NetBackup with Cohesity Data Platform
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About This Guide

This paper details the steps and best practices to deploy a Cohesity Data Platform as a storage target for the NetBackup backup application. Combining NetBackup with Cohesity Data platform provides a comprehensive, highly scalable and flexible backup solution that fits the data protection needs of any size organization whether SMB or enterprise.

Audience

This paper is written for storage and backup administrators familiar with administering and managing backup environments. You must also be familiar with:

- NetBackup backup application
- Cohesity data platform
- Server Message Block (SMB)

Data Protection for VMware Environments

There have been many technological advances in the secondary landscape of the modern data center. With each evolutionary change, new efficiencies bring optimizations to the data center administrator which have made the tasks of storing and finding data easier and easier. The migration from tape based backups to disk based based backups bring the efficiencies of speed to not only the backup process, but also to the recovery process. Next, the move to deduplication appliances bring a dramatic on-disk space savings, and coupled with virtualization, a massive reduction in overall rack space used in the data center. While each of these evolutions brought speed and efficiency to the data center, they all continued to ignore the problem of data silos. Without the ability to deduplicate between these appliances, data growth continues to increase at unprecedented rates.

Primary workloads have been revolutionized by the webscale architectures introduced by companies like Google, Facebook, and Yahoo. These architectures offer a pay-as-you-grow model which is optimized for cost and scalability. Cohesity is bringing webscale efficiencies from the primary workloads to the secondary storage landscape. With the Cohesity Data Platform, IT Administrators can bridge these islands of storage by leveraging the Scale Out and Global Deduplication capabilities of the Open Architecture for Scalable, Intelligent Storage (OASIS). Moving data centers fully into the webscale generation removes complexity and fragmentation which reduces efficiency in the ever-changing world of Enterprise IT.

Cohesity Data Platform Overview

Cohesity introduced the world's first scale-out data management platform to enable organizations to standardize secondary workflows on a completely unified and fully distributed solution. Cohesity's scale-out distributed file system (OASIS) was built from the ground up to ensure complete scalability to enable organizations to flexibly grow their environment by simply adding nodes to a cluster. With this scalability, organizations can eliminate the costs of data migrations and forklift upgrades, while benefiting from the simplicity of a homogenous solution.

In addition to ensuring complete scalability, Cohesity enables the delivery of semi-primary and secondary workloads by providing a powerful, unified platform with industry-leading capacity and performance across the most common file system protocols. In a single 2U Block, Cohesity delivers 48TB of hybrid flash and HDD storage to efficiently balance performance, capacity, and price to give organizations the flexibility to offload secondary workloads from expensive primary storage arrays. Cohesity’s integrated backup, archive, replication, disaster recovery, and public/private cloud support, combined with its inherent context awareness, eliminate the need for cataloging software, backup software, and other ancillary backup infrastructure.

With Cohesity, organizations can benefit from stringent data protection policies by gaining valuable insight from their data. Cohesity’s context-aware file system makes it easy to understand storage utilization trends, reclaim unused resources, and create summary and detailed reports with just the click of a button.
NetBackup Overview

NetBackup provides a set of features for building and maintaining a flexible backup infrastructure, performing data protection tasks (such as VM backup, replication, copying backup files), and carrying out disaster recovery procedures.

Benefits of using the Cohesity Data Platform with NetBackup

Cohesity data platform, when used as a storage target for NetBackup, delivers unparalleled performance, scalability and availability for the backup environment.

- Maximizes storage capacity with Cohesity’s advanced data reduction functionality.
- Modern webscale distributed system with limitless scaling of performance and capacity.
- Continuous availability architecture with a minimum replication factor of 2 for stored data. Any node can fail and the system continues to function.
- Deploying a global storage target is as easy as just a few button clicks.

The Cohesity NetBackup Solution

Architecture

There are several components that make up the NetBackup Architecture. For virtualized environments, a VMware MediaServer manages the data, backup, and restores for that environment. The MediaServer software is deployed on dedicated servers or virtual machines that manage the transfer of data from the clients to storage media. The management of the NetBackup architecture is managed by a dedicated master server with the NetBackup management console software installed.

In the NetBackup Architecture the Cohesity data Platform cluster is considered a storage repository. The Cohesity Data platform presents its storage to NetBackup as an exported SMB share. Cohesity Data Platform terms

- **View** – A view is a file system that is created on the storage platform. A view can be accessed by external devices as an exported SMB share.
- **View Box** – A View Box is a storage container that contains a set of views. Storage policies on are set at this level. Storage policies consists of enabling data deduplication, either n-line data deduplication or post process deduplication.
- **Virtual IPs (VIPs)** – Each node on the Cohesity data platform is assigned a VIP address. The SMB shares that is exported by the Cohesity Cluster can be accessed through the VIPs. All VIP addresses are always active. In case of a node failure the VIP of the failed node will be taken over by another node within the cluster. This ensures that VIPs are always active. Load sharing on the cluster is accomplished using the VIPs by spreading the workload between the VIPs.

Verified Solution

- NetBackup version 7.7
- Cohesity Storage Platform version 2.5
The Cohesity Advantage

Data protection is complex. Between navigating cluttered user interfaces, choosing storage appliances, tape libraries, and off-site storage solutions, more time is spent planning than actually protecting. By combining the best in class virtual machine backup software from NetBackup and the best in class data platform from Cohesity customers can implement the most comprehensive data protection solution available while also removing all the complexities of legacy secondary storage environments. Traditionally, data protection relied on a complex network of infrastructure which took days of configuration and constant monitoring. As technology changed, and storage appliances improved, fragmentation in the data center increased exponentially. NetBackup and Cohesity now provides a simplified, consolidated, webscale approach to protect your datacenter.

Advanced Data Platforms for Today’s Modern Data Centers

Legacy deduplication appliances suffer from legacy problems. They act only as islands of storage, and are unable to work together to provide global data reduction across these silos. These appliances are inefficient, and costly to the end user. Today’s webscale data centers not only need flexible solutions for primary workloads, they need it where up to 80% of the data resides, in the secondary workloads of the data center. Data growth in the secondary storage space has increased exponentially when compared to data growth on primary workloads. Both the NetBackup Suite and the Cohesity Data Platform implement advanced data deduplication algorithms which will drastically reduce the on-disk footprint of any data protection environment. Allowing Cohesity to deduplicate all backup data streamed from any number NetBackup MediaServer servers will result in fewer bytes written to disk saving hard dollars on expensive appliances, and time searching for which silo data resides on. Furthermore, no matter how big the environment gets, the Cohesity Data Platform can grow to fit the need.

Pay for what you need, when you need it

Webscale data platforms enable a pay-as-you-grow model. No longer do storage administrators need to pay today’s prices for disks they won’t use for years to come. Built on trusted x86 hardware and a fully distributed software stack, the Cohesity Data Platform infinitely scales from as few as three nodes, to racks and racks of nodes. Built with the same internals that power today’s largest internet companies, the Cohesity Data Platform is resilient to failures. Cohesity’s self-healing software is constantly scanning to insure that all data stored is uncorrupted and fully available at all times. This means that no matter what happens to the hardware, NetBackup jobs can continue to chug along.

Manage your QoS Policies

The intelligence of a fully distributed architecture doesn’t stop at self-healing. Fine-grained Quality of Service (QoS) controls allow backup administrators to weigh individual backup jobs with a priority setting. These QoS controls get applied to every write or read operation that lands on the platform, and stick with it as it traverses the layers of software, a first of it’s kind in data policy control.

Elastically expand into the Cloud with Cloud Archive and Replication

The job of the backup administrator doesn’t end at the daily backup job. Safe off-site replication and archival strategies must also be implemented. Due to lack of integration across multi-vendor solutions this can lead to further fragmentation and several disparate user interfaces to manage. By leveraging the Cohesity Data Platform’s native site-to-site replication features and the ability to archive to the public cloud, NetBackup and Cohesity become a single stack solution to tackle the end-to-end requirements of the entire Data Protection program. Replication between Cohesity Data Platforms can be setup in a one-to-one or many-to-one fashion which can allow the Backup Administrator to conform to all off-site data storage needs for any number of data center locations. Attaching a cloud-based archival service such as Amazon Glacier or Google Near Line provides an off-site archiving strategy which can be accomplished without needing a secondary data center at all. Both the replication of backup data and the archival of backups happen based on policies set up when a pool of storage is created for NetBackup. These data transfers happen automatically and continually without any need for manual intervention. With the index of data locations held locally to the platform, locating data is as easy as if it were all local.
In-Place Restores for Rapid Recovery and Testing

Backups are only as good as their recoveries, and with a Cohesity backed NetBackup implementation backup administrators are able to quickly restore virtual machines to their original primary storage, or directly host virtual machines in the event of an actual disaster or data center loss, i.e. the Cohesity Data Platform can not only serve as a target disk repository for backup jobs, but also serve as a VMware Datastore to host virtual machines. With our distributed hardware nodes, NetBackup is able to restore in a fraction of the time it takes to restore from a legacy tape library or storage appliance. This flexibility reduces the overall need for multiple user interfaces and hardware stacks to perform end-to-end data protection tasks.

Delivering Webscale Simplicity for Secondary Storage Consolidation

Once the Storage and Job level configurations have been optimized, the combined NetBackup and Cohesity Data Protection stack becomes a simple, scalable, and reliable platform to drive secondary storage consolidation. Delivering best in class data protection for virtualization, NetBackup has become the market leader in easy to manage software, flexible enough to grow to any size virtualization environment. The Cohesity Data Platform brings unparalleled scalability on top of technical advancements such as: global deduplication, in-place restores for test and dev environments, and in-place analytics. This gives data center administrators a single pane of glass to hyperconverged secondary storage workflows.

Appendix A: Deploying Cohesity Data Platform with NetBackup 7.7

This chapter describes the steps for deploying the Cohesity data appliance with the NetBackup backup application.

Deployment Prerequisites

• NetBackup v7.7 infrastructure with at least one MediaServer
• A Configured Cohesity data Platform Cluster with at least four nodes

Configuration Overview

The configuration for NetBackup and the Cohesity Data platform cluster is divided into 2 simple tasks.
• Task 1: Create a SMB share on the Cohesity Data Platform - The Cohesity Data Platform presents itself as a storage target in the form of an SMB file share. This task will step through the process of creating and sharing the SMB export to NetBackup DiskPool.
• Task 2: Add the Cohesity Cluster storage as an Advanced DiskPool on the NetBackup MediaServer

Task 1: Creating a SMB Export on the Cohesity Data Platform

This task will create a file system that will be exported as a SMB share on the Cohesity Data Platform. In the first step of this task a storage container called a View Box will be created that will allow us to set the policies for the shares to be exported. We can set the data management policies such as enabling data reduction functionality and the type of data deduplication whether inline or post process. In the second step a file system will be created called a View. We will associate the View with the View Box created in step 1 which will inherit the policies from the View Box. In the last step we will grant access to the Backup Proxies by putting its IP address in the whitelist that grants access to the shares.

1. Create a View Box
2. Create a View
3. Whitelist the IP subnet of the NetBackup MediaServer
Creating a View Box

1. From the Cohesity UI, navigate to the Add a View Box Tab, select Platform > View Boxes > Add a View Box

Figure 2. Click on Add a View Box Tab

Figure 3. Creating the View Box
Creating a View

2. From the Cohesity UI, navigate to Create View Tab, select Platform > View. Then click on the Create View button.
3. Whitelist the IP Subnet of the NetBackup Backup Proxies

This step will allow access of the MediaServer to the newly created SMB share. You will need to have the IP address of the MediaServer added to the list, or the IP address range if there are multiple Backup Proxies that needs access.

From the Cohesity UI navigate to the Specify Subnet tab select Platform > Views > Whitelisted Subnets > Specify Subnet (Figure 6.) Enter the IP address and the subnet mask of for the network range for the MediaServer. In the case of a single host a 32bit mask should be used. Ex 255.255.255.255.

![Manage Views](https://example.com/image1)

**Figure 6. Select Specify Subnet**

![Specify a Subnet?](https://example.com/image2)

**Specify a Subnet?**

Specify a Subnet that has permissions to access all Views.

**Whitelisted Subnet**

* Subnet IP

| 192.0.2.10 |

* Subnet Mask

| 255.255.255.0 |

**Figure 7. Entering IP Address of Backup Proxies**
Mounting the NFS Exports on the Linux MediaServer

Log into the Linux MediaServer with a user that has root privileges and create directories that will be used as mount points for the exported NFS share. Create a directory for each VIP address.

Example:

```
mkdir /mnt/nfs/nbu1
mkdir /mnt/nfs/nbu2
mkdir /mnt/nfs/nbu3
mkdir /mnt/nfs/nbu4
```

Open the /etc/fstab file with an editor of your choice and add the following line for each of VIP ex:

VIP:/exported NFS mount  local mountpoint

a. make sure to use the nolock option when mounting the NFS export on the Linux MediaAgent

```
Example: 172.16.2.21:/VBIDD/nbu_View/fs  /mnt/nfs/nbu1 nfs
         nfsvers=3,hard,intr,noatime,retrans=1000,timeo=900,retry=5,rsize=1048576,wsize=1048576,nolock

172.16.2.22:/VBIDD/nbu_View/fs  /mnt/nfs/nbu2 nfs
         nfsvers=3,hard,intr,noatime,retrans=1000,timeo=900,retry=5,rsize=1048576,wsize=1048576,nolock

172.16.2.23:/VBIDD/nbu_View/fs  /mnt/nfs/nbu3 nfs
         nfsvers=3,hard,intr,noatime,retrans=1000,timeo=900,retry=5,rsize=1048576,wsize=1048576,nolock

172.16.2.24:/VBIDD/nbu_View/fs  /mnt/nfs/nbu4 nfs
         nfsvers=3,hard,intr,noatime,retrans=1000,timeo=900,retry=5,rsize=1048576,wsize=1048576,nolock
```

Run the command to mount the shares.

Example: mount -a

Verify that the shares are mounted

Example: mount | grep nbu
Task 2: Create a New Storage Repository with storage from the Cohesity Data Platform

Configuring the NetBackup MediaServer

Creating the Disk Pool for Cohesity:

From the main NetBackup console create a new Storage Server for Advanced Disk, if one isn’t created. Right Click on Storage Server, and Select New Storage Server.

Select AdvancedDisk.
Confirm the selections, click Next, and then navigate back to the console and right click on Disk Pool once completed.
Select AdvancedDisk then Next
Select the Linux Storage server you wish to use (either the one created above, or an existing AdvancedDisk server)

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>linuxmedia.pm.cohesity.com</td>
<td>AdvancedDisk</td>
</tr>
<tr>
<td>nbu77master.pm.cohesity.com</td>
<td>AdvancedDisk</td>
</tr>
</tbody>
</table>
Note:
As of this writing, it appears that NBU will only write to one disk at a time in a disk pool per backup job. Repeat this process to add each of the Cohesity nodes to the Disk Pool. While a single job can only write to one disk, multiple jobs can write to the disk pool.
In summary, combining NetBackup Backup & Replication with the Cohesity Data Platform delivers a comprehensive backup solution that is infinitely scalable, highly available that provides unparalleled performance.