

veeam

Veeam Availability on Cisco UCS Deployment Guide

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The challenge

With data growing at astounding rates, IT managers are depending more and more on reliable backup and recoverability of their data. High-growth businesses require a complete data protection solution that is reliable, flexible and easy to use. Virtualizing an environment provides increased levels of data availability, but the need to meet aggressive RPOs and RTOs becomes increasingly difficult.

Traditional backup tools were not created for virtualized environments. That makes it hard for many organizations to take full advantage of their virtualized environment, and many IT managers struggle with:

- Unreliable backups
- Recovery that takes too long
- High costs associated with managing backup data and secondary storage
- Inability to provide reliable and true backups for compliance purposes
- Lost productivity due to management complexity
- The need to scale backup operations for growth

IT managers can meet the challenges of ever-shrinking RPOs and the aggressive RTOs associated with virtualized environments.

The solution

Veeam® is the leader in backup solutions that deliver Cloud Data Management™. Veeam provides a single platform for modernizing backup, accelerating hybrid cloud and securing your data. Our solutions are simple to install and run, flexible enough to fit into any environment and always reliable.

By combining Cisco UCS and Veeam® solutions, customers eliminate data loss and deliver fast data recovery, helping them minimize risk, decrease downtime and easily adapt to business changes to meet the most stringent SLA's.

Veeam® Backup & Replication™ is the one solution for simple, reliable and flexible protection of ALL of your cloud, virtual and physical workloads. Take the stress out of managing your data protection, ransomware prevention and compliance challenges. With key features that allow you to completely manage your entire backup data lifecycle, Veeam saves you time and money, simplifying administration and minimizing costly downtime. Now you can focus on driving your business objectives forward with confidence.



Figure 1

The Cisco UCS S3260 Rack Server (Figure 1) is a modular, high-density server ideal for modern data protection. The Cisco UCS S3260 addresses the need for highly scalable computing with high-capacity local storage. Designed for a new class of applications, it is simple to deploy and excellent for backup repositories. Together, Veeam and Cisco UCS S3260 create the perfect staging area for backups - reducing backup ingest bottlenecks and providing faster backups using parallel processing. In addition, Veeam Backup & Replication provides:

- Granular recovery of VMs and files, including Microsoft Exchange and SharePoint application items.
- The ability to automatically verify every backup, every VM and every replica - every time.
- Self-service recovery of VMs and guest files without direct network connection to the VM, user permissions or the need to deploy costly agents.
- Instant VM Recovery® to recover a failed VM in less than two minutes.
- A choice to back up and recover what you need, where you need it and when you need it - whether it's on site, on tape or in the cloud. Veeam and Cisco offer the right solution for performance, flexibility and reliability - providing an impressive, modern disaster recovery (DR) solution for your VMware vSphere or Hyper-V environment.

Deployment recommendations

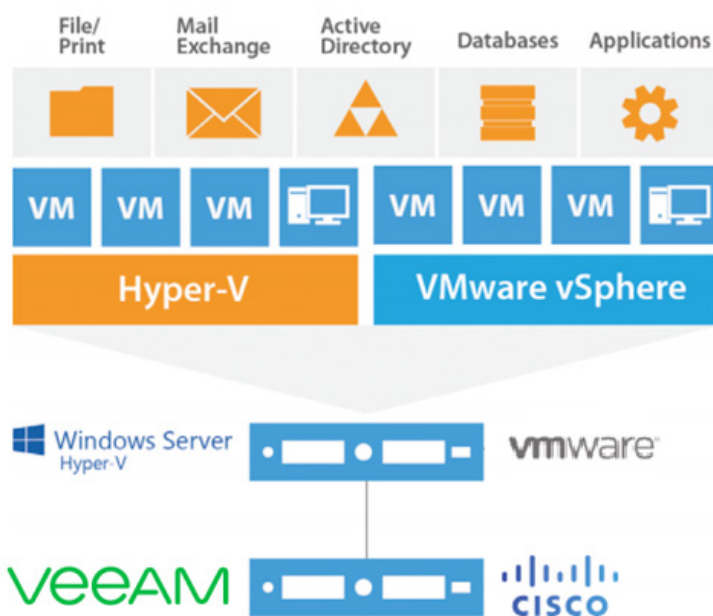


Figure 2

Simplified deployment helps streamline your data protection strategy. With the UCS S3260's combination of compute, memory and high-capacity storage, deployment of Veeam can be accomplished on a single UCS S3260 server, as show in Figure 2.

UCS S3260 recommended specifications:

- two times Intel Xeon processors
- 384GB RAM
- two times SSD's for OS (RAID 1)
- Dual RAID with 2 × 4GB cache
- 64-bit Windows OS (Server 2016 or later required for ReFS)

There are a number of different ways to install the Windows OS onto the S3260's SSD, please refer to the S3260 installation guide for details. We recommend you use two SSDs in a RAID1 configuration for the Windows OS. Once Windows is installed, several drivers will need to be installed as well. Drivers can be downloaded here: <https://software.cisco.com/download/navigator.html>

For environments with existing fabric interconnects, UCS Manager can be leveraged. For environments that already have UCS Manager in place, server configuration, network connectivity and storage can all be configured here. In this guide, we will cover CIMC (Cisco Integrated Management Controller). Create a UCS S3260 volume for a Veeam backup repository using CIMC. CIMC can be accessed via the web interface or via SSH. Before proceeding with volume creation, determine with recommended RAID selection works best for your environment. There are two recommended RAID options, RAID6 & RAID60 depending on number of drives. See the table (Figure 3) below for additional information on the recommended configurations.

| Disk count | RAID layout |
|------------|---|
| 14 | one times RAID6 (1x 11+2 Disks) 1 Global Hot Spare |
| 28 | one times RAID60 (2x 11+2 Disks) 2 Global Hot Spares |
| 56 | one times RAID60 (4x 11+2 Disks) 4 Global Hot Spares |

Figure 3

CIMC Virtual Drive configuration via web interface

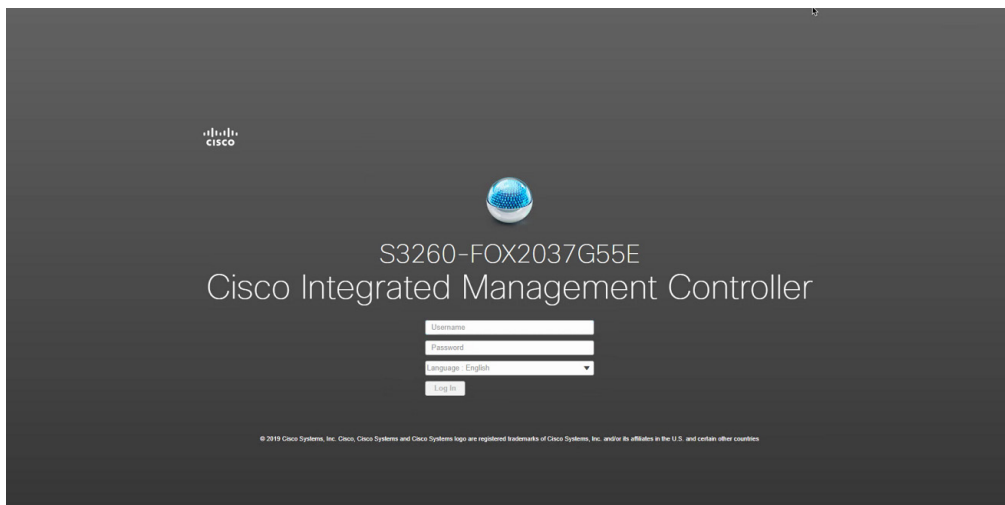


Figure 4

Open a web browser and enter the IP for the CIMC. You will be directed to the login screen where you can enter your credentials for access, see Figure 4.

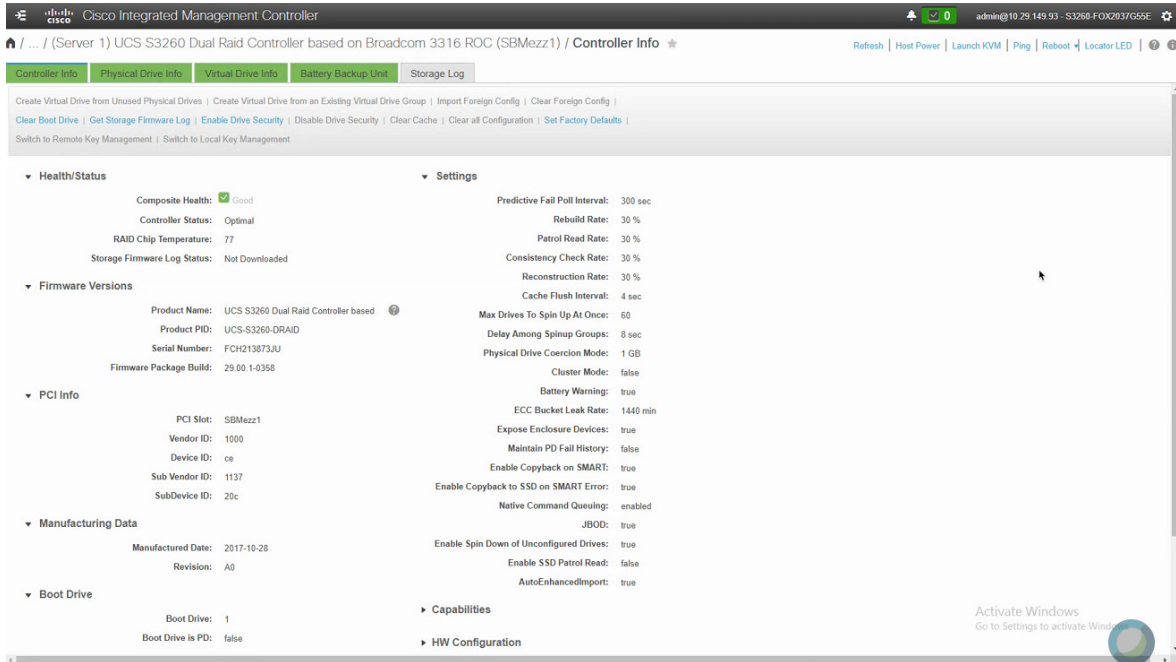


Figure 5

Once logged in, click on the menu options in the top left-hand corner, see Figure 5. Expand the Storage menu from the left side pane and select the controller.

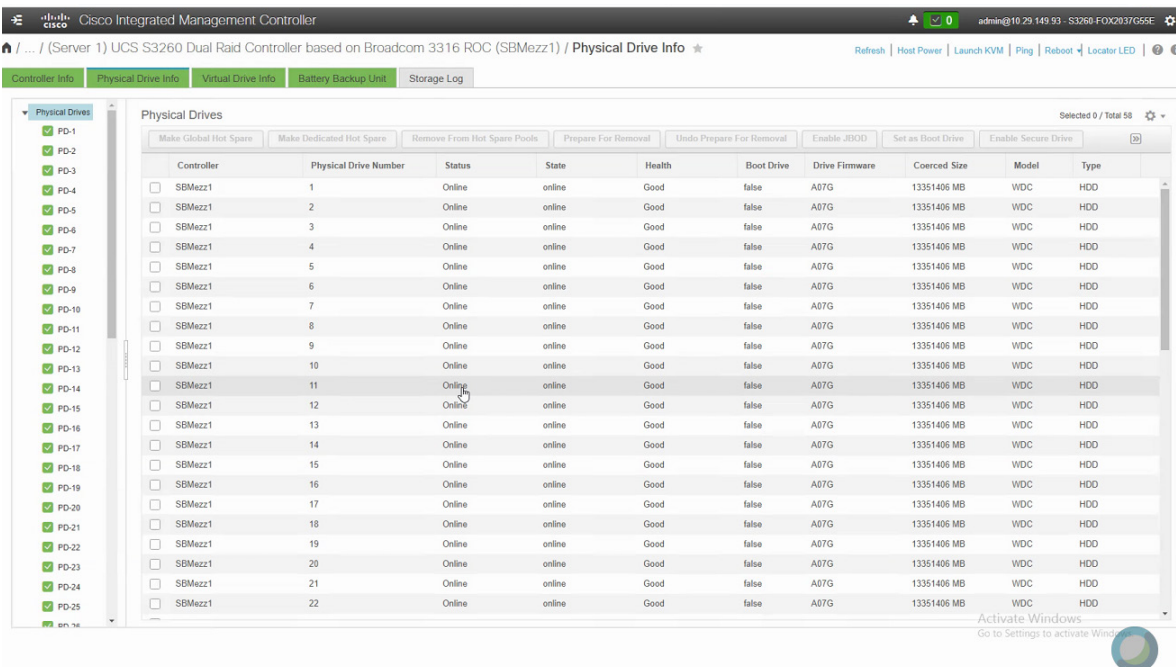


Figure 6

Under the **Physical Drive Info** tab (Figure 6), select each drive individually and click **Set State as Unconfigured Good**. Repeat this for all physical drives available, then click on the **Controller Info** tab.

| Group | | Total 1 |
|-----------|--------------|---------|
| Name | Size | |
| RAID60_26 | 125884682 MB | |

Figure 7

Click **Create Virtual Drive from Unused Physical Drives** and a configuration box will pop up (Figure 7). The selections made here will result in a new virtual drive that will be used as a Veeam backup repository.

Let's begin with the following recommended settings (Figure 7) for a Veeam repository:

- RAID level: 60
- Refer to the table (Figure 3) for drive group recommendations
- Virtual drive name: any name you'd like, up to 15 characters
- Access policy: read write
- Read policy: always read ahead
- Cache policy: direct IO
- Disk cache policy: enabled
- Write policy: write back good BBU
- Strip size: 128k
- Size: specify the desired virtual drive size in MB, GB or TB

Once the recommended settings have been entered, click **Create Virtual Drive**. This will take a few moments. Once complete, you can click on the **Virtual Drive Info** tab to verify. Select the **Virtual Drive Info** from the right side pane to verify the newly created virtual drive, see Figure 8.

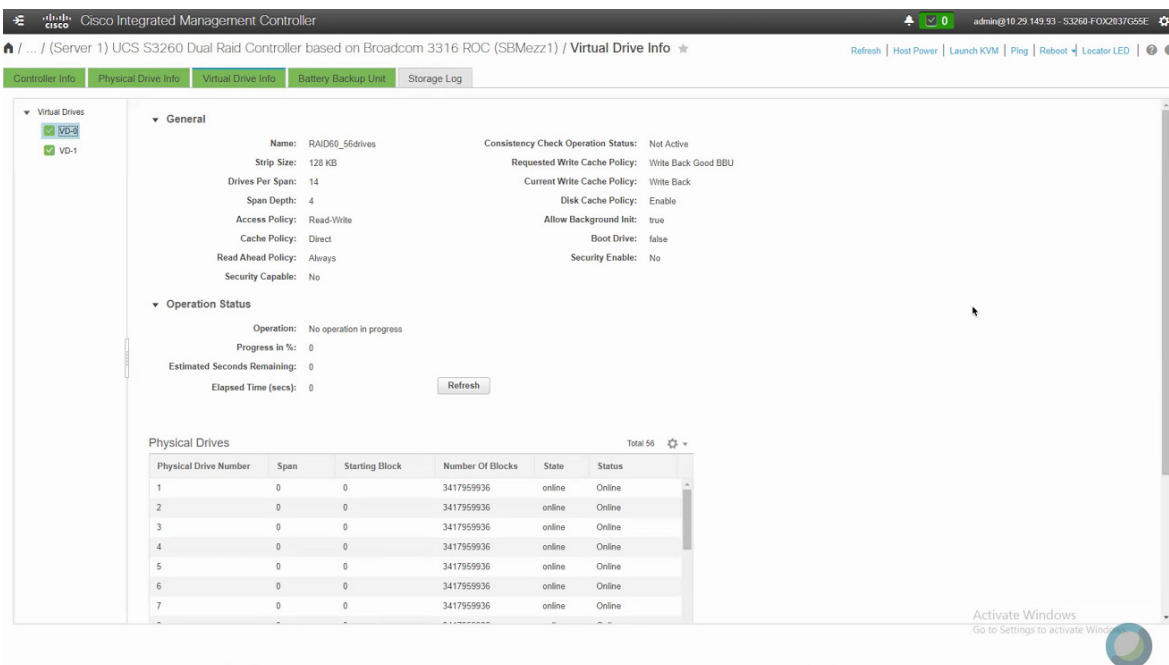


Figure 8

Now that the virtual drive is verified, it's time to mount the volume in Windows. Return to the S3260 Windows OS to create the new volume.

Before you create the volume in Windows, you will need to make sure that all necessary vnics are created. Number of vnics required will depend on your environment and what type of backup mode you wish to leverage within Veeam. For best performance, direct storage access is the preferred backup mode. To leverage direct storage access, the Veeam server will need management network as well as storage network access. The vnics required can also be created within CIMC. There are other transport modes and other deployment scenarios not covered within this guide, please refer to the Veeam User Guide (link located on page 21).

Creating a new volume in Windows

Once the virtual drive has been created, a new volume and drive letter can be assigned in Windows. You will encounter a pop-up asking if the new disk will be MBR or GPT, select GPT. The newly created virtual drive will appear in the offline state. As part of the process, bring the drive online, format it and give it a drive letter. This configuration can be completed via the disk management interface within Windows (Figure 9).

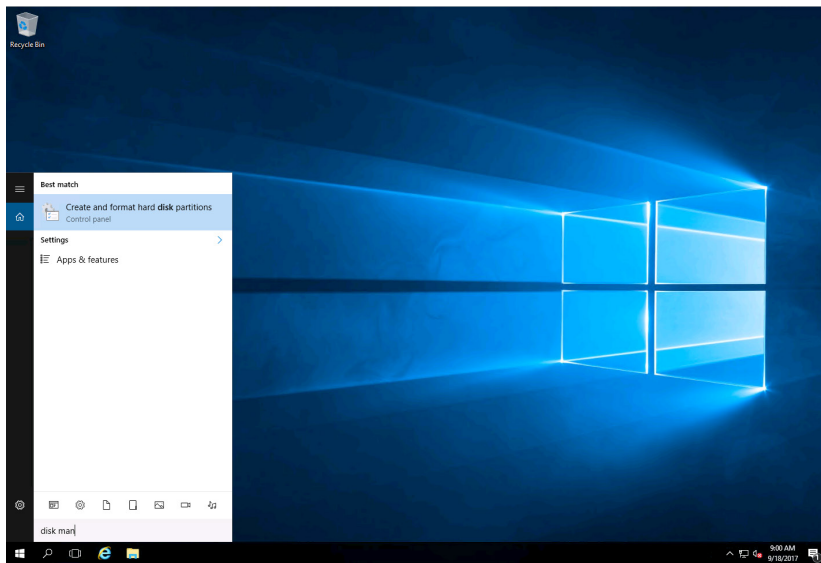


Figure 9

Right click on the new disk and select **Online**. Once online, right click in the space that currently says **Unallocated** (Figure 10). A menu will appear with multiple options, but for this example, **New Simple Volume** will be selected.

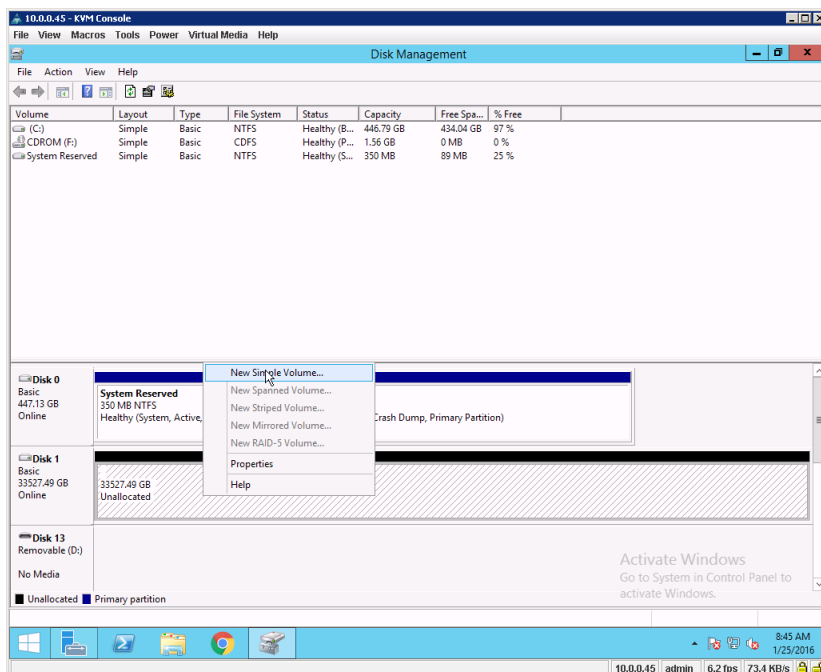


Figure 10

Making this selection will launch the New Simple Volume Wizard (Figure 11). Continue by click **Next**.

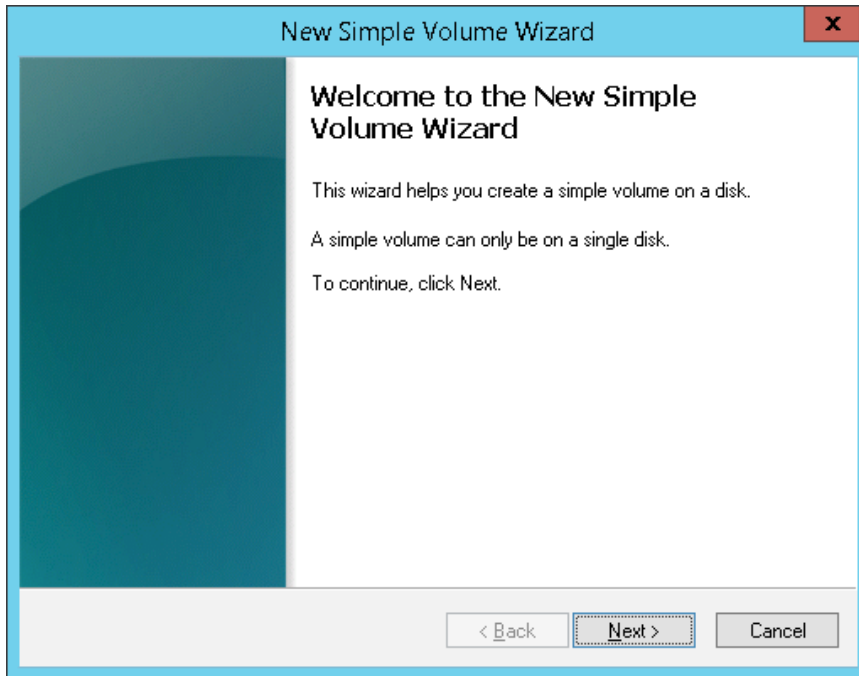


Figure 11

On the next step of the wizard, specify the volume size. Based on the maximum disk space in MB, the new simple volume size in MB should be prepopulated with the same value. Click **Next** to accept the maximum size and continue (Figure 12).

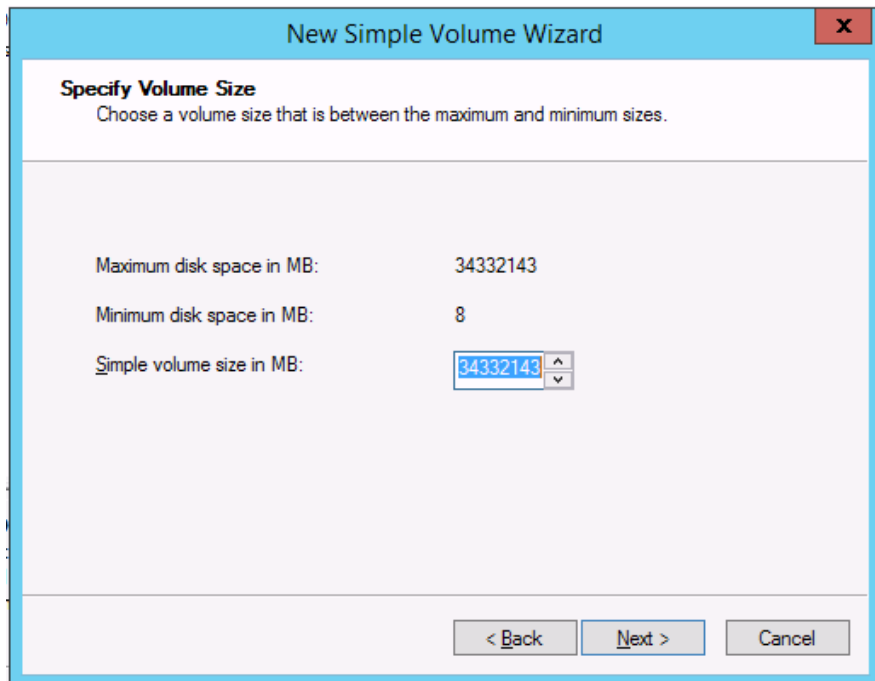


Figure 12

Next, assign a drive letter to the new volume. Once the selection has been made, click **Next** to continue (Figure 13).

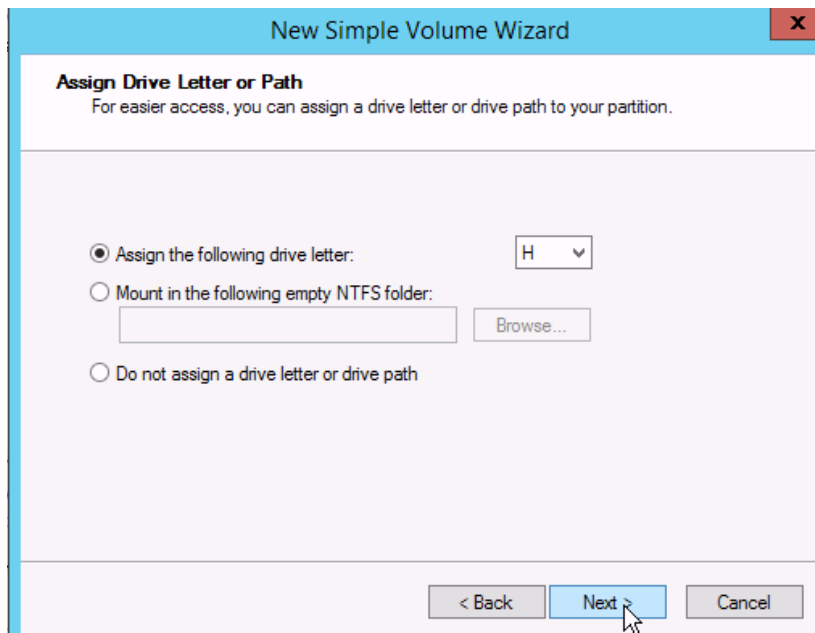


Figure 13

The next screen will have the format and file system options. Select the desired file system (ReFS is recommended), allocation unit size of 64K is recommended, and enter in a volume label. Click **Next** to continue (Figure 14).

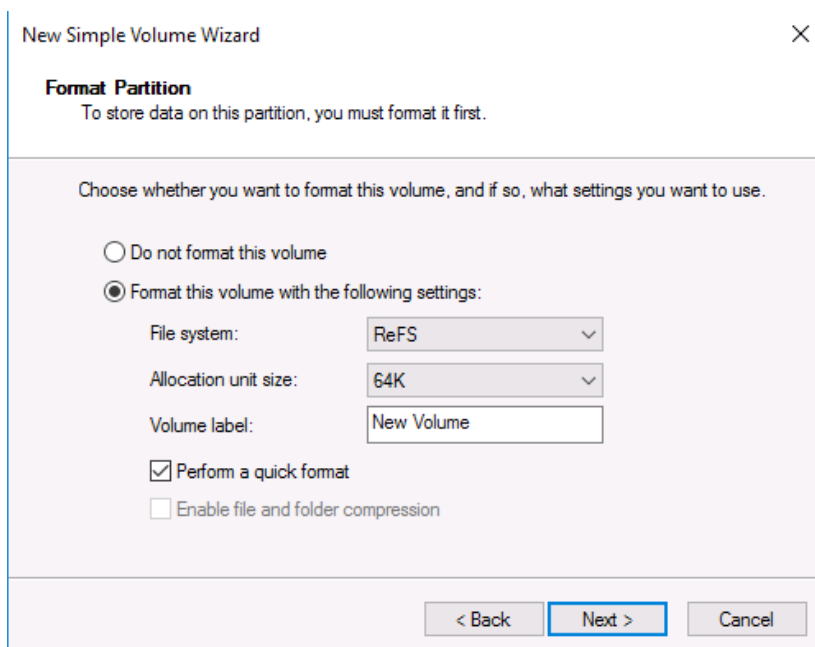


Figure 14

On the final screen, verify the settings are correct and click **Finish** (Figure 15). After a few moments, the new volume will be ready for use.

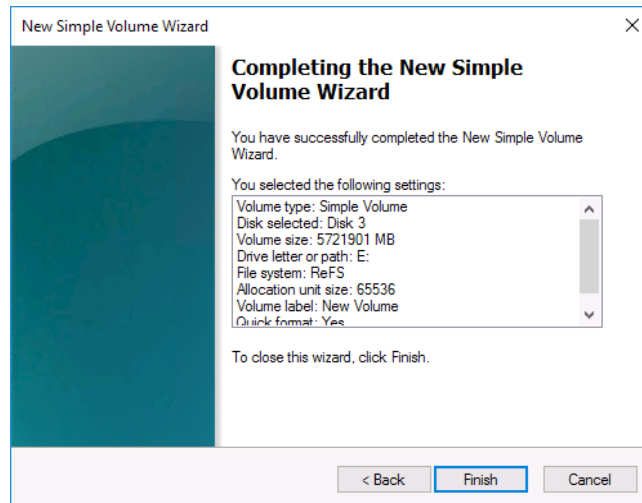


Figure 15

Once the volume has been created and assigned a drive letter, repeat the steps above for the second volume if your system has 56 disks. Once completed for all volumes needed, close the **Disk Management** window. The next step is to install Veeam Backup & Replication.

Veeam Backup & Replication installation process

To install Veeam Backup & Replication, follow these steps:

1. Log into the S3260 server as a user with local administrator privileges.
2. Mount the installation image using disk image emulation software, or burn the ISO image to a blank CD/DVD.
3. After you mount or insert the disk with Veeam Backup & Replication setup, **Autorun** will open a screen with installation options (Figure 16). If **Autorun** is not available or disabled, run the Setup.exe file from the CD/DVD disk. Alternatively, you can right-click the new disk in **My Computer** and select **Execute Veeam Backup & Replication Autorun**, or simply double-click the new disk to launch the splash screen.

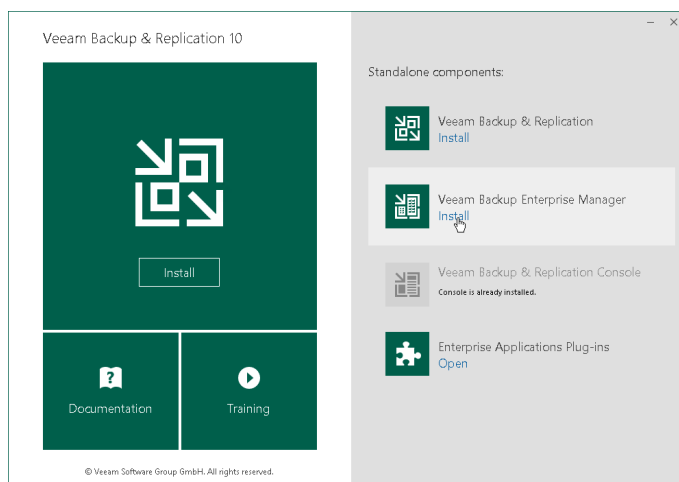


Figure 16

4. Click the **Install** link in the **Veeam Backup & Replication** section of the splash screen.
5. On the **Welcome** step of the wizard, click **Next** to start the installation.
6. To begin the installation, you must accept the license agreement (Figure 17). Read the license agreement, select the **I accept the terms in the license agreement** option and click **Next**.

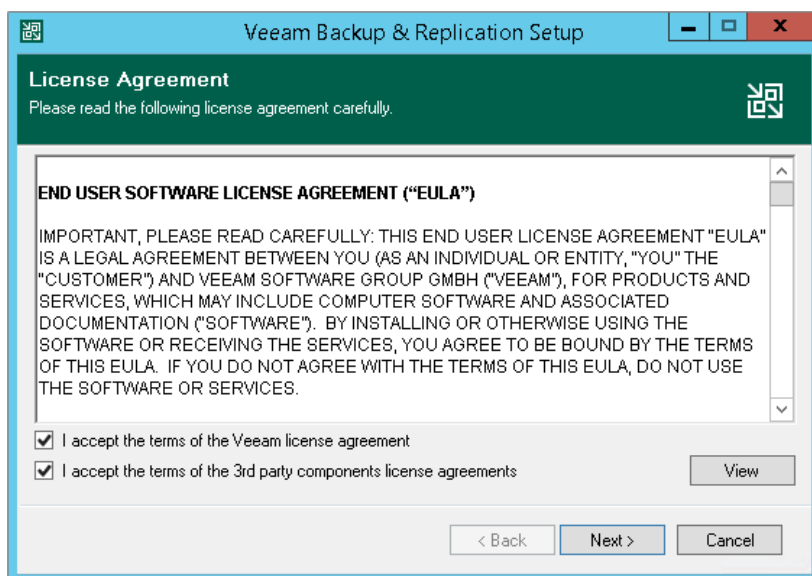


Figure 17

7. You can install Veeam Backup & Replication with a trial license that was sent to you after registration or a purchased full license. To install a license, click **Browse** and select a valid license file for Veeam Backup & Replication (Figure 18).

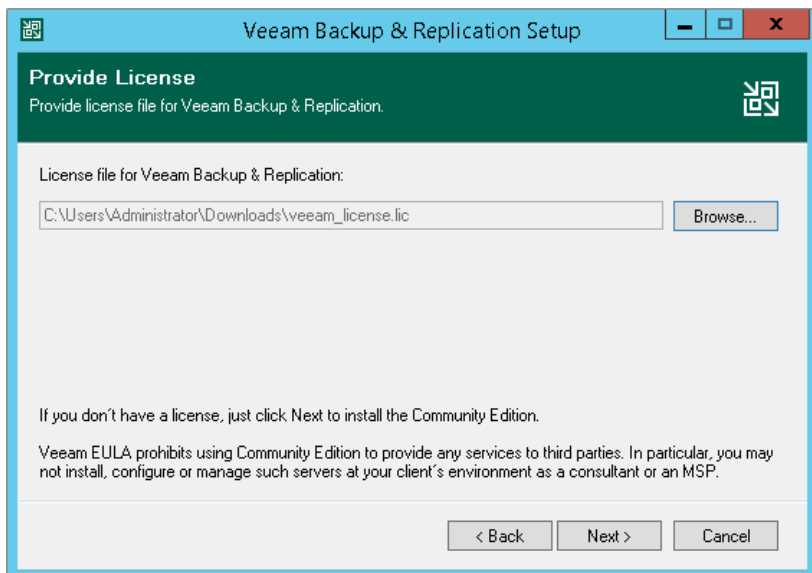


Figure 18

8. Select the components you want to install (Figure 19). The Veeam Backup & Replication setup includes the following components:

- Veeam Backup & Replication
- Veeam Backup catalog
- Veeam Backup & Replication console

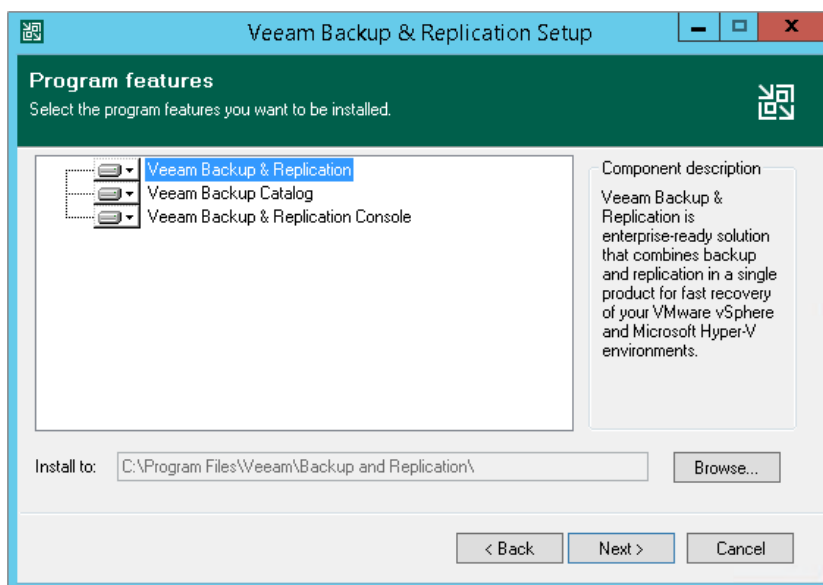


Figure 19

9. Before proceeding with the installation, the setup wizard will perform a system configuration check to determine if all prerequisite software is available on the machine. If some of the required software components are missing, the wizard will offer you to install missing software automatically (Figure 20).

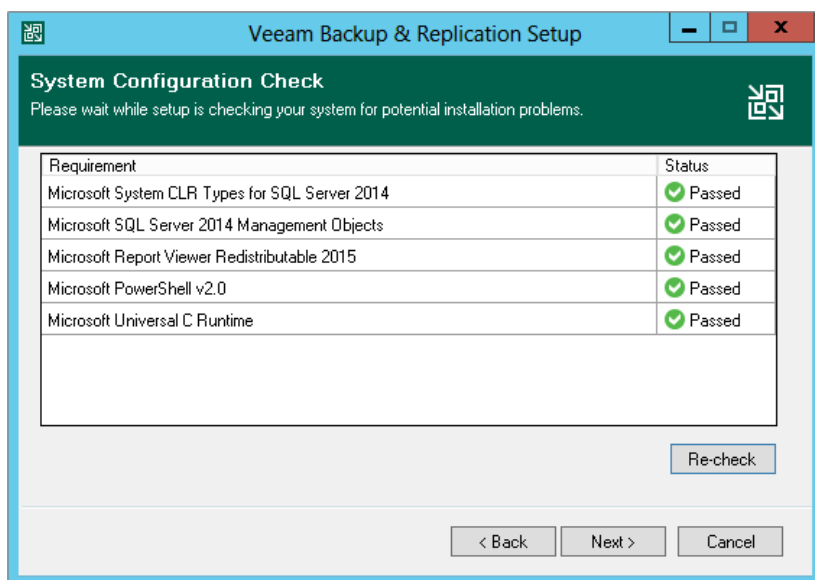


Figure 20

- At this step, Veeam will list all predefined defaults for installation. If you wish to change any of the default directories or port numbers, check the **Let me specify different settings** box (Figure 21).

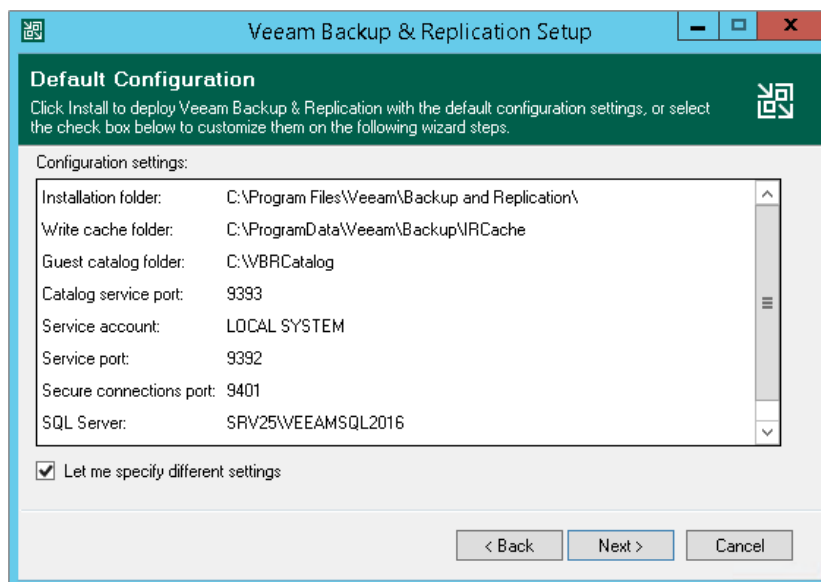


Figure 21

- When the installation completes, click **Finish** to exit the setup wizard. You can now start Veeam Backup & Replication.

Veeam Backup & Replication configuration

Now that Veeam Backup & Replication is installed, launch the application directly from the desktop icon. Once launched, the following configurations are required:

- Backup infrastructure including vSphere infrastructure, backup repositories and configuration backups
- SAN infrastructure to allow for integration with the various storage systems

Adding the virtual infrastructure

- For building your backup infrastructure in a VMware vSphere environment, Veeam Backup & Replication supports the following types of servers:
 - VMware server
 - Microsoft Windows server
 - Linux server
 - vCloud Director

Veeam Backup & Replication allows you to connect both vCenter servers and standalone ESX(i) hosts. If possible, avoid adding ESX(i) hosts which are part of the vCenter server hierarchy. Add the corresponding vCenter server instead. Adding the vCenter server facilitates management of the backup infrastructure and can be a recommended condition for certain types of operations (such as Quick Migration). Note: Free ESXi is not supported.

For a list of currently supported Virtualization Servers and Hosts, refer here: https://helpcenter.veeam.com/docs/backup/vsphere/setup_add_server.html?ver=100

For building your backup infrastructure in a Microsoft Hyper-V environment, refer to the following link for platform support guidance: https://helpcenter.veeam.com/docs/backup/hyperv/platform_support.html?ver=100

Creating a new Veeam Backup Repository

By default, Veeam automatically creates a local backup repository (usually on the C:\ drive) of the Veeam Backup & Replication server. We will create a new backup repository so that we are storing backups on our newly created volume. The following steps will outline how to create the backup repository.

1. Select **Backup Infrastructure** from the lower left pane.
2. Right click on **Backup Repositories** and select **Add Backup Repository** (Figure 22).

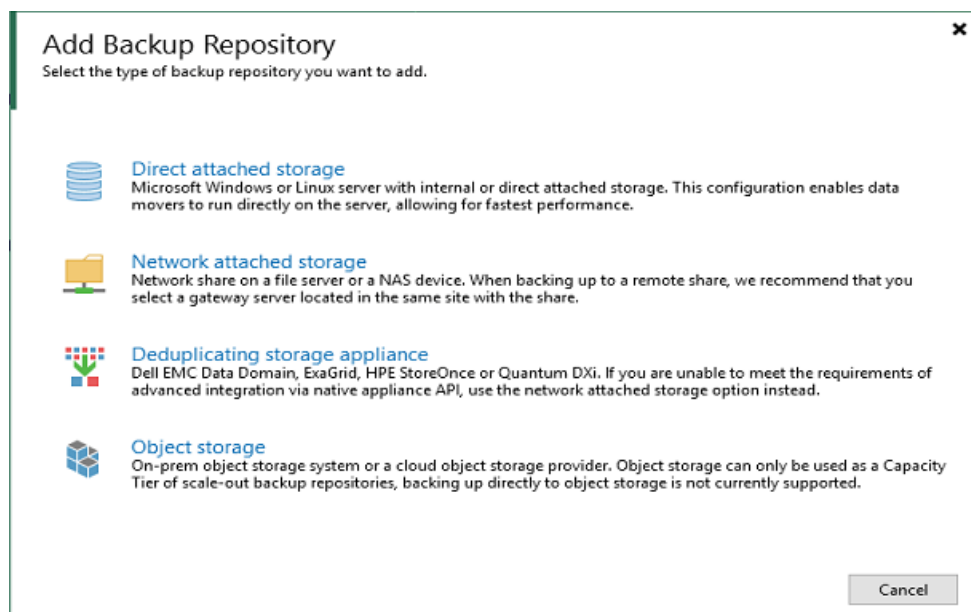


Figure 22

3. Select the **Direct attached storage** option and select **Microsoft Windows**. The New Backup Repository wizard will launch, the first screen is **Name** (Figure 23). Give the new backup repository a name. The description will be prepopulated, but you can optionally edit this field. Click **Next** to move on to **Type**.

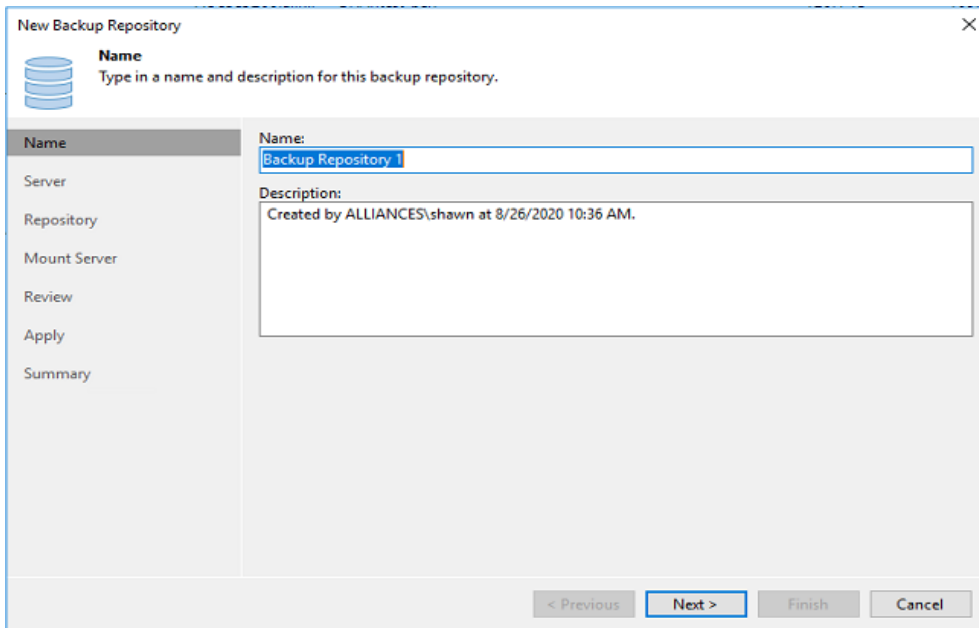


Figure 23

4. Moving on to the **Server** screen, click the **Populate** button for Veeam to detect all volumes on this server. Select the newly created volume and click **Next** to continue to the **Repository** screen (Figure 24).

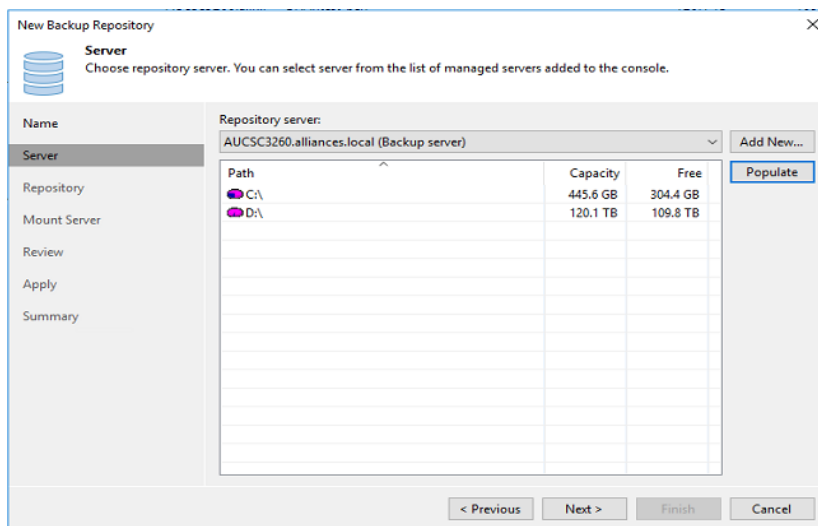


Figure 24

5. The **Repository** (Figure 25) screen is the most important screen in repository creation. First, specify a path on the new volume for which to store backups. Below **Location**, you will find the **Load control** settings. There are two options for load control, you can limit the maximum number of concurrent tasks or you may limit the combined data rate. Once the settings have been made, click **Advanced** to open up additional options.

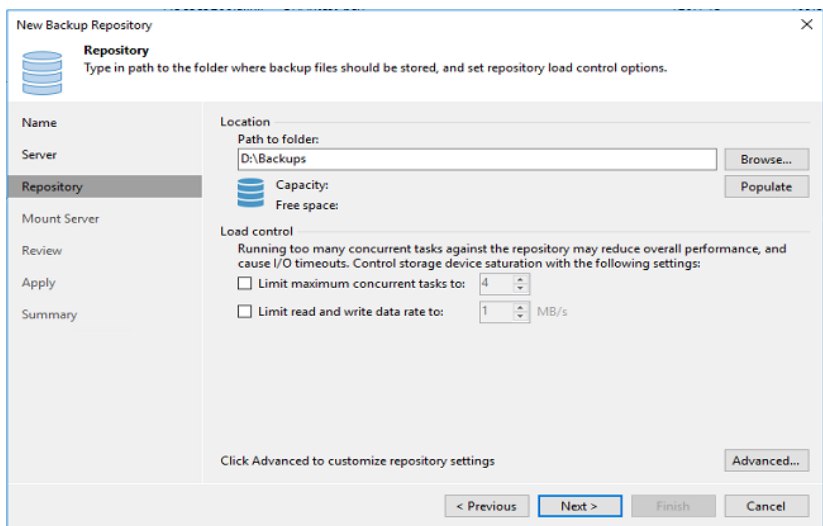


Figure 25

6. Click on the **Advanced** button in the lower right to make additional recommended settings.

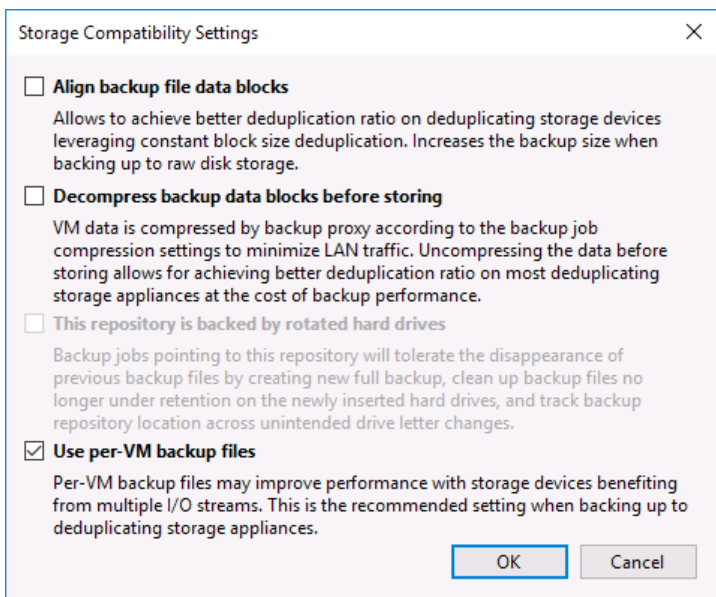


Figure 26

7. Check the **Use per-VM backup files** box, this recommended setting allows Veeam to create a backup file for each VM being backed up (Figure 26).

8. The next screen (Figure 27) is vPower NFS, and no changes need to be made here based on the configuration on the S3260. Click **Next** to proceed to the **Review** screen.

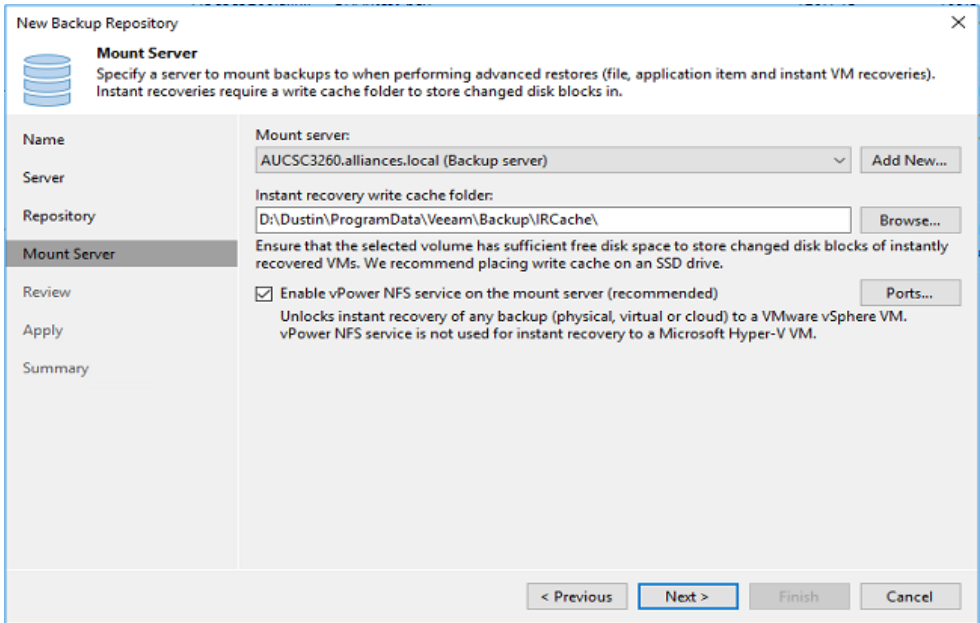


Figure 27

9. On the **Review** screen, verify the desired settings are accurate and click **Apply** to continue (Figure 28).

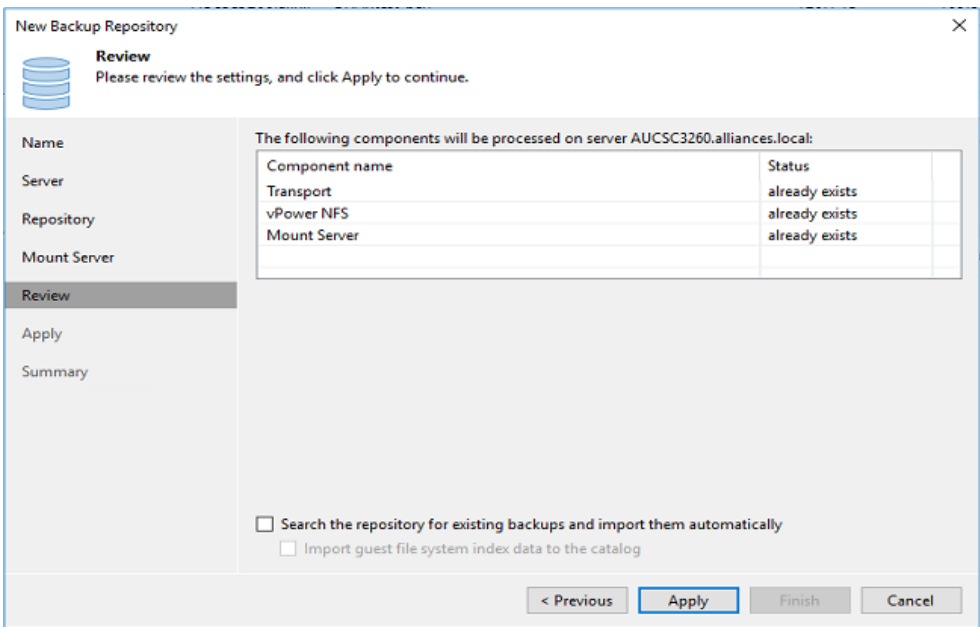


Figure 28

10. Veeam will now apply all the settings and create the new repository, click **Next** to view the summary page and then click **Finish** to exit the wizard (Figure 29).

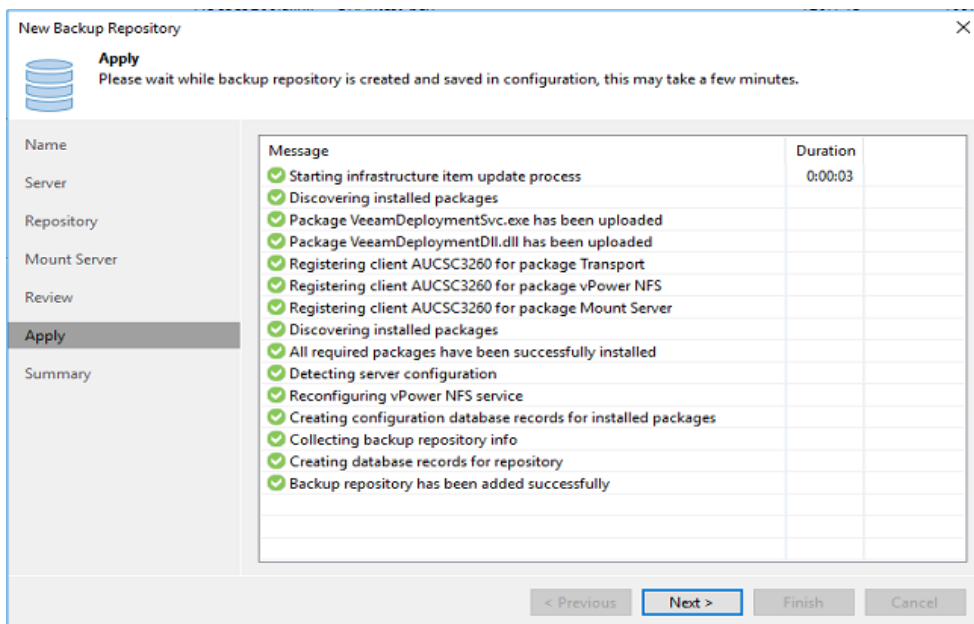


Figure 29

Veeam backup proxies

For VMware vSphere:

By default, for VMware there is already a VMware backup proxy present. This is the current server running Veeam Backup & Replication. Verify the VMware backup proxy settings by selecting **Backup Infrastructure** → **Backup Proxies** and then right-clicking on the existing backup proxy and selecting **Properties** (Figure 30).

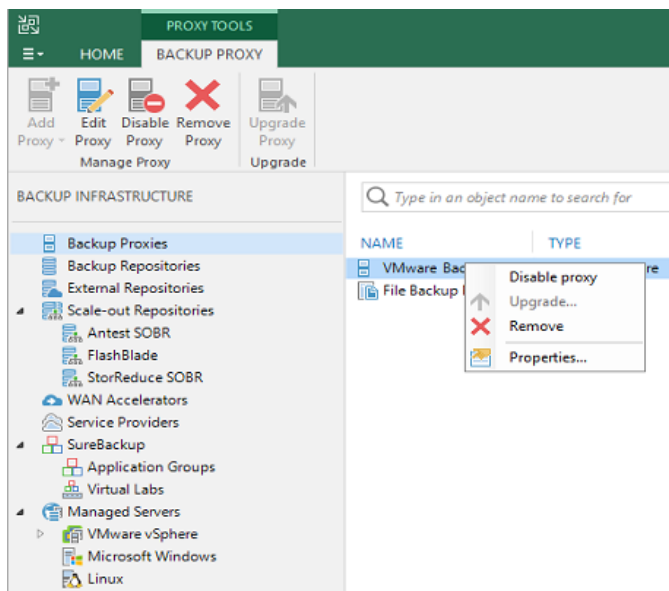


Figure 30

The **Edit VMware Proxy** settings will pop up (Figure 31). Ensure that the maximum concurrent tasks are as expected. Referencing the example we used earlier with the backup repositories, the server has two physical processors with 18 physical cores each. This results in a maximum of 36 concurrent tasks. For this guide, we will leave a little room for overhead and set the maximum number of concurrent tasks to 34. Once the max concurrent tasks have been set, select **Finish** to complete and exit proxy settings.

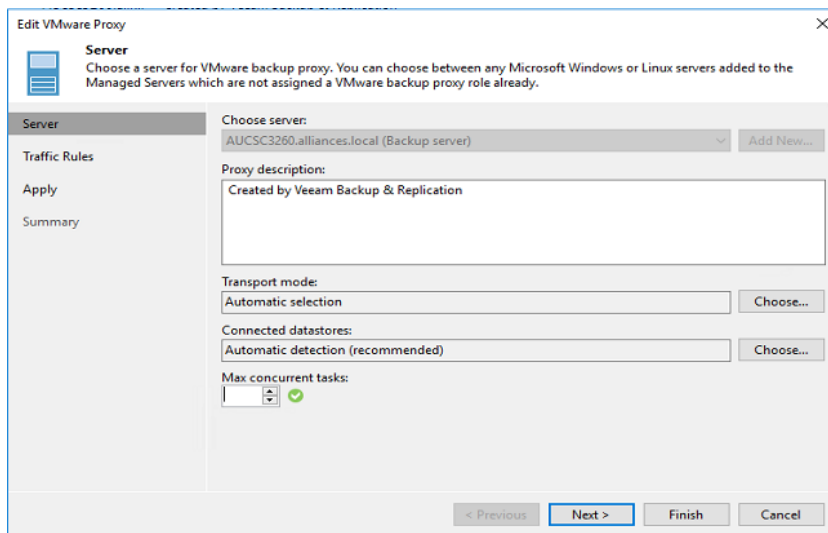


Figure 31

Additional Veeam backup proxies can be added to scale the Veeam backup infrastructure for any size environment. Additional S3260s can be used as Veeam backup proxies / backup repositories by installing a 64-bit Windows operating system (see pre-requisites on page 3). By adding additional S3260s to the backup infrastructure you can scale the backup solution linearly. Each unit provides not only additional backup storage space, but also compute and memory resources. Each S3260 can have up to 60 NL-SAS HDDs for additional backup storage. Backup proxies can be added, as needed, to scale the backup infrastructure to suite any size environment. To add additional Veeam backup proxies, perform the steps below:

Now that Veeam Backup & Replication is configured, backup jobs and many other jobs may be configured to use the newly available volume. Additional S3260's configured as a Veeam Backup Proxy / Backup Repository can be deployed off site for additional protection or archival of your backups. Veeam backup copy jobs can be leveraged to move backup data to these off-site locations. If further installation or operational detail is needed, refer to the Veeam Backup & Replication user guides for more detail. You can find the Veeam user's guide below:

[User Guide for VMware vSphere](#)

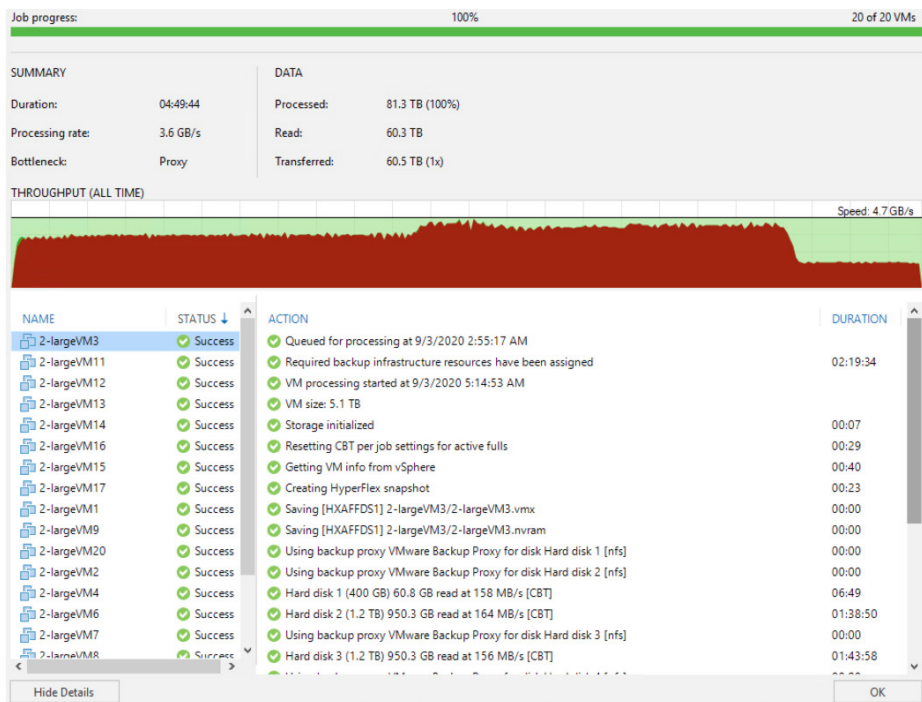
[User Guide for Microsoft Hyper-V](#)

S3260 Performance

Expected performance will vary depending on many different factors. Ensuring that the S3260 has direct access to the primary storage array and can leverage backup from storage snapshots (if available). You will also want to make sure that there is enough bandwidth to accomplish your performance expectations. Refer to the table below for expected performance based on available bandwidth.

| Server connection | Physical interface speed | Field experience | Backup speed |
|-------------------|--------------------------|------------------|--------------|
| Ethernet 1Gb | 1 Gb/s | 90 MB/s | 0.32 TB/h |
| Ethernet 10Gb | 10 Gb/s | 0.9 GB/s | 3.2 TB/h |
| Ethernet 40Gb | 40 Gb/s | 3.6 GB/s | 12.9 TB/h |
| Ethernet 100Gb | 100 Gb/s | 9.0 GB/s | 32.4 TB/h |
| FC 8Gb Dual Port | 16 Gb/s | 1.6 GB/s | 5.7 TB/h |
| FC 16Gb Dual Port | 32 Gb/s | 3.2 GB/s | 11.5 TB/h |
| FC 32Gb Dual Port | 64 Gb/s | 6.4 GB/s | 23 TB/h |

Assuming the bandwidth is available, the S3260 is capable of great performance. As you can see from the figure below, we are able to achieve sustained 3.6GB/s processing rate.



The performance shown above is achieved with no data reduction as this was a test to demonstrate the S3260 write performance. In most Veeam environments, our customers will see a minimum of two times data reduction and often higher data reduction rates. If data reduction is taken into account, the S3260 would be capable of processing at least 7.2GB/s (25.9 TB/hr) of backup data. For more performance information, check out our ESG whitepaper [here](#).

About Veeam Software

Veeam Cloud Data Management Platform is the most complete solution to help our customers evolve the way they manage data, making it smarter and more self-governing while ensuring its availability across any application or cloud infrastructure.

It's a single platform for cloud, virtual and physical to meet all your needs. It helps customers on the journey to modernizing their Backup practice, accelerating hybrid cloud, and adhering to data security standards and regulations.

veeam

Cloud Data

Backup
for what's next

5 Stages of Cloud Data Management —
start your journey today!

Learn more: [veeam.com](https://www.veeam.com)