Business Services

Flexible Engine
Veeam Backup & Replication Server deployment guide

Objectives

The document has for purpose to

- **describe** the requirements to setup Veeam Backup & Replication Server on Flexible Engine
- **explain** how to deploy the product on Flexible Engine

Content

1. Introduction

Veeam Backup & Replication Server provides an enterprise backup solution for all your cloud, virtual and physical workloads by providing backup using hypervisor level snapshot (VMware vsphere, Microsoft Hyper-V, Nutanix AHV), storage snapshot integration or by protecting the physical servers/VMs/Cloud workloads using Veeam Agent for Linux & Veeam Agent for Windows so that your data is always protected and accessible.

This guide is intended to provide best practices for deployment of a software-defined data protection solution, Veeam Backup & Replication can be flexibly deployed at any scale in Flexible Engine environment. It is not meant as a full documentation or detailed explanation of features. Please refer to Veeam documentation for complete and up to date information.

1.1. Licensing & Purchasing

Veeam Software offers the following types of licenses for Veeam Backup & Replication:

Paid Licenses

- **Subscription license** — license that expires at the end of the subscription term. The Subscription license term is normally 1-3 years from the date of license issue.
- **Perpetual license** — permanent license. The support and maintenance period included with the license is specified in months or years. Typically, one year of basic support and maintenance is included with the Perpetual license.
- **Rental license** — license with the license expiration date set according to the chosen rental program (normally 1-12 months from the date of license issue). The Rental license can be automatically updated upon expiration.

  Rental licenses are provided to Veeam Cloud & Service Provides (VCSPs) only. For more information, see the Rental License section in the Veeam Cloud Connect Guide.

This Veeam Backup & Replication (VBR) image for Flexible Engine is provided on BYOL basis. To purchase the license through OCB please use the "Contact Us" button. Please refer to the Veeam website for guidance about license sizing for your number of ECS to protect.

You will be requested to enter the Veeam license file during the configuration.

The consumption of Flexible Engine resources including ECS for VBR & storage used as a backup repository is purchased at standard pricing.

2. VBR image deployment on Flexible Engine

2.1. Pre-requisites

2.1.1. Veeam Backup & Replication Server Requirements

Before deploying a Veeam Backup & Replication Server on Flexible Engine, you must define compute requirements for VBR Server corresponding to your needs.

- **Compute Requirements**
  Recommended Veeam backup server configuration is 1 vCPU and 4 GB RAM per 10 concurrently running jobs. Concurrent jobs include any running backup or replication jobs as well as any job with a continuous schedule such as backup copy jobs.

  The minimum recommendation is 2 vCPU and 4 GB RAM.

- **Disk space**

  Installation folder
  Plan for a minimum of 40 GB. If installing in a virtual machine, thin disks may be used. By default the installer will choose the drive with most available free space for the pre-configured Default Backup Repository.

  Log files
  Log file growth will depend on the number and frequency of jobs and the number of instances being protected. Consider that the logging level may also affect the log size.

  Plan for 3 GB log files generated per 100 protected instances, with a 24 hour RPO. For environments with more than 500 protected instances it is recommended to change the default location to a different fast access disk. Many concurrently running jobs may produce a lot of write streams to log files, that can slow down operations for the Veeam Backup Service and Backup Manager processes.

- **Veeam Backup Catalog folder**
  This folder is used if guest indexing in backup jobs is enabled.

  Plan for 10 GB per 100 ECS for guest file system catalog folder (persistent data).

- **Veeam Backup & Replication Database**
  Veeam Backup & Replication stores all information about backup infrastructure, jobs settings, job history, sessions and other configuration data in a Microsoft SQL Server database. When planning the Veeam Backup & Replication deployment you must choose the placement of the

configuration database. It may be either a local or remote SQL Server with several licensing options available. Microsoft SQL Server 2016 Express Edition is included in the Veeam Backup & Replication setup which is a convenient option for most smaller deployments :

- Each instance uses only up to 1 GB of RAM
- Each instance uses only up to 4 cores of the first CPU
- Database size cannot exceed 10 GB

It is recommended to install Standard or Enterprise Edition if any of the following apply:

- When protecting more than 500 VMs.
- When unable to configure an external staging server.
- When databases are using advanced features of Microsoft SQL Server.
- When using Files to Tape jobs extensively.

Please follow these guidelines* for SQL Server :

Number of concurrently running jobs	CPU	RAM
Up to 25	2	4 GB
Up to 50	4	8 GB
Up to 100	8	16 GB

*Please refer to Veeam Documentation for complete and up to date information.

2.1.2. Backup Repositories

A backup repository is a storage location where Veeam keeps backup files, Agent based backups, VM copies and metadata for replicated VMs.

To configure a backup repository, you can use the following storage types however all repository types are not configurable in Public cloud environment:

2.1.2.1. Direct attached storage

You can add virtual and physical servers as backup repositories:

- Microsoft Windows server

  You can use a Microsoft Windows server with local or directly attached storage as a backup repository. The storage can be a local disk, directly attached disk-based storage (such as a USB hard drive), or iSCSI/FC SAN LUN in case the server is connected into the SAN fabric.

- Linux server

  You can add Linux server with local, directly attached storage or mounted NFS as a backup repository. The storage can be a local disk, directly attached disk-based storage (such as a

USB hard drive), NFS share, or iSCSI/FC SAN LUN in case the server is connected into the SAN fabric.

2.1.2.2. Network attached storage

You can add the following network shares as backup repositories:

- CIFS (SMB) share
- NFS share

2.1.2.3. Deduplicating storage appliances

You can add the following deduplicating storage appliances as backup repositories:

- Dell EMC Data Domain
- ExaGrid
- HPE StoreOnce
- Quantum DXi

2.1.2.4. Object storage

You can use cloud storage services as backup repositories. Object storage repositories can be used in the following ways:

In Scale-Out Backup Repository as a part of Capacity Tier. Capacity tier of scale-out backup repository allows to offload existing backup data directly to cloud-based object storage by using on-premises S3 Compatible devices like Flexible Engine. For more information, see Capacity Tier.

For details, see Object Storage Repository.

2.1.3. Considerations & Limitations*

Please refer to Veeam Documentation for complete and up to date information.

2.1.3.1. Infrastructure

For infrastructure components like ECS, EVS Volume, Network etc. the Flexible Engine limitations apply.

2.1.3.2. Object Storage Repositories

- Make sure to open required ports to communicate with object storage repositories in advance, as described in Used Ports.
- Make sure the S3 Compatible device you are adding supports AWS v4 signature. For more information about authentication requests, see this Amazon article.
- Data in object storage bucket/container must be managed solely by Veeam Backup & Replication, including retention and data management. Enabling lifecycle rules is not supported, and may result in backup and restore failures.
- If a backup chain contains backup files that are marked as corrupted by Health Check, then such corrupted files, as well as all subsequent files that go after the corrupted one are never offloaded. In

such a scenario, offload is only possible starting from the full backup file that succeeds the backup chain with corrupted backups.

- Different object storage repositories mapped to the same cloud folder can be used for storing both the Capacity Tier backups and the NAS backups.

Important!

The same object storage repository (mapped to the same cloud folder) must not be used across multiple Veeam Backup & Replication servers for the same purposes as it leads to unpredictable system behavior and inevitable data loss.

For the same reason, two object storage repositories mapped to the same cloud folder must not be added to different scale-out backup repositories within one Veeam Backup & Replication server.

2.1.3.3. Backup

Since on Public cloud you don't have access to hypervisor so to backup workloads like ECS, you need deploy Veeam agent for Linux & Veeam Agent for Windows.

2.1.4. Compute Requirements

2.1.4.1. VBR Server Recommendation

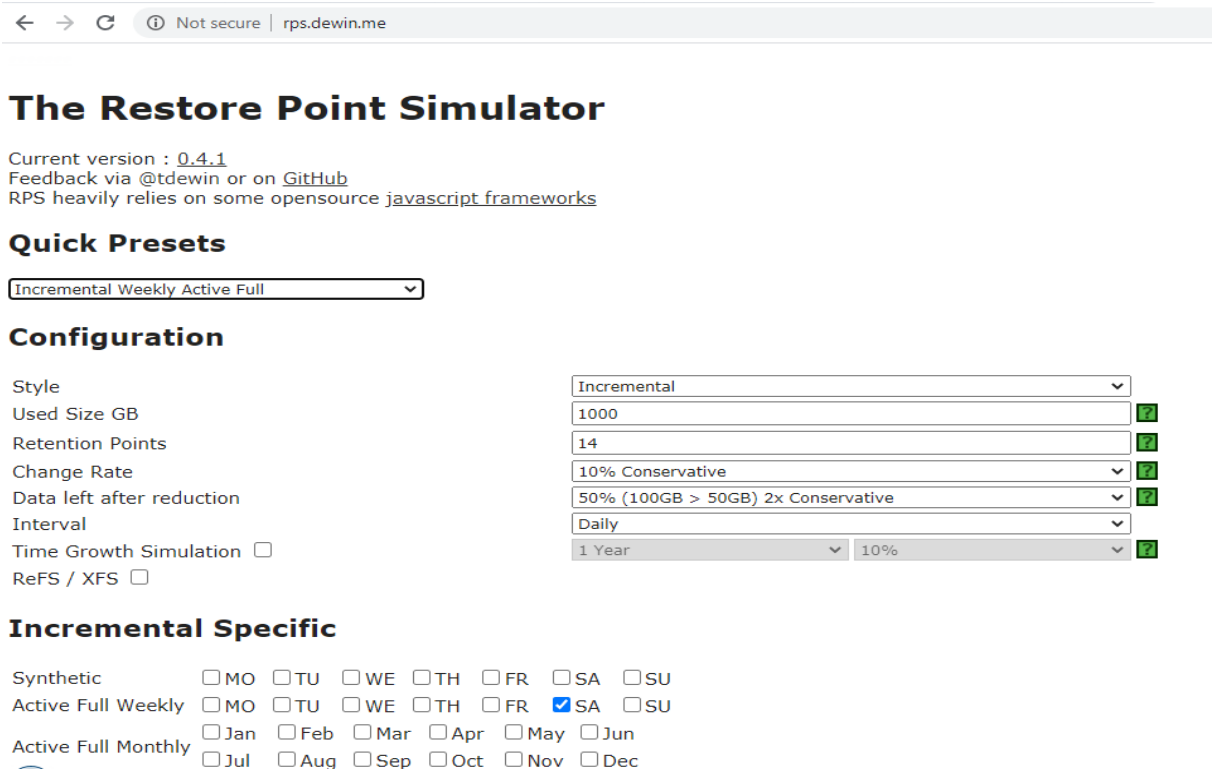
Specification	Requirement
Hardware	*CPU*: x86-64 processor (4 cores recommended). *Memory*: 4 GB RAM plus 500 MB RAM for each concurrent job. Memory consumption varies according to number of VMs in the job, size of VM metadata, size of production infrastructure, etc. *Disk Space*: 5 GB[1] for product installation and 4.5 GB for Microsoft .NET Framework 4.7.2 installation. 10 GB per 100 VM for guest file system catalog folder (persistent data). *Network*: 1 Gbps or faster for on-site backup and replication, and 1 Mbps or faster for offsite backup and replication. High latency and reasonably unstable WAN links are supported. [1] Here and throughout this document GB is considered as 2^30 bytes, TB as 2^40 bytes.
OS	Only 64-bit version of the following operating systems are supported: • Microsoft Windows Server 2019 • Microsoft Windows Server 2016 • Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2008 R2 SP1
Software	During setup, the system configuration check is performed to determine if all prerequisite software is available on the machine where you plan to install Veeam Backup & Replication. If some of the required software components are missing, the setup wizard will offer you to install missing software automatically. This refers to: • Microsoft .NET Framework 4.7.2

	• Microsoft Windows Installer 4.5 • Microsoft SQL Server Management Objects • Microsoft SQL Server System CLR Types • Microsoft Report Viewer Redistributable 2015 • Microsoft Universal C Runtime The following software must be installed manually: • Microsoft PowerShell 2.0. • Firefox, Google Chrome, Microsoft Edge, or Microsoft Internet Explorer 10.0 or later. • RDP client version 7.0 or later installed on the backup server (required to open the VM console during SureBackup recovery verification of Microsoft Hyper-V VMs). The RDP client is pre-installed on Microsoft Windows 7/Windows Server 2008 R2 OS or later. You can download the RDP client from this Microsoft KB article. [Optional] To add SCVMM servers to Veeam Backup & Replication infrastructure, the following software is required: • Microsoft System Center Virtual Machine Manager 2019 • Microsoft System Center Virtual Machine Manager 1807 • Microsoft System Center Virtual Machine Manager 1801 • System Center 2016 Virtual Machine Manager Admin UI (for connecting SCVMM 2016 servers) • System Center 2012 R2 Virtual Machine Manager Admin UI (for connecting SCVMM 2012 R2 servers) • System Center 2012 Virtual Machine Manager Admin UI (for connecting SCVMM 2012 servers) The version of SCVMM Admin UI installed on the backup server must match the SCVMM server version. Make sure that versions of updates also match. If you plan to install Veeam Backup & Replication in the unattended mode using the command line interface, manually install all prerequisite software before that. For more information, see Installing Veeam Backup & Replication in Unattended Mode.
SQL Database	Local or remote installation of the following versions of Microsoft SQL Server: • Microsoft SQL Server 2019 • Microsoft SQL Server 2017 • Microsoft SQL Server 2016 (Microsoft SQL Server 2016 SP2 Express Edition is included in the setup)[1] • Microsoft SQL Server 2014 • Microsoft SQL Server 2012 (Microsoft SQL Server 2012 SP4 Express Edition is included in the setup)[2] • Microsoft SQL Server 2008 R2 • Microsoft SQL Server 2008 All editions of Microsoft SQL Server are supported. The usage of Microsoft SQL Server Express Edition is **limited by the database size up to 10 GB**. If you plan to have larger databases, use other editions of Microsoft SQL Server. Veeam Backup & Replication and Veeam Backup Enterprise Manager configuration databases can be deployed in Microsoft SQL AlwaysOn Availability Groups. For more information, see this Veeam KB article. [1] For machines running Microsoft Windows Server 2012 or later.

* Please refer to Veeam Documentation for complete and up to date information.

2.1.5. Backup Repository Sizing

The sizing for the disk repositories differs based on the stored data & its retention (how long you want to keep the data). The sizing calculator can you help you size the repository correctly.



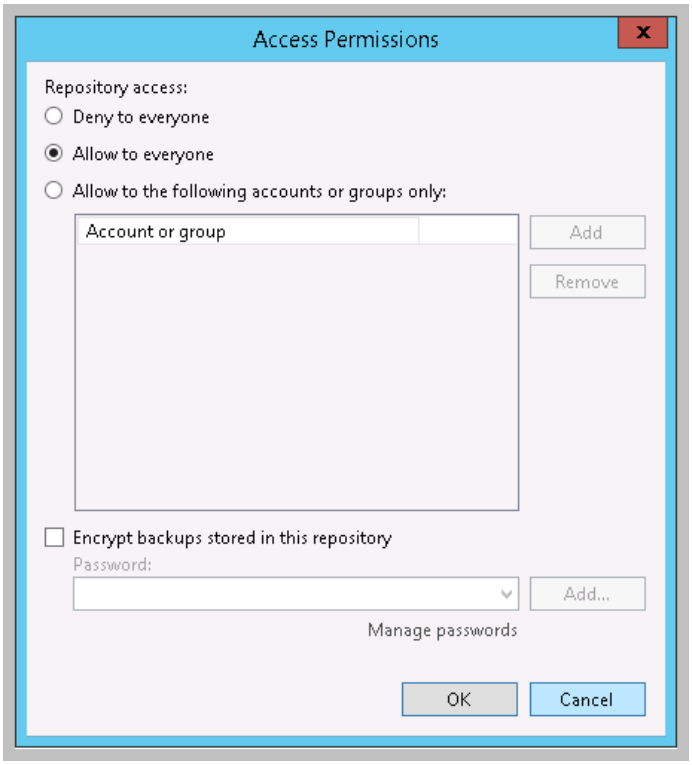
2.1.6. Permissions on Backup Repository

To be able to store backups on a backup repository managed by a Veeam backup server, the user must have access permissions on this backup repository.

Access permissions are granted to security principals such as users and AD groups by the backup administrator working with Veeam Backup & Replication. Users with granted access permissions can target Veeam Agent backup jobs at this backup repository and perform restore from backups located on this backup repository.

If the Veeam Backup Jobs are created from Veeam Backup & Replication Server instead of Agent then you do not need to grant access permissions on the backup repository to users.

After you create a new backup repository, access permissions on this repository are set to Deny to everyone. To allow users to store backups on the backup repository, you must grant users with access permissions to this repository.

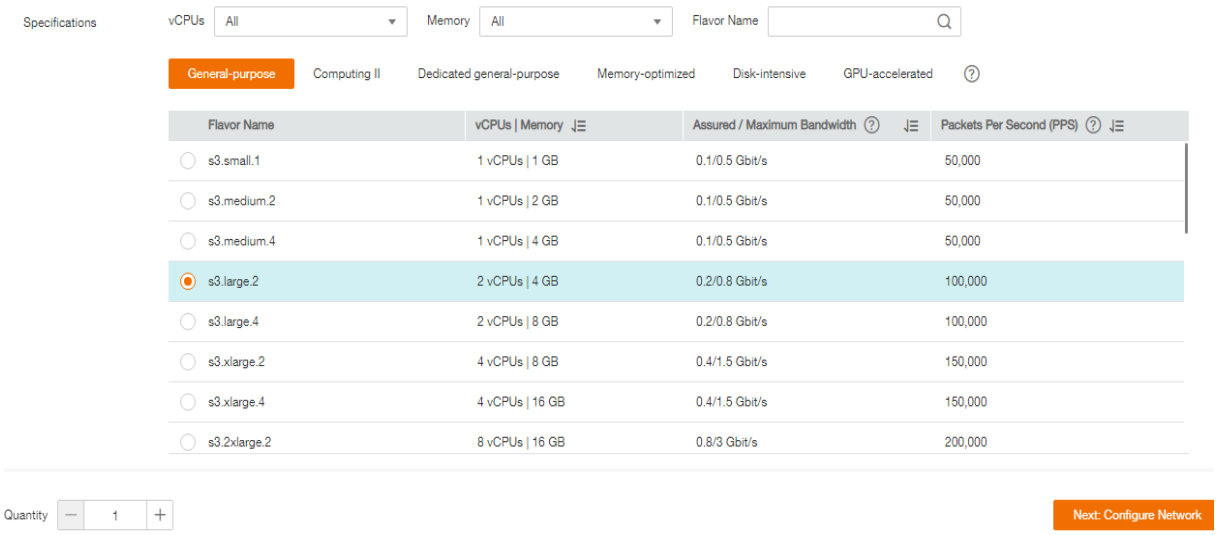


2.2. VBR ECS creation

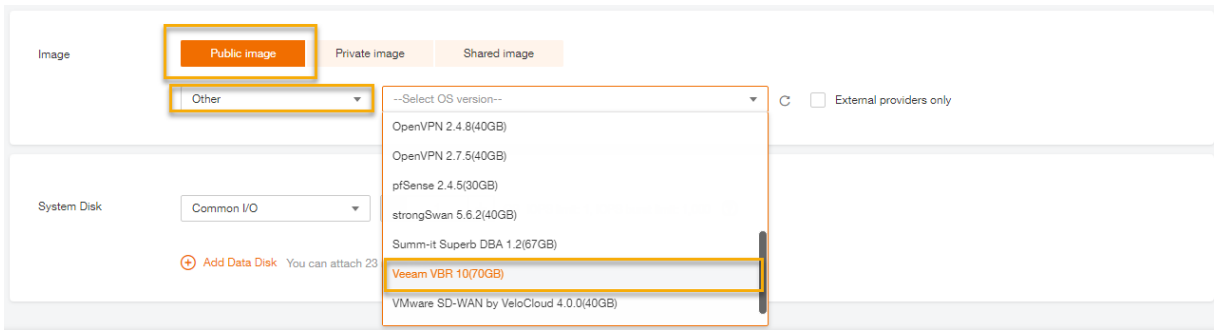
Select the Veeam Backup & Replication Server image using Elastic Cloud Server console as follows :

1. Log in to your Flexible Engine account
2. Select the Elastic Cloud Server in Computing services
3. Then click Create ECS 

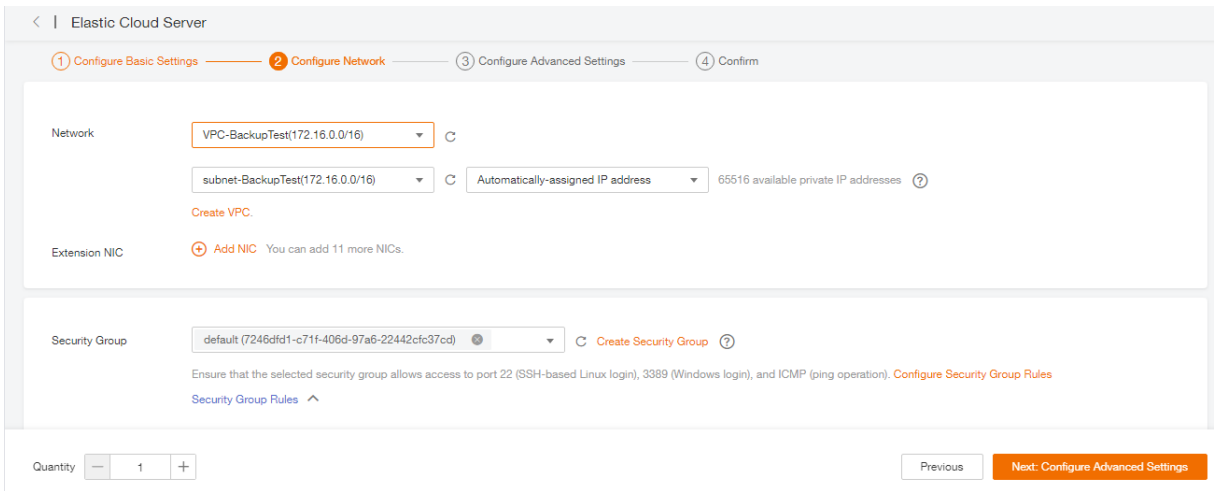
4. Select any flavor starting with minimum 2vCPU and 4GB RAM



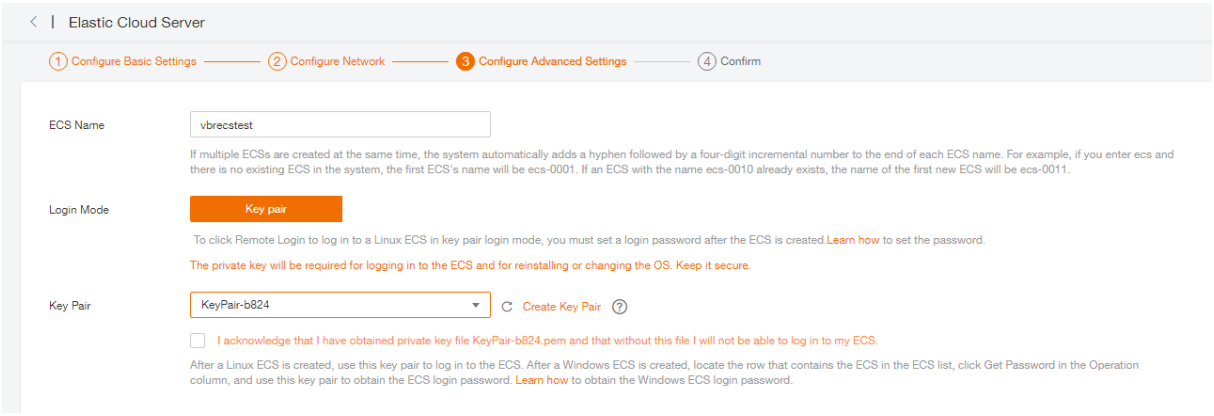
5. To select the image, click on Public Image and filter through Other field to choose Veeam Backup & Replication Server



Select required VPC based on tenants to backup & Security Group for inbound/outbound rules :



Provide ECS name as desired and choose key pair to generate secure password for login :

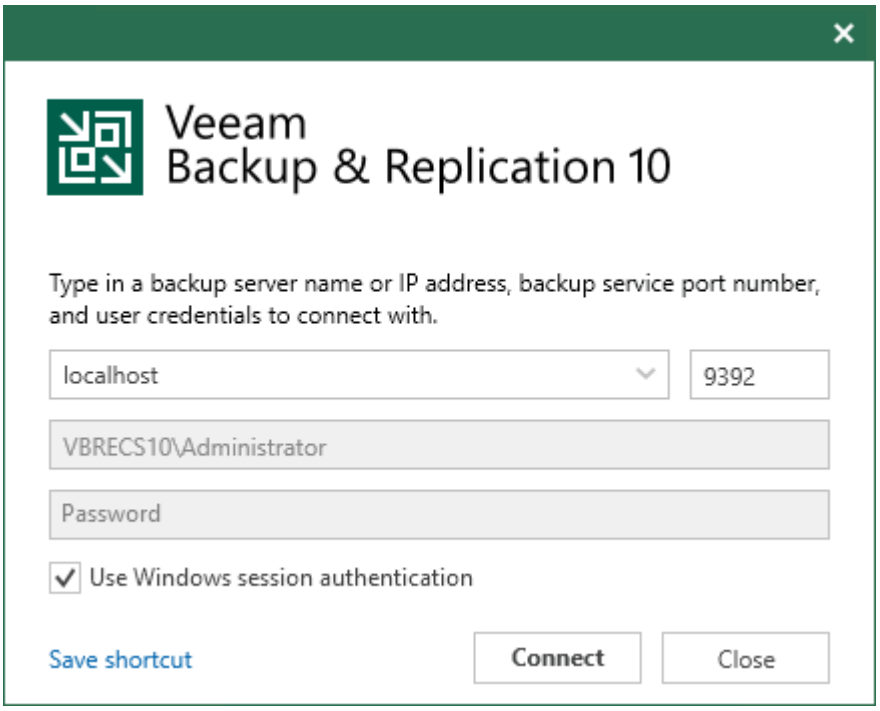


And you are done :

Name/ID	AZ	Status	Specifications/Image	IP Address	Operation
vbrecs10 8291f9cf-4a5e-4097-b99…	eu-west-0c	Running	2 vCPUs | 4 GB | s3.large.2 Veeam VBR 10	172.16.80.205 (Private IP)	Remote Login

Once you login, you will see an icon 

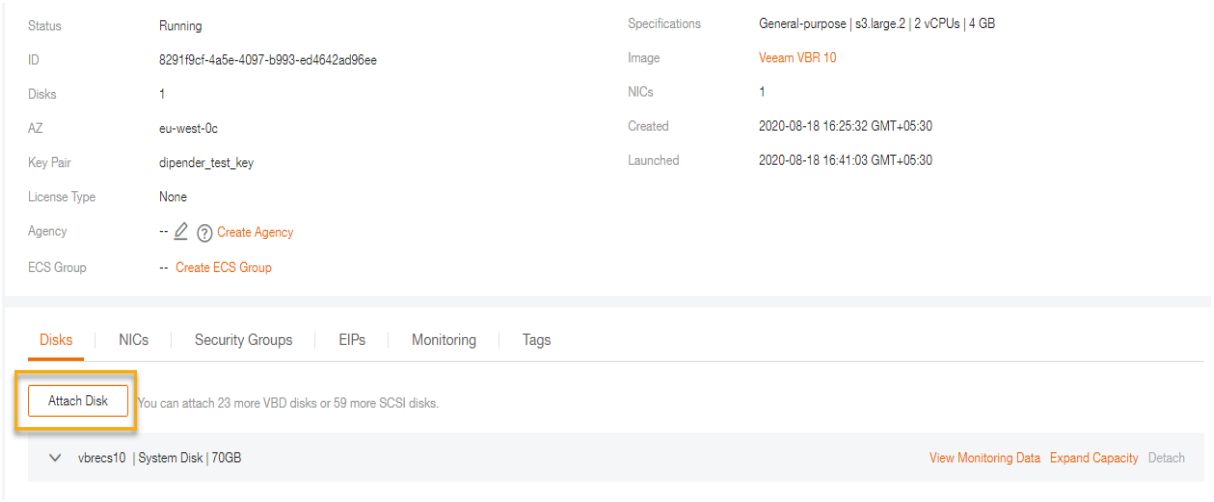
for VBR (Veeam Backup & Replication) console on the desktop to launch Veeam. Just click on connect to use Windows session authentication :



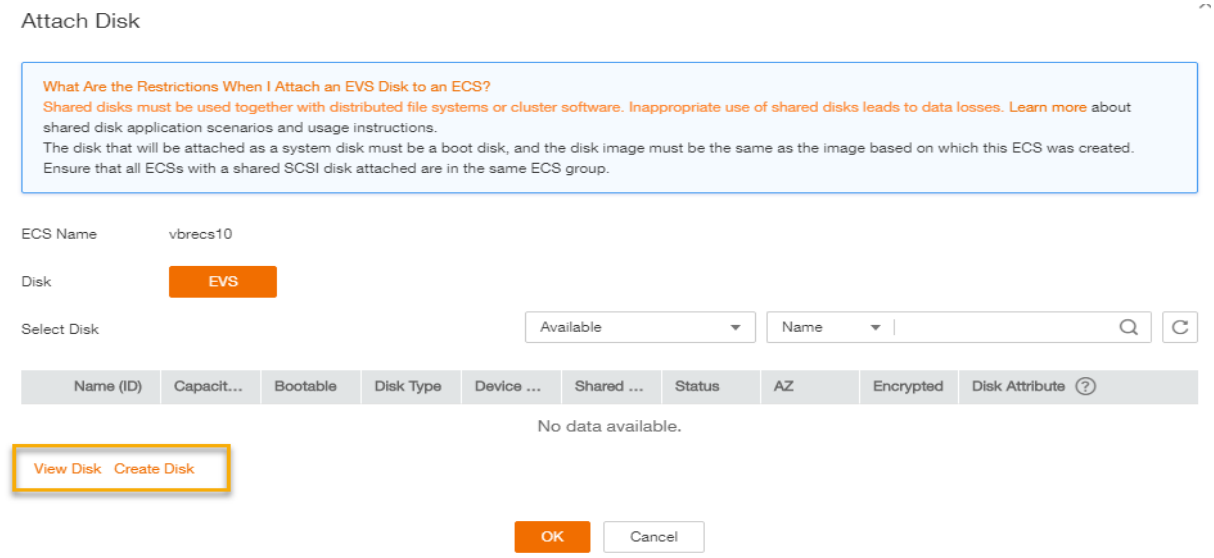
2.3. VBR initial configuration

Initially the VBR server will be deployed with a Default Repository as below on C:\Backups, it is always recommended to use a separate Drive other than system drive to create the backup repository. You can achieve this by attaching another Disk (EVS) to your ECS :

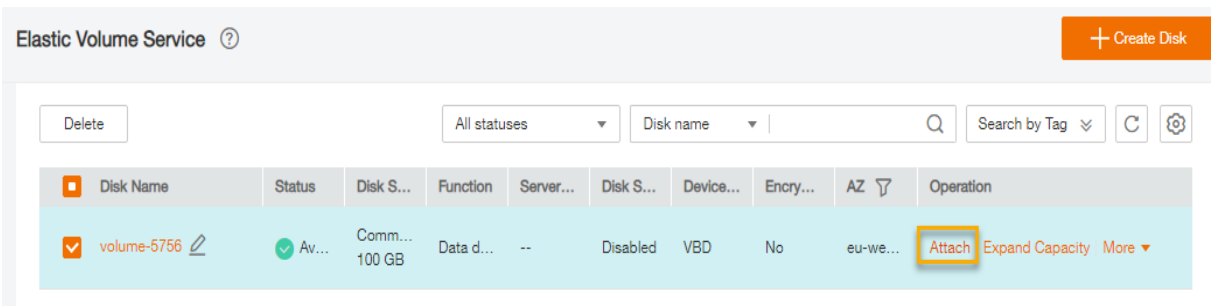
Refer to section 2.1.2 for type of Repositories:

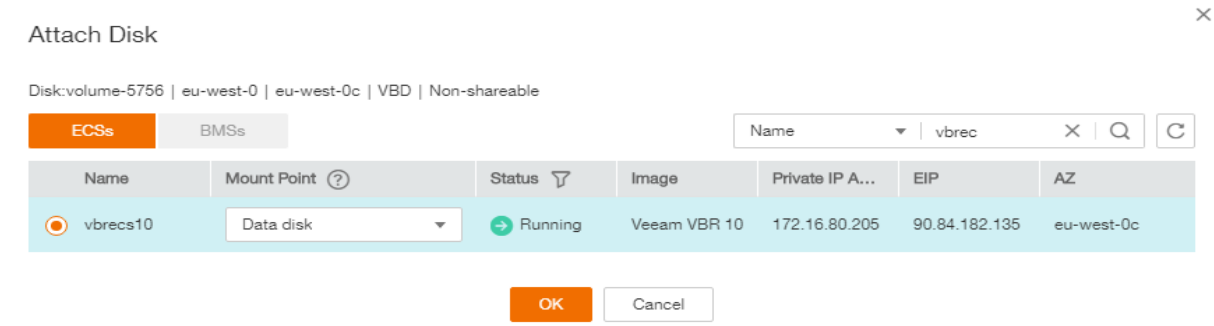


Click on Create Disk in case of a new EVS volume or click on View Disk to attach an existing EVS volume.

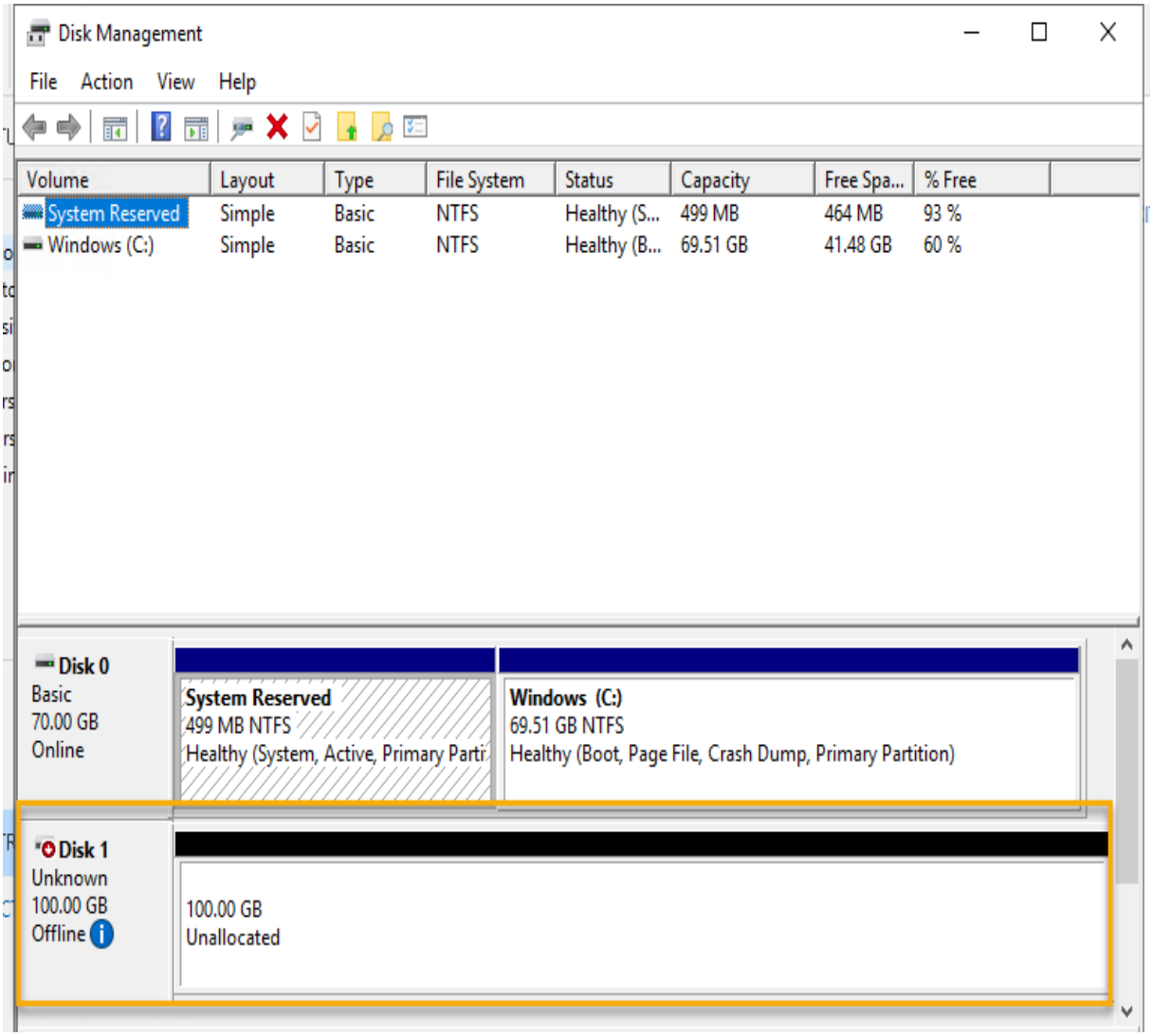


Go to EVS and attach :

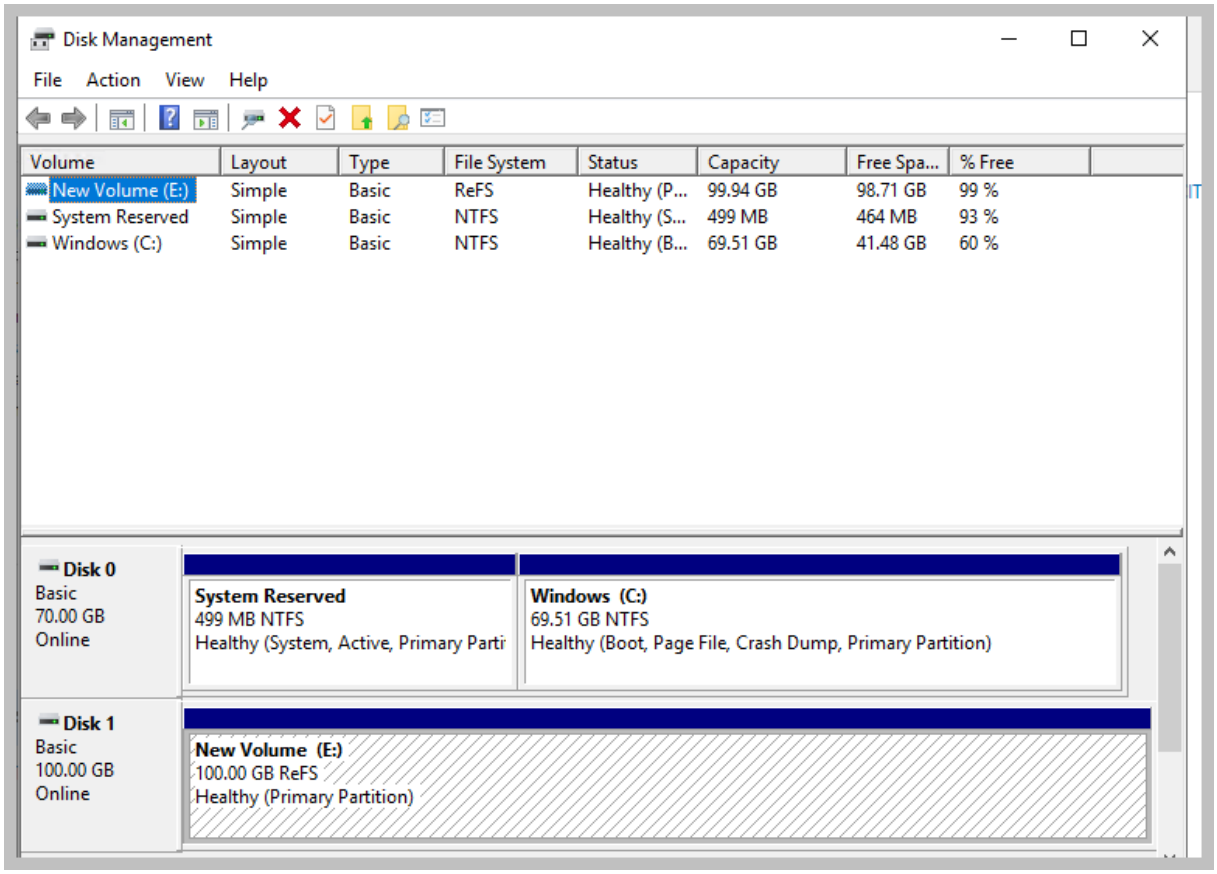




Once the disk is attached, make it present as a Drive on your VBR server to be configured as a repository on Veeam Backup & Replication server :

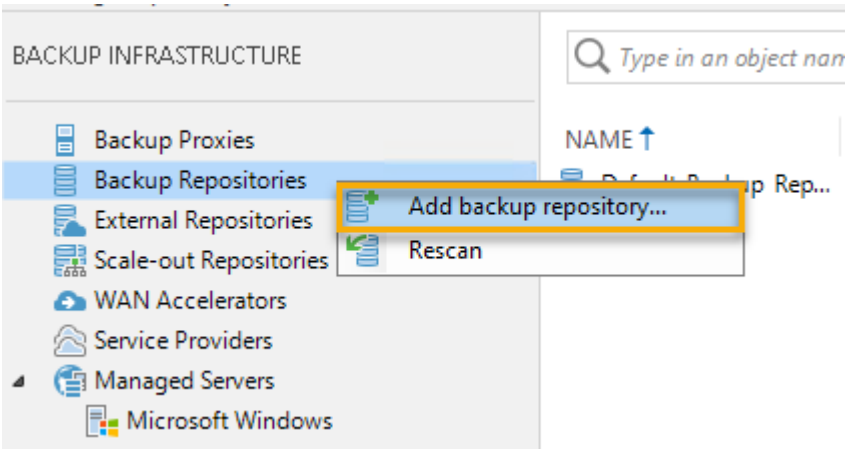


Veeam recommends using ReFS filesystem (64K Block) for local drives as repository :

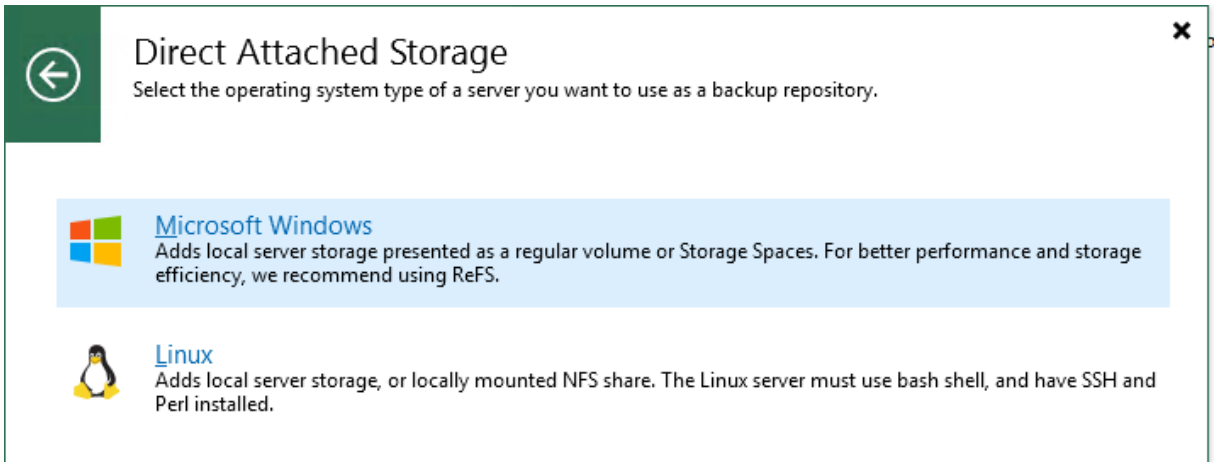


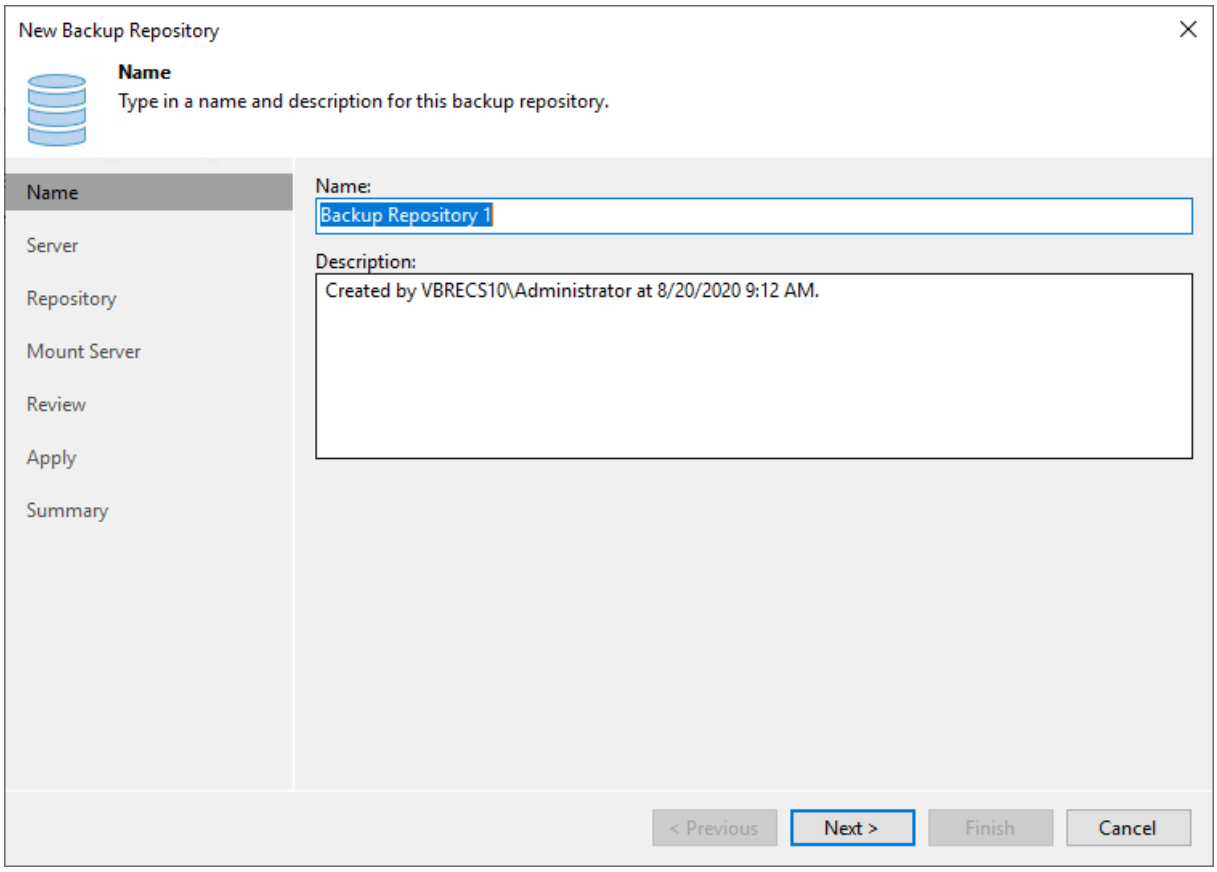
Creating a new [local backup repository] and using it as an extent for Scale Out Backup Repository with S3 bucket from Flexible Engine :

Click on BACKUP INFRASTRUCTURE -> Backup Repositories -> right click and **Add backup repository…**

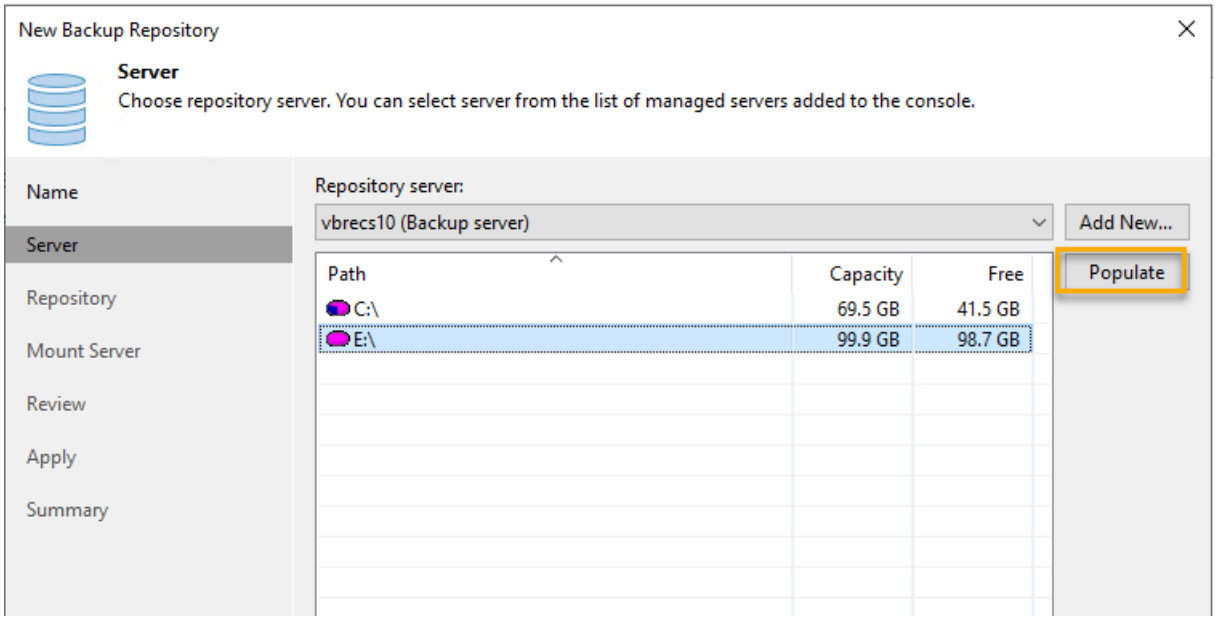


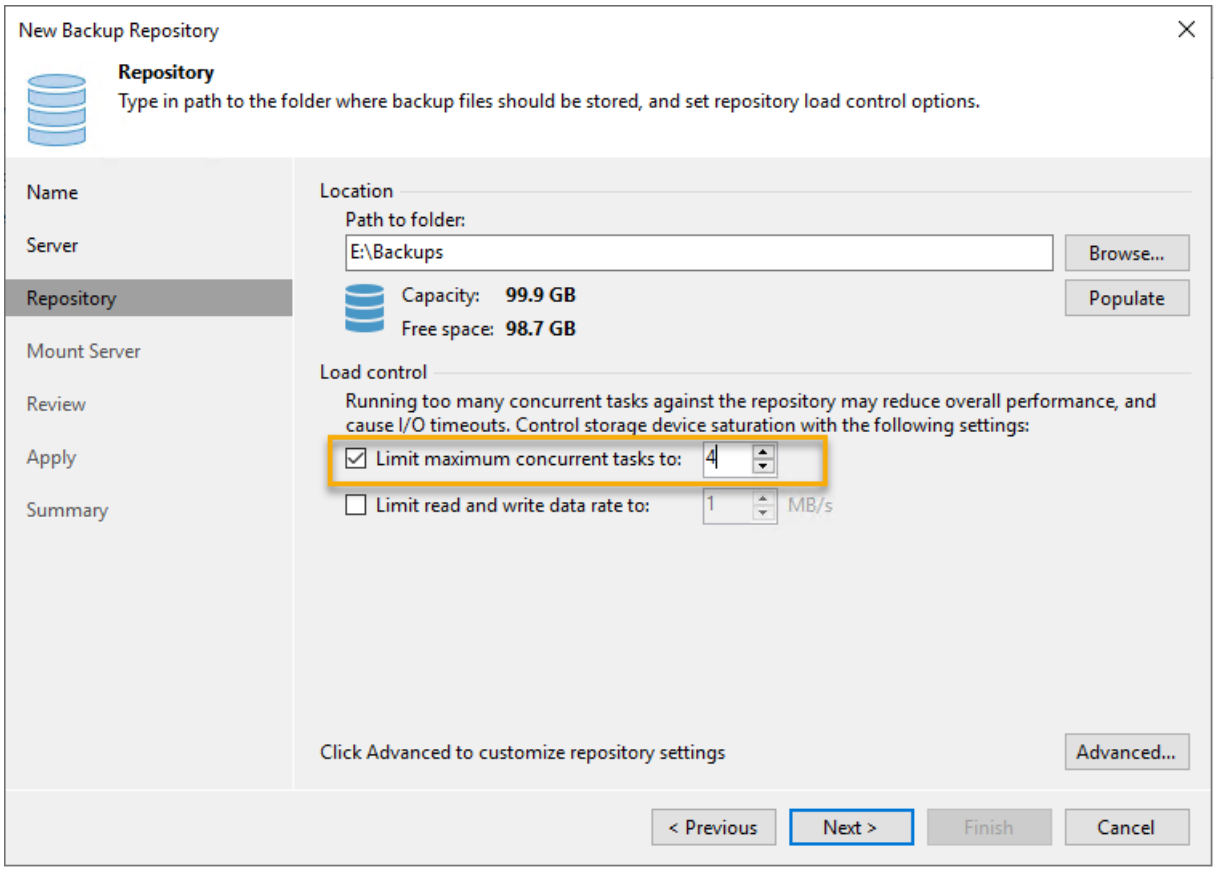
Click on Direct Attached Storage -> Microsoft Windows as the option since it is the local attached Drive on the ECS :

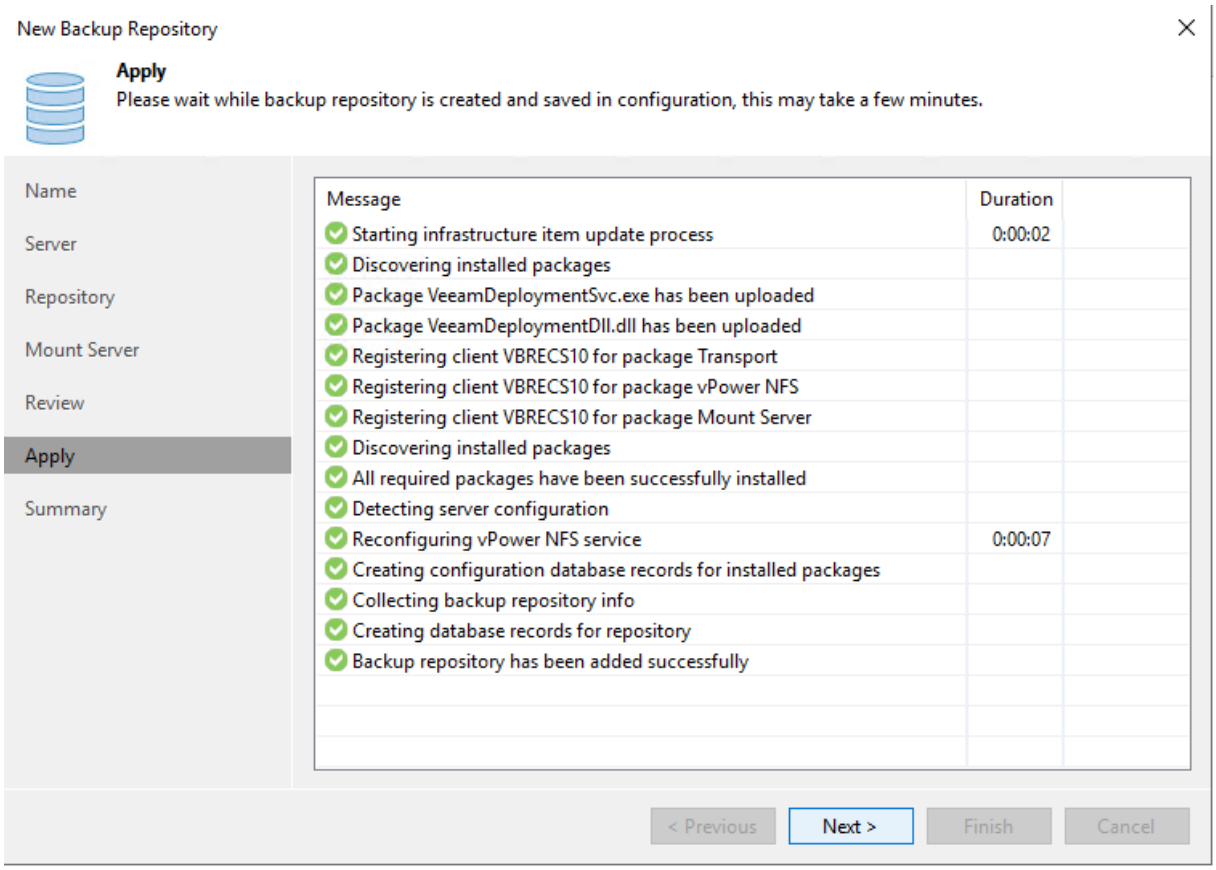


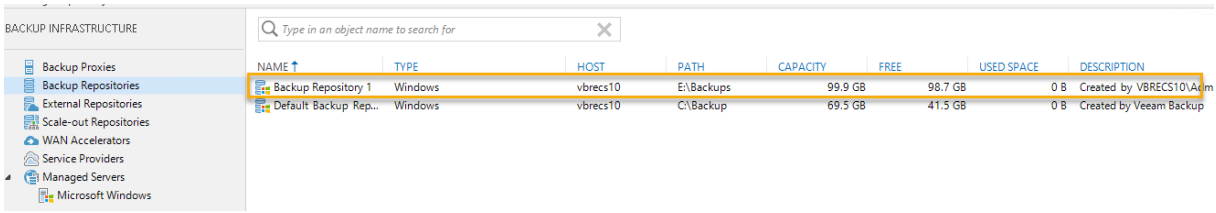


Click on Next and by default the repository server here is your VBR server, alternatively for bigger environments you can offload the process & compute requirements to a separate windows ECS as well. Now click on Populate and it will show up all local drives, select the newly created Drive (E:\ in my case) :


New Backup Repository
Server
Choose repository server. You can select server from the list of managed servers added to the console.
Name
Server
Repository
Mount Server
Review
Apply
Summary
Repository server:
vbrecs10 (Backup server)
Add New...
Path
Capacity
Free
C:\
69.5 GB
41.5 GB
E:\
99.9 GB
98.7 GB
Populate

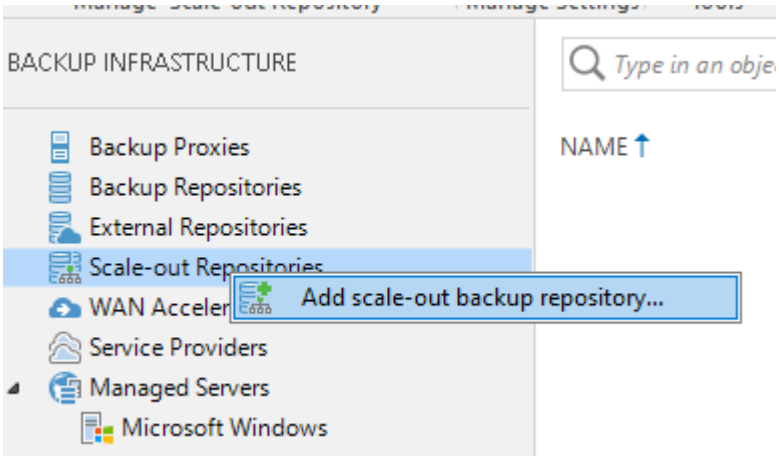

New Backup Repository
Repository
Type in path to the folder where backup files should be stored, and set repository load control options.
Name
Server
Repository
Mount Server
Review
Apply
Summary
Location
Path to folder:
E:\Backups
Browse...
Capacity: 99.9 GB
Free space: 98.7 GB
Populate
Load control
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



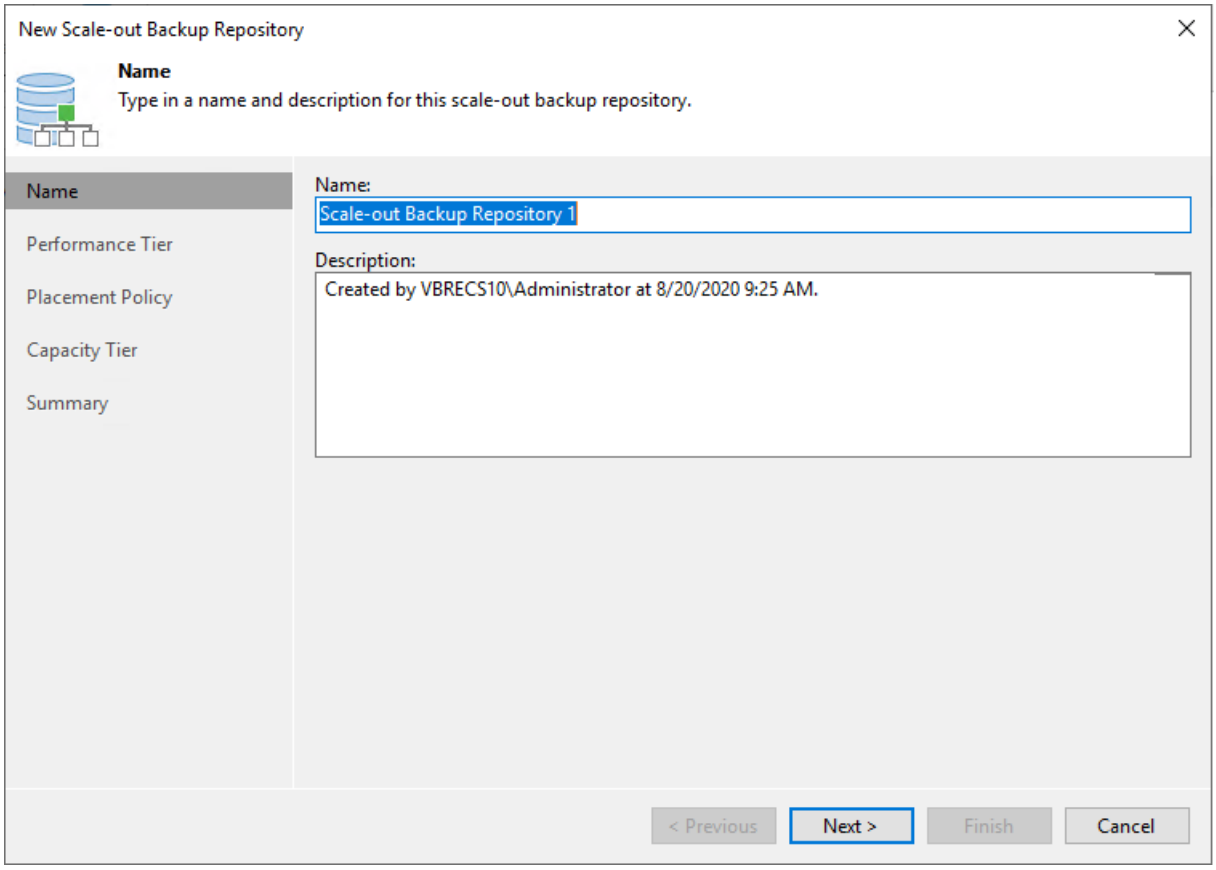


Below are the screenshots to help you add your S3 Object Storage as Scale Out Backup Repository in capacity tier.

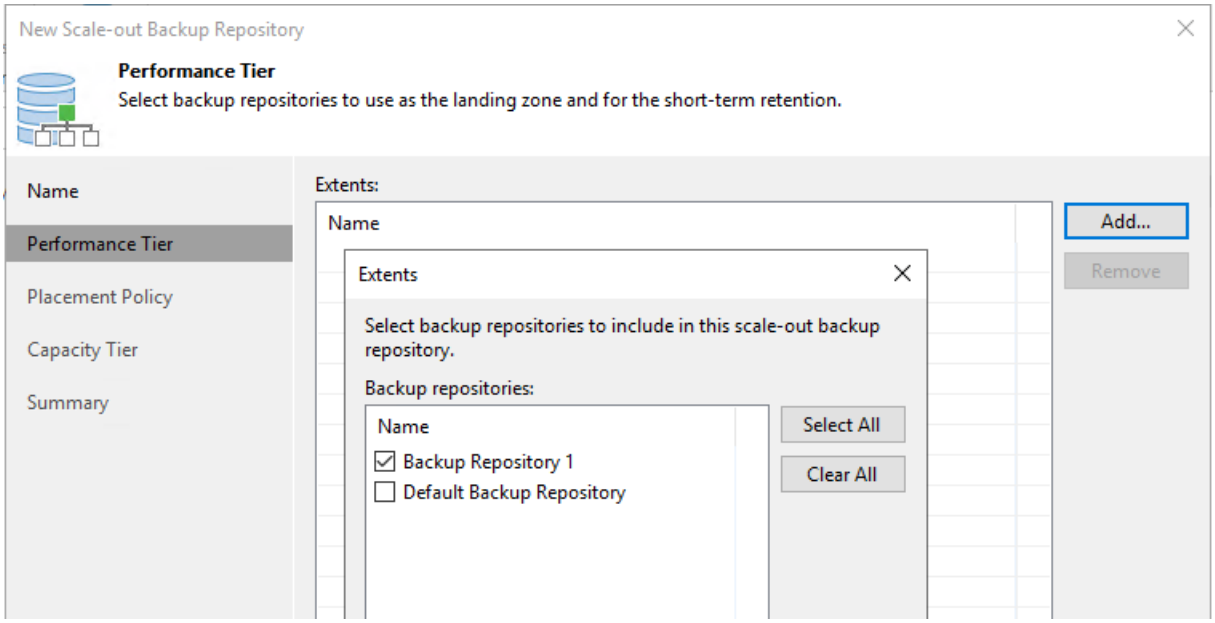
Right click on Scale-out Repositories and click on **Add scale-out backup repository…**



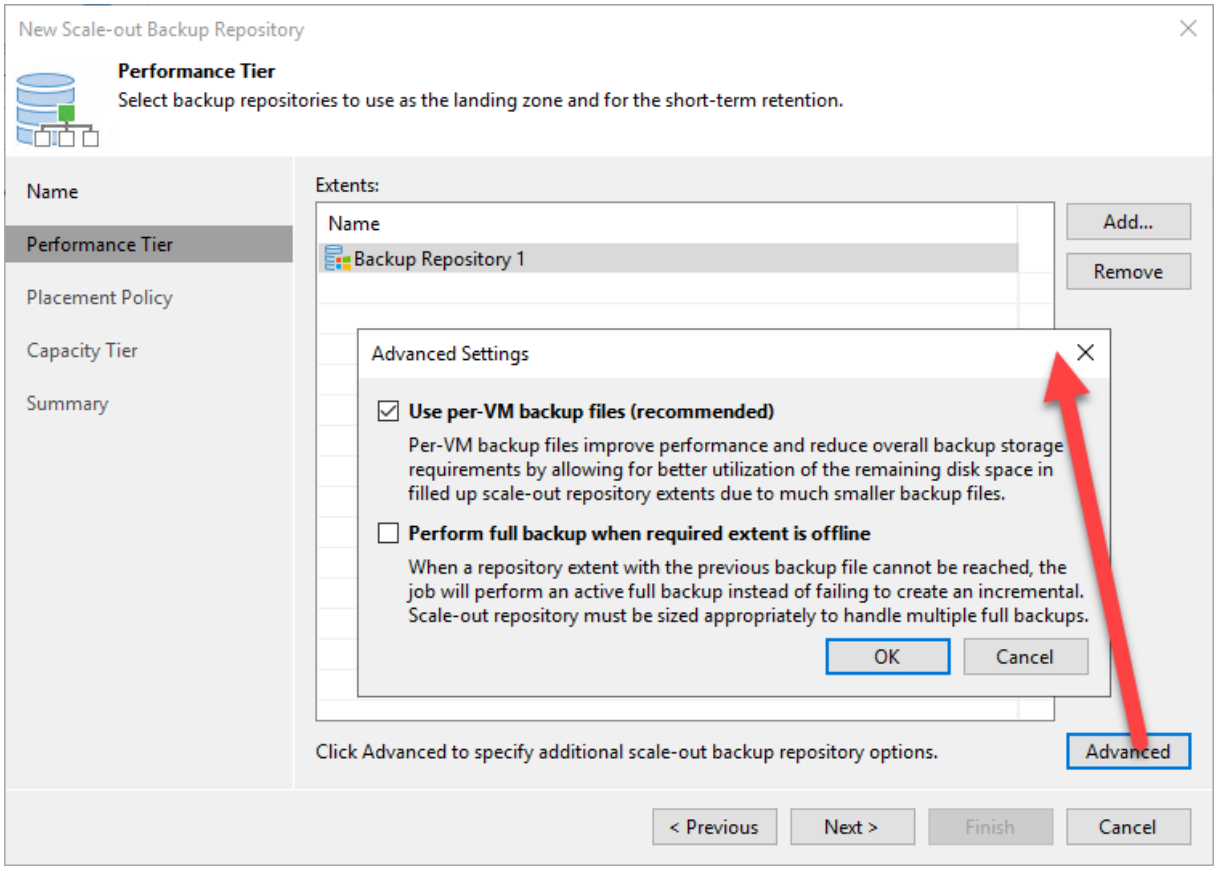
Give a suitable Name to your Scale-out Backup Repository (SoBR) and click on next :



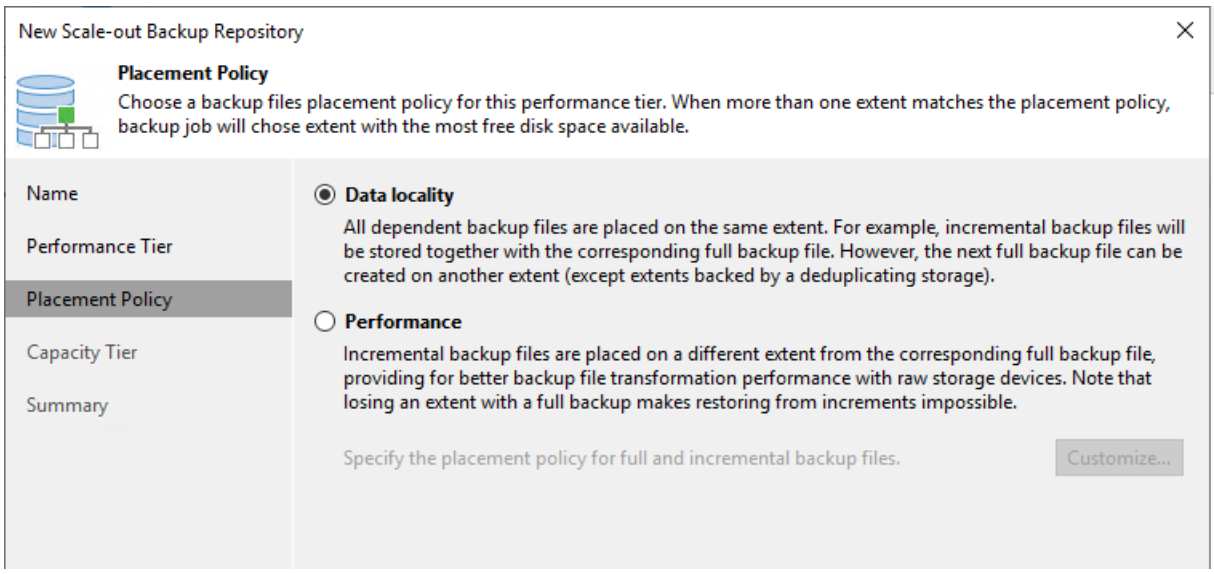
Since direct writing to S3 Object Storage is yet not supported with Veeam hence it needs a tier to be defined, we will be using local repository as performance tier and stage backups to S3 for larger retention at lower cost. Select the newly created Repository “Backup Repository 1” :



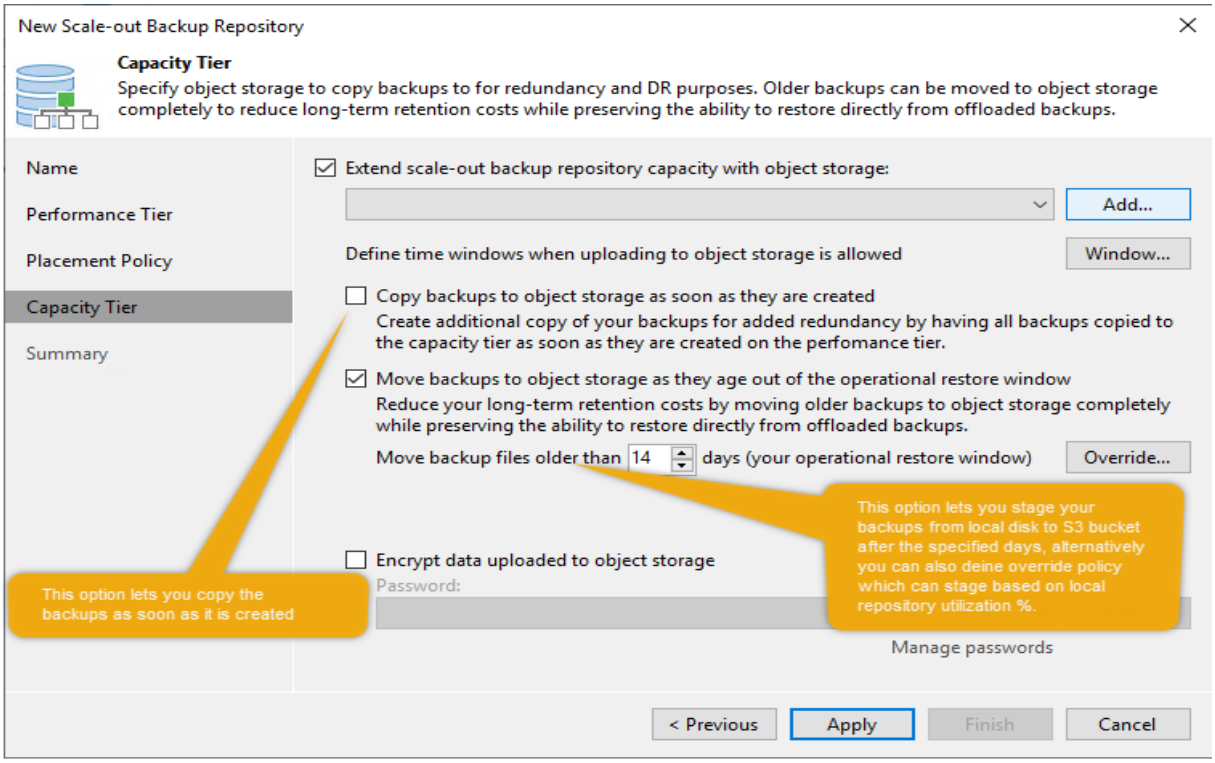
Under Advanced Options :



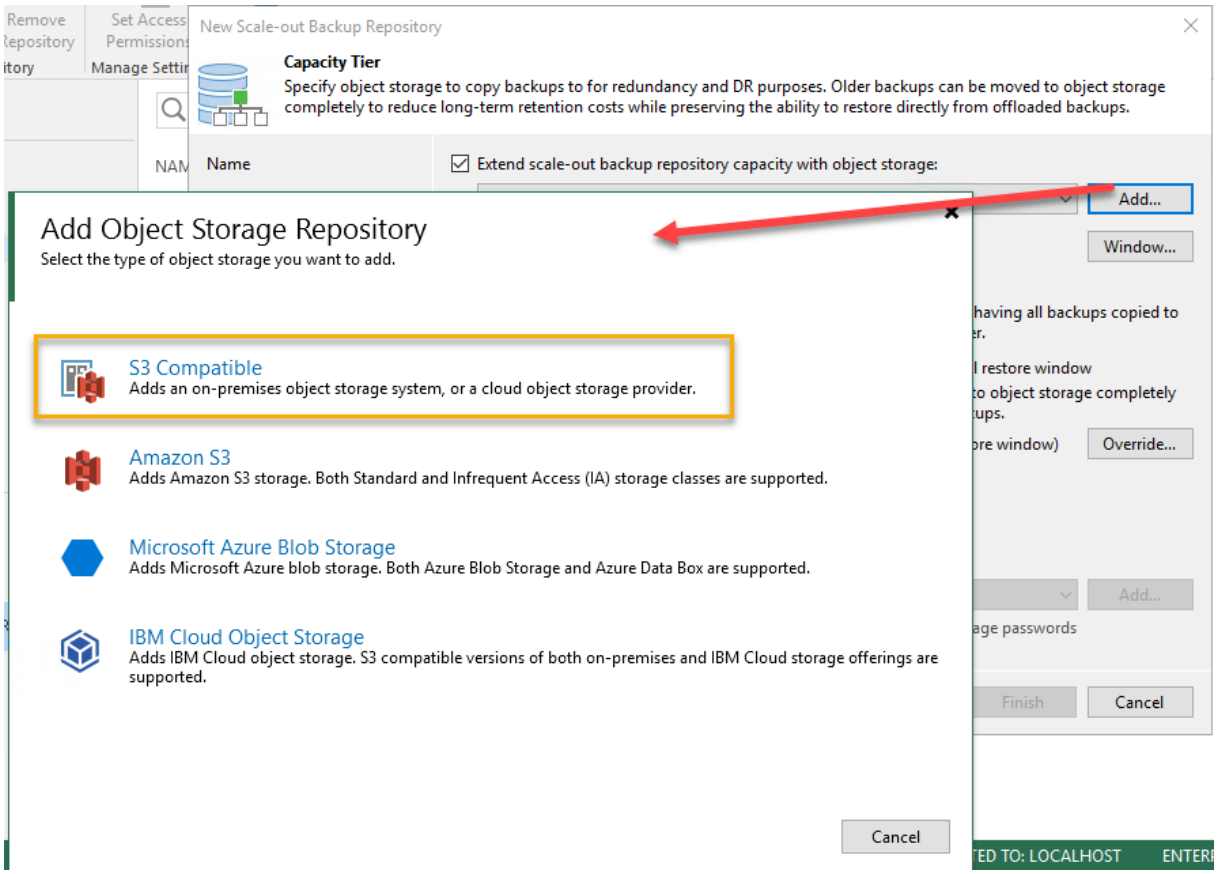
Now click on Next and Select Data Locality to keep the backup chains together " Full + Incrementals"



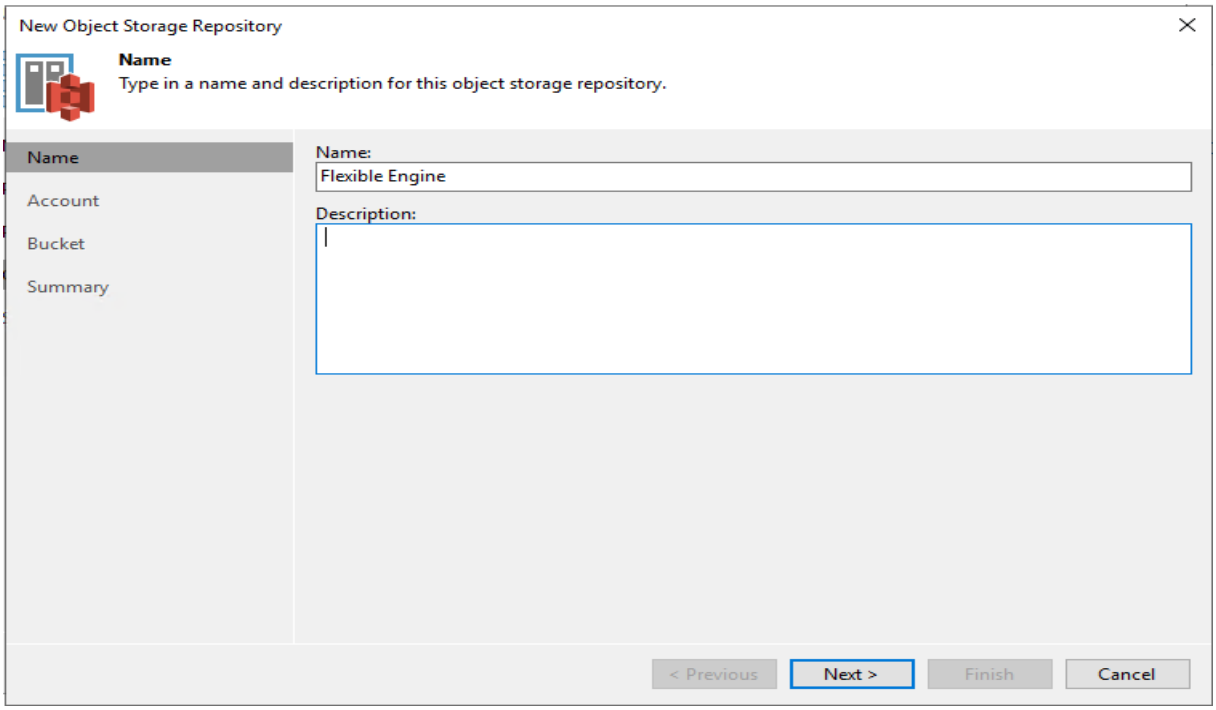
Click on Next and Click on Add to add the extent of S3 Object Storage to Scale Out Backup Repository as next Tier :



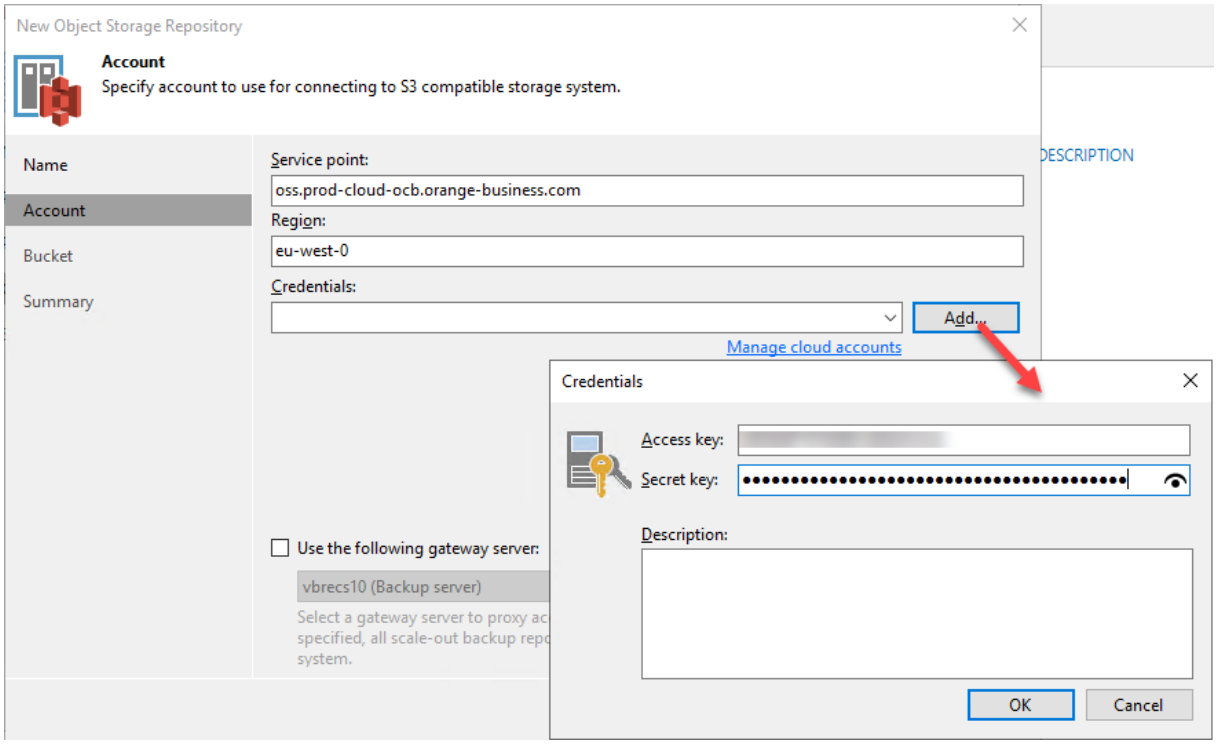
Choose S3 Compatible as the option to integrate S3 Object Storage from Flexible Engine and before that make sure you have your S3 Access Key, Secret Access Key and region details ready, you can put Service Point as this oss.prod-cloud-ocb.orange-business.com and create a bucket under S3 where you would like to store backups to :



Give a suitable name to your Object Storage Repository :



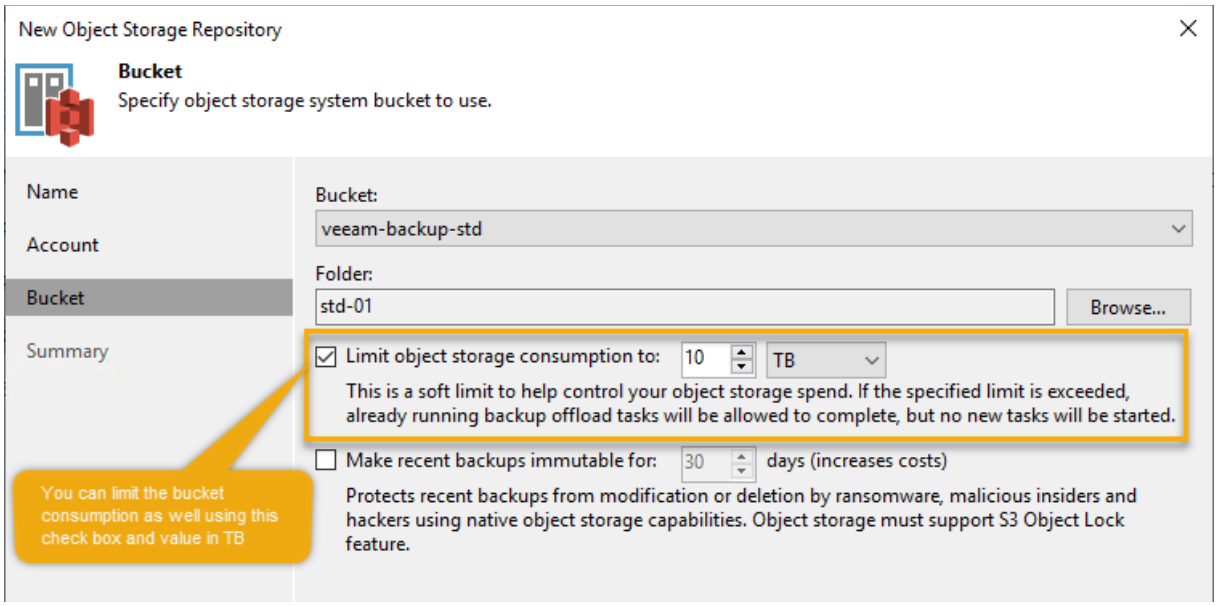
Click on Add to add the Access Key & Secret Access Key for S3 Object Storage and click on Next to Authenticate:

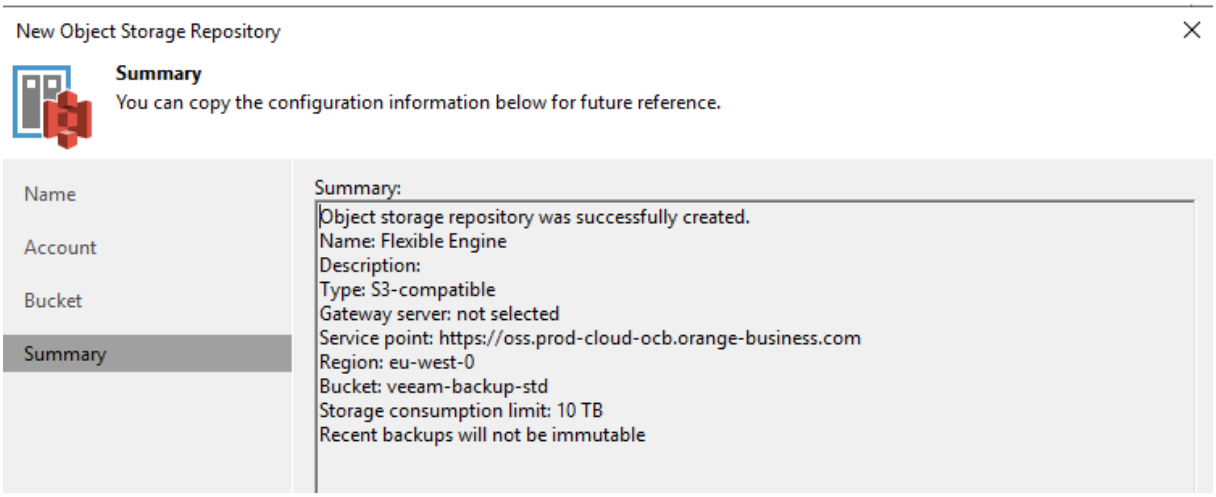


Now you will see the buckets created under the S3 account you are using and create a new folder under which you want to store backups by clicking on Browse.

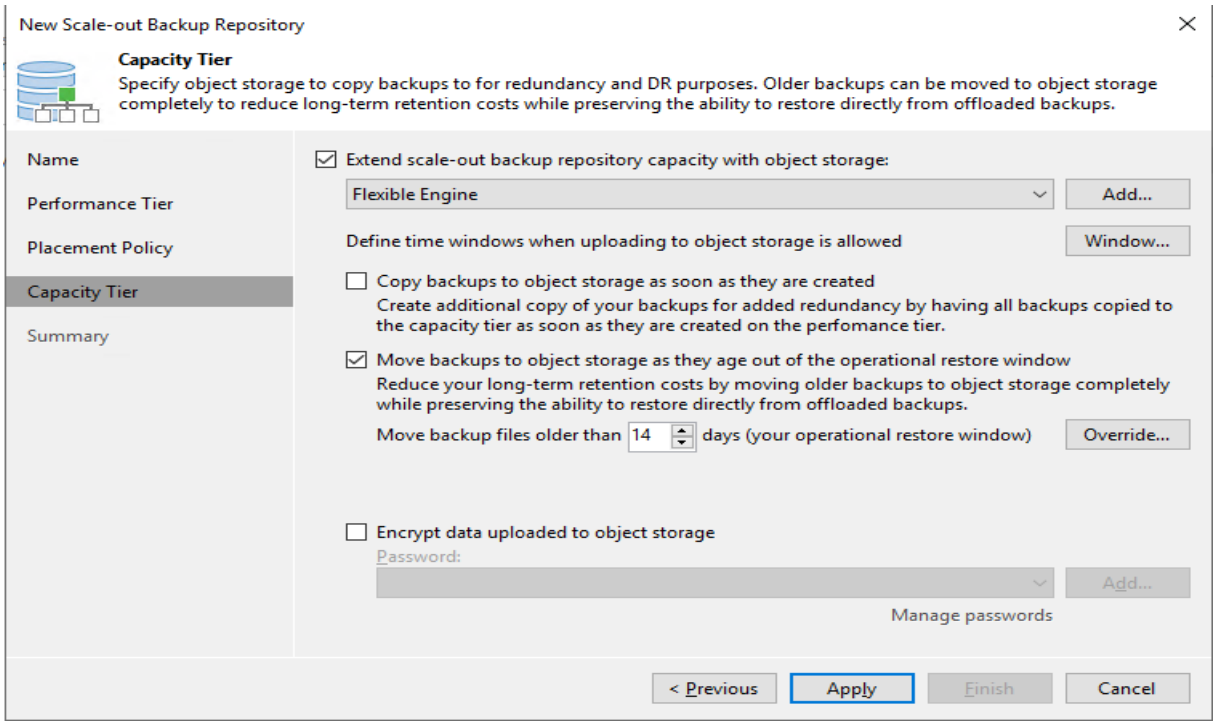
You can also limit S3 Object Storage consumption using the checkbox highlighted below.

Making backups immutable is yet not supported by Flexible Engine S3 :





Now your Scale-out Backup Repository (SoBR) is ready to be used :



You can now specify this Scale-out Object Repository in Backup job and let Veeam manage the staging of data from local disk to S3 bucket using the policy you specified during SoBR creation: