



Pivot3 and Veeam for Remote Office Branch Office

SOLUTION WHITEPAPER

Introduction

Pivot3 and Veeam have created a series of Solution Whitepapers that outline the business and technical benefits of their combined solutions. This whitepaper discusses the backup and disaster recovery challenges for IT administrators managing several remote sites and how the Pivot3-Veeam solution addresses those issues.

The Business Challenge

There are many difficult decisions that an IT administrator must make when dealing with Remote Office, Branch Office (ROBO) sites and backing up the data created within those sites. When datacenter centralization is ineffective, due to struggling WAN connectivity, or poor edge application performance, an administrator will often implement critical applications locally. This presents its own challenge: how do administrators implement backup best practices and provide a simplified IT infrastructure without readily available skilled IT staff on site?

This critical challenge is compounded by budget constraints, costs associated with management and complexity. Additionally, challenges around datacenter footprint are not often addressed ahead of time and can lead to sacrifices in functionality or a move away from backup best practices.

ROBO Challenges

Homogeneity vs Heterogeneity

Combining infrastructure and backup platforms between the core datacenter and ROBO sites has a distinct advantage when it comes to management - existing management frameworks can be expanded to encompass all sites and present a singular view of the entire IT infrastructure.

However, this is not always practical, with form factors and costs presenting certain limitations. Recent trends towards deploying off-the-shelf hardware with an abstracted management layer have helped resolved this issue by delivering a flexible solution with a single-pane-of-glass. This approach enables different geographic regions, with their own purchasing and infrastructure preferences, to maintain corporate standards while retaining a degree of local autonomy.

Backup Performance

When IT has made the choice to deploy infrastructure at a ROBO site there are typically a few critical applications that require backup performance. This creates a difficult balance between infrastructure complexity and footprint, and can place limitations on delivering application performance and resilience.

Backup performance is also impacted by degraded mode conditions – where either a node or drive fails – and ROBO sites are more prone to longer failure domain times because the IT administrator must not only rely on parts delivery but also typically lacks the skilled labor to efficiently repair the defective system.

WAN performance and availability must also be considered, as this will impact the ability to move the data from the ROBO environment back to the core datacenter and uphold the 3-2-1 rule that is a core backup best practice.

Infrastructure Footprint

ROBO sites are often underpowered and unsuitable for deploying IT infrastructure, with hardware often located in closets or other inappropriate setting. Without a dedicated server room, and with the noise created by an IT infrastructure attempting to keep itself cool, disruption to the office environment is common. Achieving a high degree of density for storage, power consumption and a computing becomes vital.

Local DR Testing

Of course, it's good practice to backup your remote VMs, but IT administrators need to know they will restore during, or following, a failure event. If they are managing several remote sites, testing these VMs can become extremely time consuming. At this point, there are two options;

1. Periodically run DR tests (for example, once a quarter) to reconcile the Recovery Point Objective (RPO) guarantee with administrative achievability.
2. Test mission-critical applications on a more frequent schedule, with the caveat that an entire site restore might not be possible or guaranteed to work.

In the event of a full site failure, considering that VMs from ROBO sites have been replicated back to the corporate datacenter, the VMs can be restored locally at the cost of remote performance. The most preferable option is to automate and guarantee DR testing daily on the remote site.

File & Object Recovery

Most restore events are the result of user error, rather than from catastrophic failures in the IT infrastructure or damage from natural disasters. As such, when user error causes an application outage, or the deletion of a critical file, the ability to centrally manage and remotely restore that object or file in a timely manner is a vital concern.

Pivot3 for ROBO

Flexible Design & Business Agility

Pivot3 hyperconverged infrastructure (HCI) systems may be deployed on a range of form factors for any footprint consideration a ROBO may have. From 1u nodes, capable of delivering a "Backup Appliance" to fully functioning 2u nodes able to deliver an entire ROBO infrastructure, Pivot3's modular design enables seamless and non-disruptive expansion, while meeting the ROBO's performance, efficiency and simplicity requirements.

By combining storage and compute resources into a scalable hybrid infrastructure, Pivot3 reduces the footprint required for ROBO deployments, reducing power, cooling and noise overhead as well. By running Pivot3 with Veeam as a dedicated backup appliance, an administrator is also able to extend his back up window by reducing the overhead on the production infrastructure, while migrating data from the ROBO back to the corporate datacenter via a backup copy job.

Pivot3 provides infrastructure management for all sites through a vSphere Web Client Plugin ensuring that a familiar, centralized point of management is available for all sites. Veeam Backup Manager also has the facility to manage multiple site simultaneously, meaning that an IT administrator has a fully connected solution for backup and infrastructure management.

Veeam For ROBO

Veeam Replication

In many respects, replication works similarly to forward incremental backup. During the first replication cycle, Veeam Backup & Replication copies data of the original VM running on the source host and creates its full replica on the target host. Unlike backup files, replica virtual disks are stored uncompressed in their native format. All subsequent replication cycles are incremental. Veeam Backup & Replication copies only those data blocks that have changed since the last replication job session.

Veeam Backup & Replication lets you perform onsite replication for high availability (HA) scenarios and remote (offsite) replication for DR scenarios. To facilitate replication over the WAN or slow connections, Veeam Backup & Replication optimizes traffic transmission. It filters out unnecessary data blocks such as duplicate data blocks, zero data blocks, blocks of swap files and blocks of excluded VM guest OS files, and compresses replica traffic. Veeam Backup & Replication also allows you to use WAN accelerators and apply network throttling rules to prevent replication jobs from consuming the entire network bandwidth.

In Veeam Backup & Replication, replication is a job-driven process. To perform replication, you need to configure replication jobs. A replication job is a configuration unit of the replication activity. The replication job defines when, what, how and where to replicate. One replication job can be used to process one or several VMs. You can instruct Veeam Backup & Replication to run jobs automatically by schedule or start them manually.

Veeam Copy Backup Job

With Backup Copy, you can create several instances of the same backup file and copy them to secondary (target) backup repositories for long-term storage. Target backup repositories can be in the same site as the source backup repository, or can be deployed offsite. The backup copy file has the same format as the primary backup, so you can restore necessary VM data directly from it in case of a disaster.

Veeam Backup & Replication copies VM data per VM at the block level. That is, it does not copy the whole VBK, VIB or VRB files from the source to target backup repository. Instead, it works with data of separate VMs stored in these files. When the backup copying process starts, Veeam Backup & Replication accesses VM backup files on the source backup repository, retrieves data blocks for a specific VM from the backup file, copies them to the target backup repository, and composes copied blocks into a backup file on the target backup repository. The backup copying process does not affect virtual infrastructure resources, does not require creation of additional VM snapshots and does not produce load on VMs whose backups are copied.

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By default, backup copy jobs process VMs in the job in parallel, starting from the first VM in the list. If some VM cannot be processed for some reason, for example, in case a new restore point for this VM is not available yet, the job will start processing the next VM in the list. When this VM is processed, the job attempts to copy the unprocessed VM once again. On the target backup repository, the backup copy job creates a backup chain in the forever forward incremental backup method. The target backup repository always contains only one active incremental backup chain. Restore points in the chain are rotated according to the retention policy.

Veeam SureBackup

SureBackup is Veeam's technology that lets you test VM backups and make sure that you can recover data from them. Veeam Backup & Replication performs "live" verification of the VM backup: it automatically boots the VM from the backup in the isolated environment, performs tests for the VM, powers the VM off and creates a report about the recovery verification results. You can verify the latest restore point of the backup or any other restore point.

The Joint Solution

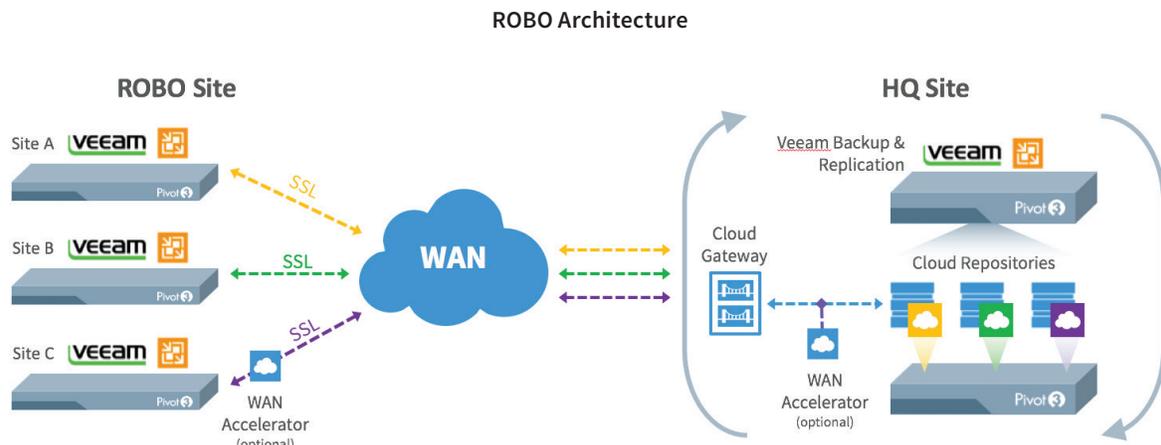
ROBO Solutions

The most logical choice of deployment for an IT administrator is to use Pivot3 HCI with Veeam as a remote backup appliance on each ROBO site. This will:

- Adhere to the 3-2-1 backup best practice rule by hosting a local copy of the data on the remote site, but on media that is not the production storage.
- Remove compute and storage performance overheads from the system by running the Veeam components within the Pivot3 node, allowing for a less disruptive backup solution.
- Provide an environment for SureBackup, recovery verification, testing and item level recoveries to occur, away from the production application, in an isolated sandbox environment.

- Expand the backup/replication window for an administrator to transfer data from the ROBO site into the corporate datacenter with minimal disruption.

The diagram below outlines the suggested architecture for the solution, where the Cloud Repositories are created on a Pivot3 HCI infrastructure, made up of Hybrid HCI nodes with data only nodes for additional storage capacity.



Conclusions

Pivot3 HCI and Veeam Backup and Replication provide a best of breed solution by addressing the most common and critical challenges facing IT administrators of ROBO sites. Backups and Replicas can be taken regularly, increasing the RPO, and by using Veeam and Pivot3 HCI as a dedicated backup appliance, an improved RTO and recovery verification can take place seamlessly and non-disruptively.

The combined capabilities solve challenges stemming from footprint, noise, and centralized management. Flexible and modular-based deployment further enhances an administrator's ability to adapt to new sites, and their expansion and business requirements, in a manner that best suits the organization and its budgetary concerns.

Pivot3 and Veeam

Technology Partners Pivot3 and Veeam work together to innovate the way businesses address ROBO availability. Together, through a combination of smarter hyperconverged infrastructure solutions and high availability technologies, Pivot3 and Veeam invest in validating, documenting, deploying and supporting joint solutions and services required for businesses to operate 24x7x365.

Further information on this solution can be found by working with your Pivot3 representative, authorized channel partner or visiting www.Pivot3.com