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WHITE PAPER

Optimizing & Securing Veeam Backups with Hitachi Vantara Object Storage

Veeam v11 Backup & Replication with Hitachi Content Platform (HCP)

May 2022

Contents

Executive Summary

Continued exponential growth of data in the industry has led to a never ending, increased demand on storage capacity and optimization of business-critical processes like backup and recovery. Furthering the complexity of managing growth, are the ever so critical needs surrounding data security, risk mitigation, loss prevention and meeting industry compliance requirements.

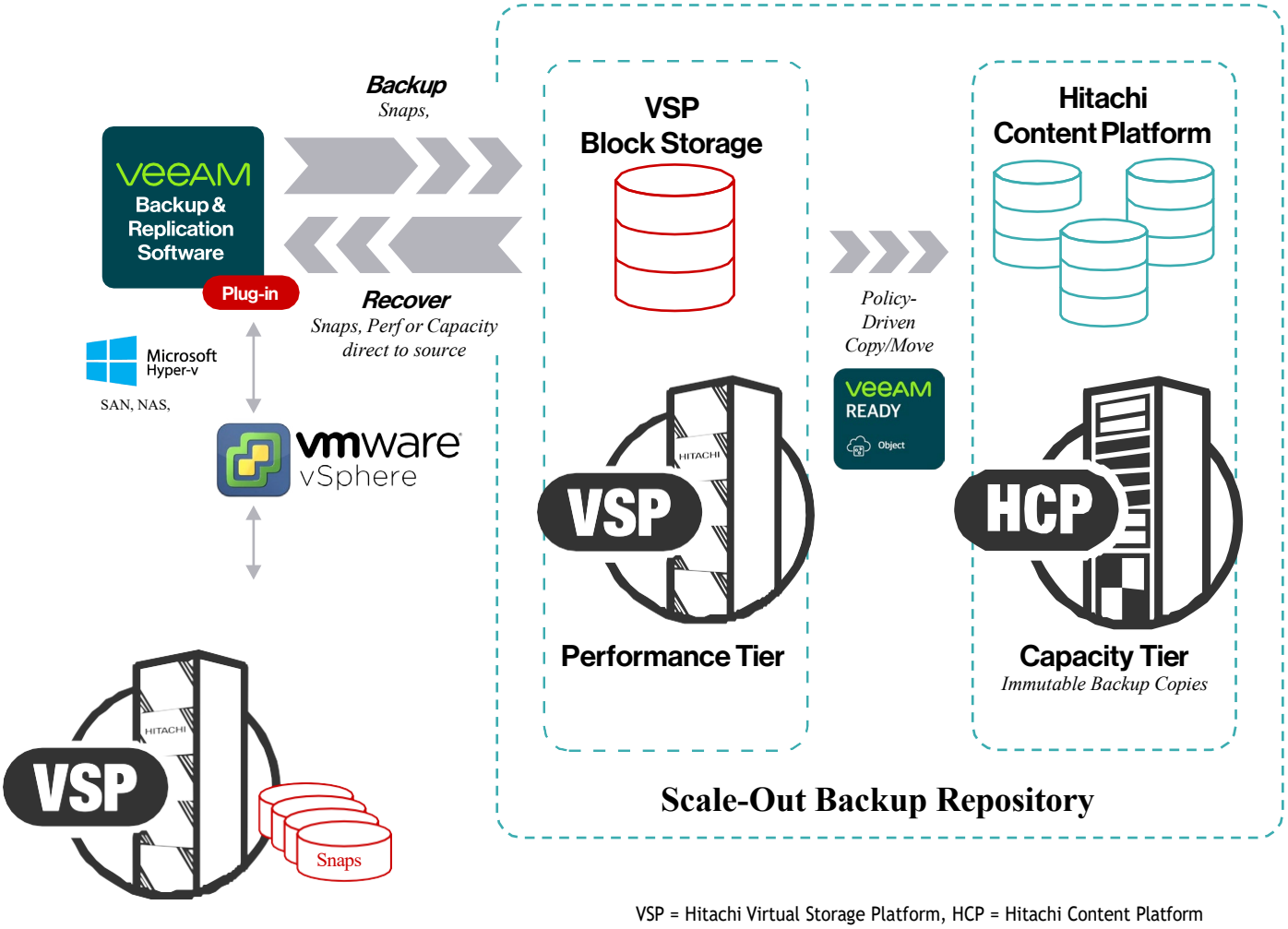
To help customers optimize their cloud data infrastructure, improve service levels for backups, replication and ensure data recovery information, Hitachi Vantara and Veeam have partnered to deliver a “Veeam Ready - Object” solution.

A Massively Scalable and Cost-Effective Solution for Object-based Storage Backup & Replication and Data Recovery.

Hitachi Content Platform (HCP) with Amazon Web Services (AWS) S3 service is an on-premises cloud Object Based Storage (OBS) solution that delivers a cost-effective, secure, and robust data platform to power a myriad of enterprise use cases.

Veeam Backup & Replication, part of Veeam Availability Suite, delivers fast, flexible, and reliable backups, recovery, and replication for virtual, physical, and cloud-based workloads. Veeam Cloud Tier, a feature of Veeam Backup & Replication Enterprise Edition, provides a Scale-Out Backup Repository for massively scalable capacity using the AWS S3 service for a compliant OBS solution with HCP.

Primary backups are tiered to HCP based on aging or capacity policies. In this manner, customers can achieve highest speed, lowest cost, and fully secured recovery data, managed in a coordinated fashion between the Veeam Backup & Replication application and the HCP platform.



VSP = Hitachi Virtual Storage Platform, HCP = Hitachi Content Platform

This Hitachi storage and Veeam Backup & Replication repository solution provides scalable, cost-effective backup and recovery, reducing risk from ransomware attacks.

The purpose of this whitepaper is to document the test configuration, results, and best practices.

The data captured in this document are specific to Veeam and Hitachi Vantara test plans, selected configurations, test methodology and processes used to measure results. Actual end user experiences may vary based on customer specific environments and corresponding solution design. Please consult with your Veeam and Hitachi Vantara technical representatives prior to implementing this solution.

Test Methodology

The goal of this testing was to validate integration, functionality, and performance of Veeam Scale-Out Backup Repository (SOBR) and Replication v11 with HCP using the AWS S3 object storage service. Testing was conducted as follows:

Basic Functional Run-Time Targets

1) Multi-Part Upload
2) File Level recovery (FLR)
3) SOBR Offload Resiliency
4) Large Offload to OBS
5) Large Download from OBS
6) Delete backup file on OBS

The test suite was developed and provided by Veeam. Configuration selection was at Hitachi's discretion. All results were submitted to and approved by Veeam. As such, HCP has received "**Veeam Ready -Object**" designation and is listed on Veeam's Ready program site https://www.veeam.com/ready.html

The corresponding Knowledge Base article can also be found at https://www.veeam.com/kb3195.

Test Environment

This section describes the configuration that was tested, following Veeam Backup & Replication and HCP reference documentation.

The full Veeam documentation set can be accessed here at https://www.veeam.com/documentation-guides-datasheets.html.

Veeam Community forum is here at http://forums.veeam.com.

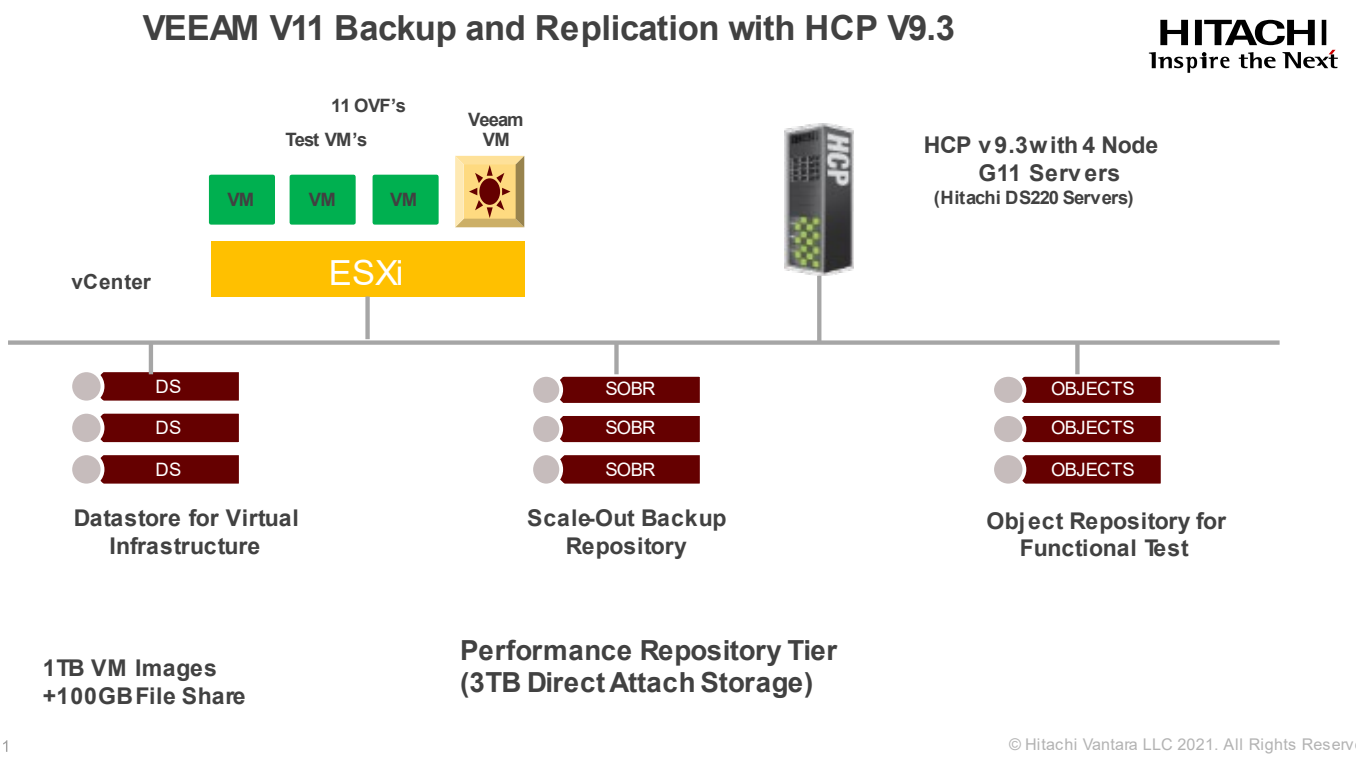
Hitachi Vantara Community site can be found here https://community.hitachivantara.com/s/.

Hardware & Software Components

- **(1) Veeam Backup and Restore Server**
  - Microsoft Windows Server 2019 Standard, 10.0.17763 Build 17763
  - 8vCores, 64GB vMemory,
    - Disk 1: 300GB vStorage (SSD)
    - Disk 2: 2.2TB vStorage (HDD)
    - Disk 3: 2.0TB vStorage (HDD)
  - Veeam Backup and Restore v11
- **(2) Microsoft SQL Server**:
    - 4 vCores, 8GB Vmemory, 100GB vStorage (SSD)
- **(3) Proxy Server:**
    - 8vCores, 8GB vMemory, 100GB vStorage (HDD)
- **(4) Perforrmance Tier Backup Repository:**
    - 24 vCores, 180GB vMemory, 3527GB vStorage (SSD)

- **(5) Hitachi Content Platform**
  - **4 - G11 Storage Nodes**
    - (G11) Hitachi DS220 Servers
      - 2x Intel(R) Xeon(R) E5-2630 v4
        768 GB ECC Memory (24x 32GB dimms)
      - 12 x 1.9TB SSD Drives
  - HCP Software V9.3.0.249

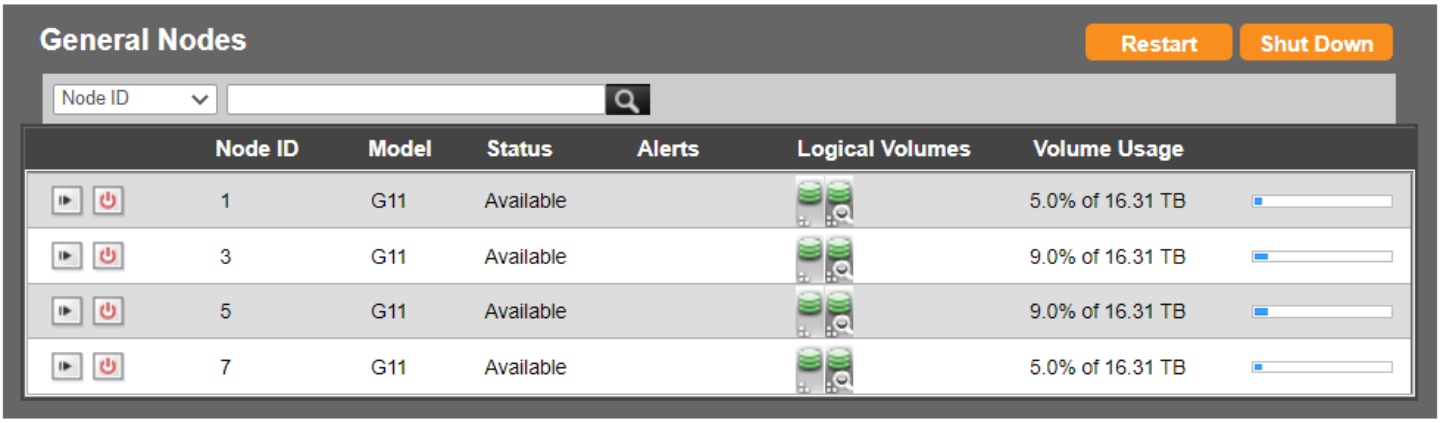
Solution Diagram



Configuring Hitachi Content Platform for Veeam

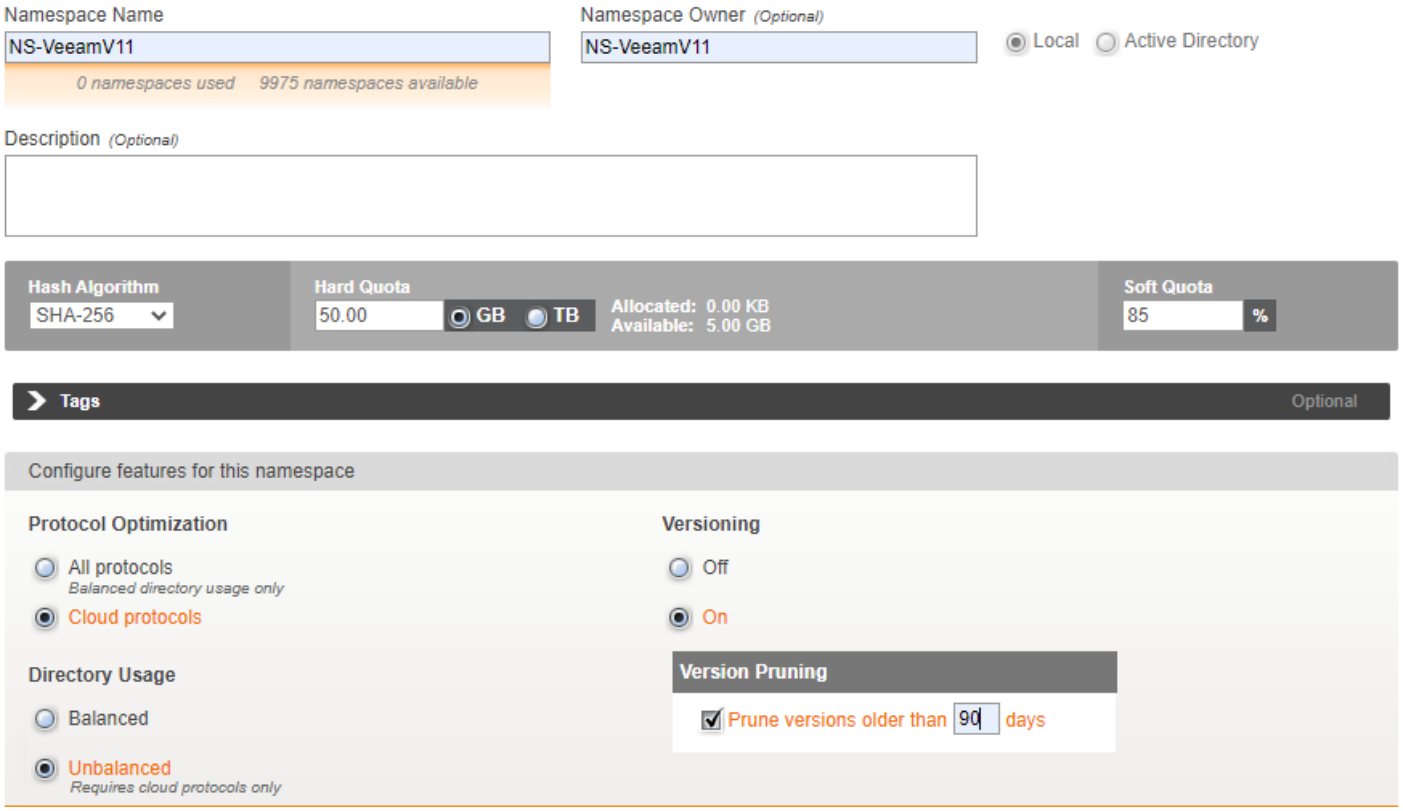
Hitachi Content Platform (HCP)

- Minimum Standard 4 – Node System
    - 12 internal 1.9TB drives per node with a useable storage of 61.31 TB

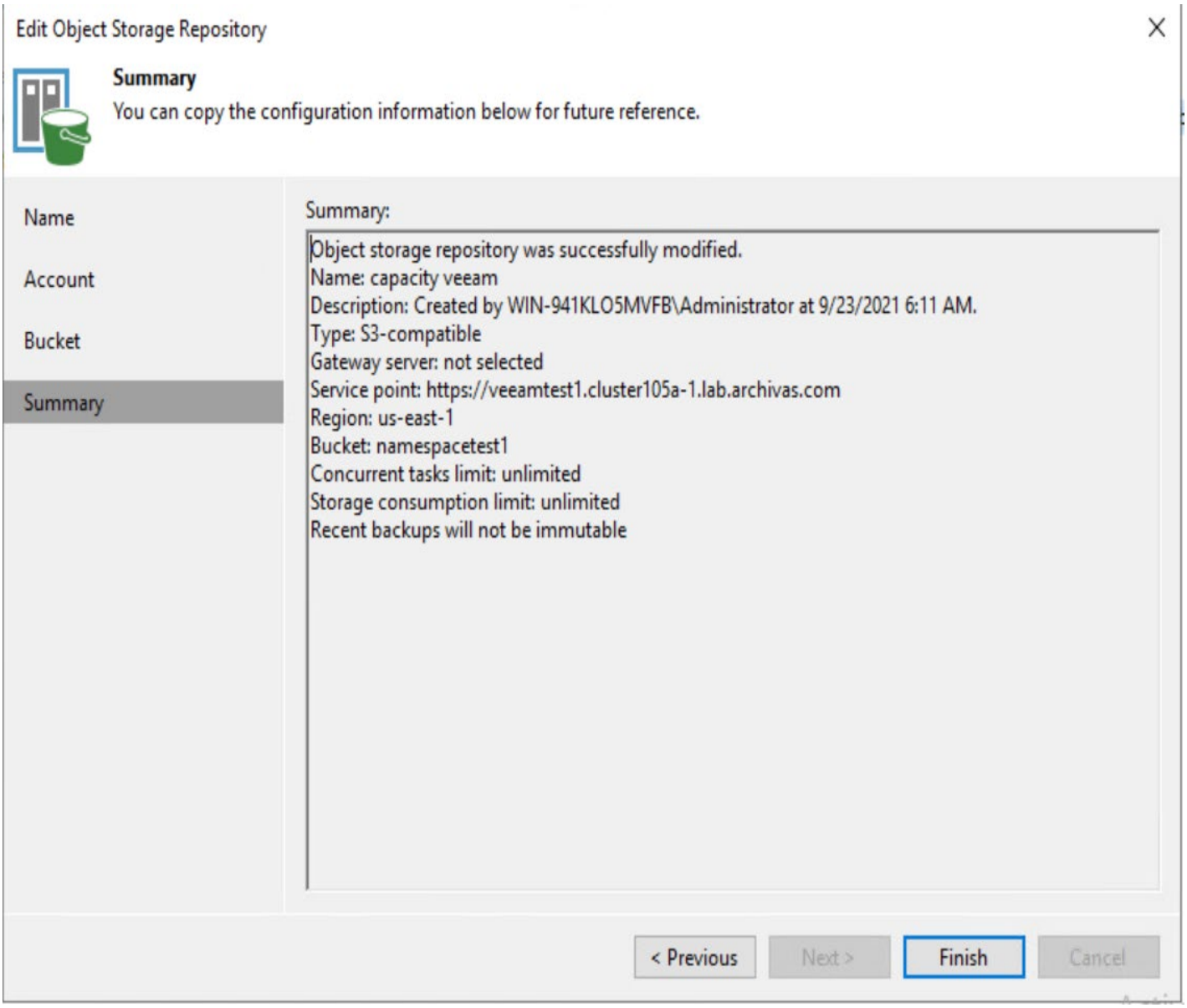


HCP Namespace Creation Configuration

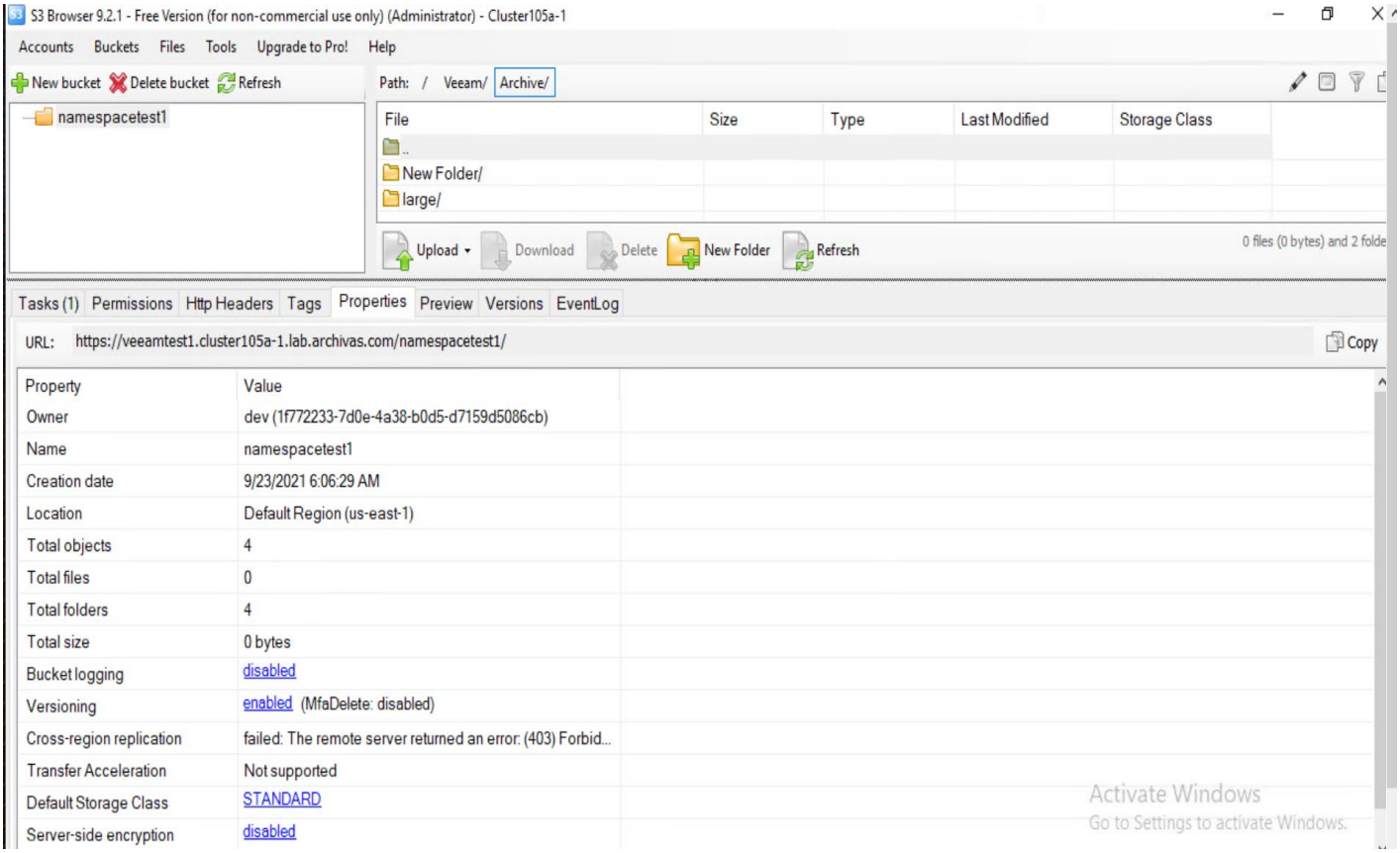
When creating a namespace, ensure that Search and Versioning features are turned ON. Protocol Optimization should be “Cloud protocols”. Directory usage should be “Unbalanced” to ensure proper performance. See below.



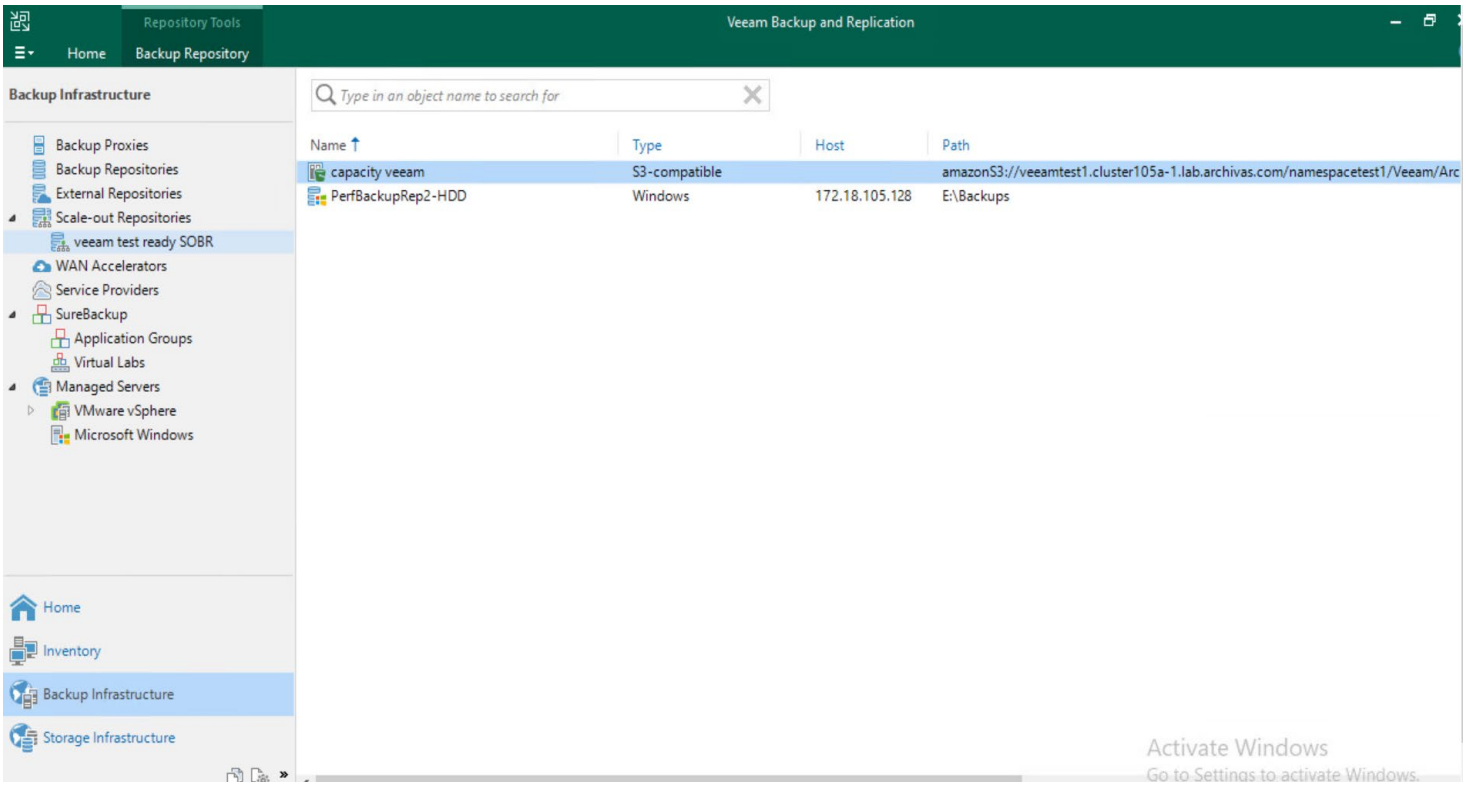
The Object Storage Creation Summary:



Object Storage GUI:



Scale-Out Backup Repository (SOBR):



Test Cases

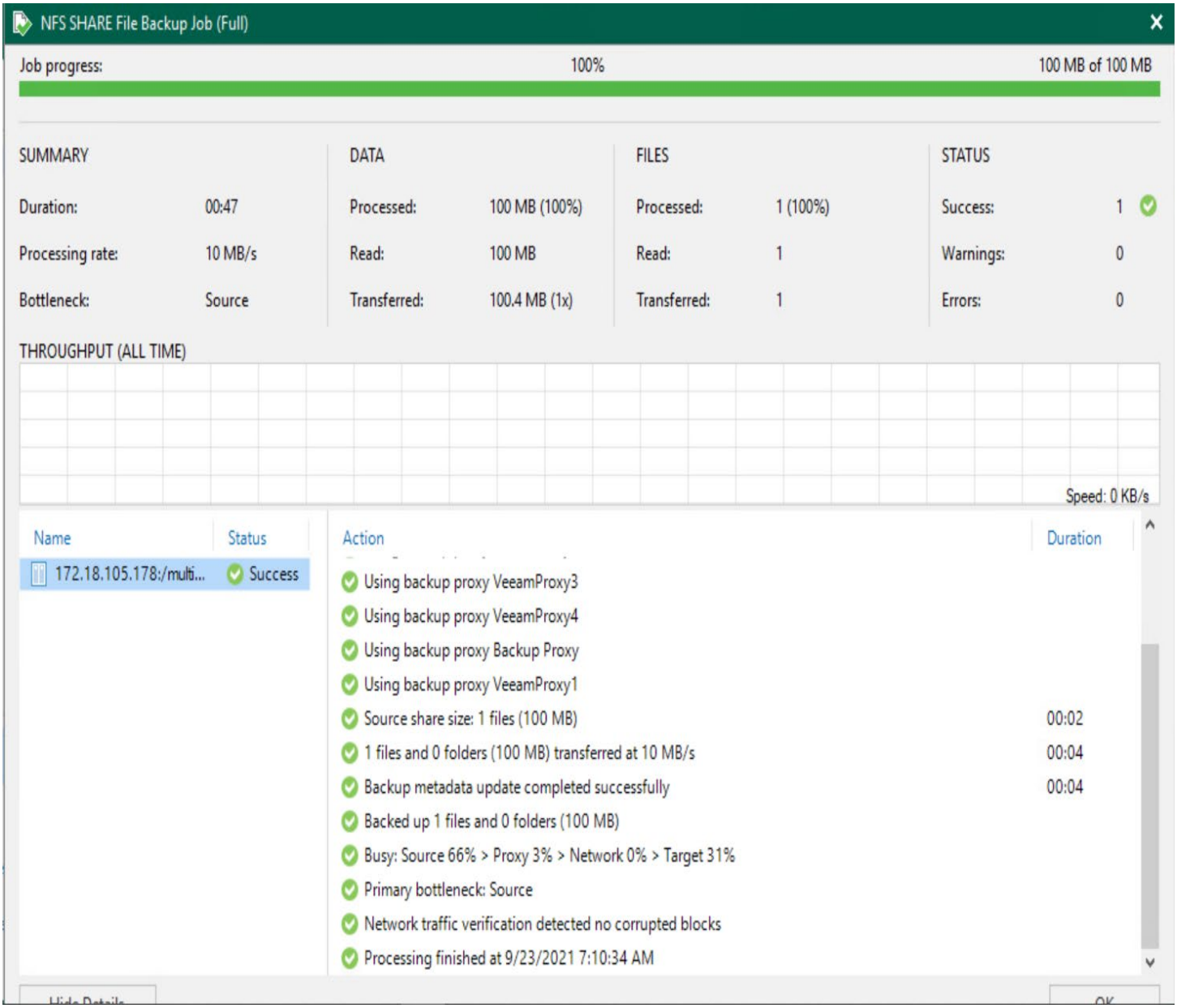
Test cases defined in the test plans for **Veeam Ready - Object** qualification as follows:

Tests:	Pass/Fail
1) Multipart Upload Test – This is testing the default upload of a backup file from Veeam to HCP.	Pass
2) File Level Recovery Test – This test restores a file stored on HCP back to Veeam and finishing by having Veeam restore that file to the local system.	Pass
3) SOBR Offload Resiliency – This test two different recovery scenarios. The first scenario tests what happens if there is a network disruption for five minutes and then it is restored. The second test will have the backup fail due to a network outage the causes the backup to fail. After that, a manual offload will be started to confirm the remainder of the file is offloaded.	Pass
4) Large Offload to OBS - Perform a large offload of a backup chain to the S3-compatible Object Storage – Take 10 large, 100GB, VMs and use Veeam to offload to HCP. There is a performance piece to this test as well, the 1TB offload needs to be completed within four-and-a-half hours.	Pass
5) Large Download from OBS - Perform a large download from the S3-compatible storage. Restore 10 large, 100GB, VMs from HCP to Veeam. There is a performance piece to this test as well, the 1TB offload needs to be completed within four-and-a-half hours.	Pass
6) Delete a backup file on OBS (S3 Compatible Storage) – Confirm that deleting a file in Veeam will also be deleted on HCP. There is a performance piece to this test as well, the delete needs to be completed within four-and-a-half hours.	Pass

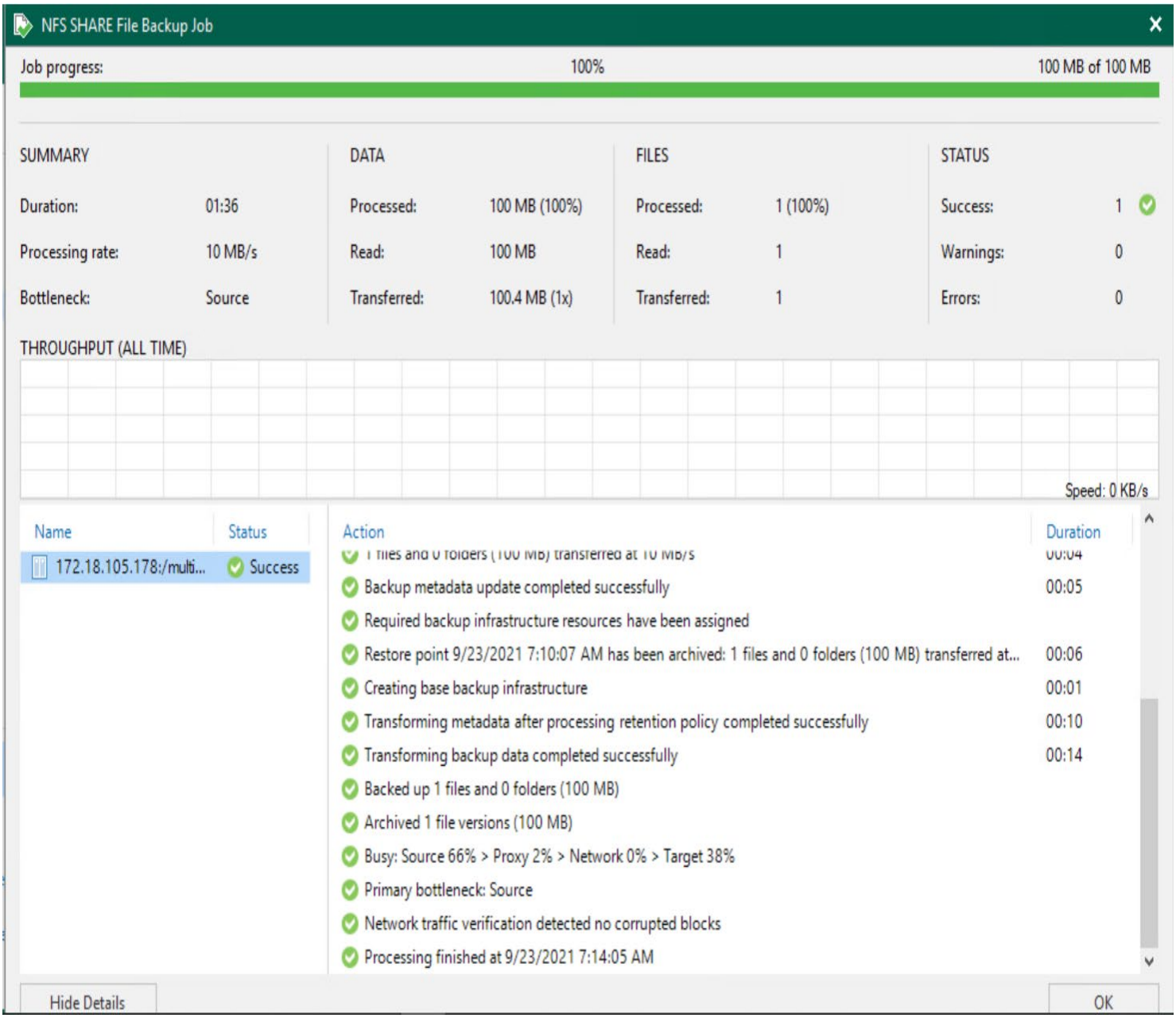
Test Result Details:

1) Multi-Part Upload

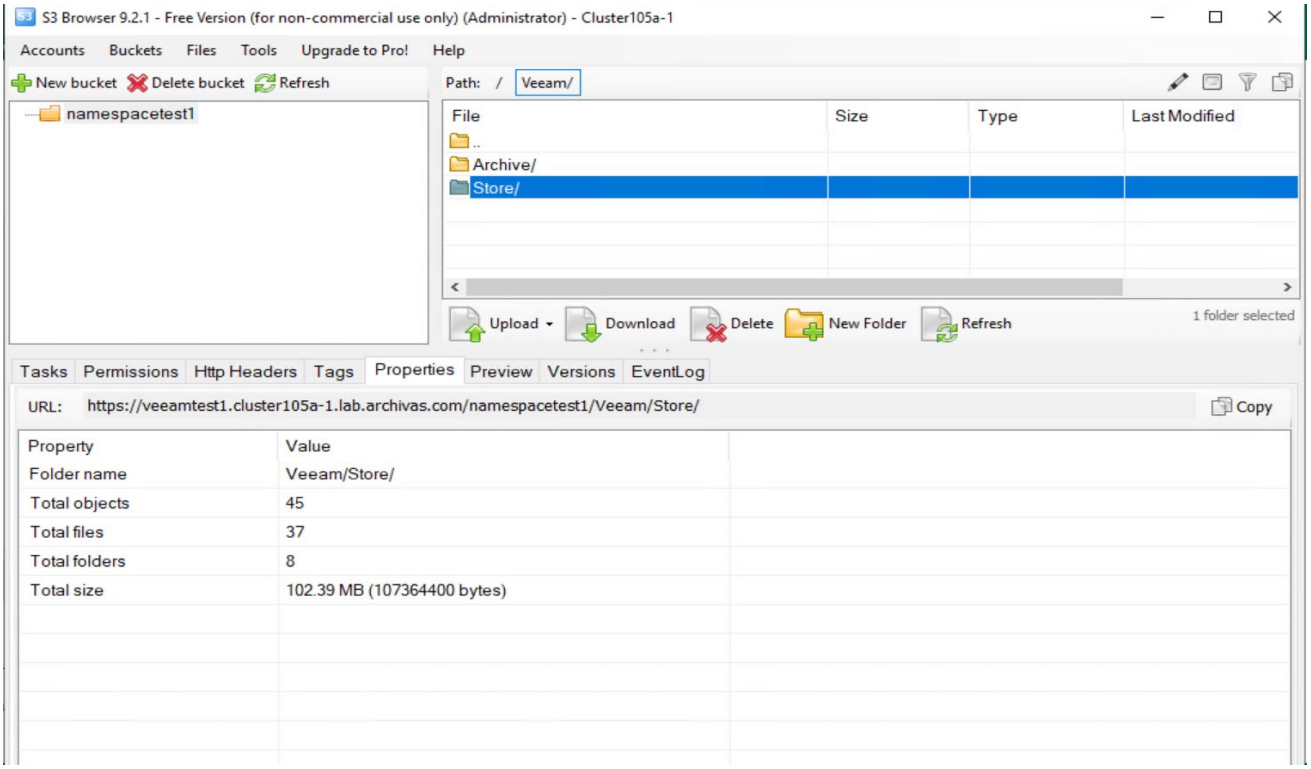
Run a backup on a single file and then offload that backup to the Object Store.

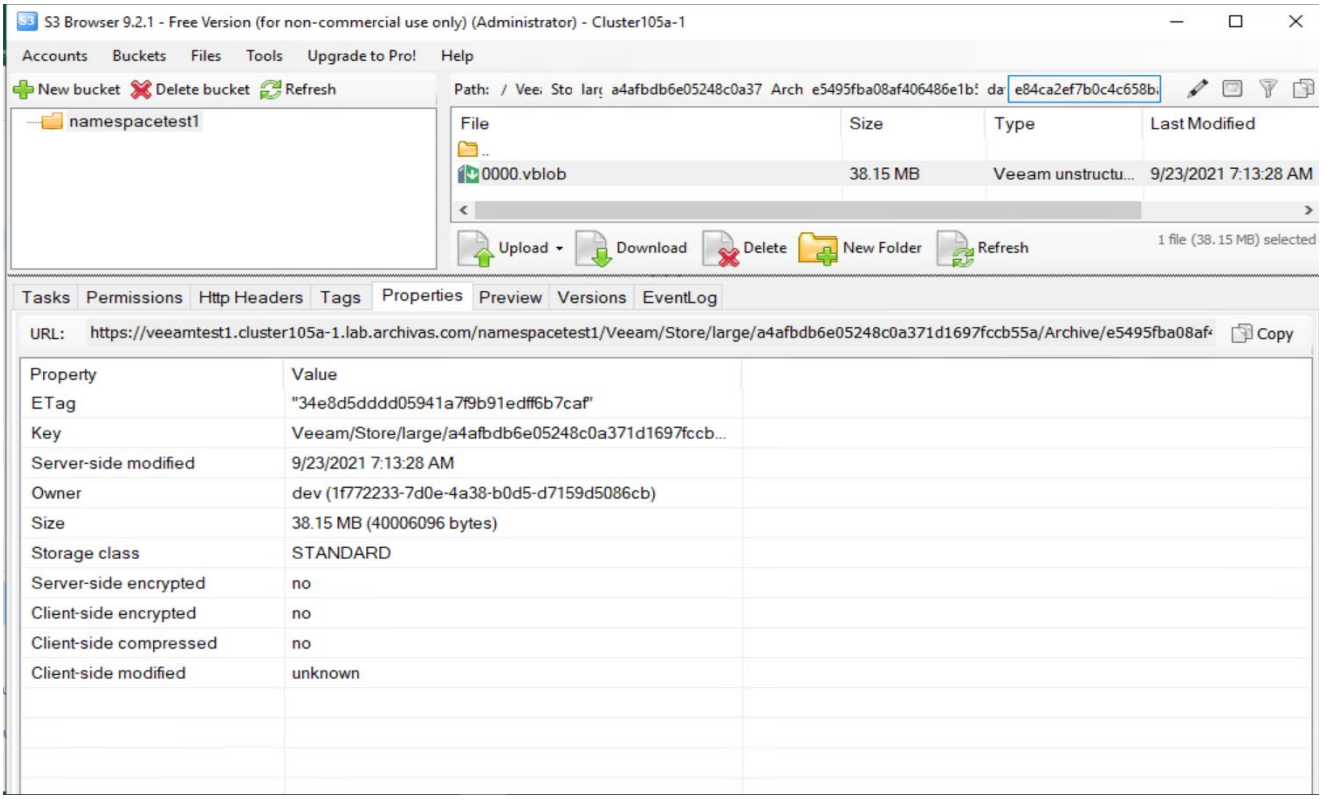


1a) Multi-Part Backup Statistics Showing Archive



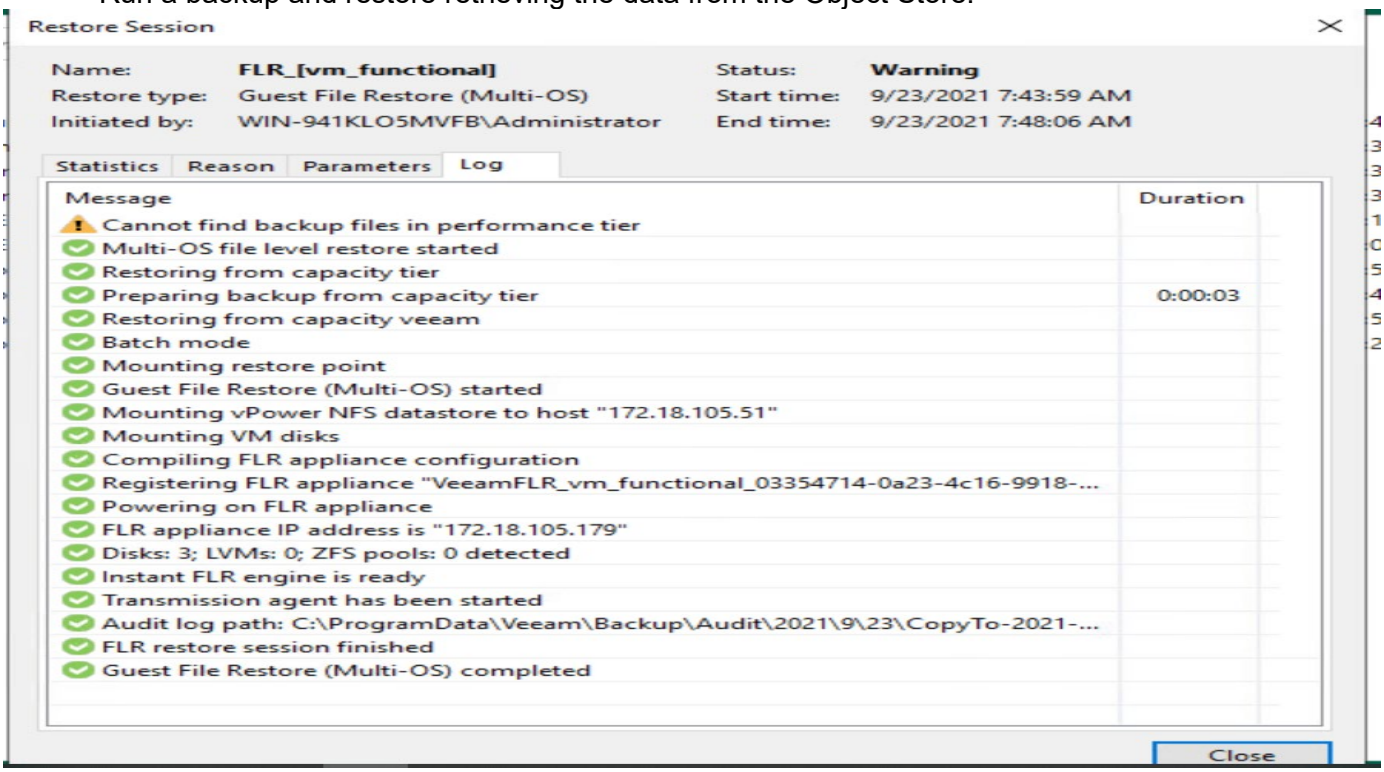
1b) S3 Browser GUI Showing /Veeam/Store/Content



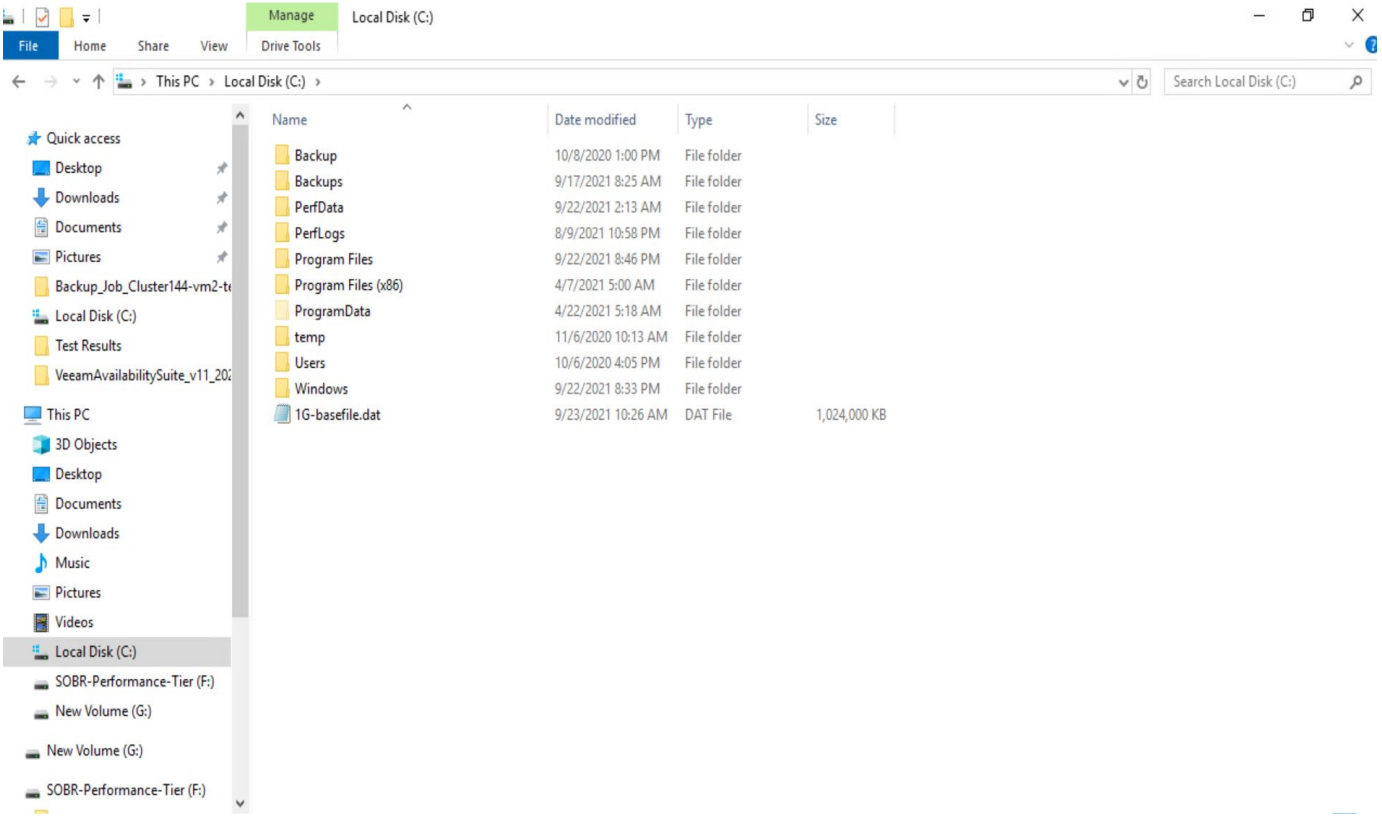


2) File Level Recovery (FLR)

Run a backup and restore retrieving the data from the Object Store.



2a) File Explorer Showing File Copied to Veeam VM



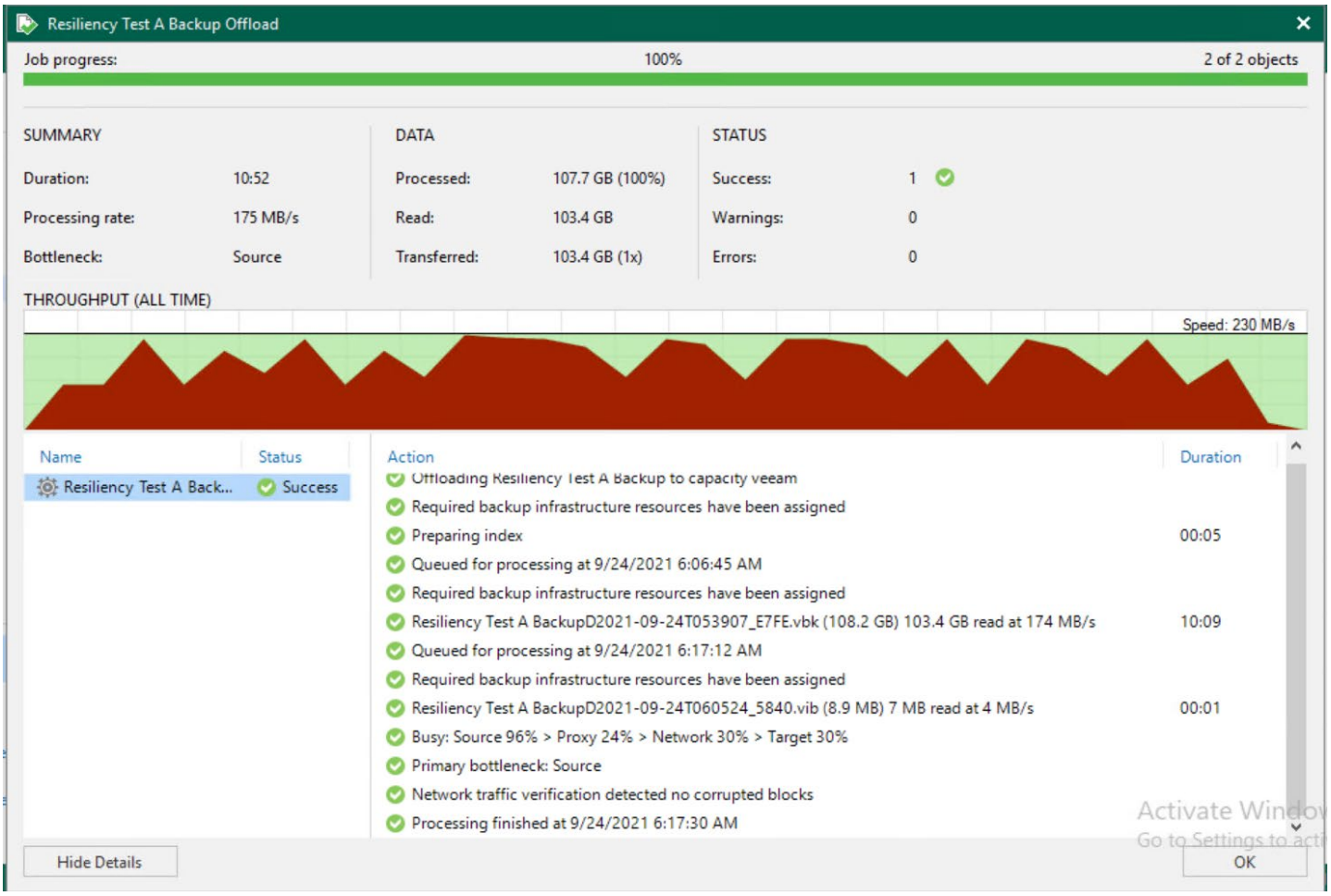
3) SOBR Offload Resiliency A

Run two backups:

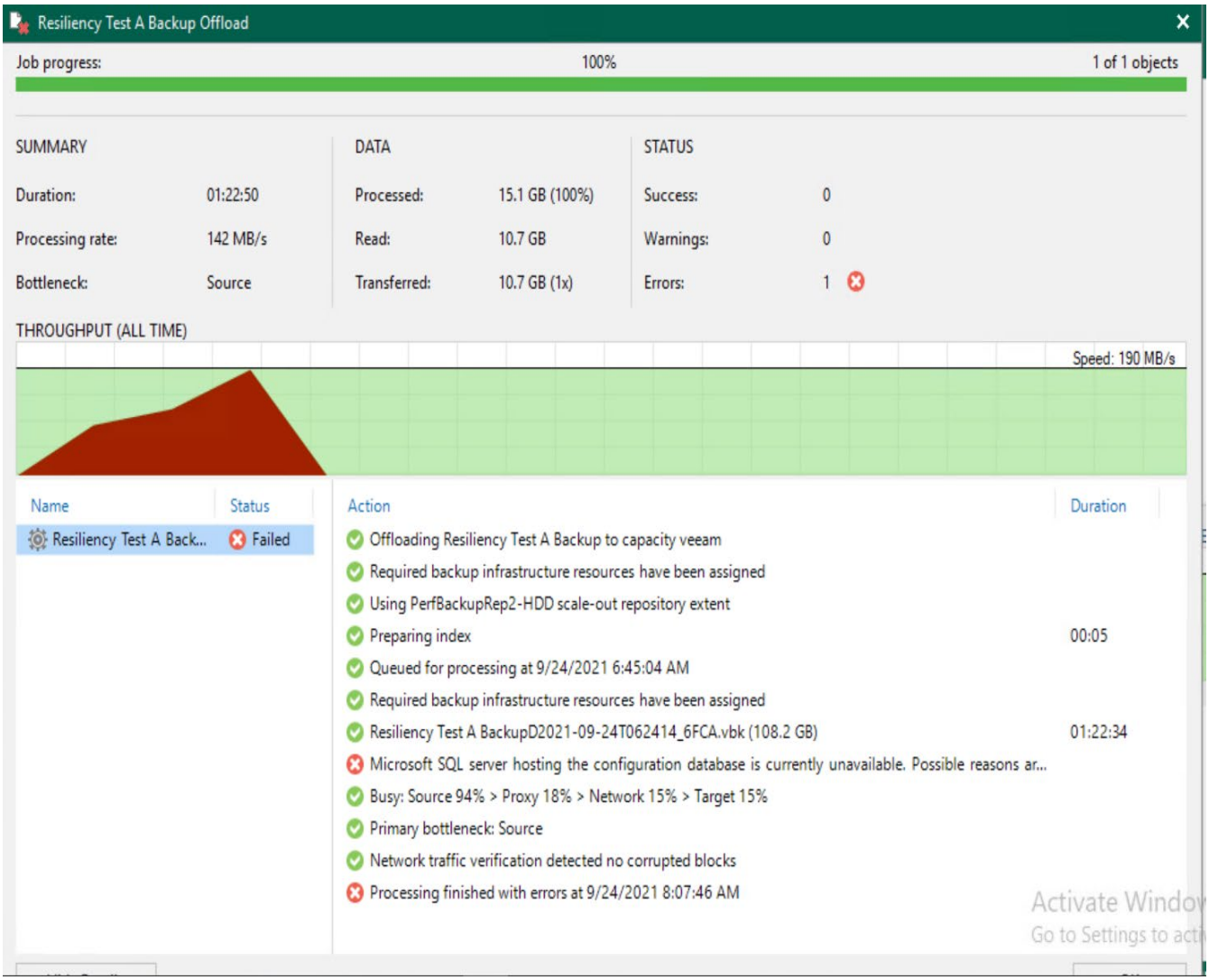
A. First, during an offload have the network connection between the Veeam server and the Object store to fail for five minutes. Afterwards, restore the connection and let the offload complete.

B. Second, during the offload have the network connection fail for over thirty minutes causing the offload to time out.

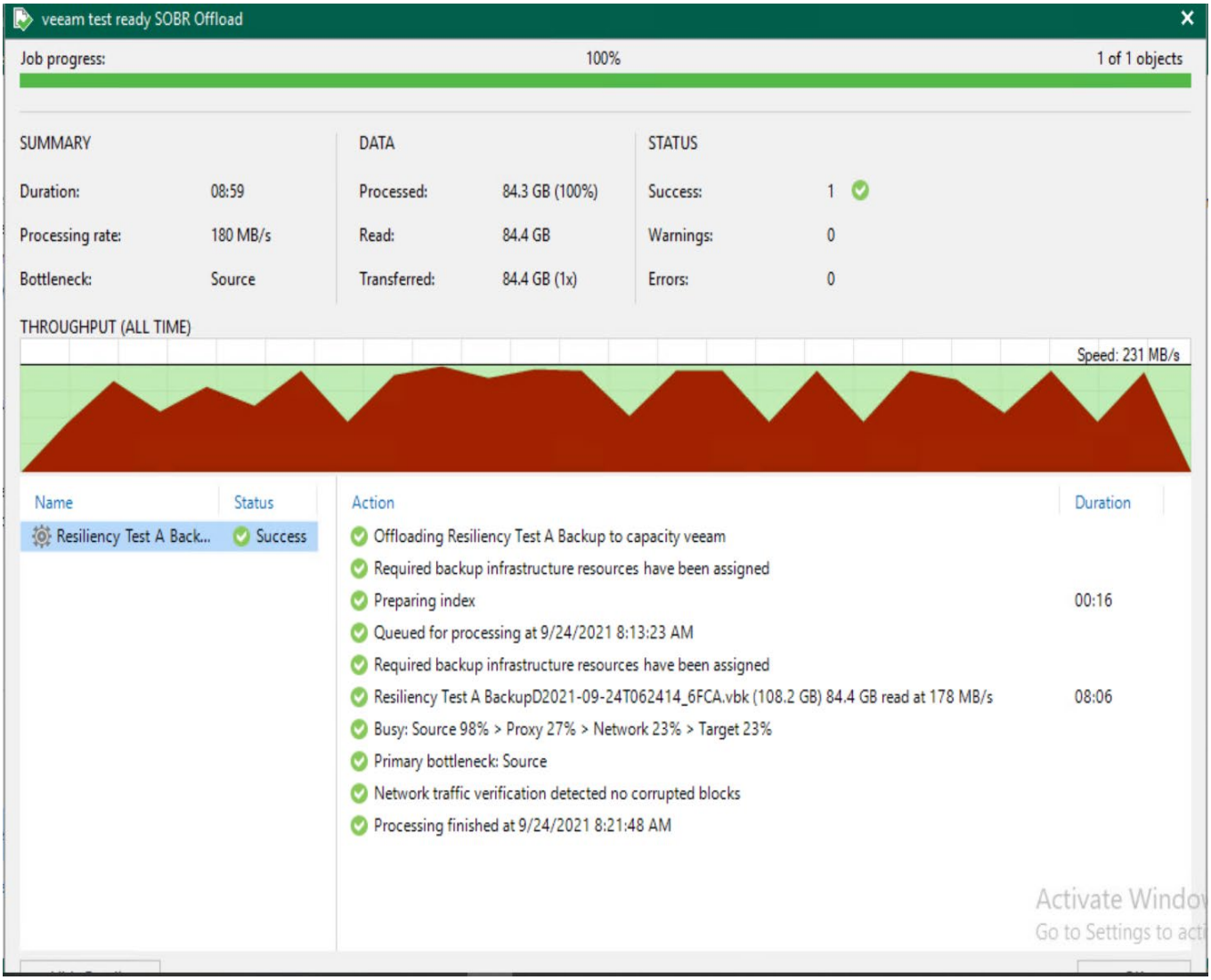
C. After the timeout, restore the network connection and manually run an offload to complete the originally failed offload.



3a) SOBR Offload Resiliency B



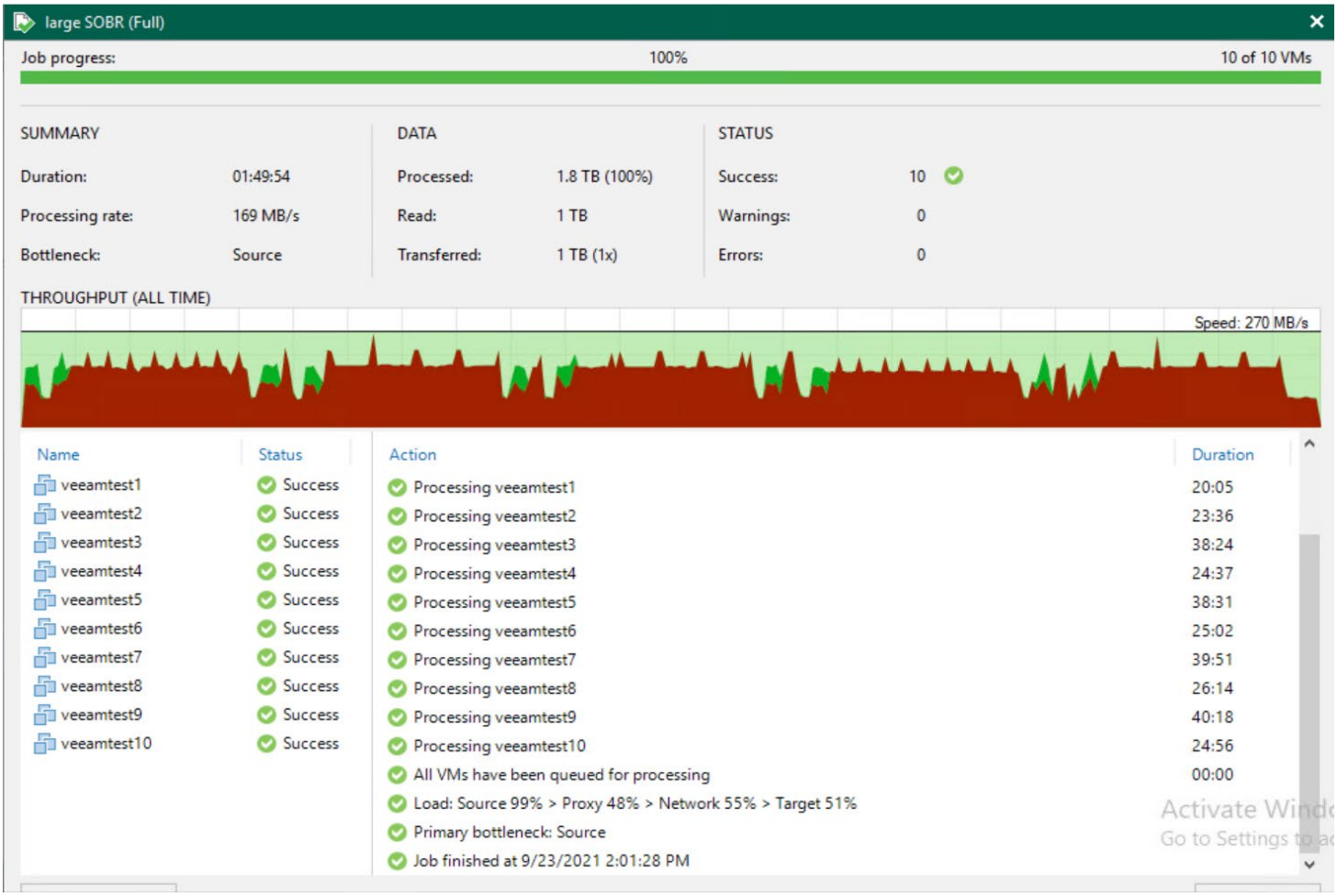
3b) SOBR Manual Offload Resiliency C



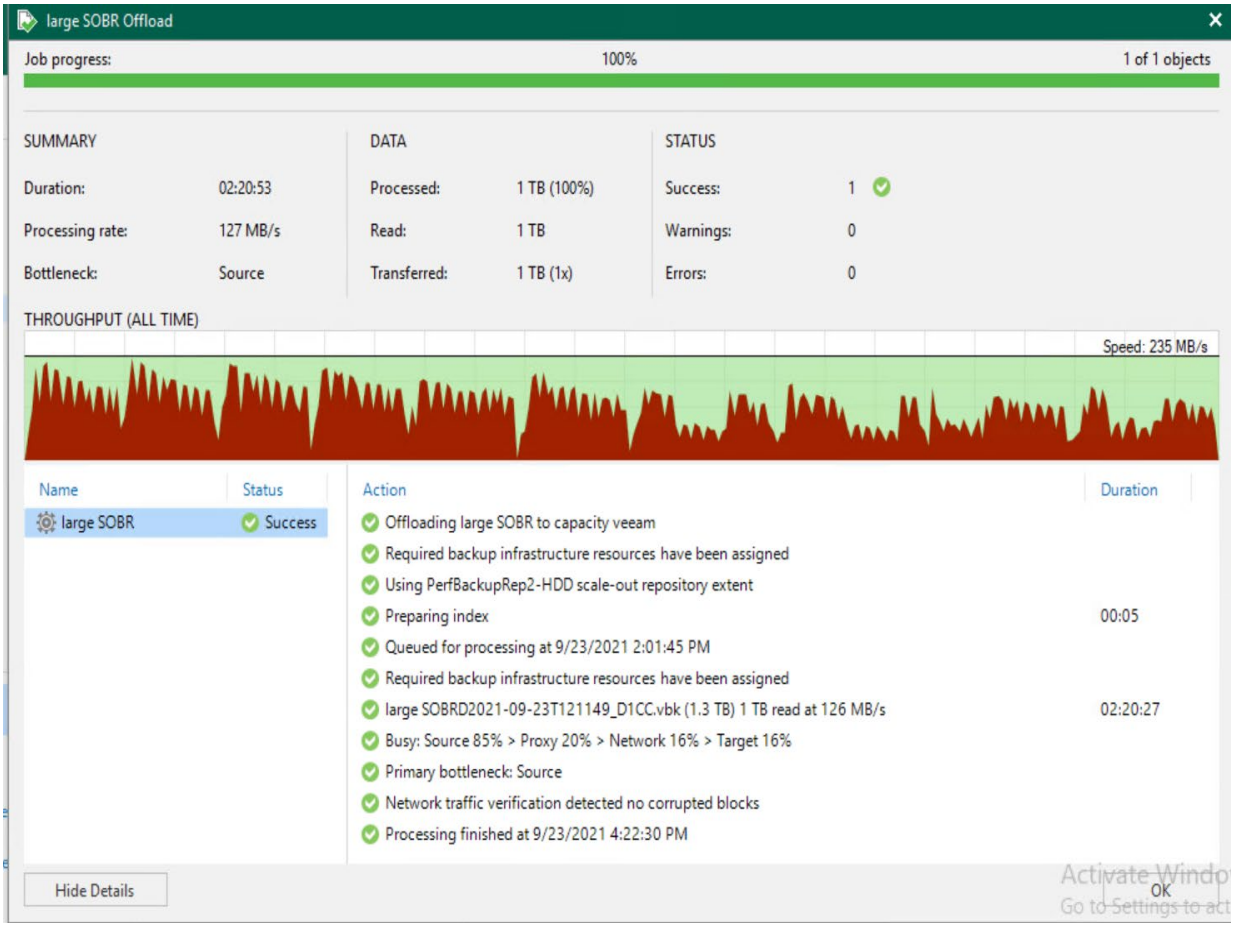
4) Large Offload to OBS

Perform a Large Offload of a Backup Chain to the S3-Compatible Object Storage

Perform a backup consisting of ten VMs totaling a terabyte in size. Measure the offload time to ensure it completes in under four-and-a-half hours.



4a) SOBR Offload Statistics



4b) SOBR Offload Job Report

SOBR Tiering: large SOBR Offload

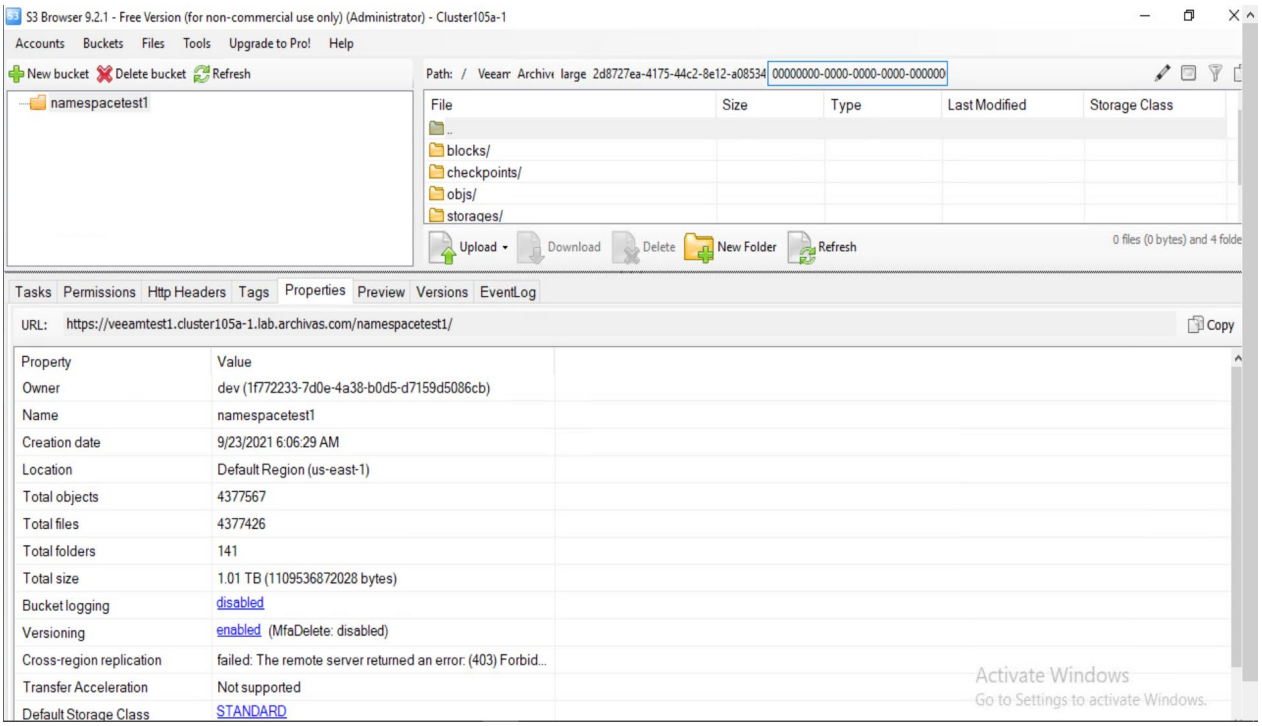
Thursday, September 23, 2021 2:01:37 PM

Success	1	**Start time**	2:01:37 PM	**Total size**	1.3 TB	Scale-out Backup Repository: veeam test ready SOBR
Warning	0	**End time**	4:22:30 PM	**Data read**	1 TB	Used archive extents: capacity veeam
Error	0	**Duration**	2:20:53	**Transferred**	1 TB	

Details

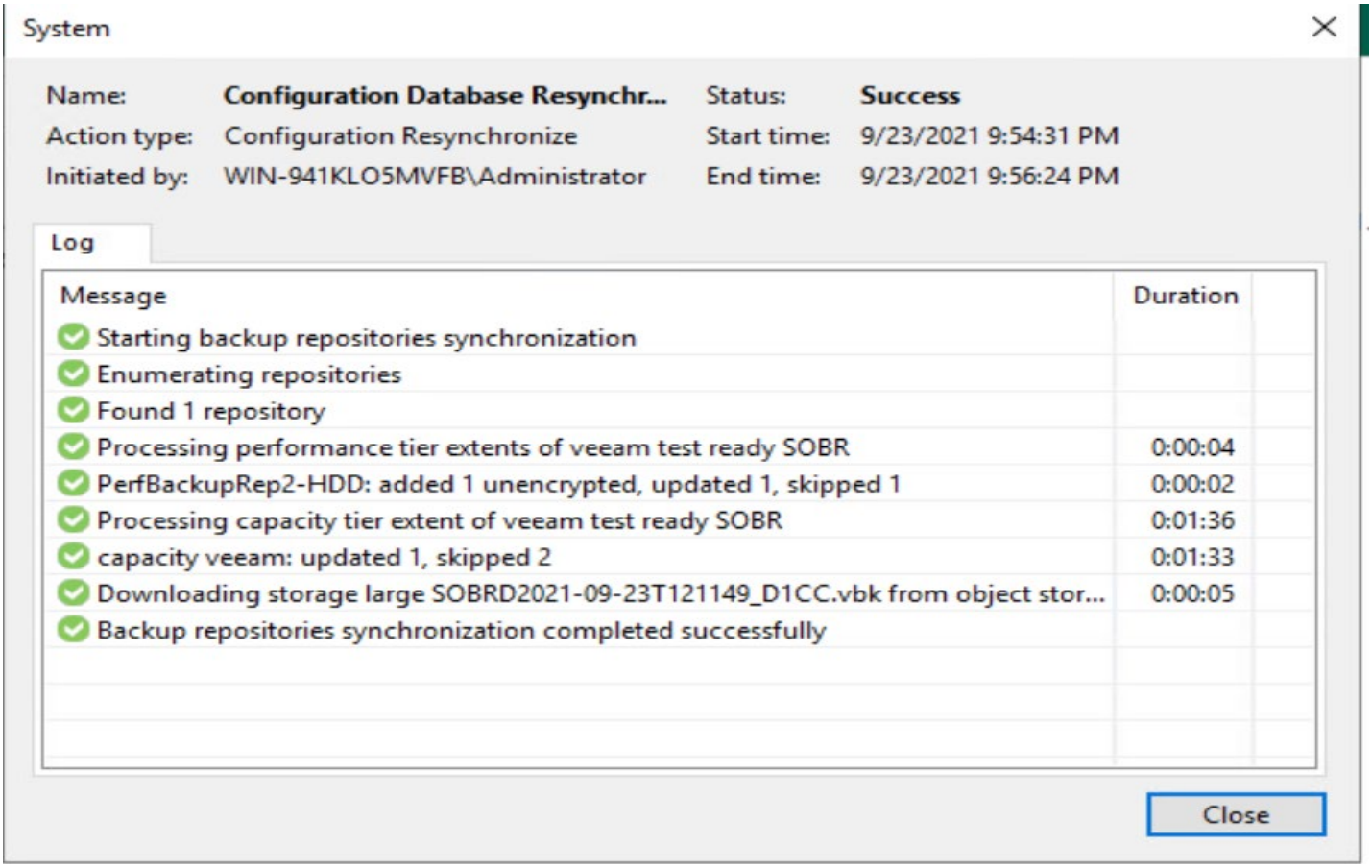
Name	Status	Start time	End time	Size	Read	Transferred	Duration
large SOBR	Success	2:01:37 PM	4:22:30 PM	1.3 TB	1 TB	1 TB	2:20:52

4c) Veeam Object Storage GUI with Archive Content

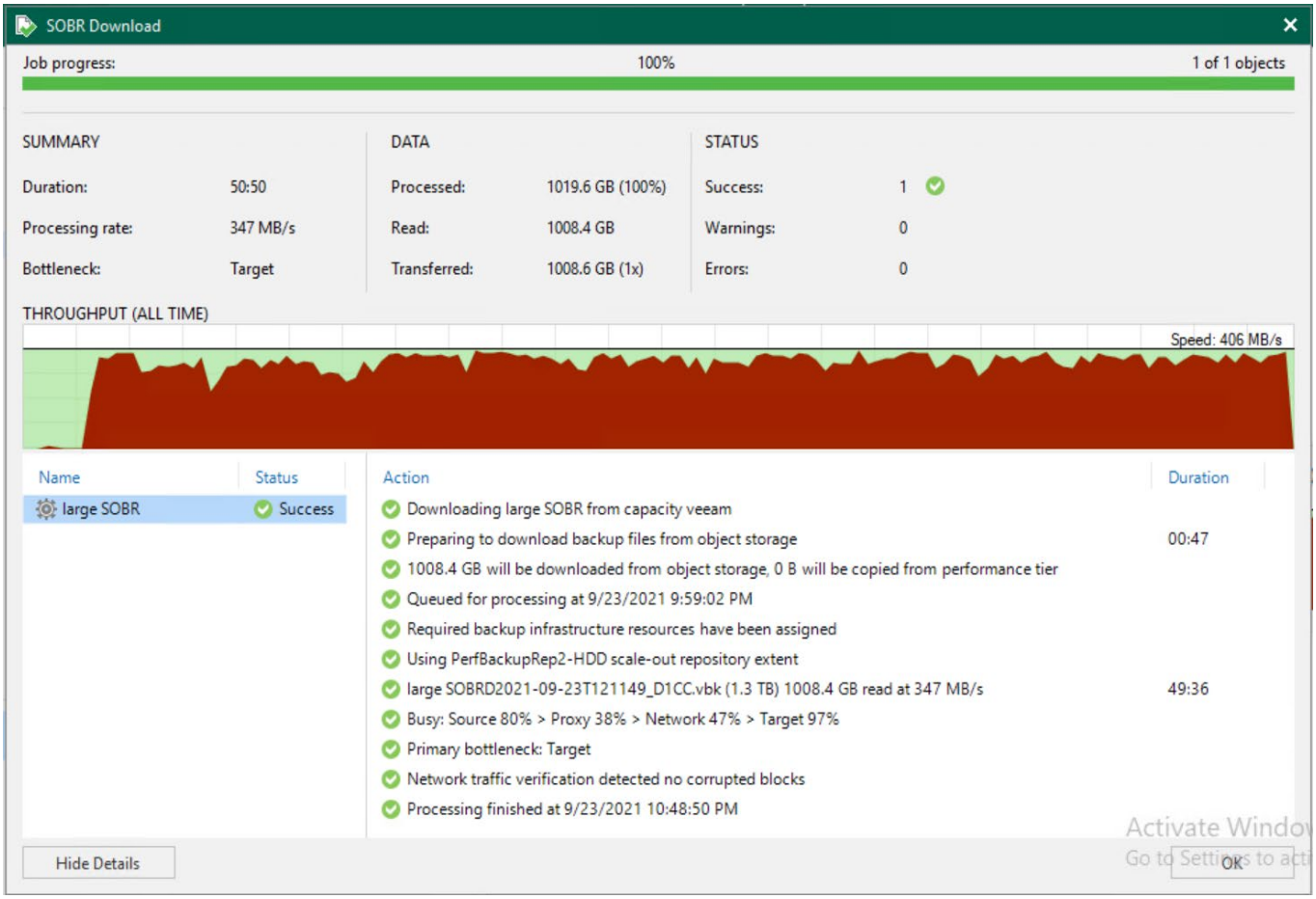


5) Large Download to OBS

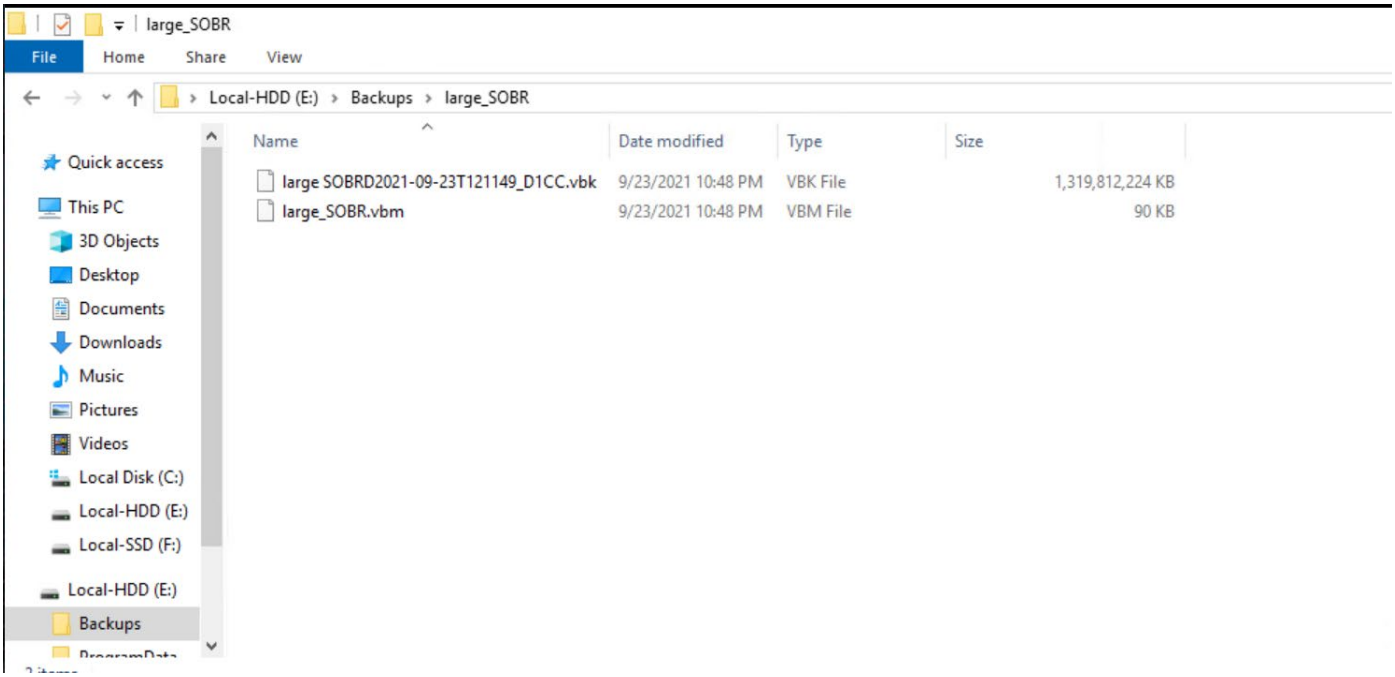
Perform a Download from S3-Compatible Storage



5a) SOBR Download Job

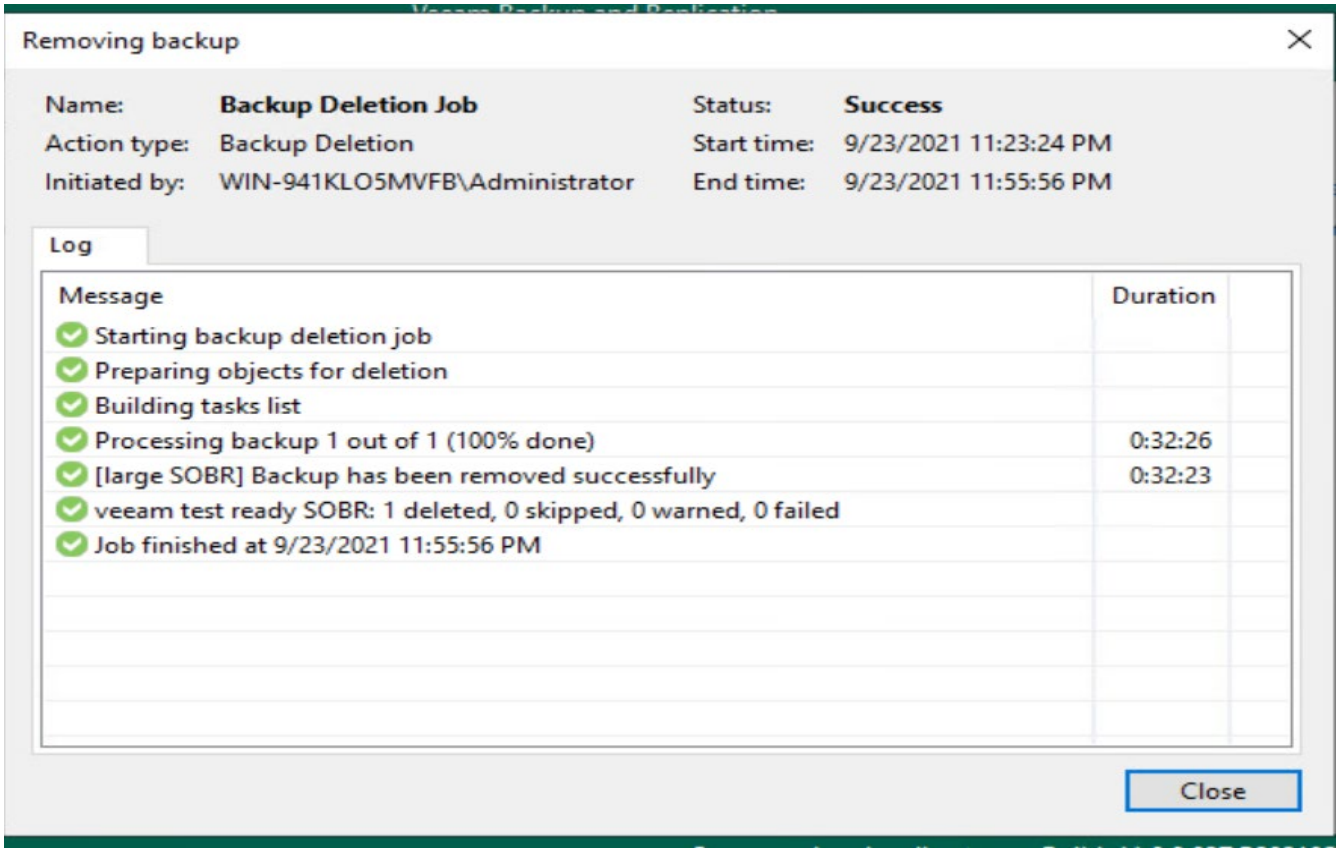


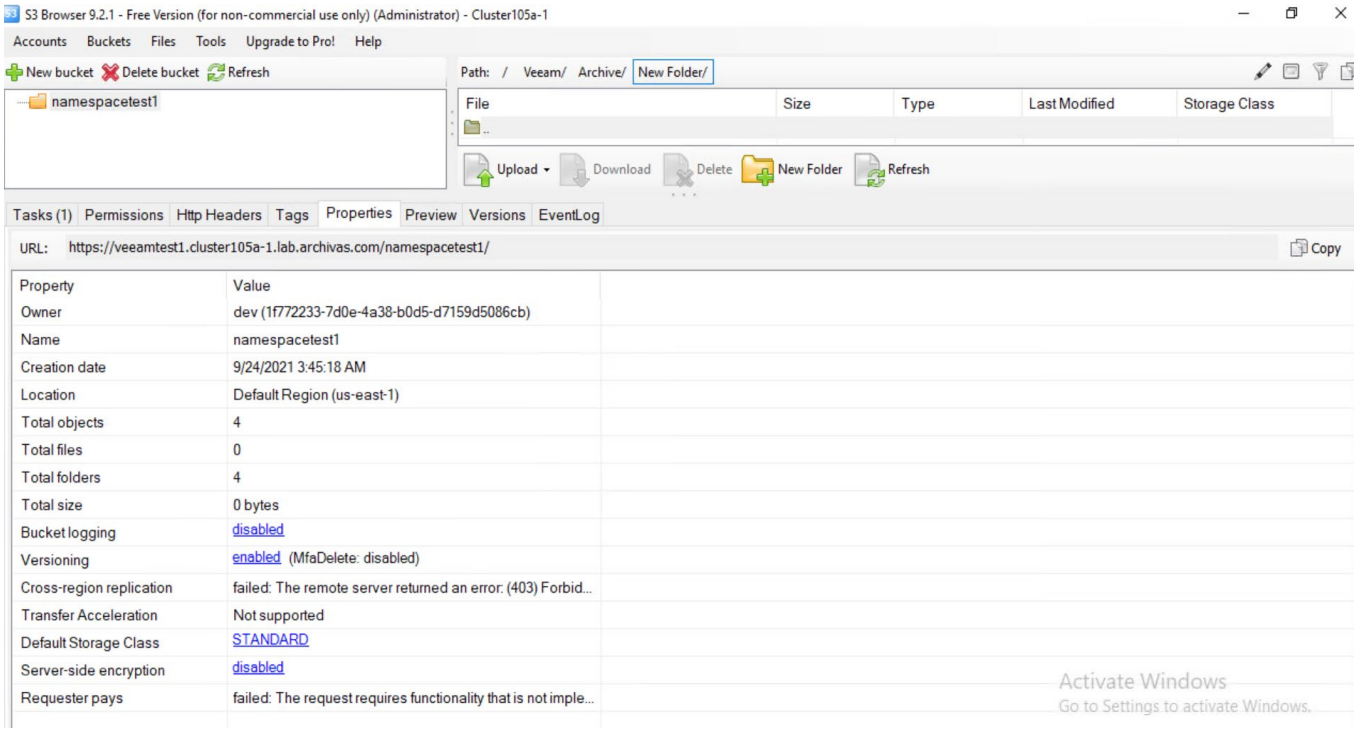
5b) File Explorer Performance Tier



6) Delete Backup file on OBS

Removing a backup session.





Performance Tuning & HCP Configuration Guidelines

Simultaneous Connections

- Veeam has the option to set several threads for uploads. Setting one thread per S3 gateway running produced the best results. In our example we had ten S3 gateways and ten threads for Veeam.

The following are key question to be answered, leading up to a proper system design:

1. Identify if Object Immutability is required. If so, the bucket will need to be created with the object immutability flag set on HCP as you cannot change the option once the bucket is created.
2. Retention Requirements. Whether delete or freezing an archive of specific data sets will be necessary. Veeam Backup & Replication in conjunction with HCP should be designed to meet company compliance and data retention policies while optimizing access searchable datasets.

Additional Resources

Check out the resources below to learn how Hitachi Vantara and Veeam work together to enable organizations to optimize their Veeam environments for reduced storage costs and greater efficiency.

Learn how Hitachi Content Platform makes your data securely available anywhere, anytime.
Read about the power of the Hitachi Content Platform portfolio.
Learn how to use Veeam to safely backup and have your data available.