Veeam DataLabs on Veeam Availability on Cisco HyperFlex Solution
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Overview

This document introduces the use of Veeam DataLabs on the Veeam Availability on Cisco HyperFlex™ solution. This solution allows customers to run advanced use cases such as disaster recovery, software upgrades, business reporting, and analytics workloads.

Introduction

Veeam DataLabs allow customers to leverage their data from existing backups and replicas to instantiate virtualized environments for several use cases, such as security testing, validation of software updates, installation of OS patches and new releases, quality assurance (QA) test environments, DevOps, and analytics workloads. It provides an isolated environment, which allows customers to use production data without affecting the live environment. To make full use of the capabilities of Veeam DataLabs, customers often depend on the performance of backup storage hardware. Several backup hardware vendors provide a backup performance tier using faster spinning drives and flash memory and solid-state disk (SSD) drives. These solutions provision a high-performance storage tier, but customers still are dependent on a third-party computing platform or a separate computing tier that hosts the hypervisor to instantiate Veeam DataLabs.

The Veeam Availability on Cisco HyperFlex solution, built on top of Cisco HyperFlex technology; provides a high-performing, scalable, and resilient backup platform for Veeam Backup Service, addressing the data protection needs of modern data centers. The increasing percentage of virtualized workloads, the dramatic increase in the size and amount of data collected, and the changes in the way that companies do business and work with data have had an immense impact on data protection solutions. With the time requirement for backup operations reduced to minutes, and with recovery-point objective (RPO) and recovery-time objective (RTO) requirements in the range of minutes to one hour, storage solutions must be fast, and the second-tier storage must be able to scale as quickly as the protected data grows. However, the traditional silo-based approach has too many limitations to be effective. The new architecture provided by the Veeam and Cisco® solution introduces a modern way to perform second-tier management by breaking down silos and reducing the management overhead in second-tier environments.

The Veeam Availability on Cisco HyperFlex solution not only allows customers to protect their workloads in a Cisco HyperFlex cluster, but customers can now use these backups to run Veeam DataLabs on top of the Cisco HyperFlex platform. This solution, powered with Veeam, provides a true appliance-like backup platform from which customers can benefit from a scalable and high-performance backup tier and can run Veeam DataLabs for workloads such as DevOps and analytics operations. This new approach eliminates the need to depend on any third-party backup storage solution or external virtualized computing tier to successfully run Veeam DataLabs.

This document introduces several important Veeam DataLabs use cases that benefit from the Veeam Availability on Cisco HyperFlex data protection solution. Customers are not restricted to running only these Veeam DataLabs use cases on the solution detailed in this document, but can run any use case supported by Veeam DataLabs.

Figure 1 shows the solution design.
Technology overview

This section introduces the hardware and software components used in this solution.

**Veeam and Cisco HyperFlex solution**

Veeam and Cisco together provide an enterprise-class, highly available solution. Jointly developed and prevalidated, the Veeam Availability on Cisco HyperFlex data protection solution offers these features:

- **High availability**: Meets or exceeds performance and recovery-time requirements for business-critical applications
- **Seamless scalability**: Provides agile scale-out capabilities, letting organizations increase capacity while maintaining performance
- **Reliability**: Combines best-in-class integrated technologies in a prevalidated solution for predictable results
- **Managed risk**: Provides enterprise data protection and policy-based compliance
- **Simplification and optimization**: Reduces the overall complexity and effort required to deploy, run, and secure the data center
- **Unified support**: Offers a single point of support from Cisco for the entire solution stack

The features and functions provided by Veeam, combined with the features and functions provided by the Cisco HyperFlex platform, create a powerful solution for fast backup and fast restore operations that is simple to implement and easy to scale. With the combination of Cisco and Veeam technologies, you can easily scale from tens of terabytes up to hundreds of terabytes of protected data.
In addition to high backup performance, scalability, and resiliency, the Veeam Availability on Cisco HyperFlex solution is ready to use, with a fully populated Cisco HyperFlex system plus Veeam software in a single bundle, all backed with unified support from Cisco. The solution is available in convenient 3- to 16-node configurations.

Figure 2 provides a high-level overview of the Veeam Availability on Cisco HyperFlex solution.

Figure 2.
Veeam Availability on Cisco HyperFlex solution: High-level overview

**Veeam DataLabs**

Veeam DataLabs allows organizations to easily create new instances of their production environments on demand. This capability enables use cases beyond typical data protection scenarios, such as DevTest, DevOps, and DevSecOps, including security and forensics testing and on-demand sandboxes for IT operations, delivering value to the business by accelerating innovation, improving operational efficiencies, reducing risk, and optimizing resources.

Veeam DataLabs takes the function of the Veeam Virtual Lab—enabling production-like instances of virtual environments on demand—and expands on it with additional use cases and business value. These isolated “sandboxes” use existing data to accelerate innovation and reduce risk. Veeam DataLabs transforms the core capability of backup and replication from a reactive insurance policy into a proactive value-added service for the enterprise. It achieves efficiencies by capturing data once through the data protection process and then repurposing that data on demand for new use cases, potentially by new users, to unlock the potential value of that data.

Veeam DataLabs offers a self-service method for developers to dynamically spin up instances of the production environment as they design new features. This capability provides several main benefits:

- It accelerates the pace of digital service delivery and helps ensure that teams are developing and testing with the most recent copies of data.
- Sandbox environments for IT operations allow developers to test new patches and updates before they are rolled out across the organization.
● Security and forensics teams can use copies of the data to test for security vulnerabilities without disrupting production systems or to perform forensics operations on an event that was identified through their security incident and event management platform.

● Compliance and analysis teams can examine and classify data for capacity-planning purposes and for compliance with regulations such as the European Union General Data Protection Regulation (GDPR).

Veeam DataLabs enables all these scenarios without disrupting production systems or requiring more infrastructure.

In addition, Veeam DataLabs uses universal storage APIs to integrate with Veeam’s storage partners. The same snapshot integrations enabled through these APIs, which also accelerate data protection capabilities, can be used with the Cisco HyperFlex HX Data Platform to provide an even more efficient way to deliver this additional value.

Figure 3 provides an overview of the Veeam DataLabs design.

![Veeam DataLabs design](image)

**Figure 3.** Veeam DataLabs design

**Validated scenarios for Veeam DataLabs on the Veeam Availability on Cisco HyperFlex solution**

This section illustrates several Veeam DataLabs scenarios validated with the Veeam Availability on Cisco HyperFlex solution. Note that these are not the only scenarios supported by the solution. All DataLabs use cases supported by Veeam can be run on the Veeam Availability on Cisco HyperFlex solution.

**Note:** Veeam DataLabs operations are computing and storage intensive, so you must be careful not to overload the Veeam Availability on Cisco HyperFlex solution cluster. Otherwise, backup performance on the solution may degrade.
Figure 4 shows several virtual machine backups on the Veeam Availability on Cisco HyperFlex solution cluster. The backups include a Microsoft SQL Server virtual machine consisting of a 700-GB TPC-C database.

![Backup virtual machines](image)

Figure 4. Microsoft SQL Server backup on the Veeam Availability on Cisco HyperFlex solution

Veeam DataLabs allows instant restoration of a SQL Server virtual machine on the Veeam Availability on Cisco HyperFlex solution cluster. Instant virtual machine restoration helps maintain system availability, allowing immediate restoration of the SQL Server virtual machine on the solution cluster by running it directly from the backup file located on the solution cluster. The Veeam Availability on Cisco HyperFlex solution cluster allows organizations to use the virtualized computing resources of the solution backup cluster, so customers can perform multiple maintenance tasks, check SQL Server upgrades, and run reports on the SQL Server virtual machine without interfering with the production environment or depending on any external virtualized computing system.

Veeam DataLabs on the Veeam Availability on Cisco HyperFlex solution allows organizations to do the following:

- Maintain low RTOs
- Reduce disruption in the data center
- Reduce system downtime on crucial production virtual machines

The following validated scenarios for Veeam DataLabs on the Veeam Availability on Cisco HyperFlex solution are discussed in this document:

- Disaster recovery of SQL Server virtual machine through instant restore operation
- SQL Server patch update validation
- Business reporting and analytics operations
Disaster recovery of Microsoft SQL Server virtual machine through instant restore operation

With instant virtual machine recovery, customers can immediately start a virtual machine from a backup file stored in the backup repository. Instant virtual machine recovery accelerates the restoration process, improving RTOs and decreasing downtime for production virtual machines.

The validation process detailed here demonstrates instant restoration of a SQL Server backup on the Veeam Availability on Cisco HyperFlex solution to the solution cluster. This operation allows customers to use the virtualized computing nodes of the Veeam Availability on Cisco HyperFlex solution and eliminates dependency on any external computing resources. The SQL Server virtual machine is a 600-GB TPC-C database backed up from the production environment.

1. Identify the SQL Server backup to be restored.

2. Restore the backup to the Veeam Availability on Cisco HyperFlex solution nodes.
3. Monitor Cisco HyperFlex performance.

4. Verify instant restoration of the virtual machine on the Veeam Availability on Cisco HyperFlex solution cluster.
5. Post the instant restoration on the Veeam Availability on Cisco HyperFlex solution cluster with backup files from the data store of the solution cluster.

6. A 10–virtual user (vUser) workload was run on the TPC-C database with 70 percent read operations and 30 percent write operations. Monitor the performance for this workload on the Cisco HyperFlex cluster.

Microsoft SQL Server patch update validation

Veeam DataLabs unlocks multiple use cases for backup data beyond data protection, leading to cost and operational efficiencies and improving business agility. Use cases include capabilities to achieve faster application deployment; mitigate risk by testing new upgrades and patches before rolling them out; implement DevOps and DevTest workloads, develop security operations, and verify compliance.

With the Veeam Availability on Cisco HyperFlex solution, customers can restore the virtual machine on the solution and verify patch updates: for instance, customers can verify update releases of SQL Server. After the updates are verified, customers can either move the instance to production or apply these updates to the live production environment.

The validation process demonstrated here verifies the SQL Server patch update from Release 13.0.4001 to Release 13.0.45600.
1. Verify the initial release of the SQL Server instance.

2. Update the release.
3. Verify the SQL Server update.

4. Monitor this workload on the Veeam Availability on Cisco HyperFlex solution cluster.

**Business reporting and analytics operations**

With Veeam DataLabs, customers can run business reporting and analytics operations on near-live copies of the production data. With no performance impact on production, customers can run analytics and reporting processes on the Veeam Availability on Cisco HyperFlex solution cluster with local copies of backups on the same cluster. For instance, the finance and analysis teams can provide statistics and analyses for several years of revenue data that exist on large SQL Server backups on the solution cluster.

The validation operation demonstrated here runs several report queries on a 700-GB TPC-C database on SQL Server, which is backed up on the Veeam Availability on Cisco HyperFlex solution cluster. SQL Server is mounted on the solution cluster with the backup in the same solution data store.
1. Restore SQL Server on the Veeam Availability on Cisco HyperFlex solution cluster.

2. Run several report queries on SQL Server instantiated from backup on the Veeam Availability on Cisco HyperFlex solution cluster.

3. Monitor performance of the Veeam Availability on Cisco HyperFlex solution on Cisco HyperFlex Connect.
Conclusion

This document demonstrated the value of running Veeam DataLabs on the Veeam Availability on Cisco HyperFlex solution. Customers can now rely on an appliance-like backup solution, which not only provides high availability, resiliency, and scalability, but also enables customers to achieve faster application deployment, mitigate risk by testing new upgrades and patches before rolling them out, implement DevOps and DevTest environments, develop security operations, and verify compliance.

For more information

For additional information about the solution discussed here, see the following resources:

- Veeam Availability on Cisco HyperFlex solution: https://www.veeam.com/wp-veeam-on-cisco-hyperflex-solution-brief.html
- Veeam DataLabs: https://www.veeam.com/blog/new-datalabs-overview.html