		
Register VM		
Instant VM Recove	ery	
Remove from Inve	ntory	
Remove from Inve	ntory And Delete from Disk	
Locate Files		
Recover Single File	e from Virtual Disk 🕨	
Refresh and check	again	
Details		

Instant VM Recovery from the Backup Explorer

2. In the Instant VM Recovery dialog box, register the VM to your selected server.

Target	settings						
Please se	lect the target	Host:					
Last	ESX-Euror)e		V			
nosi	Love and						
HUSI	Lorr Loro						
Plost Plost	ch VM's netwo	rk adapters					
Detac	ch VM's netwo	rk adapters	- 1/64				
Detac	ch VM's netwo	rk adapters	e VM				
Detac Detac Please sp VMExplo	ch VM's netwo ecify the displa	rk adapters iy name of the findowsServe	e VM				

Instant VM Recovery target settings

3. When finished, click Start.

NOTE: You can perform any test during your Instant Recovery process, as none of your changes will be saved. You can also remove any network adapters to avoid conflicts with the original VM (default option). While the Instant VM is up and running, you can even perform a vMotion operation to migrate it to an existing datastore, making it a real VM, not dependent on the HPE VM Explorer Instant VM Recovery System.

Removing an HPE StoreOnce Catalyst backup

You can either remove an HPE StoreOnce Catalyst backup from the HPE VM Explorer inventory or you can remove the backup from the HPE VM Explorer inventory and delete it from the HPE StoreOnce Catalyst storage target. To do so:

 Go to *Management* > *Backup Explorer*, expand the desired Virtual Machine name backed up on HPE StoreOnce Catalyst and click the desired backup entry to update its details. For more information, see Viewing HPE StoreOnce Catalyst backup status details, on page 67.

- 2. Then, right-click the backup entry and, on the shortcut menu, depending on your preferences, point to either option:
 - a. **Remove from Inventory**—If you want to remove the backup from the **Backup Explorer** view
 - b. Remove from Inventory and Delete from Disk—If you want to remove the backup from the Backup Explorer view and the storage environment completely
- 3. In the confirmation message, click **OK**.

Best practices when working with HPE StoreOnce Catalyst

There are some things that you need to take into consideration in order to enjoy the best performance from the HPE VM Explorer integration with HPE StoreOnce Catalyst. For example, the following features do not currently apply to backups to HPE StoreOnce Catalyst stores:

- Encrypted backups
- File consistency check
- Compressed backups
- Federated disks

You can also configure the log processes for support purposes. For more information, see Getting Support for HPE VM Explorer, on page 140.

Backing Up One or Multiple Virtual Machines

With HPE VM Explorer you can back up one or multiple Virtual Machines. To perform a backup in HPE VM Explorer:

- 1. Go to the **Datacenter** view and expand your ESXi or Hyper-V host to get a list of all your Virtual Machines. If you are using vCenter, then expand your vCenter hosts to see all Virtual Machines.
- 2. Right-click the Virtual Machine you want to back up and click **Backup...** and then, in the **Virtual Machine Backup** dialog box, configure the boxes, as required.

You can also create a task to back up one of your VMs from the Scheduled Tasks view. To do so:

- 1. Go to Tasks > Scheduled Tasks and select a scheduled task in which to create the backup task.
- Click Add and then, in the Add Task Element screen, click Single VM (for more information, see Backing up a single VM, on the next page) or Multi VM (for more information, see Backing up multiple VMs, on page 84).



Add Task element

Backing up a single VM

To back up a single VM, click **Single VM** in the **Add Task Element** screen. For more information, see Backing Up One or Multiple Virtual Machines, on the previous page. Then, in the **Virtual Machine Backup** dialog box, configure the boxes in the specific tabs, as follows. Depending on the nature of the VM, some of the options available to you at this stage may vary.

In the General tab, under Target, select a target location from the Host list. This can be your local PC, an ESXi host, a Hyper-V host, Linux/FreeBSD or Cloud host already added to your Datacenter view. Choose the target directory and configure the backup process. When finished, click OK to start the backup process.

General	Files & Disks	Snapshot	Connection	Advance	d Verify Backup				
Source -									
Host	ESX-Europe	e	*	VM	WindowsServer2012R2	2	*		
Target									
Host	Local Comp	outer	٠	e 0	n error execute next tas	k			
Directory	E:\Backups\	{VM}\{DATETIN	1E}				Browse		
	The targe	t directory must	not exist, it will	be created.					
	If the targ	et directory exis	ts, then it must	be empty.					
	If the targ	et directory exis	ts, archive exist	ng files in th	e target directory.				
	If the targ	et directory exis	ts, overwrite exi	sting files in	the target directory.				
	Increment	al Backup, targe	t folder must be	empty or mu	st contain specific VM In	icremental	Backup		
Nbr. of back	kups to keep	All	•						
The virtual n	nachine Windows	Server2012R2 wil	l be copied from t	he server ES	-Europe to the Local Com	puter into	the directory F	\Backups\{VM]	ATET
inc mound		Serverzonzne mi	roe copied iroini	ne server 20	Europe to the Local con	ipurer into	ine directory E.	(Duckups (Crrig	

Backup - General

HPE VM Explorer will create a snapshot of your Virtual Machine, which means you can back up a running Virtual Machine without stopping it. When the backup is finished, HPE VM Explorer automatically deletes the Snapshot on your ESXi or Hyper-V server.

NOTE: Selecting the **If the target directory exists, overwrite existing files in the target directory** checkbox will only overwrite the existing backup after the new backup has been successful. The reason for this is to always keep a working backup, so make sure you have enough free space while running the backup. You can also delete the existing backup before starting the new backup by selecting the **Delete existing Backup in the target directory before the Backup starts** checkbox.

IMPORTANT: Selecting this checkbox means that, if the backup fails, you will no longer have a functional backup.

At this stage, you can also perform an incremental backup. For more information, see Performing an incremental backup, on page 86.

- 2. In the Files & Disks tab, choose which Virtual Disks you want to include in the backup. If the option Include memory dump of the virtual machine is enabled in the Snapshot tab, you must select all virtual disks, otherwise you will not be able to restore the memory snapshot. Select the After backup convert as thin disk checkbox to convert all disks in the backup to thin format. This option is only available if:
 - a. The target host is ESXi
 - b. The HPE VM Explorer Agent is enabled on the target server (only for ESXi).
 - c. The Keep data compressed at destination option is not enabled.
 - d. There are no other disks with the same name.

ual Machin	e Backup							
eneral	Files & D	isks	Snapshot	Connecti	ion Ad	vanced Verify Backu	qu	
Virtual D)isks to be in	cluded i	n the Backup					_
	Bus		Descriptor Fi	le	Type	Mode	Comments	
Scsi0	:0 1	Windows	Server2012R2.vm	ndk	vmfs	Default (persistent)		
Thin Pro	visioning Su backup conv	pport	hin disk					

Backup - Files & Disks

- 3. In the **Snapshot** tab (ESXi only), configure your VM backup snapshot options. All recommended options are already selected by default.
 - Include memory dump of the virtual machine (needs additional snapshot)—If your VM is running, HPE VM Explorer creates a memory snapshot of the VM. When restarting the VM, you will lose the current memory. If you also want to back up the memory to capture the exact running state, select this checkbox.
 - Quiesce the file system in the virtual machine (only when VMware tools are installed)– Select this checkbox (recommended) if VMware tools are installed on the guest system so that VMware tools can inform the OS that a snapshot will be created. This enables you it to write down all necessary data for a consistent snapshot.
 - Make storage snapshot–Select this checkbox if all datastores used by the VM are located on SAN Infrastructures. This will enable the backup to take storage snapshots of each datastore, mount them on the same server where the VM is registered and then start the normal backup process on this copy of the VM structure. Then, HPE VM Explorer unmounts and then un-maps all the datastores and finally removes all the snapshots previously created. This type of backup allows the host to release the source VM immediately after the storage snapshots are created, thus drastically reducing the merge times of a normal backup.

Virtual Machir	ie Backup							×
General	Files & Disks	Snapshot	Connection	Advanced	Verify Backup			
Virtual I	Machine Snapshot C	options						
 Includ Quies 	te memory dump of	n the virtual mac	chine (needs an a	ddifional snapsh VMware tools ar	ot). re installed).			
	Set warning flag in	case of a Volum	e Shadow Copy S	ervice (VSS) erro	or, for Windows Serv	ver 2008 or greater	5	
Explorer to VM's file s	o access and backup to access the VM's vi system is in a consist	irtual disks irtual disks. Seco tent state at the t	of a virtual machi nd, it assures that time of the backup	ne a snapsnot na the virtual disks t b, The VM can be	s to be created. The won't be altered by the set to "quiesce" its vi	snapsnot serves two purpos he VM during the backup. To rtual disks when the snapsh	es: First, it allow: ensure that the ot is being taker	s v M :
Storage	Snapshot							
This featu	storage snapshot. Ire will be performed	d only if all the da	itastores used by t	this VM are prese	nt in SAN Systems. It	not, the backup of this VM	will be executed	
							ок	Cancel

Backup – Snapshot (ESXi)

4. In the **VSS Snapshot tab** (Hyper-V only), configure your VSS options, which ensures the consistency of the backup. Not using the VSS may grant you a faster performance but does not guarantee backup data consistency.

General	Files & Disks	VSS Snapshot	Connection	Advanced	Verify Backup			
Volume	Shadow Copy Servio	ce Options						
Use the second secon	e Volume Shadow	Copy Service (VSS) 1	to perform the vir	rtual machine sna	apshot			
Do not	use VSS. The snap	oshot process is fast	er, but data consi	stency cannot be	guaranteed.			
n order to a	ccess and backup the	he virtual disks of a vi ual disks. Second, it a	irtual machine a sr ssures that the vir	tual disks won't b	created. The snapsh e altered by the VM	ot serves two pur during the backur	poses: First, it all	ows VM the VM's f
n order to a xplorer to a ystem is in	ccess and backup th access the VM's virt a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr ssures that the vir cup, The VM can b	napshot has to be tual disks won't b e set to use the Vo	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's f is being
n order to a xplorer to a ystem is in aken.	ccess and backup th ccess the VM's virte a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr issures that the vir cup, The VM can b	napshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's t is being
n order to a Explorer to a ystem is in aken.	ccess and backup th iccess the VM's virti a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr issures that the vir cup, The VM can b	napshot has to be tual disks won't b e set to use the Vo	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's t is being
n order to a ixplorer to a ystem is in aken.	ccess and backup th access the VM's virt a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr issures that the vir cup. The VM can b	napshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's t is being
n order to a ixplorer to a ystem is in aken.	ccess and backup th access the VM's virth a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr ssures that the vir sup, The VM can b	apshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur, during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's t is being
n order to a ixplorer to a ystem is in aken.	ccess and backup th cccess the VM's virt- a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr ssures that the vir cup, The VM can b	apshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur, during the backup Service (VSS) wh	poses: First, it all . To ensure that en the snapshot	ows VM the VM's t is being
n order to a ixplorer to a ystem is in aken.	ccess and backup th cccess the VM's virt- a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr issures that the vir cup, The VM can b	apshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	ot serves two pur during the backup Service (VSS) wh	poses: First, it all	ows VM the VM's t is being
n order to a Explorer to a stem is in aken.	ccess and backup th cccess the VM's virth a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr ssures that the vir cup, The VM can b	rapshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	of serves two pur during the backup Service (VSS) wh	poses: First, it all	ows VM the VM's t is being
n order to a ixplorer to a ystem is in aken.	ccess and backup th cccess the VM's virth a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr ssures that the vir rup, The VM can b	rapshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	of serves two pur during the backup Service (VSS) wh	poses: First, it all	ows VM the VM's t is being
n order to a ixplorer to z ystem is in aken.	ccess and backup th cccess the VM's virti	he virtual disks of a va	irtual machine a sr ssures that the vir sup, The VM can b	rapshot has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	of serves two pur during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's t is being
n order to a ixplorer to z ystem is in aken.	ccess and backup th cccess the VM's virti a consistent state a	he virtual disks of a vi ual disks. Second, it a t the time of the back	irtual machine a sr ssures that the vir rup, The VM can b	apshort has to be tual disks won't b e set to use the Vi	created. The snapsh e altered by the VM olume Shadow Copy	of serves two pur during the backup Service (VSS) wh	poses: First, it all b. To ensure that en the snapshot	ows VM the VM's : is being

Backup - VSS Snapshot (Hyper-V)

- 5. In the **Connection** tab, configure the single VM backup connectivity options.
 - a. **Direct Copy Options**–Select if you want to transfer files directly between the source and the target server. You can also reverse the direction of the TCP connection (default is from the source server to the target server) in case of NAT (Network Address Translation). The direct

copy options are not available if the source or target server is ESXi and the HPE VM Explorer Agent is not enabled.

- b. **Compress data during transfer**–Select to compress data during transfer. You can also decide to keep the data compressed at destination but in this case the File Level Restore will not be available for this backup.
- c. Encryption–You can also use encryption in conjunction with the Cloud servers (Amazon S3, OpenStack and so on). The direct copy connection is unavailable and all the data will be relayed through HPE VM Explorer (for more details, see Enabling VD Services for incremental backups, on page 87).

CAUTION: The password is stored encrypted and is not retrievable. Make sure to save it in a safe place to be able to decrypt the backup.

eneral	Files & Disks	Snapshot	Connection	Advanced	erify Backup	
Direct	Conv Ontions					
The TCF	P connection v	, will be establ	ished from the	local comput	o XXXXXXXXX	
Reve	erse direct co	nnection esta	blishment (ma	y be needed	ase of NAT).	
- Com	unenes data du	ulan transform				
	ipress data du	iring transfe				
🔲 Keep	p data compre	essed at dest	ination. File Le	vel Restore w	IOT be available.	
Direct co network Currentl	opy allows to a bandwidth ar ly, direct copy	directly trans nd the speed and compres	fer files betwee of the involved sion cannot be	en the source I disk systems used with ES	the target server. The achievable trans the source and target server. ervers (without Agent option enabled)	rfer speed is only limited by the available due to their restricted interface. In case of an
Direct or network Currentl involved and ensu	opy allows to o bandwidth ar ly, direct copy d ESXI server (ure directly tro ption	directly trans nd the speed and compres without Ager ansfer files be	fer files betwee of the involved sion cannot be at option enabl etween the sou	en the source of disk systems used with ES ed), all data w	the target server. The achievable trans the source and target server. ervers (without Agent option enabled) relayed through VM Explorer. To mas t server, we suggest you to enable the	tfer speed is only limited by the available due to their restricted interface. In case of an aimize the speed of backups on ESXI servers Agent option on all your ESXI servers.
Direct co network Currentl involved and ensi - Encryp @ Encr	opy allows to o bandwidth ar ly, direct copy d ESXI server (ure directly tra- ption	directly trans and the speed and compres without Ager ansfer files be sks using the	fer files betwee of the involved sion cannot be at option enable tween the sou	en the source - I disk systems used with ES ed), all data w rce and the ta	the target server. The achievable trans the source and target server. envers (without Agent option enabled) e relayed through VM Explorer. To man server, we suggest you to enable the .	tfer speed is only limited by the available due to their restricted interface. In case of an amize the speed of backups on ESXI servers Agent option on all your ESXI servers.
Direct co network Currentl involved and ensu - Encryp @ Encr Passwor	opy allows to o bandwidth ar ly, direct copy d ESXi server (ure directly tra- ption rypt virtual di rrd	directly trans and the speed and compres without Ager ansfer files be sks using the	fer files betwee of the involved sion cannot be the option enable tween the sou specified pass	en the source of disk systems used with ES ed), all data with rce and the ta	the target server. The achievable trans the source and target server. envers (without Agent option enabled) enabled through VM Explorer. To man server, we suggest you to enable the server, we suggest you to enable the server and the server of the server of the server.	ter speed is only limited by the available due to their restricted interface. In case of an amize the speed of backups on ESXI servers Agent option on all your ESXI servers.
Direct or network Currentl involved and ensi Encryp Passwor	boy allows to a bandwidth ar by, direct copy d ESX server (ure directly tra- ption	directly trans d the speed and compres without Ager ansfer files bu- sks using the e Password	fer files betwee of the involved sion cannot be at option enable tween the sou specified pass	en the source of disk systems ed), all data w ed), all data w erce and the ta	the target server. The achievable trans the source and farget server. envers (without Agent option enabled) enabled through VM Explorer. To mail server, we suggest you to enable the server, we suggest you to enable the warning: the password will be a retrievable, please be sure to re place in order to be able to deci	If er speed is only limited by the available due to their restricted interface. In case of an amize the speed of backups on ESXI servers Agent option on all your ESXI servers.

Backup - Connection

- 6. In the **Advanced** tab, you can either shut down or unsuspend the guest VM before starting the backup if VMware Tools or Hyper-V Integration Services are installed on the guest VM.
 - If you choose to shut the guest VM down, you can also configure if and when to restart it (once the backup starts, once the backup is terminated or never to restart the guest VM) and the shutdown timeout error interval.
 - If the guest VM (source) is suspended, you can set the next suspended state (once the backup starts, once the backup is terminated or not to suspend the guest VM again), as well as the suspend timeout error interval.

			-						
Seneral	Files & Disks	Snapshot	Connection	Advanc	ed Ve	rify Backup			
Advanced	Options								
🕑 If guest	VM (source) is p	owered on shut i	t down (VMwar	e Tools must	be installe	d on guest '	VM)		
	Restart quest VM	once the backur	starts						
	Restart guest VM	once the backup	is terminated						
0	Don't restart gue	st VM							
Rais	e an error if the g	guest does not po	ower off after	10	minutes.				
Suspend	Ontions								
- Marina A									
IT guest	VM (source) is si	uspenaea execut	e a power on be	etore the bac	cup				
۲	Return to suspen	ded state once th	e backup start	s 					
	ceturn to suspen	ded state once tr	te backup is ter	minated					
Paie	e an error if the	nuest does not u	suspend after	10	minutes				
Ruis			isuspend uner		minures				

Backup - Advanced

7. In the **Verify Backup** tab you can configure when to run the File System Consistency check after the backup is completed and whether or not to test the backup using the HPE VM Explorer Instant Backup Test system.

	Files & Disks	Snapshot	Connection	Advanced	Verify Backup			
- File Syst	em Consistency							
✓ Check	that the followir	g file exists in the t	target VM virtua	l disk				
Virtu	ual Disk	[scsi0:0] Windov	wsServer2012R2	vmdk				
Volu	me ID	VLP:VPD:DS075D85	570:PO100000					
File	path	\BOOTNXT					Please Select	
	ekolokoska filokos madfinduski oko kaz							
Chec	:k that the file ha Backup Test ——	s been modified wi	ithin the last 24	hours.				
Chec Instant E Start t	ack that the file ha	is been modified wi	rm a consistency	hours.	ork adapters will b	e detached)		
Chec Instant E Start t I T	ik that the file ha Backup Test	s been modified wi l backup and perfor hot after a delay of 2nshot after a delay	rm a consistency f	hours. check (All netw 15 secon 30 secon	ork adapters will b ds. ds.	e detached)		
Chec Instant E Start t I I I I I I I I I I I I I	ik that the file ha Backup Test	Is been modified wi I backup and perfor Hot after a delay of Inshot after a delay shot after a delay o	rm a consistency f y of	hours. r check (All netw r check (All netw secon secon 60 secon	ork adapters will b ds. ds.	e detached)		
Chece Instant E Start 1 T T T T	ik that the file ha Backup Test Take first Screen: Take second Scree Take third Screen	s been modified wi l backup and perfo ihot after a delay of enshot after a delay shot after a delay o nshot after a delay o	rm a consistency f [y of [r of]	hours. y check (All netw 15 secon 30 secon 60 secon 120 secon	ork adapters will b ds. ds. ds.	e detached)		
Check Instant E Start t T T T T T	It that the file ha ackup Test the newly created fake first Screen: fake second Screen fake third Screen fake fourth Screen	s been modified wi l backup and perfor hot after a delay of enshot after a delay shot after a delay o nshot after a delay hot after a delay o	thin the last 24	hours. c check (All network) 15 secon 30 secon 120 secon 300 secon	ork adapters will b ds. ds. ds. ds.	e detached)		

Backup - Verify Backup

• Perform a File System Consistency check–Enables you to check for changes and last modification date of a specific file in a target virtual disk, once the backup/replication operation is completed. You can select the target virtual disk and the file path to check and specify the acceptable modification time interval (for example, if the file has changed within the last 24 hours). The File System Consistency check is performed once the backup/replication operation is completed: HPE VM Explorer will open the fresh target virtual disk and look for the specified file path, checking for its existence and last modification date. If the check fails, the resulting backup/replication status will be set to Warning and a detailed message will be included in the

report.



Backup - File Consistency confirmation message

NOTE: During the File System Consistency configuration, in order to access and browse the virtual disk, a temporary VM snapshot will be required, which will be deleted automatically once the file selection dialog box closes. To accept and proceed, click OK in the Confirm dialog box.

• Instant Backup Test–Enabling this option adds a completed backup to the Hypervisor inventory as a powered on VM. The VM health state is checked and you can take screenshots of the VM Console every x seconds. You can check the health state and VM screenshots in the Task History or in the e-mail report. For more information, see Viewing Task History, on page 116 or Sending E-mail Reports, on page 111.

To use this option, configure the HPE VM Explorer NFS Settings. For more information, see Working with HPE VM Explorer Settings, on page 117.

NOTE: Screenshots taken during backup test are visible in the **Task History** view or in **E-mail reports**. Automated backup test, for the moment, is only available for VM running on ESXi and if the target is set to <local computer>. During the backup test all network adapters will be disconnected so that the test will not compromise your network. Any change occurred during the Instant Backup Test will be discharged when the test is over and will have no influence on the backup data (backup data, during the test, is read-only). HPE VM Explorer cannot perform the backup of the ESXi and Hyper-V host configuration.

Backing up multiple VMs

To back up two or more VMs, in the **Add Task Element** screen, under **Backup**, click **Multi VMs**. For more information on how to get to this screen, see Backing Up One or Multiple Virtual Machines, on page 77. Then, in the **Virtual Machine Backup** dialog box, configure the boxes in the specific tabs, as described in Backing up a single VM, on page 78. Note that, depending on the backup target of your choice, the User Interface available to you at this stage may vary.

eneral Files	& Disks Snapshot	Connection	Advanced	Verify Backup				
- Source								
Host	Please select		•	Select V	Ms			
Target -								
Host	Local Compute	r	v	⊮ On	error execute next	task		
Directory	E:\Backups\{VN	1}\{DATETIME	}				Browse	
	The target directed in target directed	ectory must no	ot exist, it will b	e created.				
	If the target d	irectory exists,	then it must b	e empty.				
	If the target d	irectory exists,	archive existir	ng files in the t	arget directory.			
	If the target d	irectory exists,	, overwrite exis	ting files in th	e target directory.			
	Incremental B	ackup, target f	older must be o	empty or must	contain specific VM	1 Incremental	Backup	
Nbr. of back	ups to keep	All	۳					
Nothing will	oe done.							

Multiple VM backup - General

The difference with the single VM backup is that you can select more than one VM by clicking Select VMs... and then selecting the desired VMs to back up. You can change the machines' backup priority using the Up and Down buttons. In the backup dialog box, the directory field must contain the {VM} tag.

NOTE: The {VM} tag is not used in the case of an HPE StoreOnce Catalyst backup.

ost ESX-Europe		Solorted Virtual Machiner		
WindowsServer2012R2 WindowsSRV2003R2(64) WindowsXP(32)	Add > Add All >> < Remove << Remove All	WindowsServer2012R2_2 vSphere Management Assistant (vMA)	*	Up Down

Multiple VM backup - Select multiple VMs

Also, since the settings are shared across every VM included in the task, you cannot select the files and disks to back up for every single VM in the **Files & Disks** tab: everything in the Virtual Machines will be backed up.

Performing an incremental backup

With HPE VM Explorer you can create incremental backups, which transfer only the modified files to the next backup, not the entire Virtual Machine. Note that you cannot perform an incremental backup of VM snapshot points, but during the restore process you can choose which backup version (backup date) you want to restore. For more information, see Restoring an incremental backup, on page 101.

There are no restrictions for running Incremental Backup on Hyper-V, but you need to take into account certain aspects when performing an Incremental Backup on ESXi servers.

Prerequisites for incremental backup

- For **ESX/ESXi (licensed edition)**, you need Virtual Disk Development Kit (VDDK) installed on your computer and your system needs to meet the following requirements:
 - ESXi 5.5/6.0/6.5 or ESXi 6.0 Free Edition

NOTE: The free edition of ESXi 5.5 is not supported.

- Virtual Hardware of your VM must be version 7 or higher (check your version in your vSphere Client in the settings editing section of your VM).
- You must enable VD service support for the Server in HPE VM Explorer.
- You must initialize the VD service.

To enable VD Service backup, you must edit your server settings (**Expert Settings** tab) in the HPE VM Explorer Server view. For more information, see Working with Servers in HPE VM Explorer, on page 23.

 For ESXi free edition, you do not need VDDK, but you must enable the HPE VM Explorer agent on the ESXi server by selecting the Try to use the HPE VM Explorer agent on ESXi (...) checkbox in the SSH / HPE VM Explorer Agent screen of the Add or Edit Server (ESXi) wizard. For more information, see Working with Servers in HPE VM Explorer, on page 23.

After configuring all the settings, in the **Virtual Machine Backup** dialog box, select **Incremental Backup**, **target folder must be empty or must contain Specific VM Incremental Backup**. All other procedures are the same as for the default backup. HPE VM Explorer initially creates a full backup of your VM and then will create incremental backups, which contain only the changed data.

General	Files & Disks	Snapshot	Connection	Advanced	Verify Backup		
- Source -							
Host	ESX-Europe		•	VM	WindowsServer2012R2	Ŧ	
Target -							
Host	Local Comp	uter	٣	✓ 0:	error execute next task		
Directory	E:\Backups\	[VM]				Browse	
	The target	directory must	not exist, it will be	created.			
	If the targe	et directory exist	ts, then it must be	empty.	rget directory		
	 If the target 	t directory exist	ts, overwrite existi	ng files in the	target directory.		
	 Incrementa 	al Backup, target	folder must be en	npty or must	contain specific VM Increme	ntal Backup	
Nhr. of bac	kups to keep	2	*		If the event is mi	issed or full backup fails, do a	
	nopo to neep	-			full backup at th	e next scheduled time	
Make one f	ull backup every	۲	5 incrementa	ls 🔻			
		0	Monday	*	Every week	Ŧ	

Incremental Backup - General

Enabling VD Services for incremental backups

To enable Incremental Backups on ESXi, you need ESXi 5.5 or later. Next, you must make sure, that you upgraded the virtual hardware in your Virtual Machine to Version 7 or later.

In addition, HPE VM Explorer needs to be initialized to use the Virtual Disk Service Library (VD Service) and you must enable the VD Service in HPE VM Explorer for each host.

Enabling VD Service for each ESXi host

You can configure the VD Service settings when adding an ESXi host (for more information, see Adding an ESXi server, on page 26). After initializing the VDDK library, which is mandatory for the VD Service to work, you need to enable the VD service for every ESXi host you are adding or to modify each previously added ESXi host. For more information on initializing VD Service, see Initializing Virtual Disk Service (VD Service), on page 25. For more information on modifying servers, see Modifying a server, on page 37.

To enable the VD Service:

- 1. Go to the **Datacenter** view and right-click the ESXi host you want to configure. In the shortcut menu, point to **Edit Server...**
- 2. In the Edit Server wizard, go to the Advanced Settings screen and select Use VD Service. Click Next.



Edit server

3. In the **Test Connection** screen, verify your settings. When finished, click **Finish**. Repeat this procedure for all other ESXi hosts.

Backup encryption

With HPE VM Explorer, you can encrypt the backups to increase the security of your Virtual Machines using AES algorithm, a standard sector-based data encryption method defined by IEEE P1619. Specifically, only the disks' data will be encrypted using the specified password.

You can use encryption only with Cloud storage targets; other environments, such as HPE StoreOnce Catalyst, do not support encryption. The direct copy connection is unavailable and all the data is relayed through HPE VM Explorer.

To encrypt your backups, during the backup configuration process (for more information, see Backing Up One or Multiple Virtual Machines, on page 77), in the **Connection** tab, select **Encrypt virtual disks using the specified password** and then type your password.

	Files & Disks	Snapshot	Connection	Advanced	Verify Backup		
Direct Co	py Options						
The TCP c	onnection will be es	tablished fro	n the local comput	ter to 172.17.1.20.			
Revers	e direct connection	establishmen	rt (may be needed	in case of NAT).			
Compr	ess data during tra	nsfer.					
Keep d	ata compressed at (destination. F	ile Level Restore v	/ill NOT be avail:	ble.		
Direct cop network ba Currently, c	allows to directly tr indwidth and the spe lirect copy and comp	ansfer files be eed of the invo ression canno	tween the source ar lived disk systems a t be used with ESX	nd the target serv at the source and i servers (without	er. The achievable t target server. Agent option enab	ansfer speed is only li ed) due to their restric	imited by the available
Direct copy network ba Currently, i involved E and ensure	allows to directly tr indwidth and the spe lirect copy and comp iXi server (without A directly transfer file	ansfer files be eed of the invo pression canno lygent option e s between the	tween the source a lved disk systems a t be used with ESX nabled), all data will source and the targ	nd the target serv it the source and i servers (without I be relayed throu get server, we sug	er. The achievable t target server. Agent option enabl gh VM Explorer. To igest you to enable	ansfer speed is only li ed) due to their restric naximize the speed of he Agent option on al	mited by the available ted interface. In case of an f backups on ESXi servers Il your ESXi servers.
Direct copy network bit Currently, involved E and ensure Encryption	r allows to directly tr indwidth and the spe direct copy and comp Xi server (without A directly transfer file in t virtual disks using	ansfer files be eed of the Invo pression canno gent option e s between the s the specified	tween the source ar lived disk systems a t be used with ESX nabled), all data will source and the targ	nd the target serv it the source and i servers (without I be relayed throu get server, we sug	er. The achievable t target server. Agent option enabl gh VM Explorer. To igest you to enable	ansfer speed is only li ed) due to their restric maximize the speed of he Agent option on al	mited by the available cted interface. In case of an f backups on ESXi servers II your ESXI servers.
Direct copy network bi Currently, i involved E and ensure Encrypti Password Password	allows to directly tr ndwidth and the spe direct copy and comp XX server (without A directly transfer file n t virtual disks using	ansfer files be eed of the invo pression canno ligent option e is between the g the specified	tween the source an lived disk systems <i>i</i> the used with ESX habled), all data will source and the tarr i password.	nd the target server to the source and i servers (without I be relayed throo get server, we sug Warning	er. The achievable t target server. Agent option enable gh VM Explorer. To gest you to enable	ansfer speed is only li ed) due to their restrict maximize the speed of he Agent option on all estored encrypted ar	mited by the available ted interface. In case of an t backups on ESXI servers il your ESXI servers. nd not
Direct copy network bi Currently, i involved E and ensure Encrypti Encrypti Password	allows to directly tr ndwidth and the spe direct copy and comp SX server (without A directly transfer file in	ansfer files be eed of the invo pression canno lygent option et s between the g the specified d	Iveen the source an Ived disk systems (t be used with ESX habled), all data will source and the tary I password.	nd the target server to the source and i servers (without I be relayed througet server, we sup get server, we sup retrieva place in place in	er. The achievable t target server. Agent option enable by VM Explorer. To gest you to enable the please be sure t order to be able to	ansfer speed is only il st) due to their restrict adminize the speed of he Agent option on all es stored encrypted ar o remember it or write lecrypt the backup.	mited by the available cted interface. In case of an f backups on ESXI servers. Il your ESXI servers. and not it down in a safe
Direct copy network bi Currently, , involved E and ensure Encrypti Encrypt Password	allows to directly tr ndwidth and the spe direct copy and comp SXI server (without A directly transfer file in t virtual disks using Show passwor	ansfer files be eed of the invo yression canno ygent option e s between the g the specified d	Iveen the source an Ived disk systems a t be used with ESX habled), all data will source and the tary I password.	nd the target server to the source and i servers (without I be relayed througet get server, we sup get server, we sup retrieva place in	er. The achievable t target server. Agent option enable gh VM Explorer. To ggest you to enable r: the password will ble, please be sure t order to be able to	ansfer speed is only ii e0) due to their restric maximize the speed of he Agent option on all e stored encrypted ar o remember it or write lecrypt the backup.	mitted by the available cted interface. In case of an 1 backups on ESX0 servers. In one to it down in a safe

Backup encryption

CAUTION: The password is stored encrypted and is not retrievable, so make sure to remember it or write it down in a safe place in order to be able to decrypt the backup.

- Encryption	
Encrypt	virtual disks using the specified password.
Password	*****
	Change Password

Password encryption

General	Files & Disks	Snapshot	Connection	Advanced	Verify Backup
Direct Co VM Explore Reverse	py Options er acts as a relay. e direct connection				
Encrypted Please ente Password	backup Ir the current passy	word in order to a	change it:	w password	te achievable transfer speed is only limited by the available is server. It option enabled) due to their restricted interface. In case of an M Enrolmer: Terminitis the analysis of bacteria on ESD servers
			01	Cancel	you to enable the Agent option on all your ESXi servers.
 Encryptic Encryptic 	n : virtual disks usin	g the specified p	assword.		
Password	•••••	•••••		Warnin retrieva): the password will be stored encrypted and not ble, please be sure to remember it or write it down in a safe
Currently, e restricted in	Change Passw ncryption cannot b nterface. The direct	ord ie used in conjun copy connectior	ction with the com n will also be unava	place in pression option allable and all the	order to be able to decrypt the backup. or the Cloud servers (Amazon 53, OpenStack, etc.) due to their data will be relayed through VM Explorer .

Change encryption password

Copy a backup

You can schedule a copy of one or more existing backups to another target destination. To do so:

- 1. Go to *Tasks* > *Scheduled Tasks* and click Add.
- 2. In the Add Task Element screen, under Copy Backup, select the desired backup destination: to server or to tape media.
- 3. In the Add Copy Backup Task wizard, in the Backups to copy screen, select the backup element(s) you want to copy from the list. Here, you can select an entire scheduled task (all included backup elements will be copied) or individual backup/multiple VMs backup elements. The scheduled Copy Backup Task is performed individually for every VM only on backup versions that have changed since the last backup (if not, no backup is performed of these machines).



Copy Backup - Backups to copy

4. a. **Copy Backup to Server**—In the **Target options** screen, select the target host and the path for the backup copies. The destination path of the target server consists of the specified target base path followed by the selected append path option. You can group the backup copies by VM name or by date/time of copy and vice versa.

The {VM} and {DATETIME} placeholders of the append path stand for:

- {VM}: the display name of the backed up VM.
- {DATETIME}: the starting date/time of the scheduled task in which the copy task is included, in **YYYY-MM-DD-hhmmss** format

Also, specify the number of full backup copies to store on the target server: either **All** (default), which copies all backup copies, or a specific number, which deletes all older copies.

Important! You can copy incremental backups to either HPE StoreOnce Catalyst or to your local computer. To keep the incremental folder structure consistent on your

computer, only the {VM} subfolder will be appended to the target base path, ignoring the current date/time and keeping the original backup date/time folder structure.

Add Copy Backup Task			×
Backups to copy Target options	Please select the destinatio	on server for the backup copies	⊘ *
Summary	Please select the destination	on path where backup copies will be saved	Browse
	Append path	/{VM}/{DATETIME} /{DATETIME}/{VM}	
	The append path will be ad {VM} will be replaced b {DATETIME} will be rep	ded to the Target Location and backup placeholders replaced as follows: wy the display name of the backed up virtual machine. placed by the starting date/time of the copy task, e.g., 2015-01-30-125901	
	(Please note: for increment the original backup date/tir	al backup copies, only {VM} will be appended, current date and time will me folder structure will be kept in the copy)	be ignored and
	Please choose how many c	opies for each backup will be kept stored on the target server	
	Nbr. of full backup copies	to keep 3 Ø Y (older copies will be deleted)	
		♂ On error ex	ecute next task
		Previous Next Finish	Cancel

Copy Backup - Target options (to Server)

b. Copy Backup to Tape Media—In the Target options screen, select the desired target tape media pool. You can select the target tape library, then a corresponding target custom media pool you created. When choosing a media pool, you will copy the backups onto a media included in it, using the media pool's retention rules. All available space will be used to store backup data. Large backups will be automatically split into multiple tape media if necessary. Also, you can enable hardware data compression if your tape device supports it.

Add Copy Backup Task					×
Backups to copy	Please select the target Tape I	Library and Tape Media Pool for 1	the backup copies		
Target options	Library	Tape Library One			⊘ •
Summary	Target Media Pool	MyMediaPool			⊘ •
	Use hardware compressio Configure the Tape Drive Do not enable this option	n if available to perform hardware compression when copying already compresse already compresse	t when writing the I d backups.	eackup data to the backup data	Tape Media. cute next task Cancel

Copy Backup - Target options (Tape Media)

5. In the **Summary** screen, you can see the details of your copy backup options. At this stage you can go back and make any necessary changes. When finished, click **Save**.

Add Copy Backup Task		×
Backups to copy	Summary of the Copy Backup Task	*
Target options	Target Tape Library and Media Pool: Tape Library One	L
Summary	MyMediaPool	11
	Use hardware compression if available: Yes	Ш
	The following Backup elements will be copied:	11
	Scheduled Task 'Work Days Backup Task': all included Backup elements	11
	In case of error, continue with the execution of the next scheduled task element: Yes	11
		11
		11
		11
		11
		11
		11
		•
	Previous Next Save Cancel	

Copy backup - Summary

NOTE: Removing or modifying any scheduled tasks or backup elements referenced by the copy backup task (removing a backup element that was supposed to be copied) might result in failed subtasks. You can fix this by keeping the copy backup task up to date, editing it and deselecting the highlighted items with errors.

Edit Copy Backup Task		×
Backups to copy Target options Summary	Please select one or more Backups from the list below, showing the configured Scheduled Tasks and their corresponding Backup elements: the most recent version of each selected Backup will be copied	
	Collapse All Expand All Deselect all	
	Previous Next Finish Car	ncel

Copy Backup - Target options (removed Scheduled Task)

Replicating One or More Virtual Machines

With HPE VM Explorer, you can replicate one or multiple Virtual Machines (VMs) to another hypervisor host. To do so:

- 1. Go to *Tasks* > *Scheduled Tasks* and click Add.
- 2. In the Add Task Element screen, under Replication, select either Single VM or Multi VM, depending on your preferences.
- In the Virtual Machine Replication dialog box, configure the replication parameters. For more information, see Replicating a single Virtual Machine, below and Replicating multiple Virtual Machines, on page 97.

NOTE: Some storage environments, such as HPE StoreOnce Catalyst, may not support replication.

Replicating a single Virtual Machine

Here is the compatibility matrix of supported hypervisors you can use to replicate a previous **incremental backup** of a Virtual Machine (VM):

Hypervisors	ESXi free target	ESXi licensed target
ESXi free source	\checkmark	\checkmark
ESXi licensed source		\checkmark

Hypervisors	Hyper-V 2008 R2/2012/2012 R2	Hyper-V 2016 with Microsoft CBT	Hyper-V 2016 with HPE VM Explorer Agent
Hyper-V 2008 R2/2012/2012 R2	\checkmark	\checkmark	\checkmark
Hyper-V 2016 with Microsoft CBT		\checkmark	\checkmark
Hyper-V 2016 with HPE VM Explorer Agent	\checkmark	\checkmark	\checkmark

NOTE: If this is your first incremental replication, follow the on-screen instructions.

To replicate a single VM, configure the Virtual Machine Replication dialog box, as follows:

 Click Single VM and then, in the General tab, select the Source Host and the VM that you want to replicate and the target location – the same host as the VM or another host in the Datacenter view. Choose the target directory, the name which will be used to register the replicated VM, and how you want to handle the target directory.

General	Files & Disks	Snapshot	Connection	Replication	Advanced	Verify Repl	ication			
Source										
Host	ESX-Europe		•	VM	/indowsServer201	12R2	•			
Target —										
Host	Same Host a	is VM	Ŧ	🕑 On	error execute next	task				
Directory	[datastore] {VM} Browse									
	Register using	the following dis	play name:							
	WindowsServ	ver2012R2 (repli	cated)							
	If the target	t directory exists	s, archive existing	g files in the tar	get directory.					
	If the target	t directory exists	s, overwrite exist	ing files in the	arget directory.					
	Incremental	Replication, tar	get folder must b	e empty or mu	st contain specific	VM Incremental	Replication			
Nbr. of repli	cations to keep	All	٣							
		201202	L FOV F				TOD Commention			

Replication - General

NOTE: Selecting **Overwrite existing files in the target directory** will overwrite the previous replication only after the successful execution of the new one. The purpose is to always preserve a functional replication, so make sure there is enough free space to temporarily hold both replications. Selecting **Delete existing Replication in the target directory before the Replication starts** will erase your existing replication before the execution of the new one. If the replication process fails, you will have no replications available, so proceed with caution.

Virtual Disk Development Kit (VDDK) must be activated to make an incremental replication, so this procedure only applies to licensed ESXi hosts, not to the ESXi free version. If the host's VD Service is not activated, you will be prompted to initialize VDDK for the ESXi server. Click **ESXi Server Settings** and then, in the **How to Enable Virtual Disk Service** dialog box, download VDDK and/or initialize VDDK for the host. When finished, click **Close**.

How to Enable Virtual Disk Service (VD Service)	×
Simply follow these 4 easy steps to enable VD Service	
Step 1:	
Download VDDK 6.5.0 from:	
http://www.vmware.com/download/download.do?downloadGroup=VDDK65	
Step 2:	
Select VDDK zip file: Browse	
Step 3:	
Press "Initialize VD Service" in order to link HPE VM Explorer with VDDK lib	
Initialize VD Service	
VM Explorer status: VDDK successfully initialized.	
You can now use VD Service to back up licensed ESXi server.	
Step 4:	
Enable "Use VD Service" on backup or replication task	Close

Replication - Enable VD Service



Replication - VD Service dialog

- Selecting Overwrite existing files in the target directory will overwrite the previous replication only after the successful execution of the new one. The purpose is to always preserve a functional replication, so make sure there is enough free space to temporarily hold both replications.
- 3. In the **Files & Disks and Snapshot** screens, the procedures you need to perform are similar to backing up a VM. For more information, see Backing up a single VM, on page 78.
- 4. In the **Connection** tab, configure the direct copy options, which enable you to directly transfer files between the source and target server. You can reverse the TCP connection direction (default is from the source server to the target server) for Network Address Translation (NAT).

You can also compress data during transfer, but you cannot keep the data compressed at destination for replications because at the end of the replication process the VM will be registered on the target server. Also, the direct copy options are not available if the ESXi source or target server, and the HPE VM Explorer Agent are not enabled. In addition, this type of replication does not support encryption.

5. In the **Replication** tab, you can choose to shut down and replace the replicated VM, if it is already powered on manually. Also, for incremental replication, you can choose to preserve any desired number of Restore Points, which you can revert to, if needed, whilst keeping the previous version replicated.

Virtual Machin	e Replication							×		
General	Files & Disks	Snapshot	Connection	Replication	Advanced	Verify Replication				
 Replicat If the 	 Replication Options If the replicated VM is turned on, shutdown the VM and replace it. 									
Number o	- Incremental Replication Options - Number of Restore Points to be kept 2									
This optio Restore P This optio	This option permits to store Restore Points on the replicated VM. You can select how many Restore Points to be kept. Each time, if necessary, the oldest Restore Point will be deleted. This option will be used only on incremental replication.									
							ок	Cancel		

Replication - Replication tab

- 6. For information on how to configure the **Advanced** tab, see Backing up a single VM, on page 78.
- 7. In the **Network Adapters** tab (available for Hyper-V Host only), select from the list to which virtual network the (legacy) adapters should connect.

ual Machin	Machine Replication										
General	Files & Disks	VSS Snapshot	Connection	Replication	Advanced	Network Adapters	Verify Rep	lication			
lumber of	mber of Network Adapters found:1										
Network	Adapters										
Adapter r	iame			Connect	Connect to						
Network	Adapter			Not co	onnected			*			
Dynamic I	MAC Address			_							
00-15-50	D-01-08-67			Rest	ore MAC Addres	s					
							ок	Cancel			

Replication - Network adapters

8. In the **Verify Replication** tab, you can enable the **File Consistency Check** feature for the target replicated VM. For more information, see Backing up a single VM, on page 78.

tual Machir	ne Replication									
General	Files & Disks	VSS Snapshot	Connection	Replication	Advanced	Network Adapters	Verify Rep	ication		
- File Sys	tem Consistency									
Check	k that the followin	g file exists in the targ	get VM virtual dis	k						
Virtual Disk [scsi0:0] Windows Server 2012 R2.vhdx										
Volu	Volume ID VLG{49751157-5e27-4e01-adb5-2a36286cad7b}									
File	File path \System Volume Information\tracking.log Please Select									
Che	Check that the file has been modified within the last 12 hours.									
							OK	Cancel		

Replication - Verify replication

Replicating multiple Virtual Machines

To replicate two or more Virtual Machines (VMs), in the **Add Task Element** screen, under **Replication**, click **Multi VMs**. For more information on how to get to this stage, see Replicating One or More Virtual Machines, on page 93. Then, in the **Virtual Machine Replication** dialog box, configure the boxes in the specific tabs, as described in Replicating a single Virtual Machine, on page 93.

The difference with the single VM replication procedure is that here you can select two or more VMs by clicking **Select VMs** in the **General** tab and picking the desired VMs in the **Select Virtual Machines** dialog box. The directory and the display name used to register the replicated VM must contain the {VM} tag.

Also, since the settings are common across every VM included in the task, in the **Files & Disks** tab you cannot select the files and disks to replicate for every single VM as everything on these machines will be replicated.

Replication Explorer

For an overview of any replications performed with HPE VM Explorer, go to **Management > Replication Explorer**. You can filter the replication entries using the filters to the right. You can also power on/off every replicated VM by right-clicking the registered VM and selecting the desired operation.

VM Explorer datacenter	TASKS - MANAGEMENT -	STORAGE SYSTEMS +	SETTINGS ABOUT	🖉 Tasks 🕢 💄 admin 💡 🛽	ogout
Replication Explorer					
Date Selection	Backup status:	From:	To:		* *
Range Last Month	WindowsServer2012R2	- 21.03.2016 WindowsServer2012R2 (replica	ited)} (To: Bern)	Expand All I C	ollapse All
To 21.03.2016					
Group by					
Show					
O All					
Incremental					
● Manual ● Full					
VM Name Q					
Enterprise		© Cop	yright 2016 Hewlett Packard Enterpr	ise Development LP	

Replication Explorer

Restoring a VM Backup

In HPE VM Explorer, restoring a VM backup is a simple operation. Depending on your type of backup you want to restore, the user interface during this operation may vary.

To restore a backup in HPE VM Explorer, Professional and Enterprise editions, you need to go to *Management > Backup Explorer*, filter to view the desired backups, if needed, then right-click the backup you want to restore and point to **Restore**.

Here is the compatibility matrix of supported hypervisors you can use to restore a previous **incremental backup** of a VM:

Hypervisors	ESXi free target	ESXi licensed target
ESXi free source	\checkmark	\checkmark
ESXi licensed source		\checkmark

Hypervisors	Hyper-V 2008 R2/2012 /2012 R2	Hyper-V 2016 with Microsoft CBT	Hyper-V 2016 with HPE VM Explorer Agent
Hyper-V 2008 R2/2012 /2012 R2	\checkmark	\checkmark	\checkmark
Hyper-V 2016 with Microsoft CBT		\checkmark	\checkmark
Hyper-V 2016 with HPE VM Explorer Agent	\checkmark	\checkmark	\checkmark

To restore a backup in HPE VM Explorer Free Edition or to restore any backup not listed in **Backup Explorer**:

- Go to *Management > File Explorer*, open the desired backup folder and right-click the vmxbackup.xml file, which contains all the information about your original VM. On the shortcut menu, point to **Restore Backup...**
- 2. In the Virtual Machine Restore dialog box, in the General tab, choose the target host where you want to restore the backup, select the directory and whether to directly register the VM to your inventory using the default name. If not, you can always register any VM to your datastore by going to File Explorer, right-clicking the VM configuration file (*.vmx for ESXi VMs or *.xml for Hyper-V VMs) and pointing to Register VM. Also, you can power on the VM after registration.

Target -					
Host	ESX-Europe	*	Backup date	Version: 1 - 16.03.2016	• 08:49
Directory	[datastore] ESXi_6.1-Restored	ł			Browse
 Register Power o 	r using the following display name n VM after registration	ESKI_0.PRes			
✓ Register✓ Power o	r using the following display name n VM after registration				

Restore - General

3. In the **Files & Disks** tab, choose which file/disk you want to include in the restore and whether to convert the disks as thin after restore (if your Target host is ESXi, HPE VM Explorer Agent is enabled on the target server and there are no other disks with the same name).

		on	
Fil	es to be restored		
	Descriptor File	Size	Original Path
•	ESXi_6.1.vmx	2777	[datastore] ESXi_6.1
1	ESXi_6.1.vmsd	43	[datastore] ESXi_6.1
1	ESXi_6.1.vmxf	374	[datastore] ESXi_6.1
1	ESXi_6.1.nvram	8684	[datastore] ESXi_6.1
•	ESXi_6.1vmdk.delta.config	849	E:\Backups\20160316_inc1\ESXi_6:1\backup-version-2016-03-16-084648\2016-0
•	scsi0:0 disk (ESXi_6.1.vmdk.currentvm	1.69 MB	[datastore] ESXi_6.1
Th	in Provisioning Support		

Restore - Files & Disks

4. In the **Connection** tab, configure the direct copy options. The procedures are similar to Replicating a single Virtual Machine, on page 93.

Virtual Machi	ne Restore									×	
General	Files & Disks	Connection									
Direct (The TCP Reve	Direct Copy Options										
									ок	Cancel	

Restore - Connection

5. (Hyper-V Host only) In the **Network Adapters** tab, in the **Connect to** list, select which virtual network the network adapters and the legacy network should link. You can restore all saved network adapters in the new VM. To automatically set the old MAC address on the adapter, select **Restore MAC Address**. When finished, click **OK**.

Restoring an incremental backup

When restoring an incremental backup, you can choose up to which date to restore the date – more exactly, you can choose a specific restore point to restore. The other procedures are identical to regular backup restores. For more information, see Restoring a VM Backup, on page 98.

General	Files & Disks	Connection						
Target —								
Host	ESX-Europe	2	٣	Backup date	Version:	1 - 16.03.201	5 08:49	٣
Directory	[datastore] [ESXi_6.1-Restored					Browse	
 The targ If the tar 	jet directory mu: rget directory ex	st not exist, it will b cists, then it must b	e created. e empty.					
 The targ If the tar Registratic Register 	rget directory must rget directory ex on Settings	st not exist, it will b cists, then it must b ving display name:	e created. e empty. ESXi_6:1-Re	stored				
 The targ If the tar Registratio Registratio Register Power of 	rget directory mu: rget directory ex on Settings using the follow n VM after regis	st not exist, it will b cists, then it must b ving display name: tration	e created. e empty. ESXi_6.1-Re	stored				
The targ If the tar If the tar Registratio Register Power of	et directory mu rget directory ex on Settings	st not exist, it will b lists, then it must b ving display name: tration	e created. e empty. ESXi_6.1-Re	stored				

Restore Incremental Backup - General

Restoring an encrypted backup

When restoring an encrypted backup, make sure you know the password.

To restore an encrypted backup

- 1. Right-click the encrypted backup (indicated by a yellow padlock) and click **Restore**.
- 2. Enter the backup encryption password.



Restore encrypted backup

The standard restore dialog is displayed.

When using Instant VM Recovery and File Level Restore, HPE VM Explorer prompts you to enter the password in order to proceed with the operation.

Recovering Single Items

With HPE VM Explorer, you can recover individual files such as Exchange Server items (e-mails) or various individual files from your backup.

File level restore for single files

HPE VM Explorer supports the following file systems on disk image files for file level recoveries:

- NTFS
- FAT
- Windows Dynamic Disks (simple, spanned, striped, mirrored volumes)
- Linux—EXT (2 and 3, and EXT 4 is supported for both 32 and 64 bits versions)
- Linux LVM—Logical Volume Manager (linear, striped, mirrored volumes)
- Linux—XFS

If the EXT partition in the selected image disk is not 100% consistent, you will be notified in this respect, however, you can continue navigating the image disk. To generate consistent disk images, we recommend that you enable the quiesce option for the backups.

Disk imag	e warning
	An ext partition in the selected image disk is not 100% consistent and it may not be browsable. Please enable the quiesce option for the backup to generate consistent disk images.
	ок

Disk image warning

You can recover single or multiple files either from the File Explorer or from Backup Explorer.

To recover one or multiple files from File Explorer:

- 1. Go to **Management > File Explorer** and navigate to the backup entry from which you want to recover one or more files.
- Select which file(s) you want to restore, either by choosing an individual file or multiple files while holding the **Ctrl** key pressed. Then, right-click and point to **Download** on the shortcut menu to download the file(s) as a ZIP archive using the regular browser download procedure.

To recover one or multiple files from **Backup Explorer**:

- 1. Go to *Management* > *Backup Explorer*, expand the desired backup entry and wait for the information to refresh. After refresh, successful backup entries are marked with a ♥ green check icon, while failed backup entries due to inconsistent files are marked with an "X" 🖄 red icon.
- 2. Right-click the valid backup entry you want to restore and point to **Locate Files...** on the shortcut menu. The various files on the VM are displayed.
- Select which file(s) you want to restore, either by choosing an individual file or multiple files while holding the **Ctrl** key pressed. Then, right-click and point to **Download** on the shortcut menu to download the file(s) as a ZIP archive using the regular browser download procedure.

NOTE: Depending on the number and size of the files inside a folder that you want to restore, the operation can take some time.

Recovering Microsoft Exchange Server message(s)

This feature currently applies to the Enterprise Edition of HPE VM Explorer.

NOTE: HPE VM Explorer supports Microsoft Exchange Server versions 2013 and 2016.

To recover an Exchange Server item:

- Go to *Management > Backup Explorer* and then navigate to the VM of your choice by expanding the list of available backups.
- Right-click the VM that you want to recover the Exchange Server item from and point to Recover Exchange Server Items... on the shortcut menu. The Exchange Server Items Recovery wizard is displayed.
- 3. In the **Exchange Server Location** wizard screen, select the location of the Exchange Server installation. You can either:
 - a. Let HPE VM Explorer scan the available disks automatically, or
 - b. Select a location manually by clicking the **Please Select** button and choosing the desired folder in the **Choose Directory** dialog box.

NOTE: Make sure you have enough disk space on your computer to accommodate the entire Exchange Server database you are retrieving. You can configure the Exchange Recovery data path in the **Settings** section of HPE VM Explorer. For more information, see Configuring General settings, on page 117.

When finished, click **OK** to return to the **Exchange Server Items Recovery** wizard and then click **Next**.

kchange Server Items I	Recovery					×
Exchange Server Location	Select the Exchange Serv	r location inside th	e backup			
Database Selection	 Automatically scan d Manually select insta 	sk(s) in default ins ation folder	tallation folder(s)			
Database Preparation	Virtual Disk					
Exchange Items	Path					
Selection	Please Select					
			Previous	Next	Finish	Cancel

Exchange Server Recovery wizard – select location

- 4. In the **Database Selection** wizard screen, you can see the database detected by HPE VM Explorer as well as its recovery status:
 - Not Ready—Before the extraction of the temporary recovery data from the backup.
 - Ready—When extraction is successful.

You can delete the temporary recovery data on the local machine by clicking the **Close** button. If you want to manually select another Exchange Server database, click **Add Exchange database** and then choose the desired one in the **Select File...** dialog box. When finished, click **OK** to return to the **Database Selection** wizard screen and click **Next**.

xchange Server	Name	File path	Status	
ocation	Mailbox Database 0799584852.edb	[Exchange_Server_2013-000003.vmdk] VLP:VPD:DS00	🕑 Ready	×
atabase Selection				
atabase Preparation				
xchange Items				
election				
		А	dd Exchange data	ıbase

Exchange Server Recovery wizard – Select database

5. In the Database Preparation wizard screen, you can see the process of extracting and consolidating the Exchange database for recovery. The temporary recovery data is automatically saved in the location configured in the Settings>General section. For more information, see Configuring General settings, on page 1. If the operation is not successful, click Refresh to verify your Exchange Server settings and then go back in the Exchange Server Items Recovery wizard to make the necessary changes. If the operation is successful, click Next.

Exchange Server	-		ç		0
ocation	Prepare database result		Success		0
atabase Selection		Ø	Download configuration	files	
-t-h Dti		0	Download mailbox datab	base files	
alabase Preparation		0	Consolidate database		
Exchange Items		Ø	Check database version		
Selection		0	Initialize recovery data		
	Database ready!				
	Salabase ready.				

Exchange Server Recovery wizard – Prepare database

- 6. In the **Exchange Item Selection** wizard screen, you can see the mailboxes of all the users in the selected Exchange Server database.
 - a. If you want to restore individual e-mails, expand the user name(s), navigate to the desired mailbox folder and select the e-mail you want to recover.
 - b. If you want to restore all the e-mails associated to certain users, select the checkboxes next to the user names.

You can select/clear all the users whose e-mail mailboxes you want to recover by clicking the respective buttons. Also, you can collapse all expanded user accounts by clicking **Collapse All**. You can recover any types of e-mails irrespective of their folder or whether or not they have one or multiple attachments. When finished, click **Start Recovery**.

Exchange Server Items R	covery	×
Exchange Server Location	Select which item(s) to recover:	
Database Selection	La La Administrator	H
Database Preparation	Light Adriente Hernandez	
Exchange Items Selection	្រា ស្វើ Albert Price ្រា ស្វើ Alberto Dixon ្រា ស្វើ Alfonso Black	
	「 な Alma Bell 」 「 な Alma Souzman 」 に な Anny Adams	
	『亞Amy Klein 『亞Andres Mathis 『亞Andres Mathis	
	Grangelica Lane Grangelica Lane Grangelica Hubbard	
	التي Angelo Parker البل Angelo Parker البل Ann Bush	-
	Collapse All Select All Deselect All	
	Previous Next Start Recovery Ca	ancel

Exchange Server Recovery wizard – Select Exchange Server items

7. When the process is complete, you can download the recovered item(s) as a .*ZIP* file. In order to copy back one or more e-mails to production, simply drag-and-drop them into your Microsoft Outlook mailbox. Then, you can continue the recovery process by clicking **Yes** in the confirmation message or you can click **No** to exit the **Exchange Server Items Recovery** wizard.

NOTE: Make sure your browser allows pop-ups from HPE VM Explorer.

Scheduling Tasks

With HPE VM Explorer you can schedule tasks to run certain operations (such as backups, replications, copy backups and so on) automatically at configurable time intervals, such as hourly, daily, weekly and so on.

Creating a scheduled task

You can schedule a task to perform a large variety of operations (such as backups, replications, copy backups, e-mail reporting and so on) in the *Tasks* > *Scheduled Tasks* view or you can simply schedule a backup/replication task in the **Datacenter** view.

To create a scheduled task from the Scheduler view:

- 1. Go to Tasks > Scheduled Tasks, click Add Scheduled Tasks and point to Add Scheduled Task.
- 2. In the **Add Scheduled Task** dialog box, give a meaningful title to your task and configure the schedule according to your preferences. When finished, click **OK**.

Add Scheduled Task		×
General Task Name	New Scheduled Task	
Schedule Schedule Enable automatic Start time (24h for	a scheduling for this task mat HH:MM) 12:00	
Nur Ctry 1 hour Weekly schedule Every week	First Time: 10.05.2017 Mon Tue Wed Thu Fri Sat Sun	
Monthly schedule Every Month Run once 10.05.2017	e on the 1. v	
	ок с	Cancel

Add Scheduled Task

- 3. Next, in the **Scheduled Tasks** view, click **Add** and then select which kind of scheduled task you want to perform:
 - Backup—for more information, see Backing Up One or Multiple Virtual Machines, on page 77
 - Replication—for more information, see Replicating One or More Virtual Machines, on page 93
 - Copy backup—for more information, see Copy a backup, on page 90
 - E-mail report—for more information, see Sending E-mail Reports, on page 111
 - Custom script—for more information, see Custom script, on page 111
- 4. To modify your entries at any time, switch to **Scheduler** view. You can also add multiple steps to a single backup task, meaning that you can add backups of multiple Virtual Machines to the same task.

NOTE: Make sure that you enable the scheduler in HPE VM Explorer by clicking **Enable the Scheduler** in the **Scheduler** View.

IMPORTANT: HPE VM Explorer executes scheduled tasks using its own Windows Service that executes scheduled tasks. When using the HPE VM Explorer service you do not need to be logged on and have HPE VM Explorer running to perform scheduled tasks. In addition, if the scheduler is enabled and the **General Settings** option **Prevent 'Sleep Mode' if scheduler is enabled** (*Settings > General Settings*) prevents the system's Sleep Mode (if activated). Also, make sure your Windows updater will not cause your computer to restart and thus interrupt your backup/restore operations.

5. You can also disable a single task element in a scheduled task by clearing its check box directly in

the Task Elements list.

che	duler Overview						
ne s	cheduler is enabled.					Overview	Disable the Schedule
sed	sockets: 2 / 10						
che	duled Task Details						
atab	bases Backup Task			Copy Task Edit	Task Name/Schedule	Disable Task	Run this Task Now
nis t ext t Tas	task runs every month o two executions: Sunday, sk Elements	n the last day on the 19. c , March 19, 2017 at 12:00,	day at 12:00. then Wednesday, April	19, 2017 at 12:00			
his t ext t Tas €	task runs every month o two executions: Sunday, sk Elements Type	n the last day on the 19. c , March 19, 2017 at 12:00, VM	day at 12:00. then Wednesday, April Source	19, 2017 at 12:00 Target	Target Directory	Up	
nis t ext t Tas	task runs every month o two executions: Sunday, sk Elements Type Backup	n the last day on the 19. c March 19, 2017 at 12:00, VM Invoices	day at 12:00. then Wednesday, April Source Database Server	19, 2017 at 12:00 Target	Target Directory C:\Users\Backup\Document	Up	
nis t ext 1 Tas 🕑	task runs every month o two executions: Sunday, sk Elements Type Backup Backup	n the last day on the 19. c March 19, 2017 at 12:00, VM Invoices MySQL Database	day at 12:00. then Wednesday, April Source Database Server Database Server	19, 2017 at 12:00 Target Local Computer Local Computer	Target Directory C:\Users\Backup\Document C:\Users\Backup\Document	Up Down	
nis t extr Tas	task runs every month o two executions: Sunday, sk Elements Type Backup Backup Backup Backup	n the last day on the 19. c March 19, 2017 at 12:00, VM Invoices MySOL Database Emails	day at 12:00. then Wednesday, April Source Database Server Database Server Database Server	19, 2017 at 12:00 Target Local Computer Local Computer Local Computer	Target Directory C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document	Up Down Edit	
hist extr Tas Ø	task runs every month o two executions: Sunday, sk Elements Backup Backup Backup Backup Backup (Inc.)	n the last day on the 19. c March 19, 2017 at 12:00, VM Invoices MySQL Database Emails Exchange	day at 12:00. then Wednesday, April Source Database Server Database Server Database Server Database Server	19, 2017 at 12:00 Target Local Computer Local Computer Local Computer Local Computer Local Computer	Target Directory C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document	Up Down Edit	
his t ext t Tas Ø Ø Ø	task runs every month o two executions: Sunday, sk Elements Backup Backup Backup Backup Backup (Inc.) Backup (Inc.)	n the last day on the 19. c March 19, 2017 at 12:00, VM Invoices MySQL Database Emails Exchange Misc	day at 12:00. then Wednesday, April Source Database Server Database Server Database Server Database Server Database Server	19, 2017 at 12:00 Target Local Computer Local Computer Local Computer Local Computer Local Computer Local Computer	Target Directory C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document	Up Down Edit Copy	
his t ext f Tas	task runs every month o two executions: Sunday, sk Elements Backup Backup Backup Backup Backup (Inc.) Backup (Inc.)	n the last day on the 19. c March 19, 2017 at 12:00, Novoices MySOL Database Emails Exchange Misc	day at 12:00. then Wednesday, April Source Database Server Database Server Database Server Database Server Database Server Database Server	19, 2017 at 12:00 Target Local Computer Local Computer Local Computer Local Computer Local Computer	Target Directory CAUsers/Backup\Document CAUsers/Backup\Document CAUsers/Backup\Document CAUsers\Backup\Document CAUsers\Backup\Document	Up Down Edit Copy Add	
his t ext t Tas	task runs every month o two executions: Sunday, sk Elements Backup Backup Backup Backup (Inc.) Backup (Inc.)	n the last day on the 19. c March 19, 2017 at 12:00, Novices MySQL Database Emails Exchange Misc	day at 12:00. then Wednesday, April Database Server Database Server Database Server Database Server Database Server Database Server	19, 2017 at 12:00 Target Local Computer Local Computer Local Computer Local Computer Local Computer Local Computer	Target Directory C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document C:\Users\Backup\Document	Up Down Edit Copy Add	

Scheduled Task screen

To create a backup/replication scheduled task from the Datacenter view:

 Go to the Datacenter view, right-click the Virtual Machine you want to back up/replicate and then point to either Create New Backup Schedule... or Create New Replication Schedule... on the shortcut menu.



Create a scheduled task

2. In the **Add Scheduled Task** dialog box, give a meaningful title to your task and configure the schedule according to your preferences. When finished, click **OK**.
| Add Scheduled Task | |
|--|---|
| General | 1 |
| Task Name New Scheduled Task | |
| Schedule | |
| Enable automatic scheduling for this task | |
| Start time (24h format HH:MM) 12:00 | |
| Run every | |
| Weakly schedule | |
| Every week | |
| Monthly schedule | |
| Every Month 💌 on the 1. | |
| Run once | |
| 10.05.2017 | |
| OK Cancel | - |
| Every Month on the 1. Run once 10.05.2017 OK Cancel | |

Add Scheduled Task

3. Next, follow the backup (for more information, see Backing Up One or Multiple Virtual Machines, on page 77) or replication (for more information, see Replicating One or More Virtual Machines, on page 93) procedures.

Copying a scheduled task

To copy a scheduled task:

- Go to *Tasks > Scheduled Tasks*, right-click the scheduled task that you want to copy from the Scheduled Tasks list and point to Copy Task... You can also select the desired scheduled task and click the Copy Task... button on the View Window.
- 2. In the **Edit Scheduled Task** dialog box, you can modify any of the task's inherited settings. When finished, click **OK**. To avoid multiple running tasks and any potential conflicts, the copied task is disabled (Paused) by default, so you have to click **Enable the Scheduler** in the **Scheduler** view.

Edit Scheduled Task		×
General Task Name Copy of Work Days Backup Task		
Schedule Enable automatic scheduling for this task Start time (24h format HH:MM) 12:00		
 ─ Run every 1 hour ▼ First Time: 10.08.2016 		
Weekly schedule Every week V Mon Tue Wed Thu Fri Sat Sun		
 Monthly schedule Every Month on the T. 		
© Run once 10.08.2016		
	ок	Cancel

Copy Scheduled Task dialog box

Copying a scheduled task element

You can copy a single task element into the same or another scheduled task. To copy a scheduled task element, while in the **Task Elements** list, right-click an element and select **Copy...**, or press the **Copy...** button to the right. Then, in the **Copy the selected Task Element** dialog box, select into which scheduled task you want to copy the selected task element. Select the target scheduled task and click **OK**.

Copy the selected Task Element		×
Please choose the scheduled task into which the selected task element will be copied	1	
Weekend Backup Task		
c	ж	Cancel

Copy Task Element dialog box

Using the Command Line Interface

HPE VM Explorer enables you to execute the scheduled tasks you created from the command line. This can be useful if you want to use a different software as scheduler, such as the Windows built-in Task Scheduler.

To access full information about the command-line interface, simply type vmx.exe /? at the command prompt to generate an XML file containing all the information about the executed task. You can modify the output location by adding the /logfile parameter.

To start a backup task, you need the /runtask option. For example, you can type:

vmx.exe /runtask:mytask /logfile:"c:\log files\vmx\vmx.xml"

Custom script

In HPE VM Explorer, you can add a custom script element to a scheduled task. To do so:

- 1. Go to Tasks > Scheduled Tasks, select the desired task and click Add.
- 2. In the Add Task Element screen, under Other, click Custom Script. The Script task setup dialog box is displayed.
- 3. In the **Script task setup** dialog box, click **Browse** to select the script you want to run. You can select a .bat or .exe file and you can configure the arguments, timeout interval (the time after which the task fails if the script has not finished) and whether the task should stop or continue if the script fails. You also can select an existing account to launch the script file and you can test your script configuration before adding it as a task element. When finished, click **OK**.

Script task setup 🛛 🕹						
Script						
Script file	E:\Sc	ripts\customScript.bat	Browse			
Arguments	s /d /n					
 Script timeout after 	30	seconds				
On error execute next	t task					
Account parameters						
Use Account Paramet	ers					
Username						
Password	Password					
Domain	Domain					
Test		0	K Cancel			

Script task setup screen

Sending E-mail Reports

HPE VM Explorer has a built-in option to automatically send e-mail reports about a backup, copy backup, replication and other operations. To add e-mail reporting, you can either configure HPE VM Explorer to use e-mail notifications after performing a task or you can add a scheduled e-mail notification task.

Adding e-mail reporting as a scheduled task

- 1. Go to *Tasks* > *Scheduled Tasks*, right-click the **Scheduled Tasks** view and point to **Add Scheduled Task...** on the shortcut menu.
- 2. In the **Add Scheduled Task** dialog box, give a meaningful name to your e-mail reporting task and set the report schedule. When finished, click **OK**.
- 3. In the Scheduled Tasks view, click Add and then, in the Add task element screen, click E-mail Report.
- 4. In the E-Mail Report Wizard screen, in the Setup Type screen, select whether you want to:
 - a. Create an e-mail report task from scratch, in which case you can configure other e-mail communication settings than the default ones, in the E-Mail Default Settings screen.
 - b. Use the default e-mail communication settings, as configured in the E-Mail Default Settings screen, as a template for your report.

If you have not already configured the default e-mail communication settings, you can do so by clicking the **Edit default settings** button. For more information, see Configuring e-mail default settings, on page 120. When finished, click **Next**.

E-mail Report Wizard		×
Setup Type	- E-mail Report Type	
Sender & Receiver	Create e-mail report task	
Server Settings	Create an e-mail report task from scratch.	
Report Settings	Create an e-mail report task using the default Sender, Receiver and server settings.	
	Edit default settings	
	Previous Next Finish	Cancel

E-mail Report Wizard —Setup Type screen

5. In the **Sender & Receiver** wizard screen, type the Sender's e-mail address and (optionally) full name, as well as the Receiver's e-mail address(es) and the subject line. When finished, click **Next**.

Setup Type	Sender				
Sender & Receiver	E-mail	john.smith@acme	.com		\odot
Gerver Settings	Full Name (optional)	John Smith			
Report Settings	Receiver(s)				
	E-mail(s)				
		Accepted separator:	semicolon ";"		
	Subject	VMX Report {DA	TETIME} ({STATU	JS})	
		Accepted placehold	ers: {DATETIME},	[STATUS]	
	1				

E-mail Report Wizard—Sender&Receiver screen

6. In the Server Settings wizard screen, type the hostname or IP address and the port and select whether you want to use SSL or SMTP authentication (if permitted by the server, in which case you also need to provide the username and password). Then, you can verify whether your settings are correct by clicking the Test button. When finished, click Next to continue or Finish if you do not want to configure e-mail priority.

E-mail Report Wizard		×
Setup Type Sender & Receiver Server Settings Report Settings	Outgoing SMTP Server Hostname or IP 192.168.1.15 Use SSL Use SMTP authentication if the server supports it: Username Password	Test
	Previous Next Finish	Cancel

E-mail Report Wizard—Server Settings screen

7. In the **Report Settings** wizard screen, you can set the priority of the e-mail sent in case of success, warning or error on jobs. When finished, click **Save**. You will be taken to the **Scheduled Tasks** view.

E-mail Report Wizard					×
Sender & Receiver	Report Type				
Server Settings	Custom time report		• 1	days.	
Report Settings	Priority Mail				
	On Error	Normal priority mail			Ŧ
	On Warning	Normal priority mail			v
	On Success	Normal priority mail			v
		Previous	Next	Save	Cancel

E-mail Report Wizard—Report Settings

Types of reports

The following report types are available in HPE VM Explorer:

- Current task report—Sends a report of the scheduled task to which the report has been added. It is
 usually implemented at the end of a scheduled task with multiple tasks, to keep you informed on
 specific scheduled task.
- **Daily report**—Sends a report with the activities occurred in the past 24 hours, including jobs still running, jobs terminated in the past 24 hours and their results, whether or not the jobs have been included in the task or not. It is usually implemented in a daily scheduled task of its own, to keep you informed on all activities executed every day.
- Weekly report—Works the same as the Daily report, but integrates jobs in the past week.
- Monthly report—Works the same as the Daily report, but integrates jobs in the past month.
- **Custom time report**—Works the same as the Daily report, but for a specified time frame in which all the jobs executed (including the ones still running) are included in the report.

CAUTION: If you have not configured automated backup tests to take screenshots of the VM console, the report will contain all the images selected for the report. Be careful on the size of the report as it may reach the maximum capacity of the mail server.

Working with File Explorer

File Explorer enables you to view and download files from your ESX, Hyper-V, Linux or FreeBSD hosts and select the server you want to browse. Simply go to *Management > File Explorer* and select the server from the **Server** list.

In addition, you can register Virtual Machines to your ESXi or Hyper-V hosts by right-clicking the VM configuration file (*.VMX for ESXi VMs or *.XML for Hyper-V VMs) and choosing the **Register VM** command. You can also restore backups by right-clicking the *vmxbackup.xml* file and pointing to **Restore Backup...**

HPE VM Explorer	DATACENTER	TASKS - MANAGEMEN	T - STORAGE	SYSTEMS -	
File Explorer					
Server Local Computer 🗸	Home	Filter:		Apply filte	er Clear filter
 Local Computer C\ Nostalgia-RestoredENC Dackup-version-2017-11-23- 2017-11-23-110006 2017-11-23-120007 2017-11-23-130007 2017-11-23-140006 2017-11-23-160006 2017-11-23-160006 2017-11-23-160006 2017-11-23-160006 2017-11-23-160006 2017-11-24-10008 2017-11-24-10007 2017-11-24-150007 2017-11-24-150007 		Name 2017-11-23-110006 2017-11-23-120007 2017-11-23-130007 2017-11-23-140006 2017-11-23-150006 2017-11-23-150006 2017-11-23-160006 2017-11-23-170007 2017-11-24-10008 2017-11-24-10007 2017-11-24-10006 2017-11-24-140006 2017-11-24-150007 Nostalgia.nvram Nostalgia.vmsd Nostalgia.vmsd Nostalgia-000002.vmdk.delta Nostalgia-000002.vmdk.delta Nostalgia-000002.vmdk.delta Nostalgia-000002.vmdk.main Nostalgia-000002.vmdk.main	Date Modified 23.11.2017 11:03 23.11.2017 12:03 23.11.2017 13:02 23.11.2017 13:02 23.11.2017 14:00 23.11.2017 15:00 23.11.2017 15:00 24.11.2017 15:00 24.11.2017 15:03 24.11.2017 10:02 23.11.2017 10:0	Attr d	Size <dir> <dir> <dir <dir="" <dir<="" th=""></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir></dir>



How to use the filtering feature in HPE VM Explorer

HPE VM Explorer provides you with the possibility to filter the files displayed in File Explorer. Keep in mind the following:

- To perform a search, type the desired key words in the Filter box and then press Apply filter.
- To clear your search criteria, simply press Clear filter.
- Wildcard (*) search is supported. Any search returns results that match the specified combination of characters and wildcards.
- When the search returns a significant number of files, only the first 1,000 files are displayed. We recommend that you further refine your search if you are looking for specific files.

Viewing Task History

Go to **Tasks > Task History** to have an overview of recent tasks, with the name, the start and end time, the duration of the task and the result.

	Name	Start	End	Duration.	Real
	magneticed	Handau 9 November 205 1930-01	Hundau 9 November 2015 19:00:40	1 Minute	E Succe
S	 autorities 	Hunday, 9 November 2015 W00:00	Hunday 9 November 2015 18:00-41	1 Minute	Succession 201
Second Failed	mathematicael	Handay 9 November 205 1700:00	Manday, 9. November 2015 (2010-62	1 Minute	Succession 2
S	extended	Munday, 9 November 2015 18:5508	Hunday, 9 November 2015 165334	1 Minute	E Succe
Name Alached	a stanting	Hunday, 9 November 2015 to 57:35	Hundau 9 November 2015 16:38:07	1 Houte	E Seco
	extended	Mandag R November 2015 (R25.04	Hunday, 9. November 2015 09:25:45	1 Minute	Succession 2
An 11 1	m magnetices	Handay, 9 November 205 083530	Hunday, 9 November 2015 09 2036	487Minutes	E Fale
	 reflected 	Friday, 6. November 2015 16:57:51	Friday, 6. November 2015-17103-47	46 Hinutes	E Falm
Alreals •	automatical	Friday, 6. November 2015 30-48.54	Friday, 6. November 2018 York 25	1 Minute	E faire
	Marting Backup of an 201042	Turestiny, 27: October 2015 (578-38	Turestay, 27 October 2015 (34154)	26 Minutes	E Succ
	Harris Backap of an 201010	Tunneling 27 October 2015 10:38:25	Tuesday 27 October 2015 10 52:32	15 Houtes	E Wart
	tackup5448 w/s men	Turnelay 27: October 2015 04:00:05	Tunnelay 27 October 2015-04:04:05	6.Winutes	E Abre
Burning	techup5495 w/s mem	Tuesday 27 October 2015 08:42 kT	Tuesday 27 October 2015-08-45/33	3 Minutes	Abre
	E backup5446 with mem	Tunsday, 27 October 2015 08:39:29	Tuesday, 27 October 2015 08 42:30	4. Hinutes	E Abre
	techop5495 w mem	Handay 28-October 2018 (7):22:54	Hunday 26 October 2018 (TVR25	27 Minutes	E Sec
Warning	techopSHM = mem	Frates 23. October 2015 1154-23	Frates 25 October 2015 (202:08	E Houtes	Abre
Falled	tackup5446 with mem	Frains 23 October 2015 12:00:01	Friday, 23. October 2015 (2013)	2 Minutes	E faire
Aburhal	techop5495 w/s mem	Frates 23 October 2015 1130.39	Friday 25 October 2016/1152will	4. Hinubes	E Abre
	tackup5995 wie nem	Frates 23 October 2015 TH4048	Friday 35 October 2015 Third 20	4. Minutes	E fair
	E balag5998 als nem	Frains 23. October 2018 1124/52	Friday, 23. October 2015 11:25:40	1 Minute	E fair
	tackup5446 w/s mem	Friday 23 October 2015 11:20:42	Probas 25 October 2018/11/25/38	4.Hinuba	E Abre
	tackup5446 w/s mem	Frates 23 October 2015 11:019	Friday 15 October 2015/11/276	4.Minutes	Abre
	E Over Strifture	Frates 23. October 2015 10:5212	Friday, 23: October 2015/10:58/16	27Kinutes	II Abs
	Check SPREaste	Frains 23-October 2015 09 x836	Friday, 23. October 2018 101010	21 Minutes	Abre
	Check SPI75cale	Fishes 23. October 2015 01:73-0	Profes. 25: October 2015-01+43-04	38.Minutes	3 5 m

Task History screen

TIP: You can view more details for each entry by double clicking an entry.

Click **HTML Report** to view the current task result in your browser in HTML format, ready for print. Click **Go to Task** to visit the task.

NOTE: The **Go to Task** button is only available to you if the task still exists. Also, if the task has been deleted in the time interval between viewing its details and visiting the task, you will be taken to the **Scheduled Tasks** page.



Scheduled Task Details

Working with HPE VM Explorer Settings

Go **to <user account> -> Settings** to configure your HPE VM Explorer settings, such as the language, event logs, support information, documentation and so on.

Configuring General settings

To configure some of HPE VM Explorer's general settings, such as the Default Local Path, the Windows event logs and others, in the **Settings** view, click **General**. When finished configuring the settings, click **Save**.

Н	HPE VM Explorer datacenter tasks - management - storage systems -						
Set	Settings						
۵	General	Paths					
	Export / Import config file	Default Local Path Brows	e				
R	License Manager	Exchange Recovery data path C:\windows\TEMP\ Brows	e				
di.	Network Drives						
\bowtie	E-Mail Default Settings	General					
1 .	Reporting API	Show tip-bar with suggestions					
ø	Instant Recovery Service	Write data directly to the disk without being buffered					
1	Active Directory	Lise this option only if you experience the issue described in Microsoft kb 976618 http://support.microsoft.com/kb/976618 (the system)	m				
-	Users	file cache consumes most of the physical RAM), even if HPE VM Explorer is installed on Windows Server 2008 R2. Please note that the	is				
쓥	Groups	option could slow down backup process if target is set to "Local Computer".					
\bowtie	Password Recovery Settings	V Prevent "Sleep Mode" if scheduler tasks is enabled					
۲	Language	Check for virtualized network adapters: E1000 & E1000E					
Ê	Event Logs						
Ж	Support	Privacy —					
?	Manuals	View policy					
1	Suggest new feature (ext. link)	Save task result in Windows event log					
		Log success tasks Log warning tasks Log error tasks					

Settings - General

Under Paths

Click **Browse** to configure the default Local Path used in **File Explorer** (home directory for local computer), in the **Backup** setup dialog (default target directory), in the **Custom Script** configurator and wherever a local path is required. If left blank, HPE VM Explorer will use the Windows **My Documents** path.

Also, click **Browse** to configure the Exchange Server recovery location for temporarily storing the logs and the *.edb* database file downloaded during the recovery process. For more information on recovering individual Microsoft Exchange Server items, see Recovering Microsoft Exchange Server Message(s), on page 1.

Under General

Select/clear the **Show tip-bar with suggestions** checkbox to display/hide the tip bar with the suggestions. You can also deactivate the tip-bar by clicking **X** (close).

Select the **Write data directly to the disk without being buffered** checkbox only if, during backups, performance issues as described in the Microsoft KB 976618 occur. For more information, see https://support.microsoft.com/en-us/kb/976618.

Select the **Prevent 'Sleep Mode' if scheduler is enabled** checkbox to prevent the system from going into sleep mode. This option will be applied only if the scheduler is enabled. For more information, see Scheduling Tasks, on page 106.

Under Privacy

Here you can decide whether or not to send performance data (for statistical purposes). For more information, click **View policy**.

Under Save task result in Windows event log

To save the results of Scheduled Tasks in the Windows Event Log, select/clear the desired checkboxes under **Save task result in Windows Event Log**.

Export/Import configuration settings

In HPE VM Explorer, you can export/import the existing configuration. During export, you can encrypt the configuration file with a password (recommended).

NOTE: Ensure that you are not importing a configuration with its web server settings disabled.

Settings	
🛱 General	Export / Import config file
Export / Import config file	You can export or import the configuration file from this page
🂦 License Manager	
📥 Network Drives	Export Config Import Config
🔀 E-Mail Default Settings	
🔗 Instant Recovery Service	
Active Directory	
🐣 Users	
😤 Groups	
😌 Language	
Event Logs	
XSupport	
? Manuals	
📢 Suggest new feature (ext. link)	

Settings - Export/Import configuration file

Managing network drives

In HPE VM Explorer, you can add, modify and delete network drives from which you can backup and restore. To view and manage network drives, in the **Settings** view, click **Network Drives**. Click **Refresh** to update the list of available network drives.

NOTE: Before adding or modifying a network drive, make sure the target is available on your network and you have write access to the shared folder.

Adding a network drive

To add a network drive:

- 1. In the **Network Drives** view, click **Add** and then, in the **Location** screen of the **Add a network drive** wizard, select a letter for your network drive and write your network drive's path. When finished, click **Next**.
- 2. In the Credentials screen, type your access credentials, if necessary, and then click Next.
- 3. In the **Test Connection** screen, you can verify if your connection is valid. If not, you can go back and reconfigure your newly added network drive. If yes, click **Next**.
- 4. The **Summary** screen displays the details of your newly added network drive. At this stage you can go back and make any necessary changes. When finished, click **Finish**.

Your newly added drive is now available in the Network Drives view.

Modifying a network drive

To modify an existing network drive, in the **Network Drives** view, select the network drive you want to modify and click **Edit**. Then, complete the **Add a network drive** wizard. For more information, see Adding a network drive, above.

Removing a network drive

To delete an existing network drive, in the **Network Drives** view, click the network drive you want to delete and click **Remove**. Then, in the confirmation box, click **OK**.

Configuring e-mail default settings

In the **E-Mail Default Settings** screen, you can view, configure and test the default settings used for email report tasks. You can also check if your settings are correct by clicking the **Test**. When finished, click **Save**.

Se	tings				
* •	General Export / Import config file	In this page you can config Report" task in the "Schedu	ure and test the default Email p Iled Tasks" (Clicking the "Load d	arameters. The following parameters allow lefault settings" button on the bottom left	rs you to configure more quickly the "E-mail of the "E-Mail Report" popup window).
R 	License Manager Network Drives	Important: By configuring t "Scheduled Tasks".	these parameters, doesn't make	HPE VM Explorer sending email reports. Y	ou need to create an "E-Mail Report" task in
	E-Mail Default Settings	Sender			
6 6 10	Reporting API Instant Recovery Service Active Directory	E-mail Full Name (optional)			
-	Users	Receiver(s)			
2	Groups	E-mail(s)			
~	Password Recovery Settings		Accepted separator: semicol	on "*	
0	Language	Subject			
	Event Logs		Accepted placeholders: {DAT	TETIME}, {STATUS}	
×	Support				
8	Manuals	Ourgoing an iP Server		-	
		Hostname or IP		Port	
		Use SSL			
		Use SMTP authentica	ation if the server supports it:		
		Username			
		Password			
		Save			Test

Settings - E-mail

NOTE: The settings you define here will be used when adding an e-mail report as a Scheduled Task when selecting **Create e-mail report task using default settings** in the **Setup Type** screen of the **E-mail Report Wizard**. For more information, see Sending E-mail Reports, on page 111.

Instant Recovery Service

To be able to use HPE VM Explorer NFS, make sure no other NFS server is running on the machine where HPE VM Explorer is installed, and that no other services are using TCP port 111.

Settings							
🕸 General	VM Explorer NFS Server						
Export / Import config file	The VM Explorer NFS Server is requ	The VM Explorer NFS Server is required by all the Instant Recovery features:					
💦 License Manager	- Instant VM Recovery (IVMR) - Instant Backup Test (IBT)						
📥 Network Drives							
⊠E-Mail Default Settings	 Enable VM Explorer NFS server 						
8 Instant Recovery Service	 Open Windows firewall 						
Active Directory	NFS server listening port	2049					
🚨 Users		(default: 2049)					
🚰 Groups	Mountd listening port	4242					
🕑 Language		(default: 4242)					
🖹 Event Logs	Local temporary mount path	E:\	Browse				
X Support	Local temporary cache path	E:\	Browse				
? Manuals							
Suggest new feature (ext. link)			Start Stop				
	VM Explorer NFS Server Status – VM Explorer NFS Server is running NFS Server listening on port 2049 Mountd listening on port 4242	y on Any					
Hewlett Packard Enterprise		© Copyright 2016 Hewlett Packard Enterprise Development LP					

Settings - Instant Recovery Service

To be able to use the automatic backup test, you need to configure and enable the HPE VM Explorer NFS. To do so, in the **Settings** view, go to **Instant Recovery Service**. Here, you can start or stop the HPE VM Explorer NFS server.

If the **Enable HPE VM Explorer NFS server** dialog box is selected/cleared, HPE VM Explorer NFS Server will automatically start/stop when closing this dialog. Selecting the **Open Windows Firewall** checkbox will automatically open Windows Firewall for HPE VM Explorer NFS Server.

Configure the NFS server listening port and the **Mountd listening port** to be used to communicate with the NFS client on the host. Changes will apply after restarting the server.

Select the **Local temporary mount path** and **Local temporary cache path** to save temporary NFS mount files and temporary Instant VM cache files, respectively. The default value for both is your system's default Temp path. In

The VM NFS Server Status displays an overview of the server status.

Configuring the Active Directory

You can include Active Directory entries in your configuration and authenticate users through the Domain server using the Active Directory credentials.



Settings - Active Directory page

To add an Active Directory entry, click **Add** and fill in the **Domain Name** and the **Domain Controller** (IP or computer name).

Active Directory Details	×	
Domain Name	(e.g. domain.local)	
Domain Controller	(e.g. 192.168.1.1)	
Test Connection	Add Cancel	

Active Directory Details

Every time you test the connection or acquire existing users in the Active Directory, you need to type your administrative credentials, as HPE VM Explorer does not store the administrative credentials in its database.

Working with Users

In the **Users** settings you can add, modify and delete HPE VM Explorer users and their access permissions. You can see the current users included in HPE VM Explorer with their detailed information.

Settings	Add Lo	cal User	Add Active Directory Use	Edit Delete			
🔅 General	Active	Туре	Domain	Username	First Name	Last Name	E-Mail
Export / Import config file	1	A	HPE User	admin			
🏌 License Manager							
🚠 Network Drives							
🔀 E-Mail Default Settings							
🔗 Instant Recovery Service							
Active Directory							
🚨 Users							
🚰 Groups							
🕙 Language							
🚍 Event Logs							
* Support							
? Manuals							
📢 Suggest new feature (ext. link)							

Settings - Users

To add a new local user, click **Add Local User** and then configure the requested information in the **User Details** dialog box.

User Details		×
Active		
Username		
E-Mail		
First Name		
Last Name		
Password		
Confirm password		
Group	Administrator	
	Scheduled Task Operator	
	Restore Task Operator	
	Task Viewer	
	Guest	
	Add Car	ncel

Settings - User Details

Only local users are available in HPE VM Explorer, and the password is encrypted.

Add Activ	e Directory Users								×
Domain N	lame ex2k10.srv2k	10.com V Filter by	Username 🔻	Salasta	Retriev	e Users		Add calculated Hanna in Course	
	Username	First Name	Last Name		Username	First Name	Last Name	Add selected Users to Group: Administrator Scheduled Task Operator Restore Task Operator Task Viewer Guest	
L			Add > Add All >>	< Rem	ove << Remove A	II		Add Canc	el

Settings - Add Active Directory Users

You can also add existing users from the Active Directories added to HPE VM Explorer (for more information, see Configuring the Active Directory, on page 122) by selecting Add Active Directory Users and then adding them. Also, select the desired domain name from the list and click Retrieve Users. Make sure you know your administrative credentials (HPE VM Explorer does not store them).

The list you retrieve is limited to 2000 entries, but you can use the **Filter** option if the user you are looking for is not present. Then, select to which group to add your users by clicking **Add selected Users to group**. Users can be members of multiple groups.

Only Administrators can modify the first name, last name, e-mail and user groups in which the user has privileges. All other fields are disabled to editing in order to keep consistency with Active Directory.

Working with Groups

You can add or exclude users in every group using the Groups Settings. The available groups are:

- Administrator—Can perform all administrative activities in HPE VM Explorer.
- Scheduled Task Operator—Can manually execute Scheduled Tasks and view the Task History.
- Restore Task Operator—Can perform restore operations using existing backups/replications and restore single files from any backup.
- Task Viewer—Can view all the existing backups/replications and view the Task History.
- Guest—Can view the Datacenter, the Scheduled Tasks, the existing backups/replications and the Task History in "read-only" mode.

You can modify a group and you can add and delete a user.

Group Details		
Name	Administrator	
Description	Can perform all administrative activities in VM Explorer.	
Admin Rights		
Users		•
	• admin	
	Save Ca	ancel

Settings - Group Details

Recovering your password

You can recover a lost password via e-mail after configuring the sender and Outgoing SMTP Server settings in the **Password Recovery Settings** screen. If you have already configured e-mail settings in the **E-Mail Default Settings** page, you can load them by clicking **Load default settings**. You can also test your e-mail settings.

Changing your display language

Settings		
🔅 General	Language Choice	_
Export / Import config file	Select the language you want to use. This operation will cause the logout.	
🕅 License Manager	English	•
🚠 Network Drives		
⊠E-Mail Default Settings		
𝔗 Instant Recovery Service		
Active Directory		
🚨 Users		
😤 Groups		
🕑 Language		
🖹 Event Logs		
★ Support		
? Manuals		
Suggest new feature (ext. link)		

In the Language screen, you can change the language.

Settings - Language

NOTE: Some interface elements have not been translated on purpose: dates and times, tasks details, HTML Reports, Events logs, some Service errors. Also, when selecting a different language, after applying the changes, the web application will automatically restart and you will return to the **Login** page.

You can choose from any of the following languages:

- English
- French
- German
- Italian
- Spanish
- Japanese
- Russian
- Chinese-simplified
- Portuguese-Brazilian

Troubleshooting HPE VM Explorer

This section contains information on how to troubleshoot HPE VM Explorer. We recommend that you become familiar with the procedures herein before escalating any issue you might have to HPE VM Explorer Support. For more information, see Getting Support for HPE VM Explorer, on page 140.

HPE VM Explorer best practices

We recommend that you make yourself familiar with the general troubleshooting information available herein and that you observe the following guidelines when using HPE VM Explorer. Also, given the large variety of environments into which you can run HPE VM Explorer, we recommend that you monitor yours to establish the optimal performance level.

- Enable the HPE VM Explorer Agent when adding an ESX/ESXi server to HPE VM Explorer, for faster backups/restores and more secure connections. The HPE VM Explorer Agent is a small executable responsible for transferring the files. It is deployed at the beginning of the file transfer. You can add the HPE VM Explorer Agent during the process of adding an ESXi server. For more information, see Adding an ESXi server, on page 26.
- To maximize speed, we recommend that you perform incremental rather than standard backups/replications. Prefer the "standard" alternative every time you need to save your data altogether before performing significant changes to your VM. Note that, depending on your schedule, HPE VM Explorer will perform a standard backup/replication after a certain number of incremental backups/replications (default number is 20). Depending on your needs, you can modify this default standard interval. For more information, see Backing Up One or Multiple Virtual Machines, on page 77 or Replicating One or More Virtual Machines, on page 93.

• For better performance, when adding a VM with HPE VM Explorer installed to a VMware vSphere, we recommend that you use VMXNET3 as the para-virtualized network adapter. If you use other network adapters (such as E1000 and E1000E), you get a warning message and you are advised to turn to the VMXNET3 network adapter. Also, you need to have VMware Tools installed on the VM to provide Windows with the appropriate VMXNET 3 drivers.

SCSI Controller 0	VMware Paravirtual	•	\otimes
SATA Controller 0			\otimes
Here USB controller 1	USB 2.0	•	
 Metwork Adapter 1 	VM Network	•	\otimes
Status	Connect at power on		
Adapter Type	VMXNET 3	•	
MAC Address	Automatic ▼ 00:00:00:00:00:00		
O) CD/DVD Drive 1	Host device	▼ ✓ Connect	\otimes
▶ 🛄 Video Card	Specify custom settings	¥	

- When performing full incremental backups using Hyper-V on Windows Server 2008 R2, 2012 & 2012 R2, the first incremental backup will last longer than the subsequent ones. This is due to the fact that, even though an incremental backup will only transfer the incremental data, HPE VM Explorer needs to read the entire disk again to perform some calculations for optimal performance.
- HPE VM Explorer performs tasks sequentially and supports multiple tasks running at the same time, which can help to reduce backup windows. For simultaneous backups, HPE VM Explorer provides best performance when running a reasonable number of backups from a single ESXi/VMware vCenter at the same time. Any additional number of simultaneous backups may overload the network or the disk input/output performance.
- When performing a backup to a USB drive, make sure the disk is formatted with NTFS, not with the FAT file system.

Troubleshooting network transfers

In case your backup/restore transfer speed is low or there are bottlenecks, you can determine the cause by checking several parameters. First of all, it is important that you understand how HPE VM Explorer transfers data.

How HPE VM Explorer transfers data

This section describes how HPE VM Explorer transfers data during backup/replication.

- When performing a full/incremental backup on the local computer where HPE VM Explorer is installed, the data runs from the ESX/ESXi server to the local computer.
- When performing a full/incremental backup from the local computer to a mapped network drive, the data runs from the ESX/ESXi server to the computer where HPE VM Explorer is installed and then to the mapped network.

- When performing a backup on the same host as the VM, the data runs from/to the same server because the source server and the target server are the same. For best performance, we recommend that you enable VD Service for more information, see Initializing Virtual Disk Service (VD Service), on page 25 in which case the backup will be automatically executed using the host, so that you can copy the disks of the VM directly without the need of any outside communication. This process is also valid for replication, except for incremental replication, where data runs from the source server to the local machine where HPE VM Explorer is installed and then from the local machine to the target server.
- When performing a backup between ESX/ESXi with the HPE VM Explorer Agent enabled, the data runs from host to host using the HPE VM Explorer Agent connection between servers. This process is also valid for replication, except for incremental replication, where data runs from the source server to the local machine where HPE VM Explorer is installed and then from the local machine to the target server. For more information, see Determine the transfer speed of direct copy (ESX/ESXi), on page 131.

IMPORTANT: The SSH (Secure Shell) File Transfer Protocol provides file access, file transfer and file management functionalities over any reliable data stream. HPE VM Explorer supports backup without SSH but **we strongly recommend** to use the HPE VM Explorer Agent which uses the SSH protocol in order to transfer the files. This provides better performance and a more stable connection on your ESXi host(s). When the HPE VM Explorer Agent is enabled, file transfers are performed by the Agent, thus avoiding the use of the ESXi webservice and increasing the overall performance and reliability of the backup.

Determine backup/restore performance of hypervisor servers

You can monitor the performance of ESX/ESXi servers and Windows Server 2008 R2 using a simple procedure.

• To monitor the performance of ESX/ESXi servers:

To determine the backup/restore performance of your ESX/ESXi servers, you can investigate the network speed or you can monitor the disk input/output performance on the source/target server.

To investigate the disk performance, you need to monitor the input/output performance of the host disk during each step of the backup/restore process. You can do so from the VMware vSphere Desktop Client or from the VMware vSphere Web Client.

To monitor the input/output performance of the host disk from the VMware vSphere Desktop Client:

- 1. Open VMware vSphere Client and go to the **Performance** tab.
- 2. On the **Performance** tab, select **Disk** from the **Switch to:** tab and see the current input/output speed of each disk attached to the host.

To monitor the input/output performance of the host disk from the VMware vSphere Web Client:

- 1. Open VMware vSphere Client and go to the Monitor tab.
- 2. On the **Monitor** tab, click *Performance* > *Advanced* and, from the View list, select **Disk** to see the current input/output speed of each disk attached to the host.

For more detailed information on monitoring, see the vSphere documentation.

To replicate the steps performed by HPE VM Explorer directly from the VMware vSphere Desktop Client:

- 1. Open VMware vSphere Desktop Client on the source host, right-click a test virtual machine and point to *Snapshot* > *Take Snapshot*.
- 2. In the **Take Virtual Machine Snapshot** dialog box, type a name and a meaningful description for your VM snapshot. Make sure the option **Snapshot the virtual machine's memory** is disabled and the option **Quiesce guest file system** is enabled. When finished, click **OK**.
- 3. Open the VMware vSphere Client Datastore Browser, click the **Summary** tab and right-click the datastore where the VM is stored. On the shortcut menu, point to **Browser Datastore...** Then, go to the folder where the test VM resides and download the disk descriptor file (*Datastore/Folder/* [vm-name].vmdk) and the disk data file (*Datastore/Folder/*[vm-name].flat.vmdk) to a local test folder on the local machine (NOT in a shared drive/folder).
- 4. While the file is being downloaded, monitor the disk performance, as explained earlier in this section, and count the time it takes for the download to complete. When complete, the download should include two files: the virtual disk configuration file ([vm-name].vmdk) and the actual disk file ([vm-name]-flat.vmdk) containing the data.
- 5. Copy or upload the data file to the backup target (ESX/ESXi host, NAS/SAN, NFS or other) and, while the upload is running, monitor the disk performance on the target.

IMPORTANT:

- Check that the whole disk is fully, not partially downloaded.
- Time the length of the download and upload processes.
- Monitor the disk input/output performance on both source and target.
- Monitor the performance on a Windows Server 2008 R2:

To monitor the performance on a Windows Server 2008 perfmon.cmdR2 (or later) machine, go to *Start > Run > cmd* and type *perfmon.msc* to open the **Performance Monitor** screen, where you can see information on the performance of your system. You can also add additional counters to monitor other factors, such as the writes/sec and so on. Also, verify the status while no backup is running, then start a backup and continue with multiple backups to discover the limit. For more information on performing a backup, see Backing Up One or Multiple Virtual Machines, on page 77.

Determine the transfer speed between two ESX/ESXi servers

Sometimes, a backup/restore between two ESX/ESXi servers may take longer because of connectivity issues, which you can discover by determining your network speed. You can do this by using the command *scp*.

NOTE: This process requires PuTTy as an SSH (Secure Shell) tool to be installed on your system.

To determine the transfer speed directly between two ESX/ESXi servers using the command scp:

- 1. In HPE VM Explorer, disable the **Task Scheduler** and check that no backup is running at the moment. For more information on the Task Scheduler, see Scheduling Tasks, on page 106.
- 2. Next, connect to the source server and create a snapshot of the VM in question. For more information, see Determine backup/restore performance of hypervisor servers, on the previous

page. Then, disable SSH:

- a. For the VMware vSphere Desktop Client, go to the Configuration tab, under Security Profile, and click the Properties... link to the right of Firewall. Next, disable the SSH Client (if the SSH server is already enabled) and click OK.
- b. For the VMware vSphere Web Client, in the Navigator tree, right-click Host and point to Services > Disable Secure Shell (SSH).
- 3. Use PuTTy to connect to the source server and execute the command: scp "/vmfs/volumes/sourceDatastore/sourceVMFolder/sourceDisk-flat.vmdk" targetAdminUsemame@targetIP:"/vmfs/volumes/datastoreName/tempFile.tmp'". Then, take a screenshot to get the confirmation of the speed between the two servers in the network where the IPs targetIP and sourceIP are located.

Determine the transfer speed of direct copy (ESX/ESXi)

Direct copy enables you to transfer files between different servers and is performed automatically during a standard backup/replication if the HPE VM Explorer Agent is enabled on both servers. However, if you selected the option **Same host as VM** as a target server, under the **Target** section of the **General** tab of the **Virtual Machine Backup** dialog box (for more information, see Backing Up One or Multiple Virtual Machines, on page 77), the following options are available:

- If the HPE VM Explorer Agent is enabled and the option Use vmkfstools to locally copy virtual disks is selected (for more information, see Modifying a server, on page 37, the Advanced Settings tab), then the HPE VM Explorer Agent will request a clone command from vmkfstools.
- If the HPE VM Explorer Agent is enabled and the option Use vmkfstools to locally copy virtual disks is not selected, then the HPE VM Explorer Agent will perform a local copy.
- If the HPE VM Explorer Agent is disabled and the option Use vmkfstools to locally copy virtual disks is not selected, then the server will perform an internal copy using the web services, a process which works slower than the clone command.

Note that, while configuring a backup (for more information, see Backing Up One or Multiple Virtual Machines, on page 77), in the **Connection** tab, you can enable other direct copy options, such as compression. You cannot however use direct copy and compression while, in the **General** tab, under **Target**, **Same host as VM** is selected from the **Host** list as a target server. This is due to their restricted interface and because the transfer of the files will be performed on the internal API instead of the HPE VM Explorer Agent.

As a workaround, if you want to save space by enabling the compression options using **Same host as VM** as a target server:

- Add the same server twice in HPE VM Explorer with different names (such as Server A and Server B) but with the same IP. For more information, see Working with Servers in HPE VM Explorer, on page 23.
- 2. When you schedule the task, select **Server A** as the source server and **Server B** as the target server. For more information, see Scheduling Tasks, on page 106.
- 3. While configuring a backup, go to the **Connection** tab and select these options:
 - a. Compress data during transfer
 - b. Keep data compressed at destination. File Level Restore will NOT be available.

NOTE: Enabling compression will decrease speed transfer.

Determine connection issues to VMware vSphere Web Client via browser test (ESX/ESXi)

To determine performance/connection issues and to avoid possible retries of the VMware vSphere Client, you can download a test file from your ESX/ESXi server via your Internet browser instead of retrying to retrieve one from the VMware vSphere Web Client. To do so:

- 1. Take a snapshot of the desired VM. For more information on taking a VM snapshot, see Viewing Virtual Machine information, on page 40.
- 2. Open an Internet browser and type the IP. Then, log on to VMware vSphere Web Client, click **Storage** and select the Datastore where the replicated VM is located.
- 3. In the <datastore name> screen, click Datastore browser.
- 4. In the Datastore browser screen, click your VM folder and locate the original file path/to/vmnameflat.vmdk. Then, right-click it and point to Download on the shortcut menu. You may need to enter your VMware vSphere Web Client credentials to confirm.
- 5. If the download completes successfully, move the file to a desired network drive and check that the size of the original file is equal to the size of the downloaded file. If the two downloaded files differ in size, then the issue is network-related.

Determine Hyper-V connection issues (Microsoft)

To determine whether your performance issue is related to HPE VM Explorer or to your Hyper-V environment, you can create a VSS Snapshot. To manually create VSS (Volume Shadow Copy Service), go to the Hyper-V host, open a Command Prompt window and execute the following commands:

- 1. Identify the root drive the drive where Windows is installed.
- 2. Open the Diskshadow prompt: > diskshadow
- Add the volume <root drive>: to the set of volumes that you want to shadow-copy: DISKSHADOW > add volume <root drive>:
- 4. Start the shadow copy creation process using the current context and option settings: *DISKSHADOW > create*

NOTE: This procedure could take some time if there are several VMs running at the same time.

The output should look like:

Alias VSS_SHADOW_1 for shadow ID {715f3408-00b1-46bb-bdc4-c9050fea57f8} set as environment variable.

Alias VSS_SHADOW_SET for shadow set ID {c65c0a6c-d91a-493b-b163-6121b00b276d} set as environment variable.

Querying all shadow copies with the shadow copy set ID {c65c0a6c-d91a-493b-b163-6121b00b276d}

* Shadow copy ID = {715f3408-00b1-46bb-bdc4-c9050fea57f8} %VSS_SHADOW_1%

IMPORTANT: Do NOT exit the diskshadow.

Once the VSS is created, execute the following command on a new terminal without closing the previous one. Then, create a link to VSS on our drives: *mklink /D <root drive>:\VSSLINK\ \\?\GLOBALROOT\Device\HaddiskVolumeShadowCopy2* where

\\?\GLOBALROOT\Device\HaddiskVolumeShadowCopy2\ is the path to the created VSS. This command will create a symbolic link to access the VSS. Locate the file <*root drive*>:\VSSLINK\hyper-v\virtual hard disks\.vhdx and try to copy it to a test folder.

When finished, save the Windows event System and Application of the machine. To do so:

- 1. Go to *Start > Run > eventvwr.exe* to open the Windows Event Viewer and then, in the **Event Viewer** tree, expand the **Windows Logs** knot.
- 2. Right-click Application and select Save All Events As...
- 3. Right-click System and select Save All Events As..

HPE VM Explorer troubleshooting table

This section contains some of the real-life issues you may encounter when using HPE VM Explorer and the resolutions you can apply.

N o.	Issue	Environme nt	Cause	Resolution
1.	USB drive returns "disk full" error during backup, even though there is plenty of space on the disk.	Any	The disk is formatted with the FAT file system, which has a 4 GB limitation for single files.	Format the disk with the NTFS format.
2.	HPE VM Explorer cannot read Tape Media without barcodes.	Backing to Tape Media.	HPE VM Explorer cannot read Tape Media without barcodes.	Use barcode labels.
3.	NTFS Related error in Windows System Event Log.	ESX/ESXi and Microsoft issue, HPE VM Explorer 6.x.	This is a known VMware issue under investigation by VMware and Microsoft.	Contact VMware for a solution. See the VMware knowledge base article.
4.	Media erase error.	HPE VM Explorer 6.x.	Defective media.	Replace the defective media and clean the drive using a cleaning tape.
5.	Jobs do not start.	Any	Antivirus software.	Check your antivirus settings and allow access to C:/ to run

N o.	Issue	Environme nt	Cause	Resolution
				the HPE VM Explorer installer.
6.	<i>QueryChangedDisk</i> <i>Are</i> errors during incremental backup/replication.	-	 This issue appears when Change Block Tracking (CBT) is corrupted for a specific VM on the ESXi Server. The reasons are documented by VMware: https://kb.vmware.com/kb/10 20128 https://kb.vmware.com/kb/20 90639 	See Appendix 1: QueryChangedDiskAr eas errors during incremental backup/replication, below.

Appendix 1: *QueryChangedDiskAreas* errors during incremental backup/replication

Issue: Incremental backups/replications fail. Example log entry:

[3595967] Requesting Changed Disk Areas (full) for disk file: "[Datastore_Name] VM-Name/VM-Name.vmdk" Device Key: "2000" Capacity: "20971520"

[3000] 20.03.2017 22:00:42 [ERROR] QueryChangedDiskAreas error: Error caused by file /vmfs/volumes/570636cd-399b66cb-a6fe-e41f13788ae4/VM-Name/VM-Name.vmdk

[3000] 20.03.2017 22:00:42 [ERROR] QueryChangedDiskAreas: QueryChangedDiskAreas error: Error caused by file /vmfs/volumes/570636cd-399b66cb-a6fe-e41f13788ae4/VM-Name/VM-Name.vmdk

[3000] 20.03.2017 22:00:42 [3595967] QueryChangedDiskAreas Error. Data file: "VM-Name.vmdk.delta" Change ID: "*"

Background: This issue appears when Change Block Tracking (CBT) is corrupted for a specific VM on the ESX/ESXi Server. There are several reasons for this behavior, as documented by VMware:

- https://kb.vmware.com/kb/1020128
- https://kb.vmware.com/kb/2090639

Solution:

- 1. If the issue is caused by an issue in VMware, make sure to update ESX/ESXi to a non-affected version to prevent this issue from reoccurring.
- 2. Reset the CBT to clean it up:
 - a. Connect to the server using VMware vSphere Client and ensure that there are no snapshots for the VM.
 - b. Power off the VM, then right-click the VM and point to Edit Settings.
 - c. Click the **Options** tab, then click **General** under the **Advanced** section and then click **Configuration Parameters**.

- d. In the **Configuration Parameters** dialog box, set the *ctkEnabled* parameter to **False** for all SCSI disks. When finished, power on the VM.
- 3. The next incremental backup you initiate via HPE VM Explorer will enable CBT and will create a full backup of the VM. Depending on the effect of the issue, you may need to start a new backup cycle in HPE VM Explorer. To make sure the old (corrupted) backups are not mixed with the new ones while keeping the old backups as a fallback, follow this procedure:
 - a. Create a copy of your backups storage folder to create a fallback.
 - b. In HPE VM Explorer, go to *Management > Backup Explorer* and delete all the backups for the affected VM:



- c. Make sure the backups storage folder is empty and create a backup. For more information, see Backing Up One or Multiple Virtual Machines, on page 77.
- 4. In case you need to make a restore, you can use the copy created during the step 3. a), as described earlier in this section. However, the operation depends on how corrupt the backup is. Go to *Management > File Explorer*, browse to the directory that contains the copy of the backup, then right-click the *vmxbackup.xml* file and point to **Restore Backup**.

File Explorer			
Server Local Computer Local Computer Local Computer DA DR-DOS-2 DSL-backup-ya DSL-Thin CO2013 2017-01-27-112431 Rex2013_1.vmdk	Home	 2017-01-27-112431 ex2013.nvram ex2013.vmsd ex2013.vmsf ex2013_i.vmdk ex2013_1-filat.vmdk vmxbackup.xml GZip View as Text Instant VM Recovery Restore Backup Delete Backup Download Refresh 	Name

Then, use the wizard to configure the restore parameters. For more information, see Restoring a VM Backup, on page 98.

Appendix 2: Linux browsing explained

This section explains how browsing Linux volumes works based on an example of an openSUSE system with the following file system layout:

cat /etc/fstab

/dev/sda1 swap swap defaults 0 0

/dev/sda2/ext3 acl,user_xattr 1 1

/dev/sdb1 /test ext3 defaults 1 2

proc /proc proc defaults 0 0

sysfs /sys sysfs noauto 0 0

debugfs /sys/kernel/debug debugfs noauto 0 0

devpts /dev/pts devpts mode=0620,gid=5 0 0

To browse Linux volumes:

1. Try to recover a single file from a virtual disk (for more information, see File level restore for single files, on page 102). Here, there are 2 VMDK files available:

	suse.dpad.deu.hp.com - 24.05.2016 24.05.2016 11:09:13 (To: Local Machine)		
• 🖵	Restore Register VM		
	Instant VM Recovery		
	Remove from Inventory Remove from Inventory And Delete from Disk		
	Locate Files Recover Single File from Virtual Disk	suse.dpad.deu.hp.com-000001.vmdk	
	Refresh and check again Details	suse.dpad.deu.hp.com_1-000001.vmdk	

The first one represents /dev/sda* and the second one represents /dev/sdb*.

2. When selecting, for example, the first one, a warning message is displayed:

Disk image warning				
⚠	An ext partition in the selected image disk is not 100% consistent and it may not be browsable. Please enable the quiesce option for the backup to generate consistent disk images.			

Explanation: When performing a backup of a running Linux VM, the guest OS still has a flag set on the disk, which identifies the disk as "dirty" as long as it is mounted. Since the disk is not unmounted during backup, the "dirty flag" is part of the backup. Because of this flag you get the warning, but the flag and the resulting message do not compromise the integrity of your backup and you can still recover the file without any issues.

OK

3. In step 1, the first VMDK file has been opened (as marked by /dev/sda*). You cannot browse the first disk (that represents /dev/sda1, highlighted in yellow below), therefore double-clicking it does not open it.



Explanation: In this case, it is a swap partition. Since it does not contain any data that you can restore, there is no need to browse it. The second disk represents */dev/sda2*, that is mounted to */*. Here you can see the directory structure of the system and also mount points for other volumes:

		Name
	lost+found	
	etc	
\Box	proc	
\square	sys	
Π	dev dev	
Π	🗖 var	
П	boot boot	
E.	usr	
H	ib	
H	💼 bin	
H	home	
H	ib64	
H	media	
H	mnt	
H		
H	= root	
H	shin	
H	solinuw	
H	seimux	
	SIV	
\square	tmp	
	log	
	bn_backup	
	test	

4. When opening mount points to other volumes, you will see that they do not contain any data. This is an expected behavior, because these mount points are just empty directories. To browse the data from a mount point, you need to browse the VMDK file that belongs to the mount point. In this example, the mount point is /test and its data resides on /dev/sdb1. Here it is the second VMDK:

-	suse.dpad.deu.hp.com - 24.05.2016 24.05.2016 11:09:13 (To: Local Machine)	
-	Restore Register VM	
	Instant VM Recovery	
	Remove from Inventory Remove from Inventory And Delete from Disk	
	Locate Files Recover Single File from Virtual Disk •	suse.dpad.deu.hp.com-000001.vmdk
	Refresh and check again Details	suse.dpad.deu.hp.com_1-000001.vmdk

	Name
ULP:VPD:DSBCF741F6:P0100000	
	Name

Here you can find the files from /test.

From the original Linux System:

lost+found

testfile1.txt

II /test

 \square

 \square

total 20

drwx------ 2 root root 16384 May 24 10:45 lost+found

-rw-r--r-- 1 root root 4 May 24 10:53 testfile1.txt

5. File attributes are not shown (for Linux and Windows systems), but this is normal behavior.

HPE VM Explorer datacenter tasks - management - storage systems -						
File Explorer						
			Name	Date Modified	Attr	Size
Server Local Computer		ib lib				<dir></dir>
		iog log				<dir></dir>
Centos7-Thin.vmdk		adm 🗌				<dir></dir>
VLP:VPD:DS00046735:P0100000		Cache				<dir></dir>
grub		💼 db				<dir></dir>
grub2		empty				<dir></dir>
VLU:KcTXZv-anCa-q5WS-xCUm-xNN		games				<dir></dir>
VLU:Oan4fe-H0Lc-zi5c-syjf-SCHM-I8		gopher gopher				<dir></dir>
boot		iocal				<dir></dir>
dev		nis 📄				<dir></dir>
proc		i opt				<dir></dir>
run		preserve				<dir></dir>
sys		spool				<dir></dir>
etc		💼 tmp				<dir></dir>
root		💼 ур				<dir></dir>
in tmp		kerberos				<dir></dir>
▼ 🔽 var		Crash Crash				<dir></dir>
lib		updated				
log		_				

6. Files that start with a dot are renamed after you download them to a Windows system:





The reason is that a file without an extension, which starts with a dot, is not a valid file in Windows.

Workaround: Add an extension to the file, then add the dot and afterwards remove the extension.

Getting Support for HPE VM Explorer

To access the features that you can use in HPE VM Explorer for support purposes, click **Support** in the *<user account> -> Settings* screen. In the **Support** view, you can:

- Find the information to contact HPE Support directly
- Generate a debug report and download it
- See the path where the logs are stored. You can also open the logs in File Explorer (for more information, see Working with File Explorer, on page 115)
- Select whether you desire to log additional debug information for troubleshooting (it is recommended to use this feature only at the request of HPE VM Explorer Support team; also, this feature is disabled automatically once you log out)
- Set the log level for HPE StoreOnce Catalyst

When finished, click **Save** to preserve your settings.

NOTE: The default size of the log file for HPE StoreOnce Catalyst is 10 MB and you can increase it to a maximum of 99 MB. The type of event you want to log can impact the performance of your system. For example, selecting **Error** on the **Log level** list provides the fastest logging performance, as the system will only log errors. Performance is then gradually degraded as you select additional logging levels (**Quiet**, **Info**, **Trace**, **Debug** or **Extended Debug**).

Send documentation feedback

If you have comments about this document, you can contact the documentation team by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on HPE VM Explorer User Guide (HPE VM Explorer 6.7)

Add your feedback to the email and click **Send**.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to clouddocs@hpe.com.

We appreciate your feedback!