Hewlett Packard Enterprise

HPE SMB Business Continuity Solutions deployment guide

HPE SMB Business Continuity Solutions with Veeam Backup and Replication software

Contents

Overview

Purpose

HPE Small Business Solutions are part of the HPE SMB Offers portfolio. They are based on HPE server, storage, and networking products that are equipped to meet the needs of small businesses for a variety of company sizes and use cases. They are also the foundational on-premises component of HPE Small Business Solutions used in hybrid cloud deployments.

This deployment guide is intended to provide SMBs with general, high-level instructions for deploying HPE Business Continuity Solutions with Veeam Backup to enable enterprise-class hybrid cloud business continuity and disaster recovery for small businesses. It is ideal for use with HPE SMB Solutions for Virtualization but is equally suitable for several of the other configurations in the HPE SMB Solutions portfolio.

Disclaimer

This guide provides basic setup instructions for deploying HPE Small Business Solutions. There are many additional business considerations that are outside of the scope of this document, such as security policies, organizational user and group structure, regulatory compliance, and more.

HPE claims no liability because of implementing procedures in this guide.

Audience

Important: The intended audience is IT professionals who are familiar with deploying SMB technology solutions on variety of operating systems on-premises, cloud, and hybrid environments.

Organization

The guide will be periodically updated as new HPE Small Business Solutions are brought to market and new configurations and use cases are developed. It aims to help customers and partners quickly deploy HPE Small Business Solutions by providing high-level, step-by-step guidance that is grouped into several modules that follow the typical workflow stages of deploying a server in an SMB environment.

Deploying HPE SMB Business Continuity Solutions

Businesses that rely on electronic data and services must plan for continuing business operations if they are to survive an unexpected loss of those data and services. While there have been enhancements in hardware reliability, hardware failures do still occur. Of greater risk than hardware failure, however, is loss of data through inadvertent or maliciously intentional activity such as accidental deletion, cyberattacks, and malware or ransomware. HPE SMB Business Continuity Solutions help mitigate such damages while enabling recovery through a recent backup.

Technical overview

Implementation scenario

This deployment guide will cover the business continuity method used by HPE SMB Business Continuity Solutions that uses Veeam Backup and Replication to backup virtual machines (VMs) and data directly to the on-prem servers and storage, and archive that data to tape libraries.

Technical summary

Veeam's backup and recovery engine provides simple, reliable, and flexible protection of all your cloud, virtual, and physical workloads. This guide describes the process of deploying a typical implementation of Veeam's Backup and Replication common for SMBs.

Veeam software, installed on a VM or bare-metal machine, is the management console for configuring backup and recovery jobs. The backup administrator can configure backup jobs to protect VMs and data from any compatible sources. Veeam Backup and Replication software is compatible with a variety of backup solutions and can be used to protect VMs running on VMware vSphere® and Microsoft Hyper-V operating systems. It can also protect individual file systems and applications, as well as provide transaction-level restores of databases.

Veeam stores backup data on one or more Veeam repositories, which can be local storage or external storage that is direct attached, or attached via SAN/iSCSI network. Veeam can also manage archiving the stored backups to removable media or to cloud storage for off-site storage of backup data, providing an extra level of air-gapped security to backup data.

Architecture overview

In general, the Veeam solution for SMB has the following components:

- An internet connection with sufficient bandwidth and performance to meet backup and recovery time objectives
- Servers to be protected that are hosting VMs or file systems
- A Veeam component server (running on a VM or bare-metal host) to manage backup/recovery jobs
- A Veeam storage repository for storing backup jobs locally to enable shorter backup windows and quick recovery
- Optional removable media or cloud-based archival storage, such as LTO Tape Library or public cloud

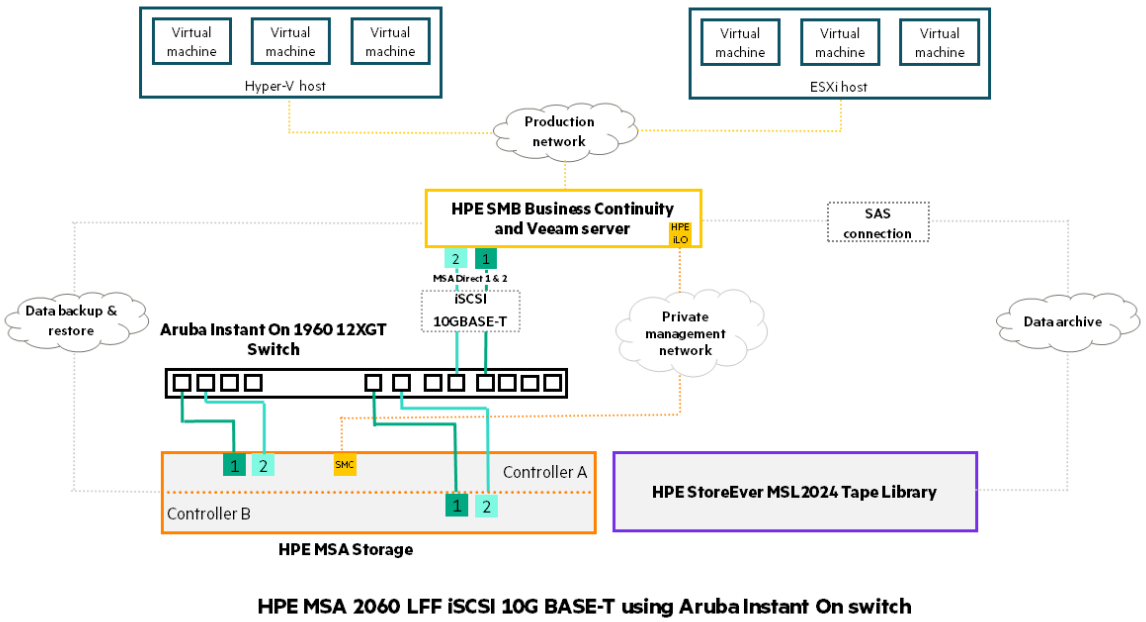


Figure 1. HPE SMB Business Continuity Solutions block diagram

Pre-deployment planning

This section of the guide assumes the following:

- A suitable internet connection is available
- Access credentials with sufficient privileges to perform installation and backup and recovery tasks on the protected servers
- Full understanding of the network environment requiring protection, with recommended VLANs to segregate production, management, and storage data traffic
- Ensure the servers to be protected are reachable on the local network, functional, and running a compatible version of VMware ESXi™ or Microsoft Windows
- An HPE SMB Business Continuity Solution ready for installing and configuring Veeam with either local or external storage for the Veeam repository
- Installation files for Veeam Backup and Recovery, and any supported guest operating systems to be installed if Veeam is to be installed on VM
- Optional external removable media system is installed on the Veeam host
- Optional cloud storage account (Note: Cloud storage will be covered in a later edition of this guide)

Deployment phases

- Veeam component server preparation
  - Preparing the network environment
  - Preparing the storage environment
  - Preparing the removable media storage
- Optional external media system configuration
- Install Veeam Backup and Replication software
- Configure a Veeam Backup Repository
- Adding clients to the backup infrastructure server
- Deployment check
  - Create and run a Veeam backup job
  - Create and run a Veeam restore job
- Tape infrastructure check:
  - Adding tape server
  - Creating media pools
  - Creating tape backup job
  - Creating tape restore job

Deployment phases

Some of the deployment steps addressed here will be high-level steps that assume common configurations specific to the deployment environment have already been made (such as network IP ranges). These steps will be bulleted rather than numbered to distinguish them from solution-specific configurations.

Step-by-step configurations specific to the HPE SMB Solution are numbered to distinguish them from bulleted common configurations.

Veeam component server preparation

This guide assumes that the HPE SMB Business Continuity Solutions server running Windows Server (VM or bare-metal) is prepared up to the point which the operating system has been installed and ready for further configuration. It does not cover initial hardware configuration or system installation. Refer to the HPE Small Business Solutions deployment guide—Microsoft Windows-based solutions for initial setup guidance.

- Configuring production, management, and storage NICs/HBAs (10GBASE-T, SAS, and others)—Prerequisite (after the OS installation)

1. The 10GBASE-T CAT 6E cables are used to connect HPE MSA 2060 and the Veeam component server through the Aruba 1960 switch.
2. For archiving the stored backup in HPE MSA, the HPE StoreEver MSL2024 tape library is directly connected from the Veeam component server to the tape library through the direct SAS cable.

- Installing any external media hardware/drivers

1. Open the device manager in Veeam component server (Settings > Control Panel > System > Hardware > Device Manager > Tape Drive)
2. Check the connectivity status of the tape library in the Veeam component server
3. Investigate any warning information related to the tape library, if a warning is displayed, download the compatible driver for the tape library
4. Install the driver in the Veeam component server

- Prerequisite software

Make sure the following software components are installed before installing Veeam.

1. Microsoft System CLR Types for SQL Server 2014
2. Microsoft SQL Server 2014 Management Objects
3. Microsoft Report Viewer Redistributable 2015
4. Windows PowerShell v5.1
5. Microsoft Universal C Runtime
6. .NET Core 3.1.10
7. ASP.NET Core Shared Framework 3.1.10

Note: The software components can be installed automatically or manually.

Preparing the network environment for the Veeam component server

It is a best practice to segregate production network data from management network data, and where applicable storage network data.

- Establish or review the network environment IP address scheme, VLANs, and network switch configurations to accommodate segregated production, management, and storage network traffic.
- Configure at least one NIC port on the Veeam component server per local network policies to enable it to communicate with any client hosts on the production network that will be backed.
- (Optional for HPE iLO remote administration) Configure the HPE iLO port on the Veeam component server per local network policies to enable remote administration through the HPE iLO remote administration tool from a common management workstation.
- (Optional for iSCSI HBA) When the HPE SMB Business Continuity Solutions include the HPE MSA 2060 iSCSI storage component, you will need to configure the Veeam component server's iSCSI NIC to communicate with the HPE MSA 2060 storage. See the section External storage: HPE MSA 2060 storage configuration for step-by-step guidance.

Preparing the storage environment for the Veeam component server storage repository

This section discusses preparing the Veeam component server storage repository prior to installing Veeam, which can be hosted on internal local storage or externally connected storage.

Internal storage: Local disk

Most HPE SMB Business Continuity Solutions rely on internal local disk storage for the Veeam Storage Repository. The following are general steps for preparing local storage as the Veeam Storage Repository:

1. Open the Disk Management console in Windows Admin Center or Press Win+R and type diskmgmt.msc
2. In Disk Management, right-click the disk you want to initialize, and then click **Initialize Disk**. If the disk is listed as Offline, first right-click it and select **Online**
3. In the **Initialize Disk** dialog box, check to make sure that the correct disk is selected and then click **OK** to accept the default partition style (GPT/MBR); Veeam suggests the disk layout could be GPT/MBR. The validation was performed using GPT as the disk layout; the disk status briefly changes to **Initializing** and then to the **Online** status
4. Right-click the unallocated space on the drive and then select New Simple volume
5. Select Next, specify the size of the volume or use the whole disk and then select Next
6. Specify the drive letter to the volume and then select Next
7. Specify the file system as NTFS, select Next and then Finish

External storage: HPE MSA 2060 storage configuration

The largest HPE SMB Business Continuity Solutions are configured to use external storage featuring the HPE MSA 2060 iSCSI storage as the Veeam repository. This section describes connecting the Veeam component server to the HPE MSA 2060 iSCSI storage using the HPE MSA Storage Management Utility (SMU), which will guide you through the initial setup of your storage for the first time and initial hardware setup for HPE MSA 2060 controller and disk enclosure configurations.

Configuring and provisioning a new HPE MSA storage system

The base URL for accessing the SMU is "https ://< controller-module-IP address>" (placing the IP address of the controller module in the <bracketed> variable).

When you connect to the system for the first time, a wizard in the SMU guides you through the first-time setup of your system. You can create a user name, password, and select a language.

Network settings

The network panel (Settings > Network) in the SMU provides options for you to configure IPv4 and IPv6 network port settings, configure a DNS server, enable or disable system management services, and view certificates.

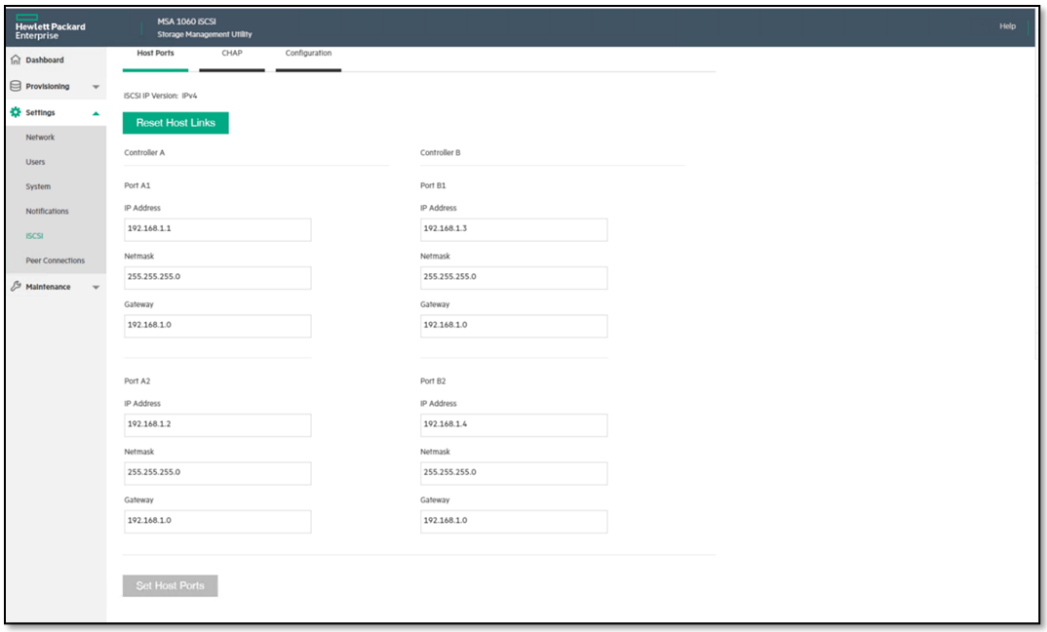
The factory-default IP address source is set to DHCP. When DHCP is enabled in the storage system, the following initial default values are set and remain set until the system can contact a DHCP server for new addresses or a static address is configured.

While IP addresses can be configured using DHCP, it is a best practice to manually configure static IP addresses for the controllers and host HBAs. Additionally, it is recommended to segregate the storage network traffic from production and management network traffic either using VLANs or separate physical switches. The tested implementation makes use of a separate 10GBASE-T switch for the storage network.

Refer to the HPE MSA Storage Management guide that covers concepts used to administer an HPE MSA Storage system and provides information about managing the system by using its web interface—SMU.

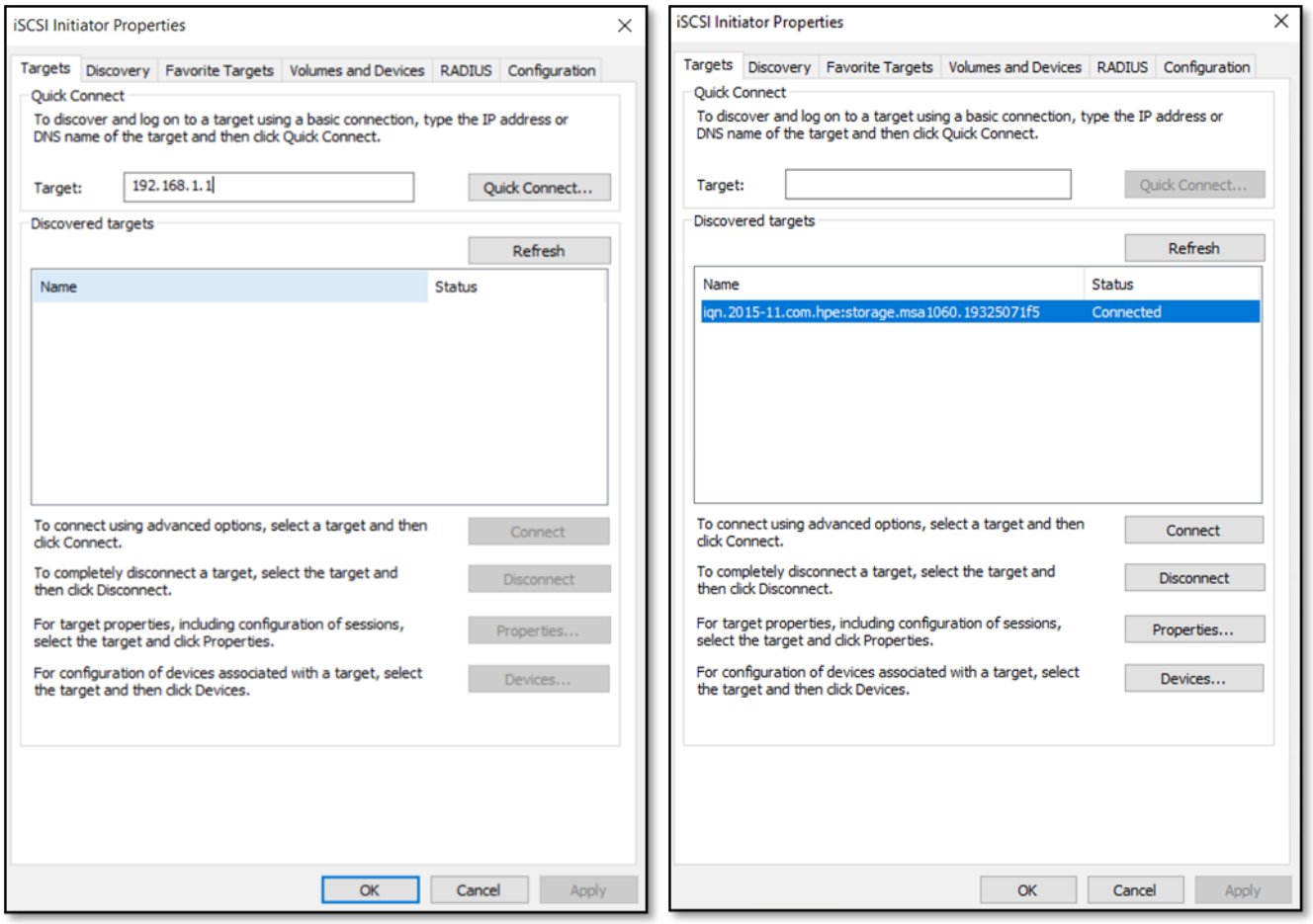
The following steps assume the default configuration is used (if your network environment is different be sure to substitute network information to that of your deployment environment):

1. Login to HPE MSA SMU with the user name and password.
2. Go to Settings > iSCSI > Host Ports; configure the Controller A and B hosts private IP addresses with Netmask and Gateway (the following screenshot).

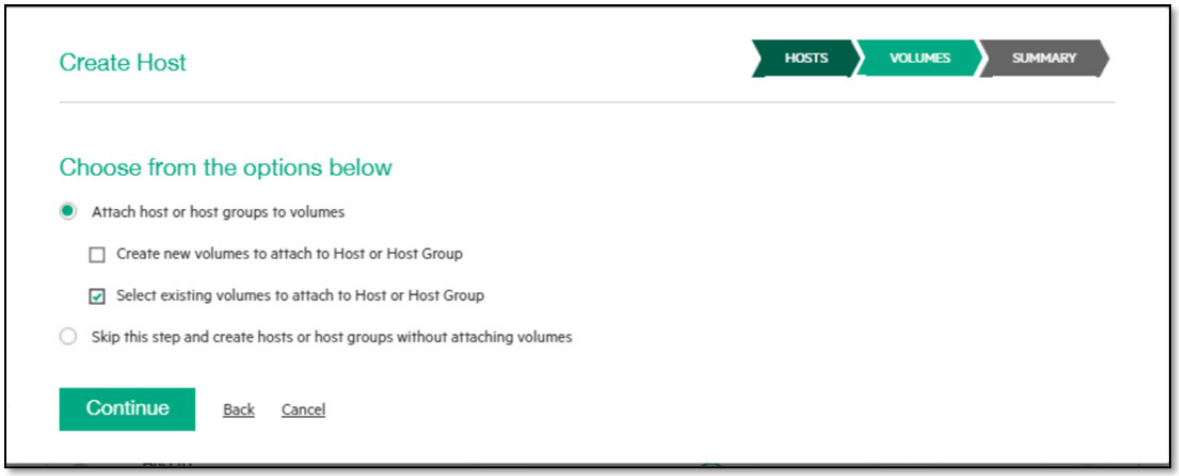


3. Click **Set Host Ports** then click OK on the pop-up notification.

4. Navigate to the Windows Server designated as the Veeam component server, Click Server Manager > Tools > iSCSI Initiator. Specify IP address of Controller A and select Quick Connect. The Quick Connect will open, click **Done**.



5. Navigate to HPE MSA 2060 Maintenance tab, click Storage, then select the available disks, and click Add Disk Group. The disk group will be created successfully and click OK. Storage Pool dgA01 is created for assigning the pool to volumes.
6. Navigate to Provisioning tab, click **Volumes**. Create Volumes and specify the following:
   a. Pool: dgA01
   b. Volume name: MSA Storage
   c. Volume size: Select all Volume (MSA-DP+ RAID) and Click Add Volume
7. Click **Continue** to create volumes to attach to host or host group.
8. In Create Volumes Host window, select skip this step and create Volumes without attaching hosts or host groups. Click **Continue** and then Volumes.
9. Click **Volumes** and click **OK** on the successfully created volumes storage popup window.
10. Navigate to Provisioning tab, click on **Hosts** and **Create Host**.
11. In Create Host window, provide the hostname, for example, Veeam component server, select the check box of node's initiator ID, and click **Add Initiator to Host**.
12. In Create Host window, select attach host-to-host groups to volumes and then Select existing volumes to attach to Host or Host group. Click **Continue**.



13. In Create Host window, select the storage volume and click **Continue**.
14. Click **Continue** on the Summary window and then **OK** on the following pop-up window "Successfully configured the hosts to the volumes".

(Optional) Preparing the removable media environment

Veeam Backup and Recovery software can fully manage removable media as part of its storage repository. To prepare the HPE SMB Business Continuity Solutions for removable media perform the following steps:

- Add the HPE Smart Array E208e-p SR Gen10 to the Veeam component server and connect the available SAS port in the controller with a SAS direct connectivity cable
- The SAS direct connectivity cable should be connected between the HPE MSL Tape library and the Veeam component server
- Install the HBA for the removable media
- Open the device manager in Veeam component server
- Check the connectivity status of the tape library in the Veeam component server's device manager
- If any warning information related to the tape library is displayed, download the compatible driver for the tape library
- Install the driver in the Veeam component server
- Connect the HBA to the removable media system and configure settings required to make the removable media system visible to the operating system (and thus to the Veeam component server console); refer to the Tape infrastructure overview

Install Veeam Backup and Replication software

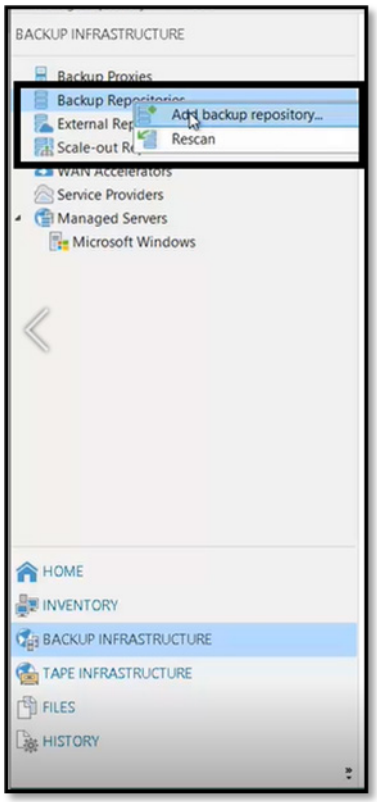
Veeam Backup and Replication is a powerful backup and recovery engine that provides simple, reliable, and flexible protection of all your cloud, virtual and physical workloads. The Veeam component server can run on either a Windows Server bare-metal environment, or on a Windows Server virtual machine. The following steps discusses installing on a Microsoft Windows Server bare-metal environment.

1. Login to the Windows Server designated as the Veeam component server
2. Download the Veeam image from veeam.com/downloads.html
3. Mount the .iso image to the Veeam component server
4. Open the .iso mount folder and run Setup file using Run as Administrator
5. Click **Install** in the Veeam Backup and Replication section of the splash screen
6. Accept License Agreement, click **Next**
7. Browse the License file for Veeam Backup and Replication, click **Next**
8. Select **Next** in Program features
9. Click **Install** at the System Configuration Check step of the wizard to install missing components automatically
10. After all the System Configuration Check Status is Passed, click **Next**
11. Click **Install** in Default Configuration window

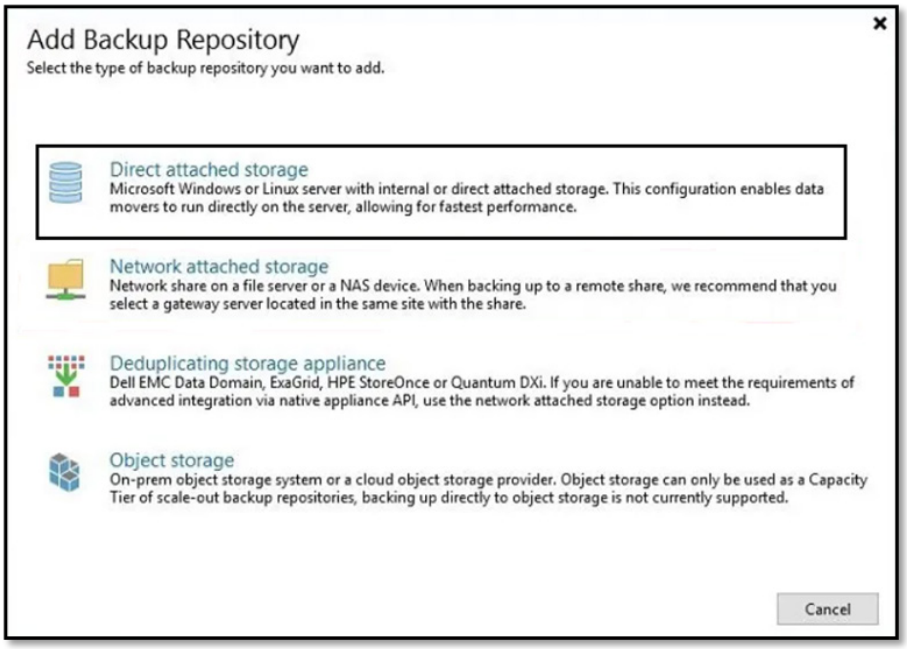
12. In Installation succeeded window, click **Finish**
13. Reboot the server after completing the installation

Configure a Veeam backup repository

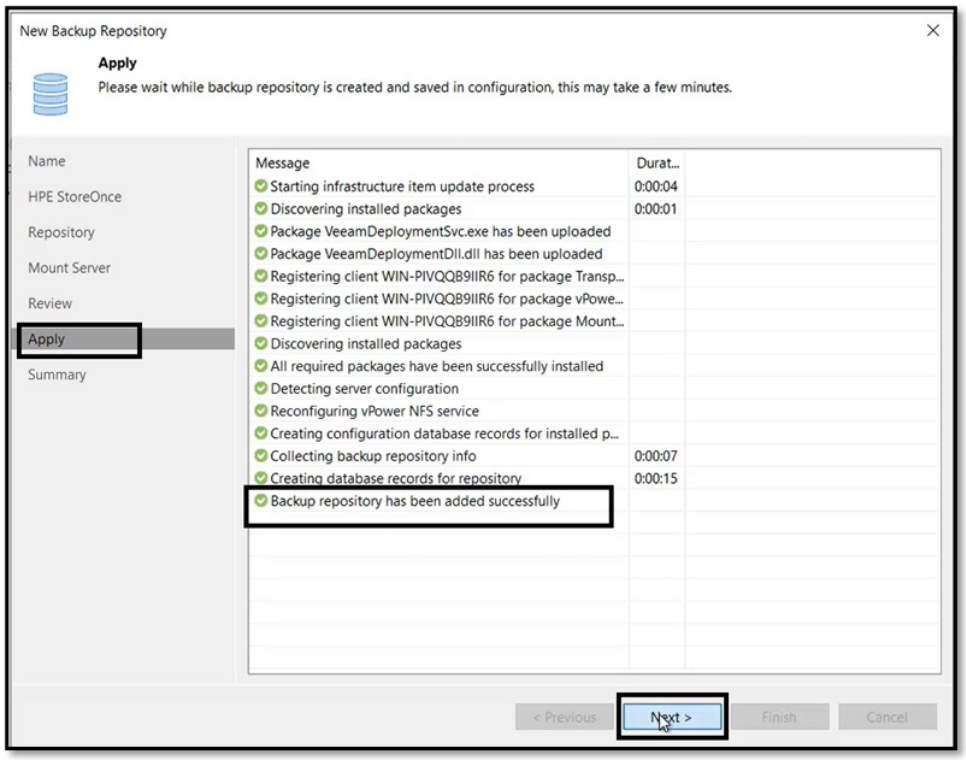
1. Login to the server configured as **Veeam component server**
2. Launch the Veeam Backup and Replication console. Click Backup Infrastructure and right-click on Backup Repositories and select Add backup repository



3. Click the option **Direct attached storage** for local VM backup and restore



4. Select the operating system type of a server you want to use as a backup repository; choose **Microsoft Windows**
5. Type in a name and description for the backup repository
6. Choose the HPE MSA backup repository server from the list that you previously added in External storage: HPE MSA 2060 storage configuration
7. Specify a path to the folder where backup files should be stored and set repository load control options capacity; click populate to load the Capacity and Free space of the direct attached storage
8. ON the Mount Server GUI, accept the default and click **Next**
9. On the Review GUI, select Apply to start the validation checks; Veeam will do multiple checks and when done, click **Next** and then **Finish**



10. Veeam will prompt if you want to use the new repository. Click **Yes**

Adding clients to the backup infrastructure server

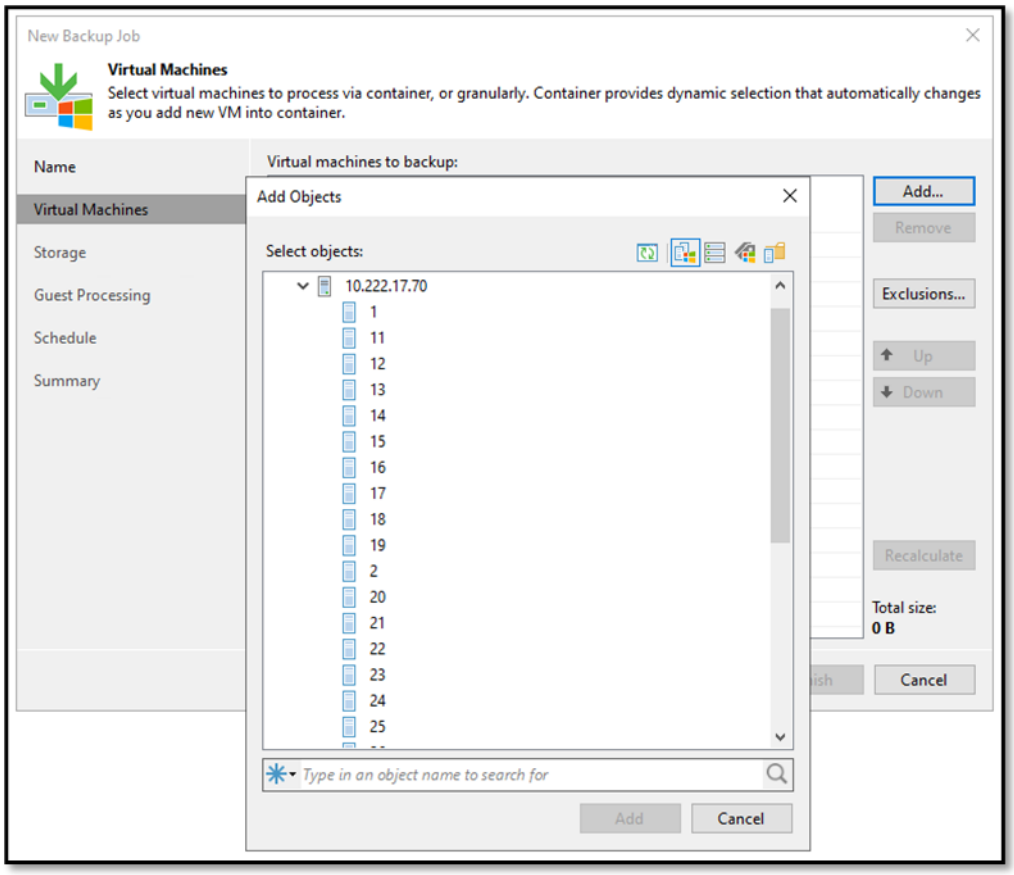
1. In the inventory pane of the backup infrastructure, right-click **Managed Servers** and select **Add server**
2. In the Add Server window, select VMware vSphere; select vSphere to launch the new VMware Server™ wizard or click Microsoft Windows to launch the new Windows Server wizard
3. Specify the DNS name or IP address of the server at the Name step of the wizard and click **Next**
4. Specify the credentials for the user account with administrative privileges and Click **OK**
5. Follow the steps of the wizard and click **Finish** at the Summary step
6. The added server will be available in the working area of Managed Servers node under the backup infrastructure view

Deployment check

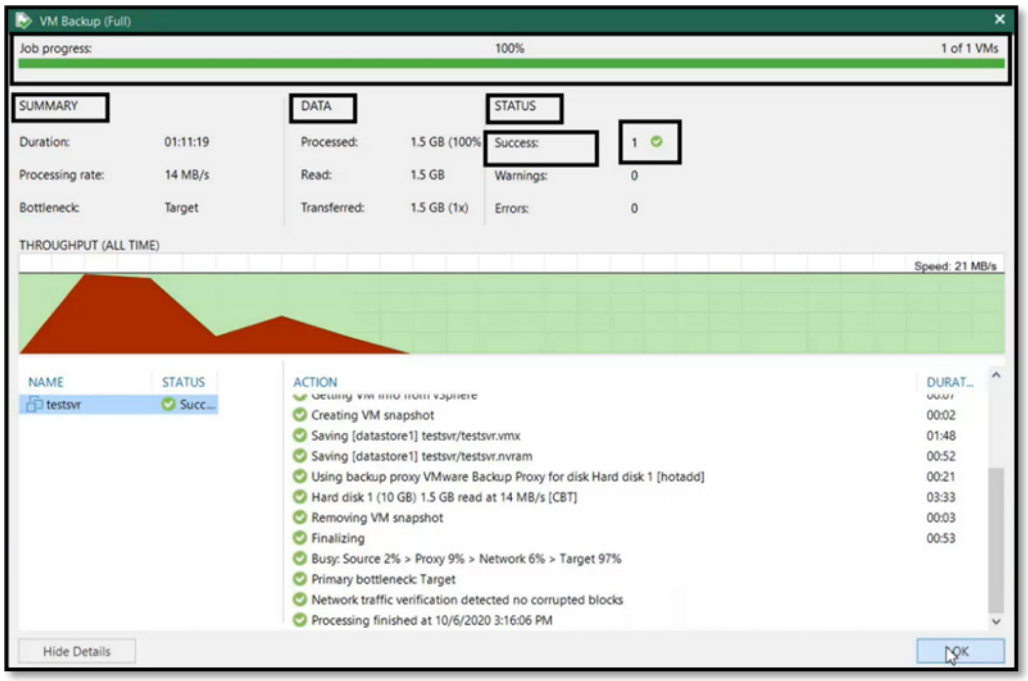
Create and run a Veeam backup job

When a backup is performed, Veeam Backup and Replication retrieves VM data from the source storage, compresses and deduplicates it. The data to the backup repository is written in Veeam proprietary format. The backup job defines how, where, and when to back up VM data. One job can be used to process one or more VMs. Jobs can be started manually or scheduled to run automatically at a specific time.

1. Login to the server configured as Veeam component server and launch Veeam
2. Click Home in Veeam component server console, right-click Jobs > Backup > Virtual machine (Select VMware vSphere or Microsoft Hyper-V)
3. Enter a Name and Description for the backup job at the Name step of the wizard; select **Next**
4. Click Add at the Virtual Machines step of the wizard; Select VMs from the drop-down list that you want to back up and click **Next**



5. At the Storage step of the wizard, select the HPE MSA backup repository by clicking the drop-down arrow; there may be many numbers of backup repositories, care should be taken while selecting backup repository; you may see a popup after clicking Next regarding deduplicating appliances; click **Next**
6. At the Guest Processing wizard, leave it as default, click **Next**
7. At the Schedule wizard, click the check box, Run the job automatically; by enabling this, the backup job will trigger automatically; click **Next**
8. At the Summary wizard, click the check box, Run the job, and select the **Finish button**
9. Select the Jobs node in the Inventory pane of the Home view
10. Right-click a running job in the working area and click **Statistics**
11. Get full statistics about the job by clicking Last 24 hours / Success and clicking the job from the list of completed jobs



12. You can see the details of the files included in a backup job; click Home > Backups > Disk and right-click on the Job Name and select Properties

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Note

The job must complete with the Success or Warning status. If the job completes with the Failed status, the Veeam Backup and Replication software does not create the backup file and will not be able to perform restore operations.

Create and run a Veeam restore job

Veeam Backup and Replication restores an entire VM from a backup file to the latest state or to a previous point in time if the original VM fails.

A VM can be restored to its original location or to a new location. When you restore a VM to its original location, the Veeam Backup and Replication software powers off the original VM and deletes it before the restore. This type of restore ensures the quickest recovery and minimizes the number of mistakes, which can be potentially caused by changes in VM settings.

1. Navigate to the server configured as Veeam component server; open the Home view.
2. Select Backups > Disk node in the Inventory pane; expand the backup job, right-click a VM in a backup job, and select Restore entire VM to launch the Full VM Restore wizard.
3. In the Virtual Machines step of the wizard, select VMs from the list, choose a restore point by clicking the point button.
4. Select the Backup Job created in VM Backup process for VM Restore. The VM restoration is done from the Backup job created in VM Backup process.

   Note: If you select an increment restore point, it automatically restores data blocks from the full backup file and chain of incremental backup files.
5. At the Restore Mode step, specify the desired restore mode. Select **Restore to the original location option and Quick rollback check box**. Click **Next**.

Precautions to be taken if restoring to the original location:

- Initiate the restore of selected VM to its original location, with the original name and settings. This option minimizes the chance of user input error.
- Scan the restored machine for malware prior to performing the restore.
- The objects will be deleted from the infrastructure so ensure that the virtual disk files are not in use by another VM.
- From the Summary window you can copy the configuration information (original machine name, new machine name, restore point, and target host) for future reference.

Note
The Veeam Backup and Replication software will get data blocks that are necessary to revert the VM to an earlier point in time and will restore only these data blocks from the backup. Quick rollback significantly reduces the restore time. Do not enable Quick rollback if the problem occurred at the VM hardware level, storage level, or due to a power loss.

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6. At the Secure Restore step enable scanning of the machine to scan the restored machine for malware prior to performing the recovery. Scan the selected backup for malware, such as computer viruses or ransomware, prior to performing the restore. This requires compatible antivirus installed on the mount server specified for the corresponding backup repository. Click **Next**.
7. At the Reason step, specify the reason for performing this restore operation. This information will be logged in the restore sessions history for reference. Click **Next**.
8. A popup will be displayed, one or more restored VMs are still powered on. During restore, these VMs will be powered off. Click **OK**.
9. One more popup will be displayed, the following existing VMs will be deleted from the infrastructure. Click **OK**.
10. In the Summary window, review the restore settings before continuing. The restore process will begin after you click Finish. Navigate to the corresponding restore session under History node to monitor the progress. Click the check box Power on VM after restoring. Click **Finish**.

Tape infrastructure overview: A scenario of archiving the data

The tape server is connected to the Veeam backup server and added to the console from the Veeam Backup and Replication GUI. To do so assign the role of the tape server to a Windows Server already added to the list of managed servers. All tapes managed by Veeam Backup and Replication belong to one of the media pools. Generally, the new tapes are in the free media pool. Tapes that were written by tape jobs stay in the media pools that are targets to the tape jobs.

Adding tape server to Veeam

1. Open the Tape Infrastructure Server view and right-click Tape Servers and Select Add tape server in the Inventory pane
2. At the Server step of the wizard, choose a physical server to which the tape devices are connected and that you want to add as the tape server
3. Provide a description in the Description field
4. Add Tape Server, review the network traffic rules and click **Next**
5. Review the Tape Server setting and click **Apply**
6. New Tape Server installs and configures the required components, once the task is completed click **Next**
7. At the Summary screen, select the Option "**Start tape library inventory when I click Finish**" and Click **Finish**
8. Click **Close** after the Tape library inventory is successful

Creating media pools

Media pools are logical containers created in the Veeam Backup and Replication software to organize and administer tapes. Media pools should be created after adding the tape library.

1. Open the Tape Infrastructure view, right-click the Media Pools node, and choose Add Media Pool and Select **Standard**
2. At the Name step of the wizard, define the Name and description for the media pool and click **Next**
3. From the list in the tape library field, select the tape device that you want to use in the media pool; click **Add**
4. Select the tapes and click **OK**
5. Verify the tapes and select **Add tapes** from free media pool automatically when more tapes are required
6. At the Media set step, specify the Media set name and in the Automatically create new media set section, select **Do not create, always continue using current media set**
7. At the Retention step of the setting, select **never overwrite the data** and click **Next**
8. At the Options step of the wizard, enable parallel processing for tape jobs and enable parallel processing of backup chains within a single tape job and click **Apply**
9. Review the media pool settings and click **Finish** to complete the wizard

Creating tape backup job

1. Navigate to Tape Infrastructure and click **Backup to Tape**
2. Type the name and description for the tape job
3. In the Backups window, click Add and select Backup jobs, select the VM or files to backup, and click **Next**
4. In the Media pool window, click Add new and follow the instructions in adding a new media pool, select the media pool, and click **Next**
5. In the Incremental Backup window, click **Next**
6. In Options window, click **Next**
7. In the Schedule window, specify the job scheduling options and click **Next**
8. In the Summary window, click the check box “Run the job when I click finish” and click **Finish**
9. In the Jobs window, monitor the tape backup job

Creating tape restore job

1. Navigate to Tape Infrastructure and click **Restore backup** from Tape to Repository wizard
2. In the Source window, click Add and select **from backups** (the backup stored in the HPE MSA)
3. Select the Backups from the Backup Browser window
4. Select the destination restore point as any other backup repository listed in the Backup Repository field
5. In the Summary window, review the settings and click **Finish** to exit the wizard and Start the Restore process

Conclusion

The Veeam Backup and Replication software is used for taking effective backup of important data while saving for reference is a tedious task as observed. The insights in this deployment guide provides a clear view of backup and restore of data or VM from remote server to locally attached storage. The remaining process will be the same. There is only a change in the selection of storage, while having a backup for local storage—the remote server or local backup, which is stored in the HPE MSA storage can be archived to HPE StoreEver MSL2024 Tape Libraries using direct SAS connectivity. The archived data can be restored whenever required from the Veeam console.

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Revision history

Publication date	Edition	Summary of changes
May 2022	1	Initial publication of the HPE Small Business Solutions Deployment Guide for Business Continuity Solutions with Veeam Backup

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