



# QSAN Unified Storage Series Application Note

## Veeam Backup with Snapshot & WORM Data Protection Guide



QSAN Technology, Inc.  
[www.QSAN.com](http://www.QSAN.com)



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# Notices

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This QSAN Unified Storage series application note is applicable to the following XCubeNXT models:

## XCubeNXT Storage System Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
XN8026D	Dual Controller	SFF 26-disk 2U Chassis
XN8024D	Dual Controller	LFF 24-disk 4U Chassis
XN8016D	Dual Controller	LFF 16-disk 3U Chassis
XN8012D	Dual Controller	LFF 12-disk 3U Chassis

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# Veeam Data Protection

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## Executive Summary

Digital transformation era boosts enormous data growth, digital data becomes the essential asset for every organization. Veeam is the leader in Cloud Data Management, providing a simple, flexible and reliable backup & recovery solution for all organizations. QSAN collaborates with Veeam to liberate the traditional backup architecture. Providing the modern data backup and protection solutions to prevent business or organization from cyber-attack.

## Audience

This document is applicable for QSAN customers and partners who are interested in learning about how Veeam and QSAN collaborate the data protection solutions for preventing from ransomware or any cyberattack. It assumes the reader is familiar with QSAN products and has general IT experience, including knowledge as a system or network administrator. If there is any question, please refer to the user manuals of products, or contact QSAN support for further assistance.

## Overview

With rapid data growth, digital data evolves continuously. More than 70% of companies do not have effective data protection strategies, leaving companies in a dangerous state at all times. However, effective data protection is usually complex and expensive, and the current dated backup technology is difficult to manage and protect the ever-expanding data. The backup solution continues to transform in response to demand. More and more ransomware and cyber-attacks became significant issues of digital transformation.

Most of the business think that data has been backed up multiple times, the current data can still be stored safely while attacking by ransomware, but this is not 100% truth. The ransomware will attack the entire shared folder. When the ransomware is in one of the backup platforms, all the data in the network neighborhood will not be spared. Eventually, it

will fall into the trap of ransomware, and the enterprise will have to spend extra cost to get it decrypted. However, together with Veeam, integrating backup software and storage system, we provide not only easy data backup but the high availability data protection.

## The Structure of QSAN and Veeam Integration

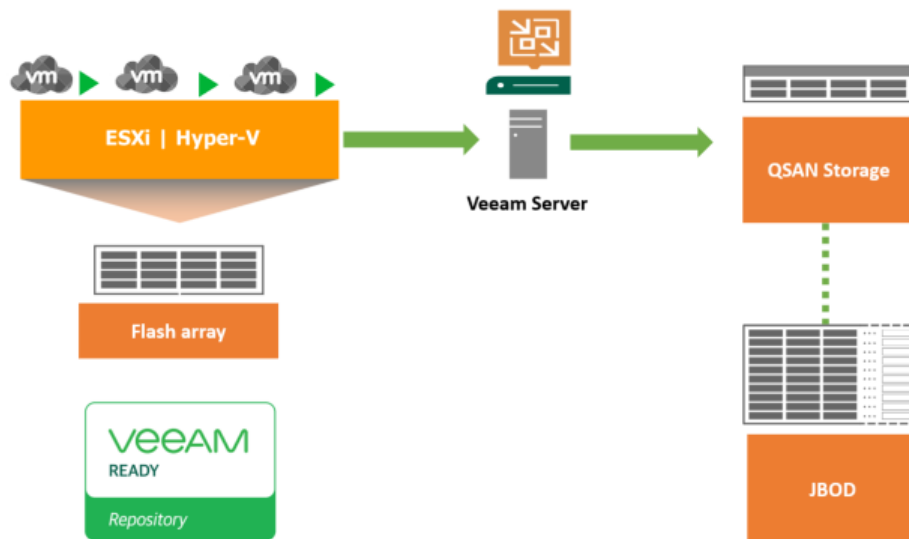


Figure 1-a QSAN and Veeam Integration Structure

Create VMs on server and save all the data into QSAN primary storage. Applying Veeam software for backing up to QSAN storage for data integration.

## The Integration with Veeam from QSAN through Snapshot Mechanism

[Snapshot](#) is the read only file stored in the safe Zettabyte File System (ZFS). No matter your data is attacking by ransomware or the unexpected condition happened in the storage, snapshot file can help to recovery all the data. To achieve rapid data protection and recovery short-term data preservation through storage snapshot integration technology. Making sure the unexpected issues do not affect online operating data.

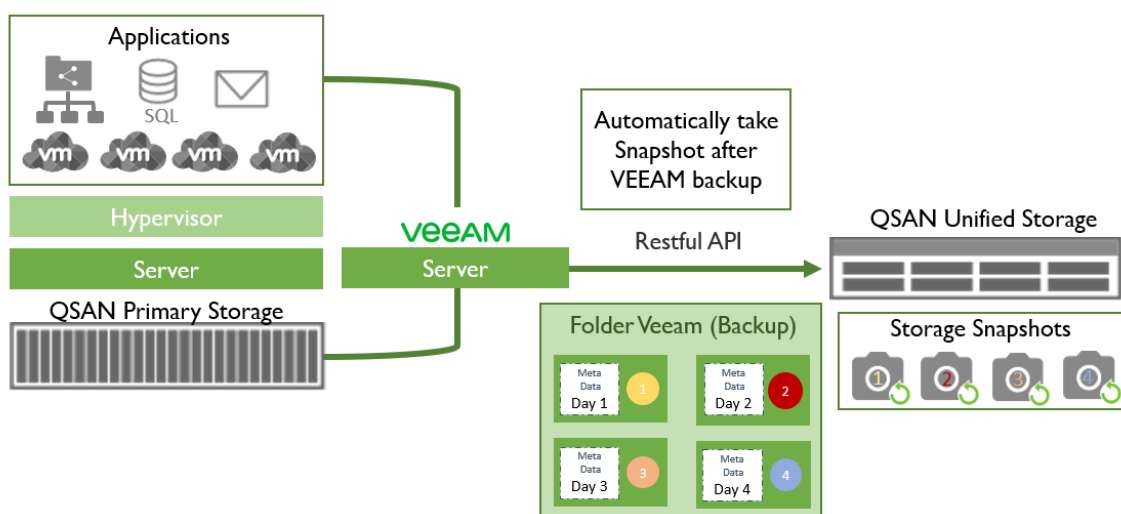


Figure 2-b How QSAN Snapshot Works for Data Protection

All of the VM data are stored in QSAN primary storage, applying Veeam for backup to QSAN Unified Storage. Using Restful API to communicate between Veeam and QSAN Unified Storage. The Restful API provided by QSAN is scripted as “automatically take snapshot after Veeam finish backup.” Thus, QSAN and Veeam integration makes business data protection automatically done by taking snapshot that ensure snapshot file is kept in ZFS, there’s no need to worried about data is been tempered by cyber-attacks.

## How to Set Up Auto-Snapshot After Veeam Backup

Step 1. Open **Control Panel**

Step 2. Go to **File Sharing** → **Folder** → **Shared Folder**

Step 3. Click on **Create**

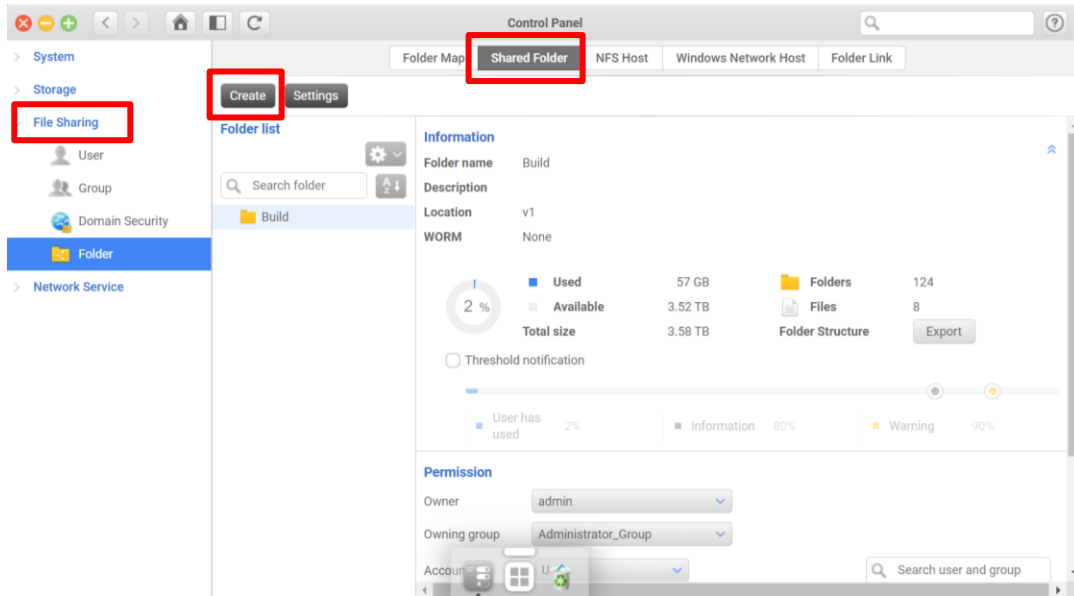


Figure 1-1 Configuration Page for folder Setup

Step 4. Select **Create a Share Folder** → Click **Next** bottom

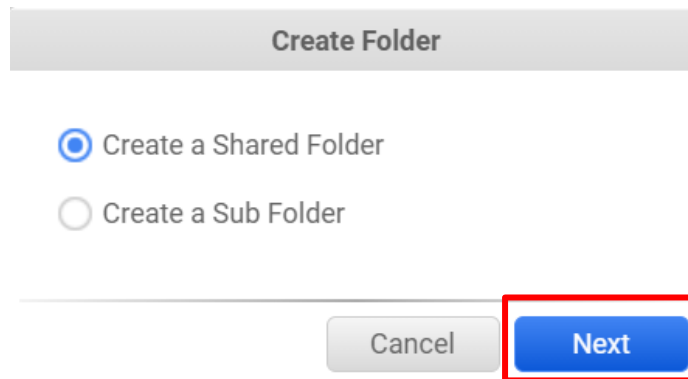


Figure 1-2 Create a Shared Folder

Step 5. Type in **Folder name** → Click **Confirm** bottom



Create Folder

**Create Folder**

Folder name

Description

Location Software

The folder will share the size of Software. You can also enable folder size and reserve capacity for the folder.

☐ Folder size (Reserved capacity)  GB

Total 5 TB    ■ Used 85.5 GB    ■ Available 4.91 TB

☐ Hide Network Drive

☒ Enable Recycle Bin

☐ Anonymous login Read only

☐ Enable File Retention  Days delete files. Advance

When this feature is enabled, if the file has not been opened within the set time, it will be automatically deleted.

Cancel
Confirm

Figure 1-3 Type in Folder Name to Create Folder

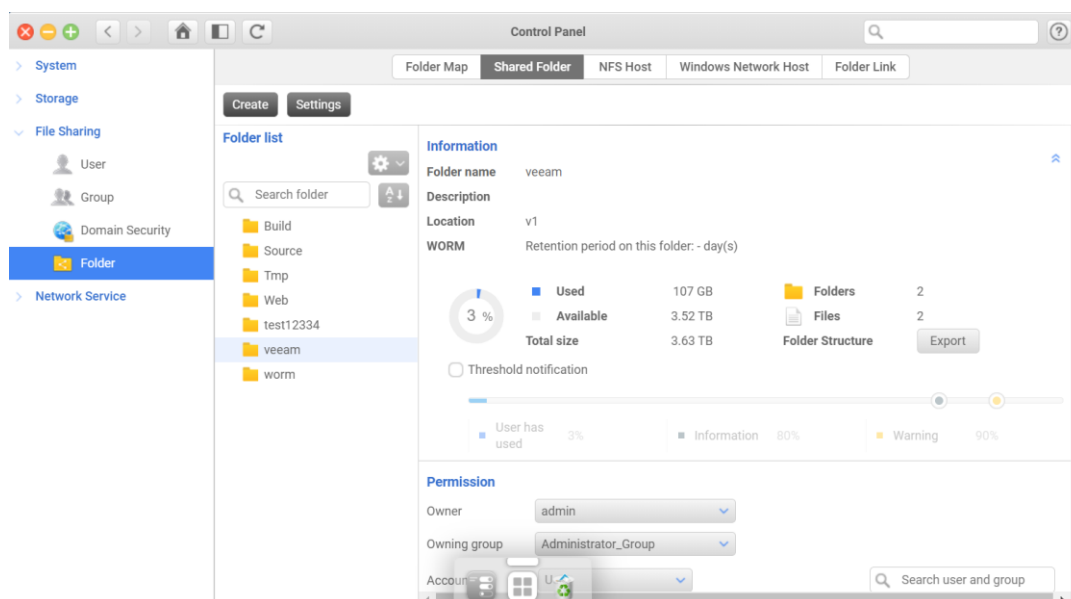


Figure 1-4 Finish Set Up Veeam Folder

Step 6. Please refer to [B. Set Up in Veeam Backup and Replication UI](#)

## Make the Protection Triple! WORM, Snapshot, and Veeam

WORM stands for write once read many, is the unique feature designed by QSAN and comes with Unified Storage that doubles the level of data protection. WORM can ensure that the status of the written data will not change, it can neither be deleted nor changed. The WORM mechanism has "locked" the data status, and inherently prevented the possibility of ransomware attacks, encryption or deletion of data.

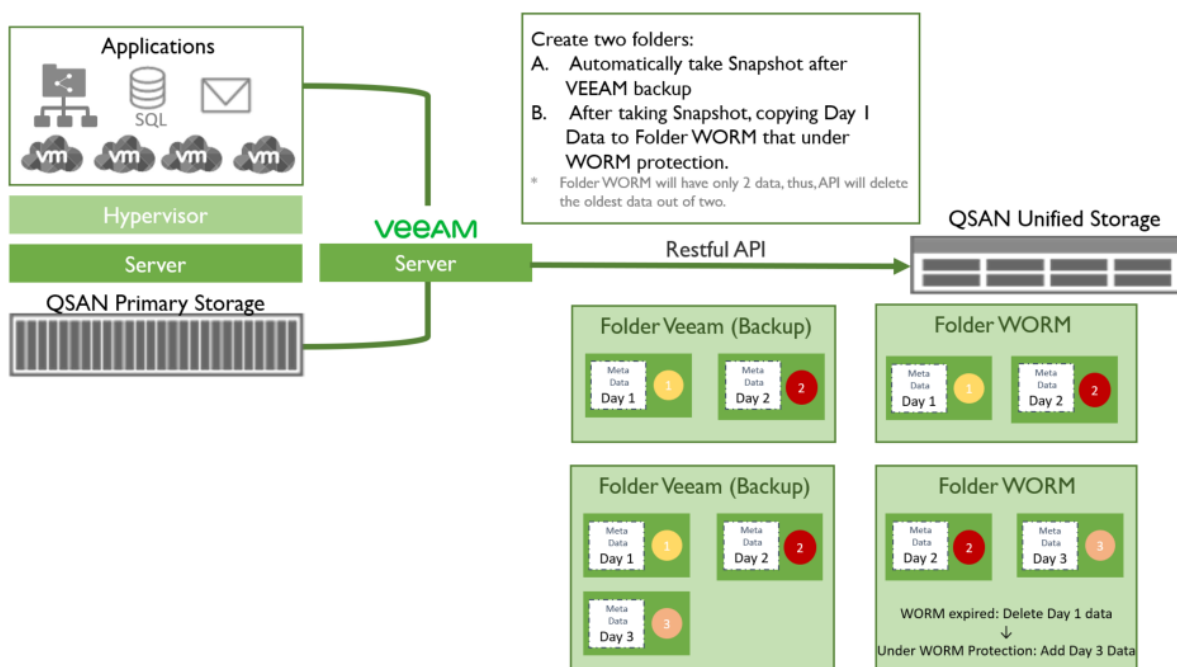


Figure 2 How QSAN WORM Works for Data Protection

QSAN provides the Restful API to communicate between Veeam and QSAN Unified Storage. User decides the Veeam Backup period, the same period will be applied to WORM Protection.

For Example:

1. User creates 2 folders (Named Folder Veeam & Folder WORM for example), and set up Veeam to do data backup EVERYDAY.
2. After Veeam finish backing up in day 1, it will take snapshot automatically, and copy the meta data and transaction file saving them in folder WORM.
3. Under WORM protection, Data Day 1 in folder WORM cannot be modify for 2 day.

4. Veeam will automatically do the second backup after a day (user set up). After Veeam backup, repeating the second and third steps.
5. After 2 days, WORM is expired, it will automatically delete Day 1 data in folder WORM (Make Folder WORM always have only two data to save storage capacity).

### Benefit of Veeam and QSAN WORM Integration

Single data backup is not enough for preventing ransomware. Veeam and QSAN WORM integration doubles the level of data protection!

- Enable WORM protection mechanism after Veeam automatic backup for an active data protection.
- Make sure the ransomware cannot modify the metadata and transaction files that are kept intact by WORM.
- However, if business is unfortunately being attacked by a ransomware, business can still complete data recovery from a folder protected by WORM.
- The 24-hour WORM expiration setting will delete previous metadata automatically, so that your data is not only perfectly protected, but also not occupying your storage capacity.

## How to Set Up Auto-WORM After Veeam Backup

### A. Set Up in QSAN UI

Step 1. Open **Control Panel**

Step 2. Go to **File Sharing** → **Folder** → **Folder list**

Step 3. Select a **Share Folder** → Click on the **Gear icon** → Select **WORM** from dropdown menu

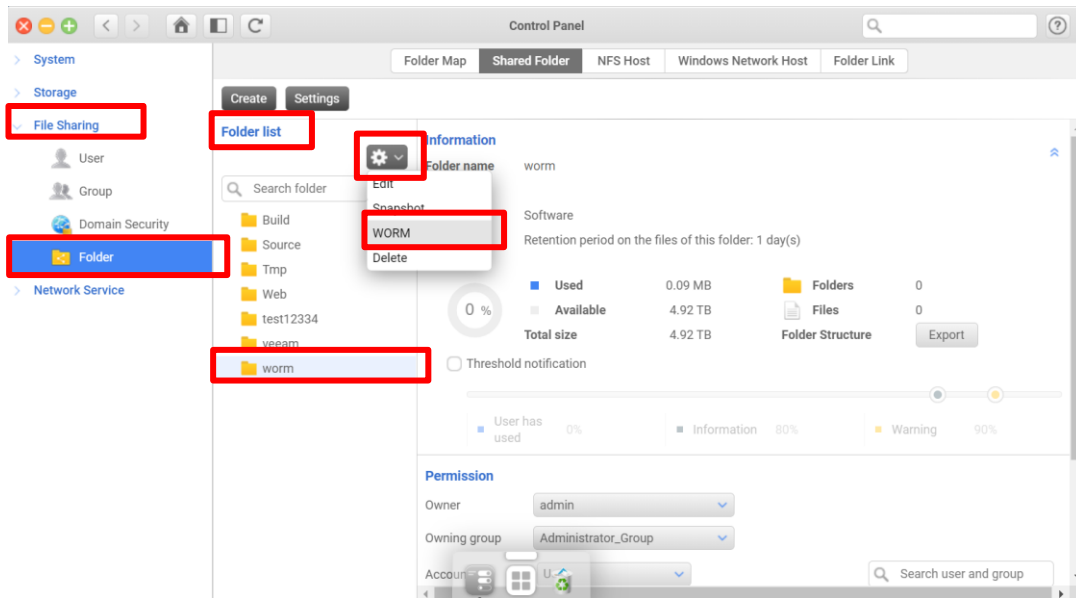


Figure 2-1 Configuration for WORM Setup

Step 4. Check **Enable WORM protection** box to enable WORM→

Click on the **Set Retention Period on Each File of This Folder** radio button

- ① Enter a number equal to or greater than 1 Day(s)
- ② Click on the **Next** button

**[Note]** Days set up proportion is 1:2 (Veeam backup : WORM)

For example:

- If user set Veeam backup every day, then set WORM retention for two days.
- If user set Veeam backup every two day, then set WORM retention for four days

WORM

WORM (Write Once, Read Many) When WORM is enabled, data in this folder will remain read-only until retention date ends.

☒ **Enable WORM protection**

☐ Protect this forever

☐ Set retention period on this folder.

Retention  days

☒ Set retention period on each file of this folder.
 

days

Figure 2-2 Configuration for WORM Setup

- ④ Click on the **Confirm** button if all information is correct

WORM

Folder name      worm

WORM protect this folder retention period in this folder

Retention   1   days

Are you sure you want to set WORM protection on this folder?

Figure 2-3 Confirmation: Applying Set Retention Period on Each File of This Folder

Step 5. Click on the **Apply** button to apply WORM protection onto designated Share Folder

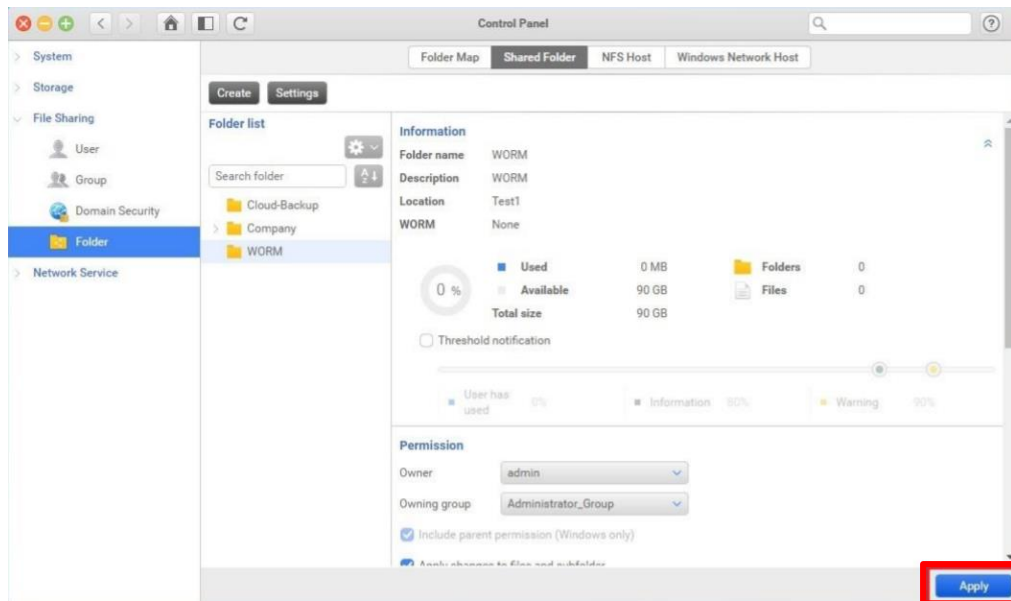


Figure 2-4 Apply WORM

## B. Set Up in Veeam Backup and Replication UI



[video tutorial](#)

Step1-1. Click **BACKUP INFRASTRUCTURE** → Select **Managed Servers** → Click **Add Server**

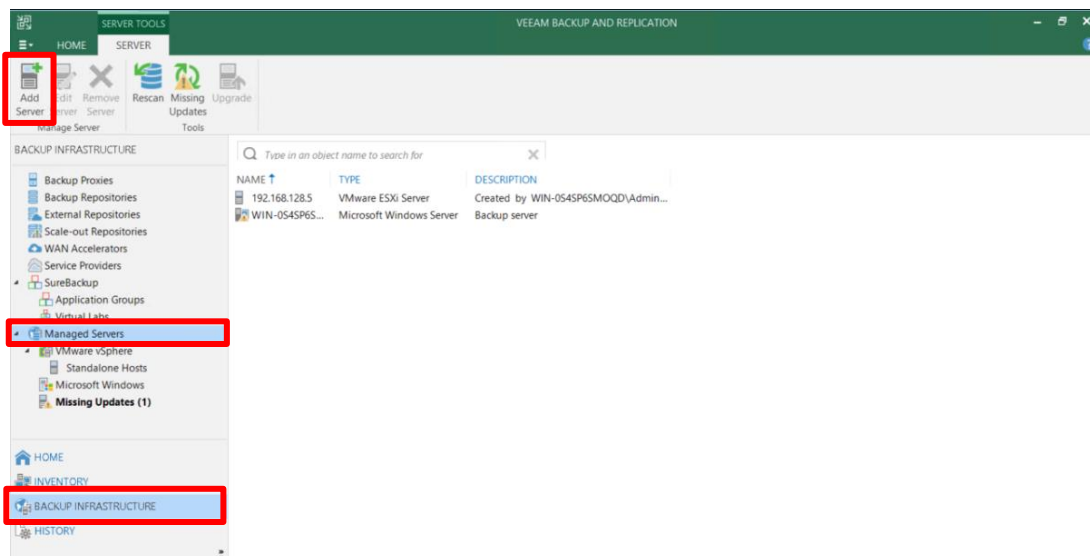


Figure 2-5 Configuration of Server Adding

Step 1-2. Click **Network attached storage**

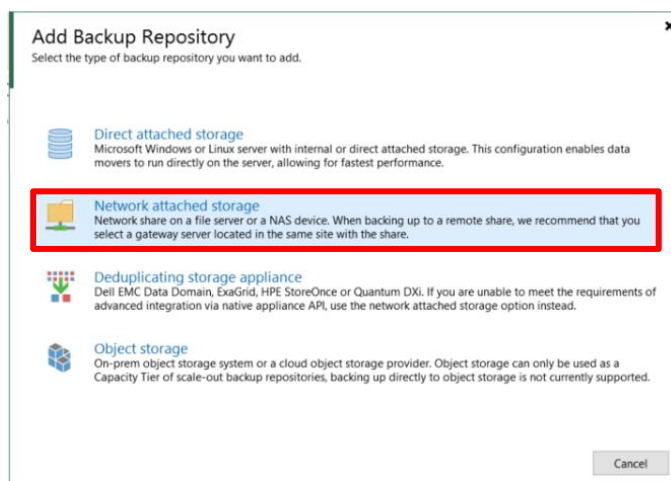


Figure 2-6 Add Backup Repository

Step 1-3. Choose either one on based on the environment

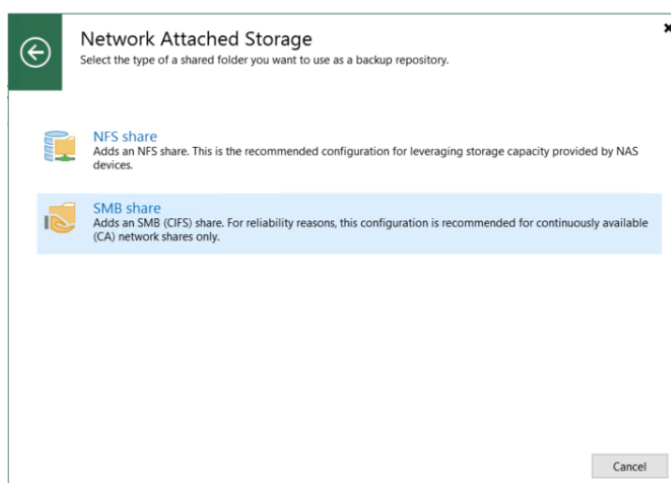


Figure 2-7 Network Attached Storage

Step 1-4. Type in the **Name** for this backup repository → Click **Next**

The screenshot shows the 'New Backup Repository' dialog box. On the left is a sidebar with options: Name, Share, Repository, Mount Server, Review, Apply, and Summary. The 'Name' section is active, showing a text input field with 'Backup Repository 1' and a description box with the text 'Created by WIN-054SP6SMOQD\Administrator at 4/22/2021 1:34 PM.' At the bottom right, there are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'. The 'Next >' button is highlighted with a red rectangle.

Figure 2-8 Network Attached Storage

Step 1-5. Type in the location of the **Shared folder** that created in QSAN UI → Tick the checkbox in **This share requires access credentials** → select or create an account → Click **Next**

The screenshot shows the 'New Backup Repository' dialog box, now on the 'Share' tab. The sidebar on the left has 'Share' selected. The main area shows a 'Shared folder' text box with '\\192.168.214.50\Tmp' and a 'Browse...' button. Below this, the checkbox 'This share requires access credentials' is checked. A dropdown menu shows 'admin (admin, last edited: less than a day ago)' with an 'Add...' button. At the bottom, there are buttons for 'Gateway server' (Automatic selection or The following server) and a dropdown for 'WIN-054SP6SMOQD (Backup server)'. The 'Next >' button at the bottom right is highlighted with a red rectangle.

Figure 2-9 Shared Folder Location



Step 1-6. Check the **Path to folder** is correct → Click **Next**

**New Backup Repository**

**Repository**  
Type in path to the folder where backup files should be stored, and set repository load control options.

**Name**

**Share**

**Repository**

**Location**  
Path to folder:  
\\192.168.214.50\Tmp

Capacity: **3.5 TB** Populate

Free space: **3.5 TB**

**Load control**  
Running too many concurrent tasks against the repository may reduce overall performance, and cause I/O timeouts. Control storage device saturation with the following settings:

☒ Limit maximum concurrent tasks to: 4

☐ Limit read and write data rate to: 1 MB/s

Click Advanced to customize repository settings Advanced...

< Previous **Next >** Finish Cancel

Figure 2-10 Path of folder

Step 1-7. Click **Next**

**New Backup Repository**

**Mount Server**  
Specify a server to mount backups to when performing advanced restores (file, application item and instant VM recoveries). Instant recoveries require a write cache folder to store changed disk blocks in.

**Name**

**Share**

**Repository**

**Mount Server**

Mount server:  
WIN-054SP6SMOQD (Backup server) Add New...

Instant recovery write cache folder:  
C:\ProgramData\Veeam\Backup\VRCache\ Browse...

Ensure that the selected volume has sufficient free disk space to store changed disk blocks of instantly recovered VMs. We recommend placing write cache on an SSD drive.

☒ Enable vPower NFS service on the mount server (recommended)  
Unlocks instant recovery of any backup (physical, virtual or cloud) to a VMware vSphere VM. vPower NFS service is not used for instant recovery to a Microsoft Hyper-V VM. Ports...

< Previous **Next >** Finish Cancel

Figure 2-11 Mount Server

Step 1-8. Check all the status → Click **Apply**

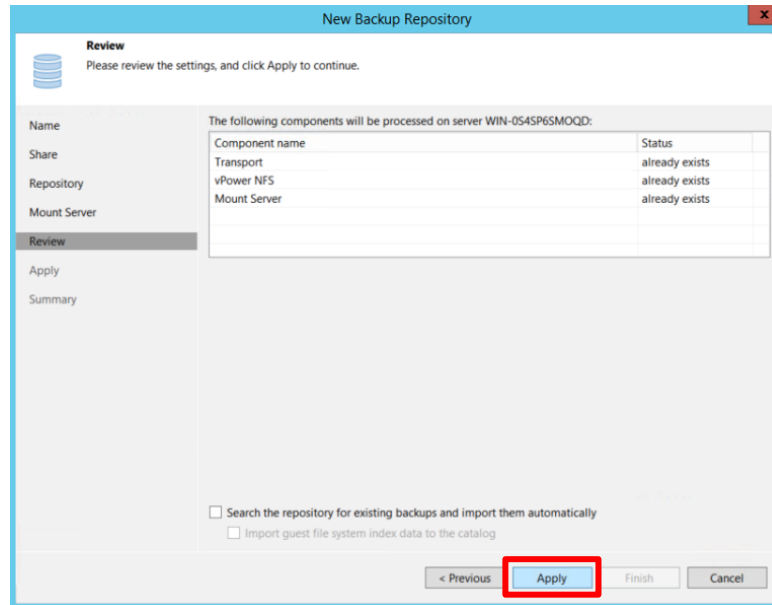


Figure 2-12 Review

Step 1-9. Click **Next**

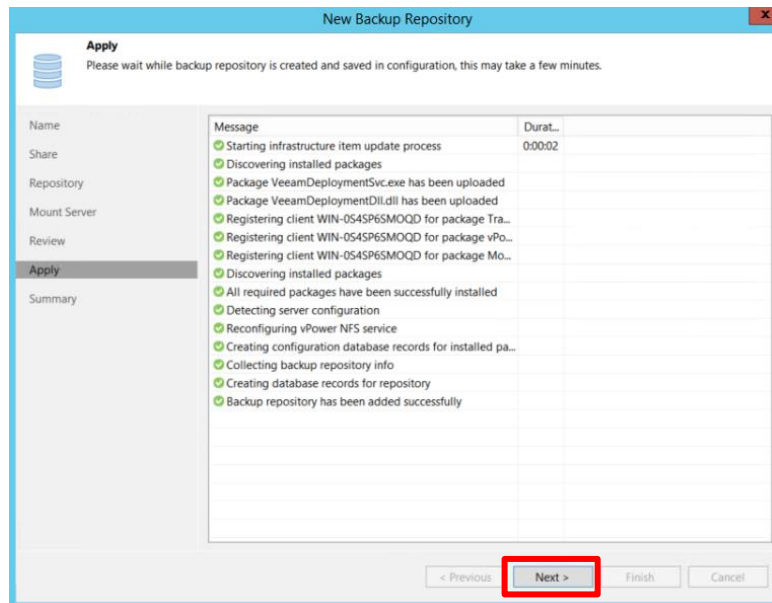


Figure 2-13 Apply

Step 1-10. Click **Finish**

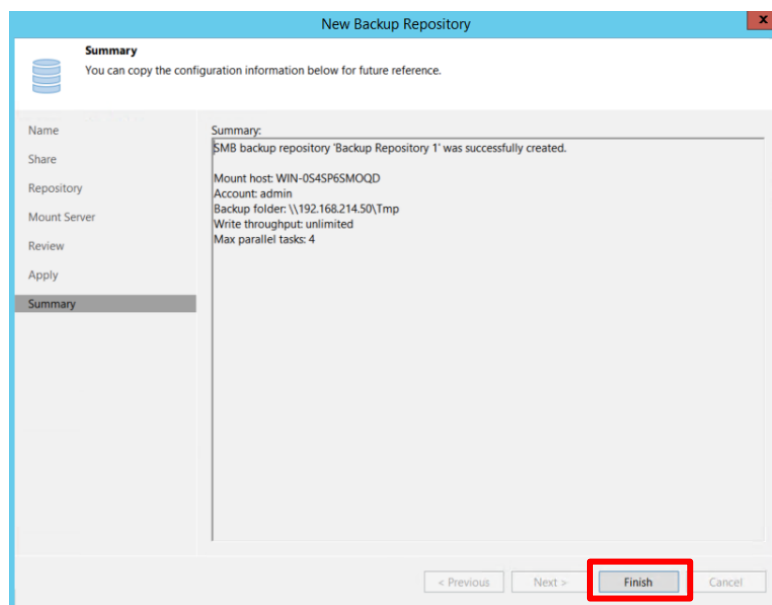


Figure 2-14 Summary

Step 2. Click **INVENTORY** → check all the VMs are included

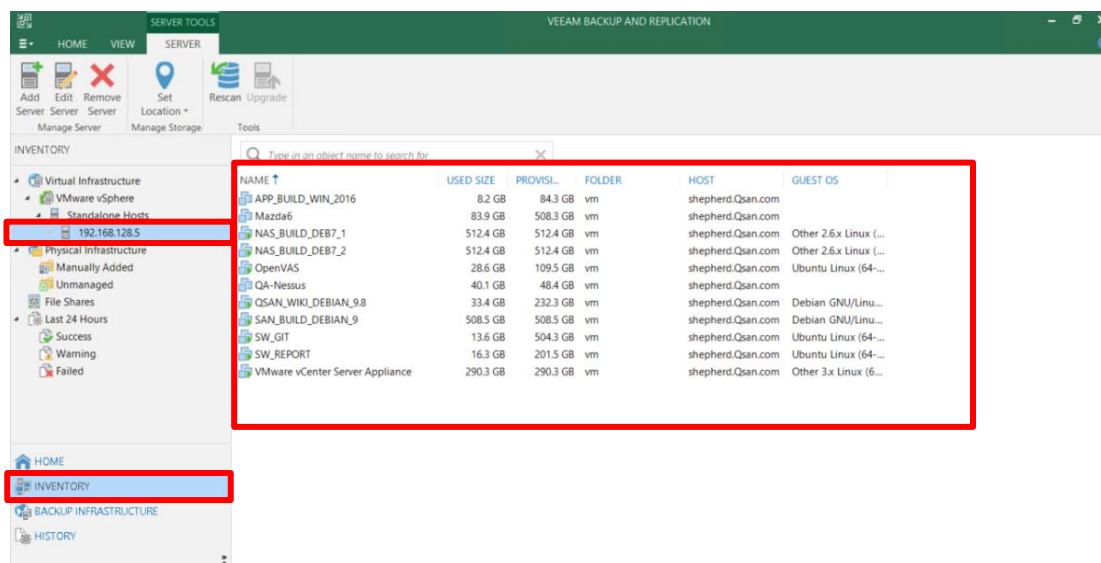


Figure 2-15 INVENTORY

Step 3-1. Select **HOME** → Click **Backup Job** → Click **Virtual machine**

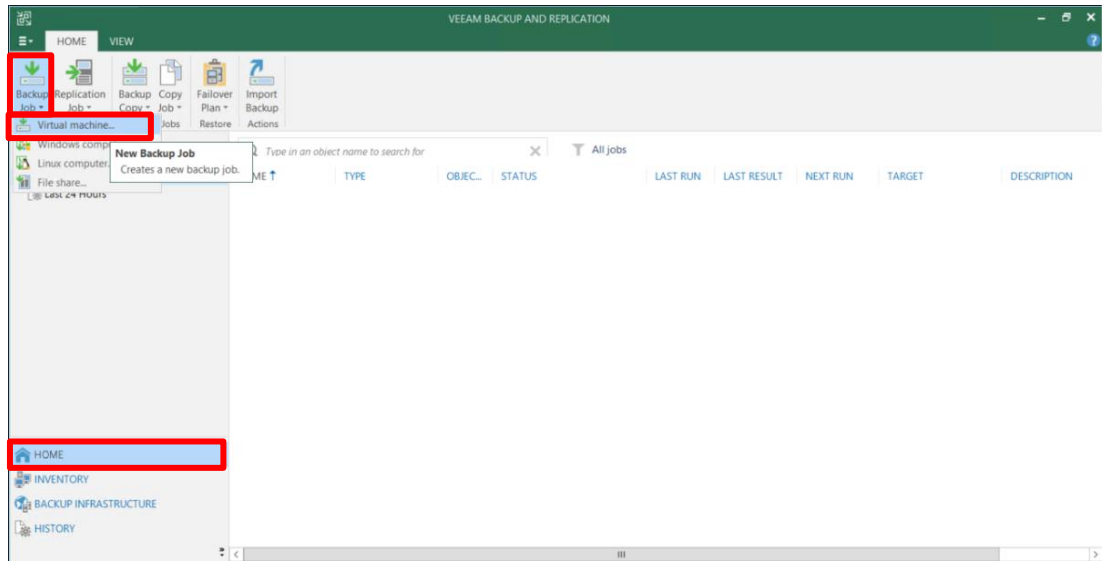


Figure 2-16 Configuration of Adding Backup Job

Step 3-2. Type a **Name** for this backup job

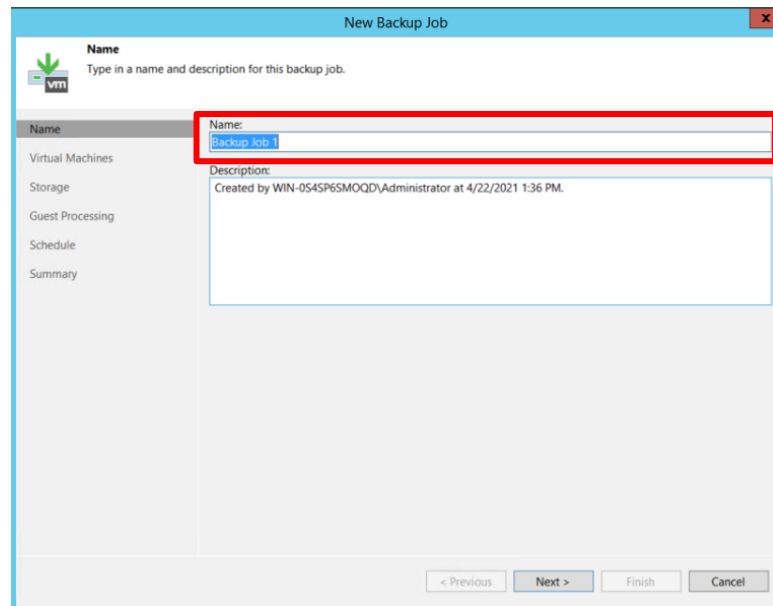


Figure 2-17 Name

Step 3-3. Click **Add** → Choose a Virtual Machine to **Add Object** for backup

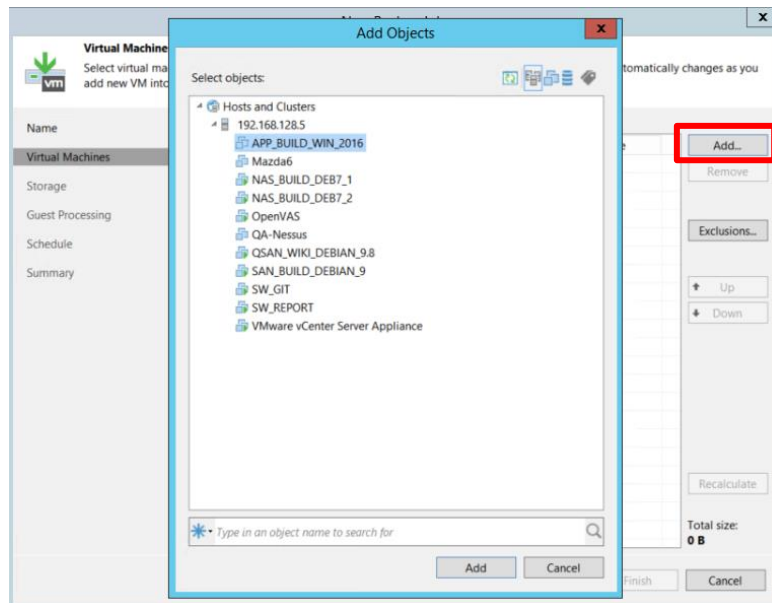


Figure 2-18 Add Virtual Machine

Step 3-4. Click **Next**

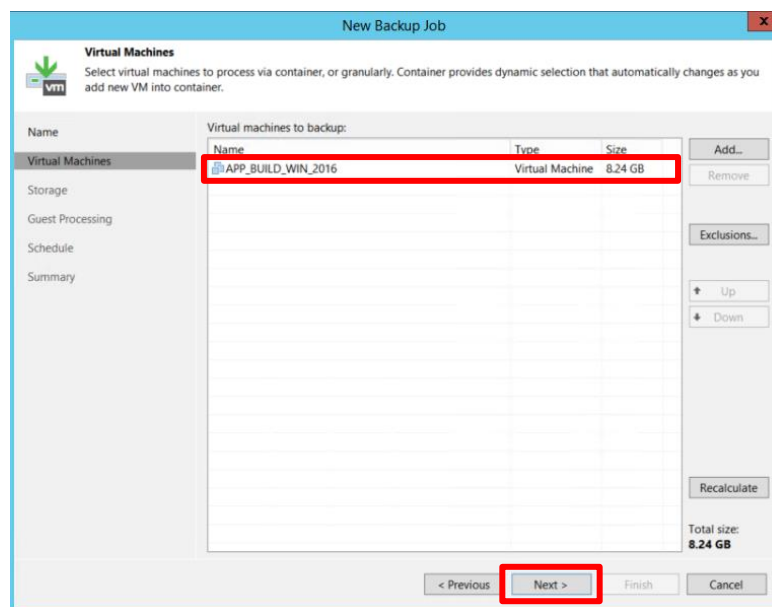


Figure 2-19 Virtual Machines

Step 3-5. Select **Backup repository** to map backup → Click **Advanced**

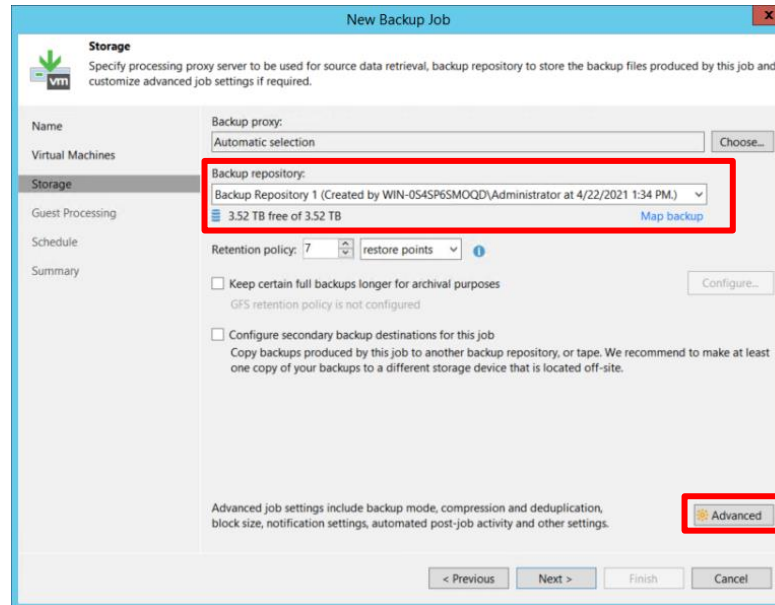


Figure 2-20 Storage

Step 3-6. Select **Scripts** → Tick the checkbox of **Run the following script after the job:** → Click **Browse**

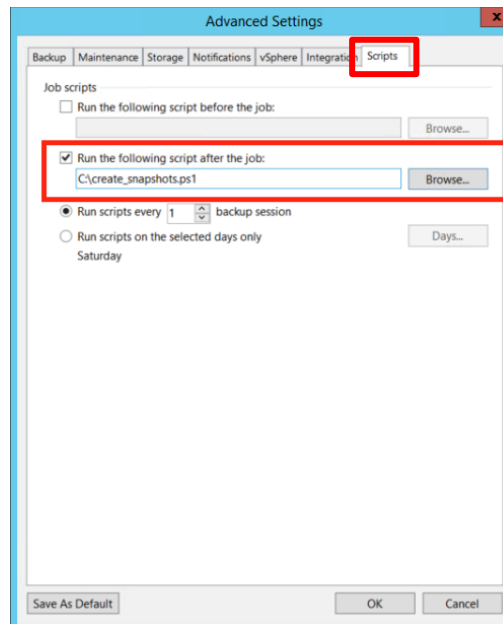


Figure 2-21 Add Scripts in Advanced Settings

Step 3-7. Choose **PowerShell Files (\*.ps1)** file type → Select the **script file** downloaded from **QSAN**

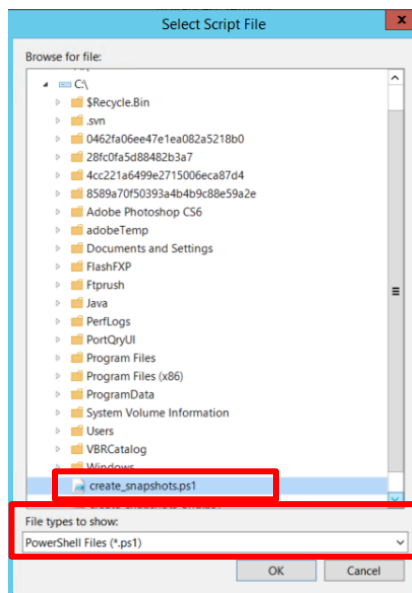


Figure 2-22 Select Script File

Step 3-8. Check the script file is the right one → Click **OK**

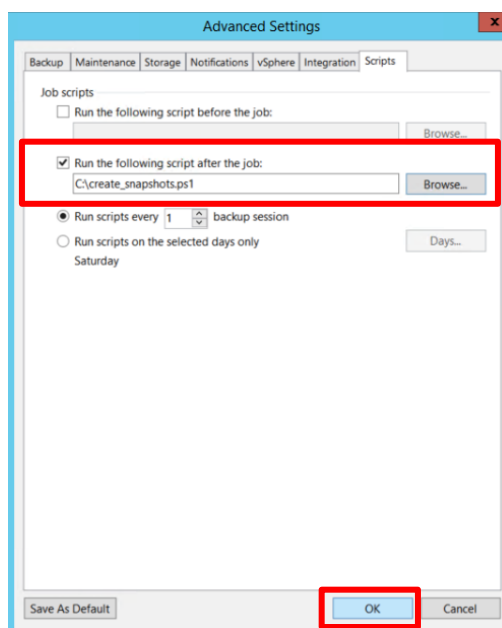


Figure 2-22 Script file to run after the job

Step 3-9. Select by the needs → click **Next**

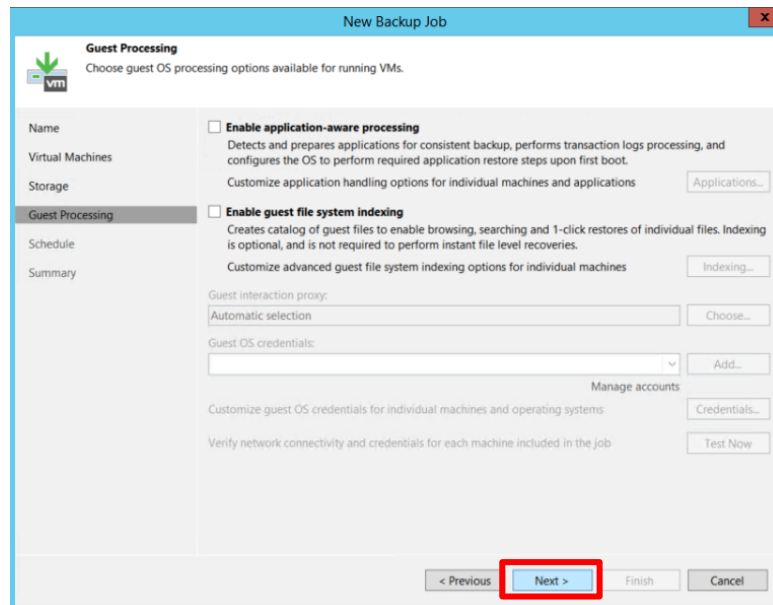


Figure 2-23

Guest Processing

Step 3-10. Tick the checkbox on **Run the job automatically** → Set the backup **Schedule** → refer to QSAN UI WORM schedule

[Note] Schedule set up proportion is 1:2 (Veeam backup : WORM)

For example:

- If user set Veeam backup everyday, then set WORM retention for two days.
- If user set Veeam backup every two day, then set WORM retention for four days



**New Backup Job**

**Schedule**  
Specify the job scheduling options. If you do not set the schedule, the job will need to be controlled manually.

**Run the job automatically**

- ☒ Daily at this time: 10:00 PM Everyday Days...
- ☐ Monthly at this time: 10:00 PM Fourth Saturday Months...
- ☐ Periodically every: 1 Hours Schedule...
- ☐ After this job: [dropdown]

**Automatic retry**

- ☒ Retry failed items processing: 3 times
- Wait before each retry attempt for: 10 minutes

**Backup window**

- ☐ Terminate job if it exceeds allowed backup window Window...
- If the job does not complete within allocated backup window, it will be terminated to prevent snapshot commit during production hours.

< Previous Apply Finish Cancel

Figure 2-24 Schedule

Step 3-11. Reconfirm for all the settings→Click **Finish**

**New Backup Job**

**Summary**  
The job's settings have been saved successfully. Click Finish to exit the wizard.

**Summary:**

- Name: Backup Job 1
- Target Path: \\192.168.214.50\Tmp
- Type: VMware Backup
- Source items: APP\_BUILD\_WIN\_2016 (192.168.128.5)
- Command line to start the job on backup server: "C:\Program Files\Veeam\Backup and Replication\Backup\Veeam.Backup.Manager.exe" backup f5317929-a1f0-4bd7-8dca-aa4cdfba51f

☐ Run the job when I click Finish

< Previous Next > **Finish** Cancel

Figure 2-24 Summary

Step 3-12. The Job created appeal in the council

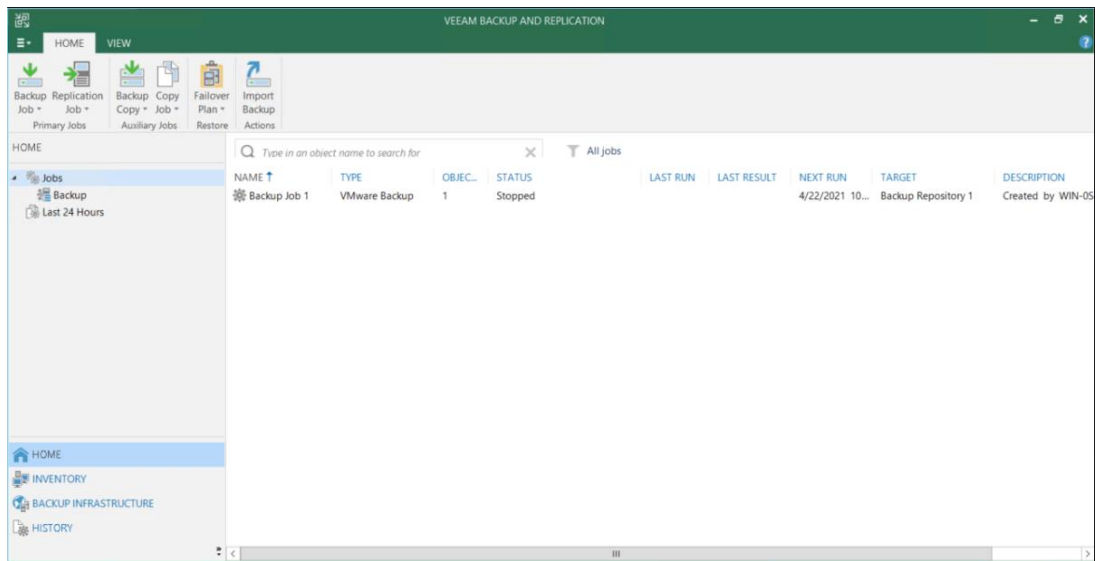


Figure 2-24 Done Setting in Veeam Backup and Replication UI

Step 4-1. Find the **Script** file downloaded from QSAN→Right-click →**Edit**

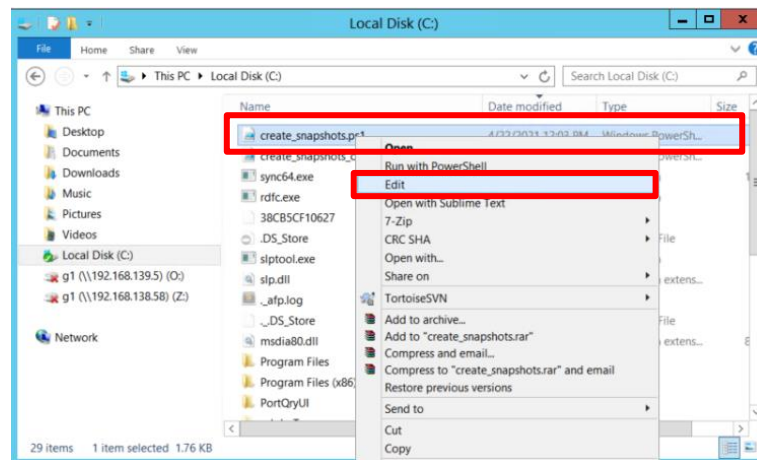
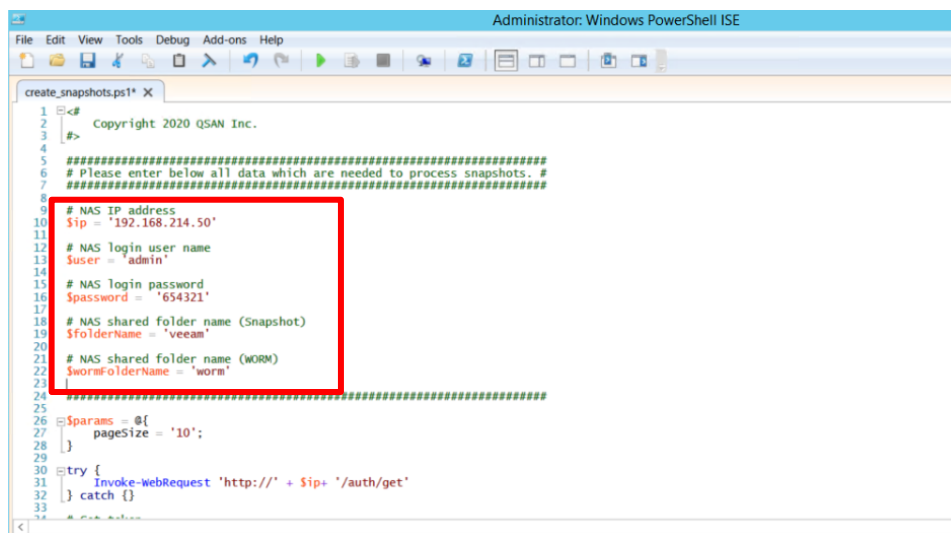


Figure 2-25 Make custom-changes on the Script

Step 4-2. Change the following customize items :

- i. **NAS IP address:** into your NAS IP
- ii. **NAS login user name**
- iii. **Nas login password**
- iv. **NAS shared folder name (Snapshot) :** into the folder name you create for snapshot (set in QSAN UI)

- v. **NAS shared folder name (WORM):** into the folder name you create for WORM (set in QSAN UI)



```

Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
create_snapshots.ps1 X
1 1 # Copyright 2020 QSAN Inc.
2 2 #
3 3 #
4 4 #
5 5 #####
6 6 # Please enter below all data which are needed to process snapshots. #
7 7 #####
8 8 #
9 9 # NAS IP address
10 10 $ip = '192.168.214.50'
11 11 #
12 12 # NAS login user name
13 13 $user = 'admin'
14 14 #
15 15 # NAS login password
16 16 $password = '654321'
17 17 #
18 18 # NAS shared folder name (Snapshot)
19 19 $folderName = 'veeam'
20 20 #
21 21 # NAS shared folder name (WORM)
22 22 $wormFolderName = 'worm'
23 23 #
24 24 #####
25 25 #
26 26 $params = @{
27 27     pageSize = '10';
28 28 }
29 29 #
30 30 try {
31 31     Invoke-WebRequest 'http://' + $ip + '/auth/get'
32 32 } catch {}
33 33 #
  
```

Figure 2-26

5 Items Change in the Script

## Summary

The Integration between QSAN and Veeam bring higher data protection level for all business. In the age of advances in information technology, cyber-attack becomes the main issue for most business to conquer. Try to apply Veeam Backup with Snapshot and WORM mechanism to prevent from any ransomware attack. After setting up by the steps listed above then the business can enjoy the automatic data protection process.

## Appendix

---

### Related Documents

There are related documents which can be downloaded from the website.

- [All XCubeNXT Documents](#)
- [QSM\\_WORM White Paper](#)
- [XCubeNXT Hardware Manual](#)
- [XCubeNXT Software Manual](#)
- [Compatibility Matrix](#)
- [White Papers](#)
- [Application Notes](#)

### Technical Support

Do you have any questions or need help trouble-shooting a problem? Please contact QSAN Support, we will reply to you as soon as possible.

- Via the Web: [https://www.qsan.com/technical\\_support](https://www.qsan.com/technical_support)
- Via Telephone: +886-2-77206355  
(Service hours: 09:30 - 18:00, Monday - Friday, UTC+8)
- Via Skype Chat, Skype ID: qsan.support  
(Service hours: 09:30 - 02:00, Monday - Friday, UTC+8, Summer time: 09:30 - 01:00)
- Via Email: [support@qsan.com](mailto:support@qsan.com)