

# Rsync Backup and Recovery - Cohesity Remote Adapter

*Solution guide to back up any unix based operating system using rsync and Cohesity remote adapter*

Version 1

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## Scope

### In Scope

- First full Backup (Initial Sync) of unix filesystems to Cohesity NFS
- Incremental forever (Changed Size and Last Modified time) of unix filesystem to Cohesity NFS live view
- Preserve ACL's, ownership, extended attributes
- Preserve mtime, ctime, atime
- Exclusions and Inclusion based on pattern/input-file
- Automation using RA
- Indexing backup for easy search option
- Download file/folder option from UI
- Clone view and mount as NFS workflow to recover back to source
- Capture and Display errors on UI

### Out of Scope

- Full server recovery or BMR
- Performance aspects, if any (as we are dependent on rsync)
- Hard Links handling

## Pre-requisites

- Unix based operating system
- Commands/utilities required
  - rsync version 3.0.8 or later
  - sudo
  - mount
  - umount
  - Bourne shell (default shell)
- [Setup passwordless ssh access from Cohesity to the unix host](#)
- Ensure the user being used for password less access has sudo access to execute following commands:
  - rsync
  - mount
  - Umount

Sample sudoers file content below:

```
bash-5.0# cat /usr/local/etc/sudoers
mittal  ALL=(ALL) NOPASSWD: /usr/bin/rsync, /usr/sbin/mount, /usr/sbin/umount
manoj   ALL=(ALL) NOPASSWD: ALL
bash-5.0# █
```

- PATH variable should be updated in script. This is needed so that script can locate and use required commands and utilities. Currently the script is hardcoded to use the following PATH variable
  - /usr/sbin:/usr/bin:/usr/local/bin
- Create an NFS view on Cohesity for each host that needs to be protected.
- Create a mount path on each host which would be used to mount cohesity view. The script takes care of automatically mounting and unmounting cohesity as NFS to this path. The path needs to be provided as a parameter to remote adapter job
- Follow the following KB to ensure cohesity views can be mounted as NFS on HP-UX and Solaris hosts

<https://support.cohesity.com/s/article/HP-UX-v-11-31-NFS-UDP-initialization>

## Setup Passwordless ssh access from Cohesity to Unix host

- Log in to Cohesity UI and create a remote adapter group. Provide group a name, unix hostname, username

**Remote Adapter**

Protection Group

Name \*

test

Host

Linux Hostname or IP \*

10.1.1.0

Username \*

test

Cluster SSH Public Key

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCSKBf0fEkbFuA9mjaIplurfdI6DruAIMJhy+Krk+x2fEigNNIsjyT89HIDFVLdh8Ue+jcTptBE
TFQ9Yk8Vqd80Ts/9iirVwFgWwBOR5pi/bsPT4Zj2ycxN1Ix3H67OQFTb/ycXGbuuAEijIN1Fg5wvbHppYZV4JdpBVBjZl8bISL+Okix0NAF+5ls9
IJhGTjlo7Cc3OLEZXvY9dB5gIawwQ4knP7RyC7G5nmsnCYps52xalWdU94pImAplmC0Ds/iH6lbqNWsXUe4C8NKgQ9XUJagECfd55sarf22
Mxyk/hss7WvLWcpTepm0SYcQCuBmBwTUUWErWf59fxbATO31I cohesity@virtual-robo-esx
```

To allow Cohesity Cluster to run the scripts remotely on Linux system, copy SSH Public Key to Clipboard, login to the Linux System with the username specified earlier and set up the permission.

- Copy the cluster ssh public key as shown in the screenshot above
- Log into the unix host using the username with which remote adapter group is configured
- Update the users authorized\_keys file (under ~/.ssh/ directory) with the cluster ssh public key that was copied from cohesity UI
- Change the permissions of the file to minimum (400) and save the file
- This completes passwordless access from Cohesity to the unix host

## Rsync options used by the script

The script uses the various rsync command options to do its job. Following is an explanation of each of these options used by RSYNC command in the script

**-a:** Archive mode. In this mode, script takes care of backing up files recursively, preserves permissions, symlinks, modification times, ACL's, device and special files

**--stats:** This tells rsync to print a verbose set of statistics on the file transfer, allowing you to tell how effective rsync's delta-transfer algorithm is for your data

**--human-readable:** Output numbers in a more human-readable format

**--out-format:** output updates using the specified FORMAT

**--delete:** Delete extraneous files from destination directory. This option ensures that if any directory is deleted on source, it is also deleted on the live view

**--relative:** Use relative paths. This indicates the full path names specified on the command line are sent to the server rather than only the last parts of the file names.

**--no-whole-file:** This option ensures that in case a large file is modified, only changed blocks are sent rather than the whole file improving the efficiency of transfer

**--exclude:** This is a hardcoded path in the script which ensures that the rsync destination directory is always excluded

**--exclude-from:** This is a path to the text file containing list of files and directories that needs to be excluded or included.

## Using Exclusions and Inclusions

- Create a file on the host being protected, name it anything you like. An example would be /home/cohesityrsyncexclusioninclusion
- Edit the file and add contents as per the examples given below as per your requirements
- The script automatically polls any NFS filesystems mounted during runtime and excludes them. There is no need to specify them in the user specified exclude file

**Example 1:** Exclude a complete directory

/home/xyz/d/ ----- Excludes "d" directory under /home/xyz/

**Example 2:** Exclude all hidden files in a directory

/home/xyz/. \* ----- Excludes all hidden files under /home/mittal/

**Example 3:** Exclude all hidden files in a directory but backup one named hidden file

+ /home/xyz/.cshrc ----- This will include “.cshrc” file under /home/xyz/ directory  
- /home/xyz/. \* ----- This will exclude all hidden files under xyz but backup “.cshrc”

More example on how to use exclusions and inclusions can be found at below link:

<https://sites.google.com/site/rsync2u/home/rsync-tutorial/the-exclude-from-option>

## Script Location

The script can be downloaded from the following github link:

<https://github.com/spartans-cohesity/scripts/tree/main/Cohesity%20Remote%20Adapter%20-%20Rsync%20Backup%20and%20Recovery>

## Script Parameters

This section explains various parameters that need to be passed on to the script through Cohesity's remote adapter protection group that runs the script

-V : Name of the NFS view created on Cohesity that should be mounted on the unix host  
-P : Path on the unix host where the script would attempt to mount the Cohesity view  
-I : IP or hostname of the cohesity cluster node which would be used to mount the view  
-S : Source path that needs to be backed up (Ex: / or /home)  
-E : Path to the exclude/include file. For more details, refer the section on [exclusions and inclusions](#)

## Steps to Configure and run the script

- Create one NFS view per unix host that needs to be protected on Cohesity

**Create View**

**View Name**  
View name is required

**Category**  
☐ File Shares ☒ Backup Target ☐ Object Services

**Storage Domain**  
**DefaultStorageDomain**  
Deduplication: Inline |  
Compression: Inline

**Read/Write Protocol**  
NFS v3

**Read-Only Protocol (Optional)**

Cancel More Options Create

- Copy the rsync script to the unix system and ensure it has adequate privileges. The user which is configured on Cohesity Remote adapter job should have execute privilege to the script
- Identify a user which has super user privilege on the system to backup all the files
- Create a remote adapter job on Cohesity



## Remote Adapter

### Protection Group

Name \*

test

### Host

Linux Hostname or IP \*

10.14.17.228

Username \*

test

Cluster SSH Public Key

ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCsKBf0fEkbFuA9mjaIplurfdi6DruAIMJhy+Krk+x2fEigNNIsjyT89HIDFVLdh8Ue+jcTptBE  
TFQ9Yk8Vqd80Ts/9iirVwFgWwB0r5pi/bsPT4Zj2ycxN1ix3H67OQfTb/ycXGbuuAEijlN1Fg5wvbHppYZV4JdpBVBjZl8bISL+Okix0NAF+5ls9  
IjhGTJlo7Cc3OLEZXvY9dB5gJanwQ4knP7RyC7G5nmsnCYps52xaIWdU94pImAplmC0Ds/iH6lbqNWsXUe4C8NKgQ9XUJagECfd55sarf22  
Mxyk/hss7WwLWcpTepm0SYcQCuBmBwTUUWErWf59fxbATO31l cohesity@virtual-robo-esx



To allow Cohesity Cluster to run the scripts remotely on Linux system, copy SSH Public Key to Clipboard, login to the Linux System with the username specified earlier and set up the permission.

### Policy

Bronze



Backup

Every day | Retain 1 month



Extended Retention

Every week | Retain 3 months  
Every month | Retain 1 year

### Settings

Storage Domain

DefaultStorageDomain

Deduplication: Inline | Compression: Inline

NFS View

testrsyncnew

QoS Policy: Backup Target High

NFS Mount Path

10.15.15.0:/testrsyncnew





NFS Mount Path

10.15.15.0:/testrsyncnew

**i** In order for this Protection Group to capture the results of the script, the associated View must be mounted on your system and the script must write to a directory on the mounted View.

Script Information

Script Information for Incremental Schedule

Script (with Full Path) \*

/tmp/testruncopy.sh

Parameters

-V testrsyncnew -P /tmp/rsync -I 10.15.15.0 -S / -E /tr

As shown in the above screenshot, please pass all the parameters. EXplanation of all the parameters can be found [here](#)

- Copy ssh public key generated on cohesity UI to the user's home directory (~/.ssh/authorized\_keys). Follow instructions [here](#)
- Make sure indexing is turned on the job with include set to "/"

Additional Settings ^

End Date Never

Remote View Do not create View on remote Cluster

Indexing ☒ Indexing

Include

/

+ Add

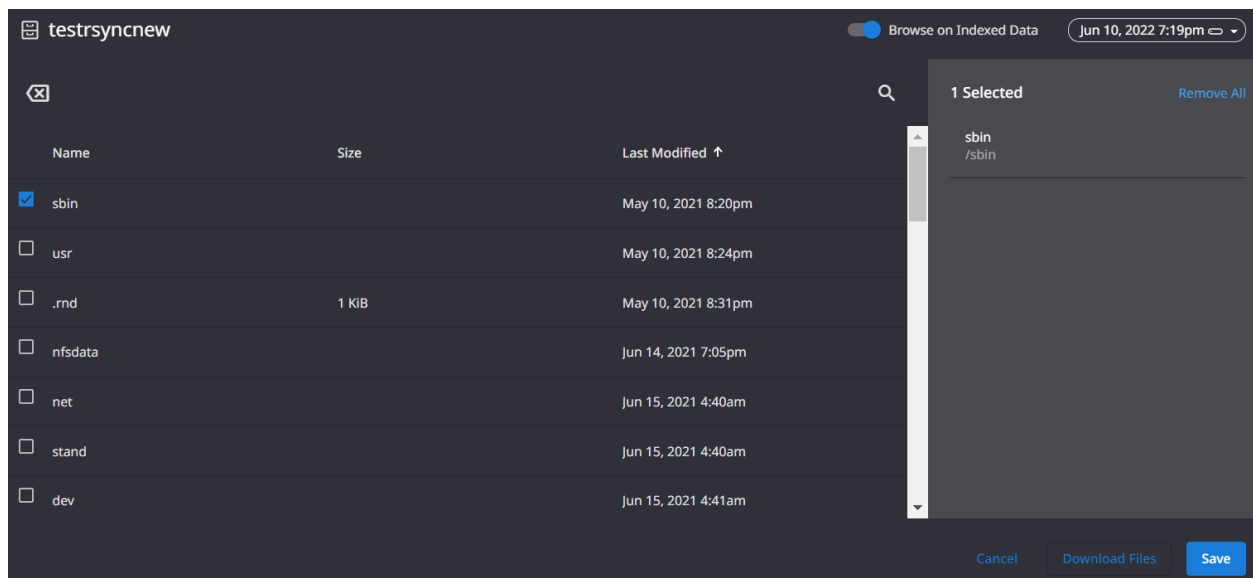
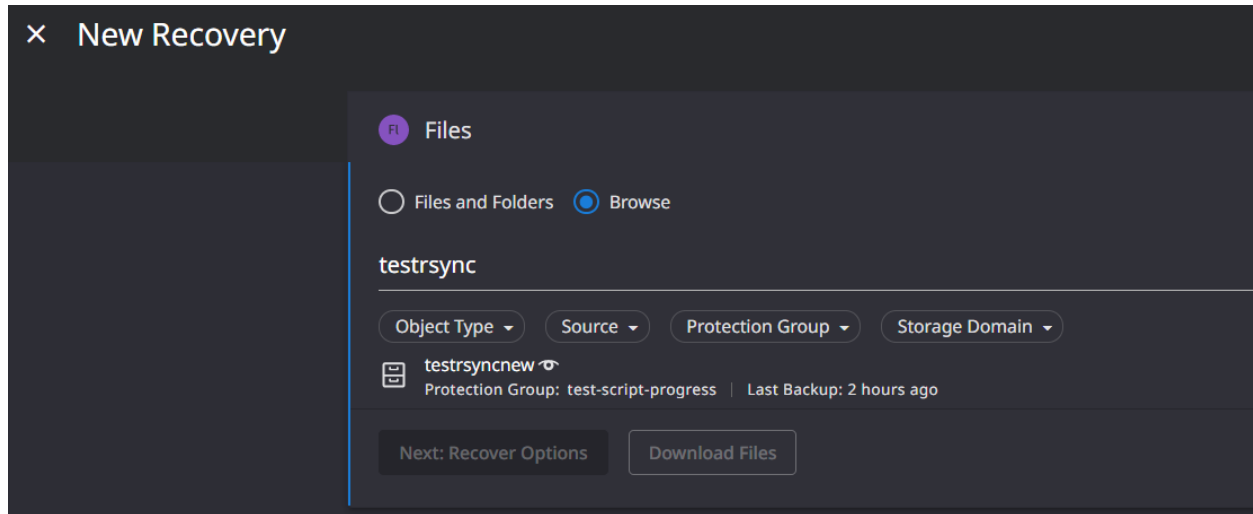
Exclude

+ Add

- Save and run the job
- If the job is successful, it should backup all the files to Cohesity mount and at the end of the job Cohesity will initiate a snapshot of the view
- View retention is defined by the policy used on the remote adapter job

# COHESITY

- The live view is used for regular rsync delta whenever this job is run, so there is no requirement for the script to have intelligence to retire data
- View snapshots will be used as different recovery points
- During recovery, one can directly search and download any file directly from Cohesity UI



- For recovery back to source, one needs to clone required view snapshot and mount the clone to target system. Once done, any regular unix copy command can be used to perform recovery

testrsyncnew [Go to Views](#)

Consumption Trend Shares Quotas **Protection** Settings

Yes Data Protection	No Replication	No Archival
------------------------	-------------------	----------------

Snapshots

Filter by 7 days Jun 4, 2022 - Jun 10, 2022

Snapshot Time	Protection Group	Stored
Jun 10, 2022 7:19pm	test-script-progress	
Jun 10, 2022 3:19pm	test-script-progress	
Jun 10, 2022 11:19am	test-script-progress	
Jun 10, 2022 7:19am	test-script-progress	
Jun 10, 2022 3:19am	test-script-progress	
Jun 9, 2022 11:19pm	test-script-progress	

Jun 10, 2022 3:19pm	<a href="#">test-script-progress</a>		
Jun 10, 2022 11:19am	test-script-progress		

[Clone from Local Target](#)

## Clone View

Cloning creates a new View with a copy of the data from the original View. After cloning, the two versions of the data are unique, any changes made to the data in the new View are not replicated in the original View.

Purpose  
Clone View

Task Name\*  
Clone-View\_Jun\_10\_2022\_9-12pm

View Name\*  
testrsyncnew-Clone

View Description

Storage Domain  
DefaultStorageDomain

QoS Policy\*  
Backup Target High

Selected Object

Selected Objects

Clone to

**testrsyncnew**  
 Protection Group test-script-progress | Storage Domain oracle\_sbt

**testrsyncnew-Clone**  
 Restore Point  
 Jun 10, 2022 3:19pm

[Continue](#) [Cancel](#)

Cv

Clone-View\_Jun\_10\_2022\_9-12pm

[Back to Clones](#)

Cloned by admin | Protection Group test-script-progress | Type Clone View | From testrsyncnew | Cloned to testrsyncnew-Clone | Snapshot Jun 10, 2022 3:19pm |

Success

Status

Jun 10, 2022 9:13pm

Start Time

Clone Options

Clone to:

Cv

testrsyncnew-Clone

- Original Source: Local
- QoS Policy: Backup Target High
- VLAN: Auto

Task Details

Show Subtasks

- This cloned view can be mounted back as NFS to any unix system and files recovered

## About the Author

Product Solutions Team at Cohesity. For more details, please contact [spartans@cohesity.com](mailto:spartans@cohesity.com)

## Document Version History

VERSION	DATE	DOCUMENT HISTORY
0.1	June 2022	Draft
1	Apr 2023	Document update & formatting



## ABOUT COHESITY

[Cohesity](#) ushers in a new era in data management that solves a critical challenge facing businesses today: [mass data fragmentation](#). The vast majority of enterprise data — backups, archives, file shares, object stores, and data used for dev/test and analytics — sits in fragmented infrastructure silos that makes it hard to protect, expensive to manage, and difficult to analyze. Cohesity consolidates silos onto one web-scale [platform](#), spanning on-premises, cloud, and the edge, and uniquely empowers organizations to run apps on that platform — making it easier than ever to back up and extract insights from data. Cohesity is a [2019 CNBC Disruptor](#) and was named a [Technology Pioneer by the World Economic Forum](#).

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