COHESITY

Version 1.0

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Protect Epic with Cohesity Using the Mount Host Method

Cohesity solution for backup and restore of Epic databases with best practices

ABSTRACT

An overview of Cohesity database protection features, general workflows, and options, along with Cohesity best practices for Epic.

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Epic Database Protection using Cohesity Physical Adapter

Epic database administrators contend with the challenges of increasing backup duration, rapid data growth, increased storage costs, and the need for more flexibility and storage management tools in Epic.

In addition to these challenges, today's database protection must encompass more than getting a clean copy; it must include factors like security, storage efficiency, minimized impact on production systems, automation, and scaling.

Cohesity protection for Epic provides a solution to these challenges. It reduces the complexity of database backups and restores secure, streamlined workflows. You can protect and manage your workloads and execute available protection and recovery workflows with a few steps. Cohesity Physical Adapter provides flexible deployment options to make Epic backup and restores simple and secure.

Guide Overview

This guide focuses on Epic database protection using the Cohesity Physical Adapter and the Storage Array Snapshot method for Cohesity 7.0 and above.

The Storage Array Snapshot method for backup and recovery of the Epic Cache database involves snapshotting the LUNs on the Storage Array. This method is agnostic of the OS on which Epic is hosted. Also, this method doesn't need the mount host but still requires a Proxy server, to host the Epic freeze-thaw script.

The guide aims to provide an overview of features and options along with their related recommendations and best practices.

Use Cases

You can use this workflow for Epic protection:

- For protection for your Epic environment using an on-prem Cohesity cluster.
- For a simple FULL file-based restore.
- For a simple UI based restore to an alternate host.
- To meet your backup SLA.
- For faster, secure backups and restore performance.
- To reduce storage space and cost for your backups.
- For granular file folder recovery.
- If the backend storage for Epic is running on a Pure Flash Array.

Technical Considerations

Technical considerations are the things you think about before making major decisions about your solution.

- Cohesity version 6.8.1 and higher supports the following Linux operating systems:

Table 1: Supported Physical Adapters

Physical Adapters	Supported Versions
RHEL	9.0-9.2, 8.0-8.5, 7.0-7.9,6.7+,5.8-5.11

Table 2: Hardware and Software Requirements

Operating System	Minimum CPU	Minimum Memory	Minimum Supported Operating System	Free Disk Space	Software Requirement
RHEL	1 core	300 MB	RHEL 6	400 MB	nfs-utils, rsync, lsof, wget

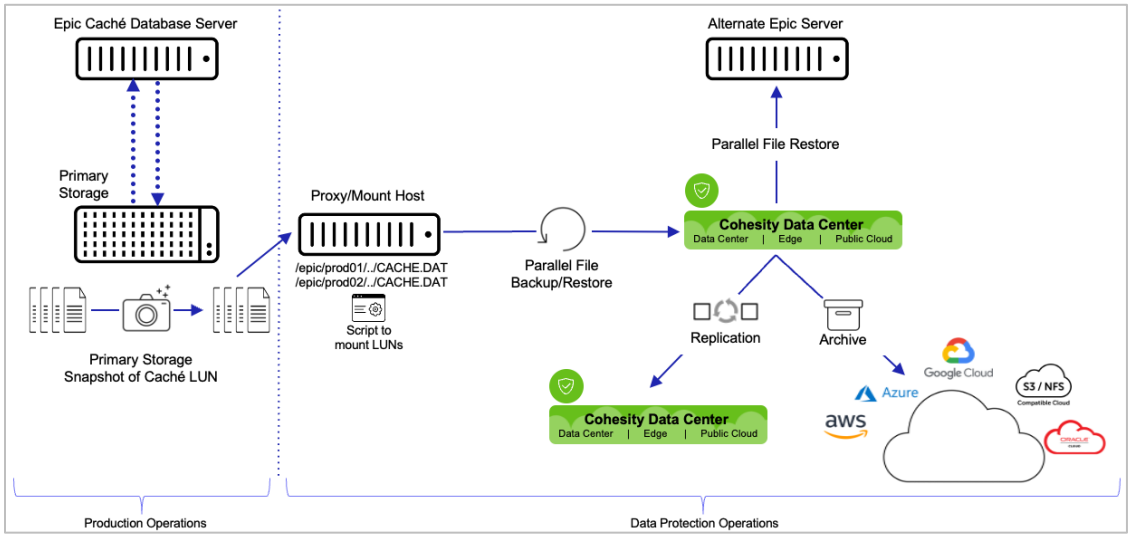
Read a comprehensive treatment about the Cohesity adapter requirements in the Cohesity Physical Agent Deployment Guide.

How Cohesity Works with Epic Databases

Using the Mount host method for the backup of the Epic database involves using the Cohesity Linux agent on an independent mount host. The mount host has the Epic LUNs mounted to it from a previous snap of the primary storage.

Cohesity's Linux agent integrates with the mount point host to provide a file-based backup and recovery solution for Epic deployments.

Figure 1: How Cohesity Works with Epic Databases



Epic Backup Process Flow

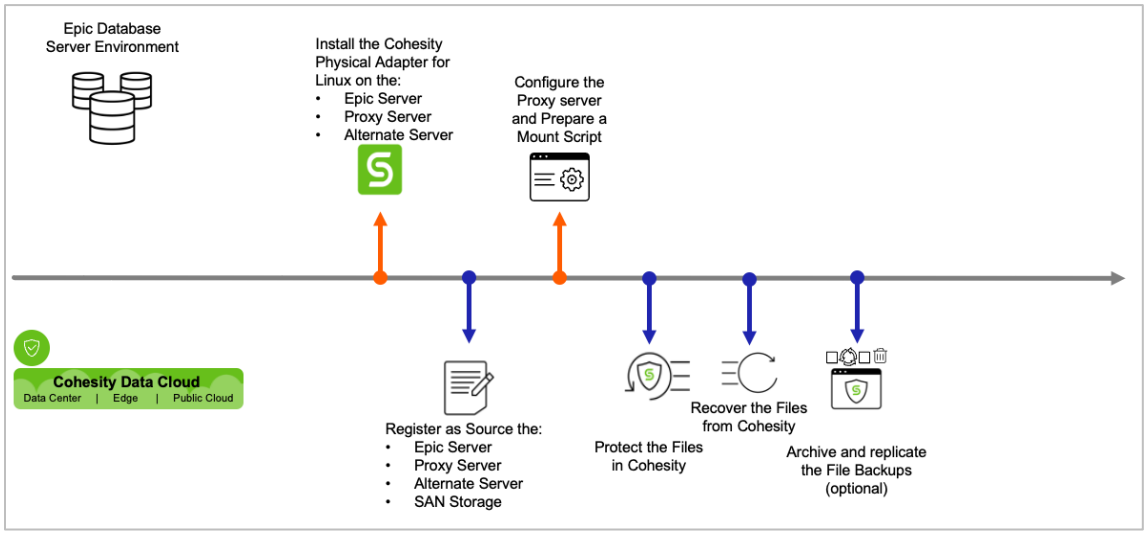
These steps, which the script handles, may be modified to meet your configuration.

1. **Script (executed by Cohesity Pre-Script option)**
   a. Freeze Caché in production.
   b. Take a SAN/LUN Snapshot on primary storage.
   c. Unfreeze Caché.
   d. Present the snapshot from primary storage to the proxy host.
   e. Mount File System on the proxy host.
2. **Initiate a Cohesity file-based backup of the filesystem**
3. **Script (continues from Cohesity Pre-Script option)**
   a. Unmount file system from the proxy host.
   b. Delete snapshot in primary storage.

Deployment Steps

Install the Cohesity Physical Adapter for Linux on the mount point host you plan to use.

Figure 2: The Adapter Installation and Component Configuration



Once you complete the installation of the Physical Adapter on each host, you are ready to register them as a source.

You must complete the following steps to configure the Epic environment for protection:

1. Adapter Installation
2. Cohesity Cluster Configuration
3. Mount Host Setup
4. Primary Storage Configuration

Complete the following steps to create a Protection Group:

1. Register the Epic host as a Source
2. Register the SAN in Cohesity as a Source
3. Create a SAN Protection Group

Adapter Installation

Downloading and installing the Physical Adapter for Linux on the mount point server allows you to register it as a source with the Cohesity cluster. The Cohesity cluster can then use a file-based Protection Group for backups.

Before you install the physical adapter, ensure the following prerequisites are met: Port Requirements and Firewall Settings.

Recommendation: Install the Cohesity Linux Physical Adapter on each host that is potentially a restore target.

Install the Linux Physical Adapter

Cohesity recommends the RPM installer.

Table 3: Steps to install the Cohesity Physical Adapter for Linux

Action	How To
Download the Linux agent RPM and install:	yum localinstall rpmfilename.rpm
After install:	Append the contents of the agent settings text file to `/etc/cohesity-agent/agent.cfg`. and restart the agent `systemctl restart cohesity-agent.service`

The Cohesity Physical Agent Deployment Guide presents a comprehensive treatment of the Cohesity adapter install and its options.

Cohesity Cluster Configuration

The Cluster can be tuned using cluster and agent gflag values to achieve its performance. Your Cohesity team needs to determine recommended flag values based on the size of your cluster. The table below is an example of the flags and settings.

Cache Optimization is enabled by default for clusters running 7.0 or later.

Table 4: Example of optimized settings for Epic

Flag Type	Service Name	Flag Name	Recommended Value
Cluster	magneto	magneto_gatekeeper_max_tasks_per_physical_linux_entity	12
Cluster	magneto	magneto_slave_nas_max_concurrent_sub_tasks	24
Cluster	magneto	magneto_slave_nas_concurrent_sub_tasks_multiplier	6
Cluster	magneto	magneto_slave_file_restore_max_concurrent_sub_tasks	24
Cluster	magneto	magneto_slave_file_restore_concurrent_sub_tasks_multiplier	6
Cluster	bridge_proxy	bridge_magneto_skip_local_ip_get	true
Agent	NA	max_rpc_context_count	32
Agent	NA	grpc_server_cq_control_threads	2
Agent	NA	grpc_server_cq_data_threads	2
Agent	NA	grpc_number_of_default_cq	2

Flag Type	Service Name	Flag Name	Recommended Value
Cluster	magneto	magneto_gatekeeper_max_tasks_per_physical_linux_entity	12

Critical: To achieve optimal performance, your Cohesity Support Engineer should refer to Auto tuning Gflags for Epic backups for Linux for your optimized values.

Mount Host Server Script Setup

The mount host is used as the target location where the script mounts the newly snapped LUNs. These LUNs are then backed up by Cohesity and it is also the location for the existing script.

The Mount host method for the backup of the Epic database involves using the Cohesity Linux agent on an existing mount host.

All Epic customers generally have the Epic freeze and thaw script that snapshots the Epic and mounts it on a mount host.

This script can also live on a script server (the most common method) or be part of Cohesity agent pre- and post-script (uncommon, but wholly supported).

The examples in the following sections will show you how to incorporate your existing script into the Cohesity agent **pre- and post-script** options in the protection group.

Your existing script must perform these major tasks:

1. Freeze the Epic database.
2. Execute a snap of the storage LUNs.
3. Unfreeze the Epic database.
4. Mount the newly snapped LUNs on the mount host.

Use the mount host method:

- If granular file folder recovery is required.
- If zero impact to the production server is required.

Existing Script Location and Modification

Step 1. Cohesity will execute your script as part of the protection job. Copy the script to the user_scripts directory on the mount host, located in `/opt/cohesity/agent/software/crux/bin/user_scripts`.

Step 2. Where the script calls out to the existing backup software, comment that step out of the script.

Mount Host Server Source Registration

Register your mount point host as a Source in Cohesity, as shown in the screenshots below.

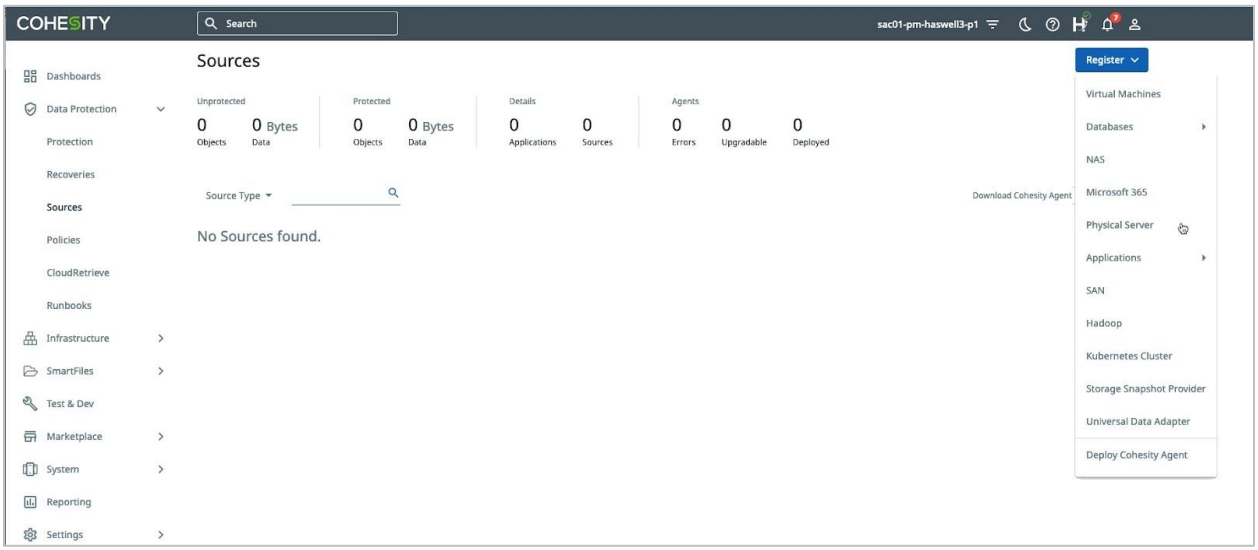
By registering the mount point host, you prepare the server for script execution and Epic file protection by Cohesity.

Registering the Mount Point Host as a Source

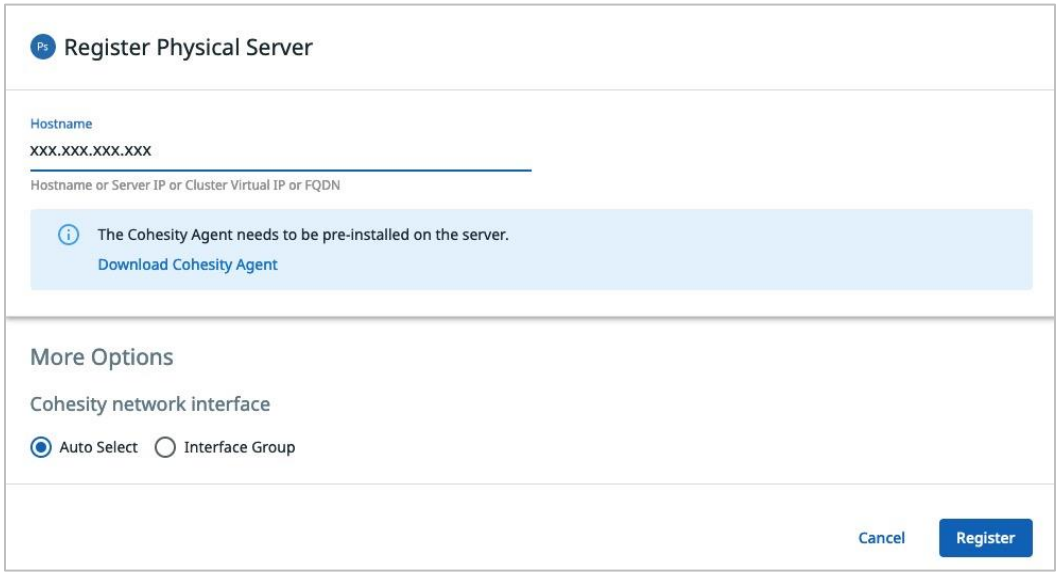
The mount point method protects the Epic database at the primary storage level by taking a snap of the LUNs via script execution.

To register your host as a Source in Cohesity:

1. Navigate to **Sources** > **Register** > **Physical Server**.

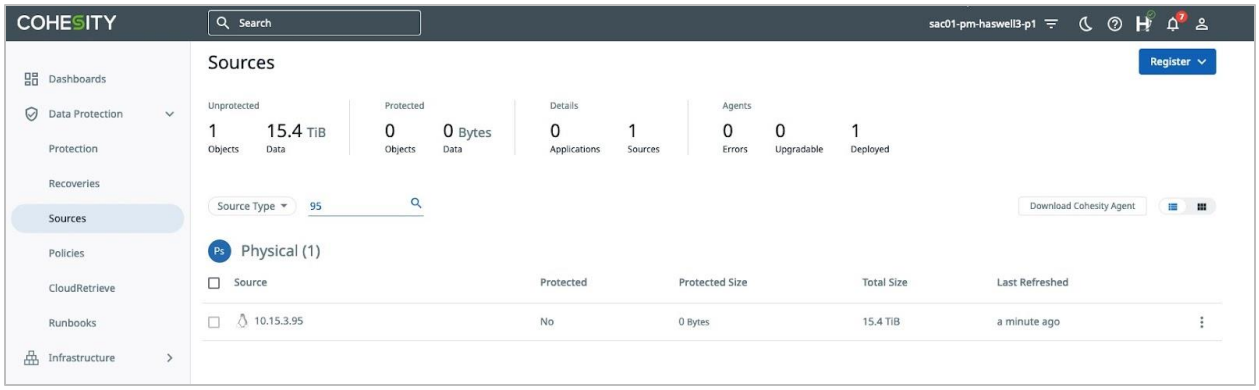


2. In the **Register Physical Server** form, choose Epic from the Source Type drop-down list. Then choose Linux from the Host OS Type drop-down list, which is the type of OS the host is running.



3. Complete all the fields in the form, then click **Register**.

   Successful Registration



   You can update, refresh, and unregister your source from the **Sources** page.

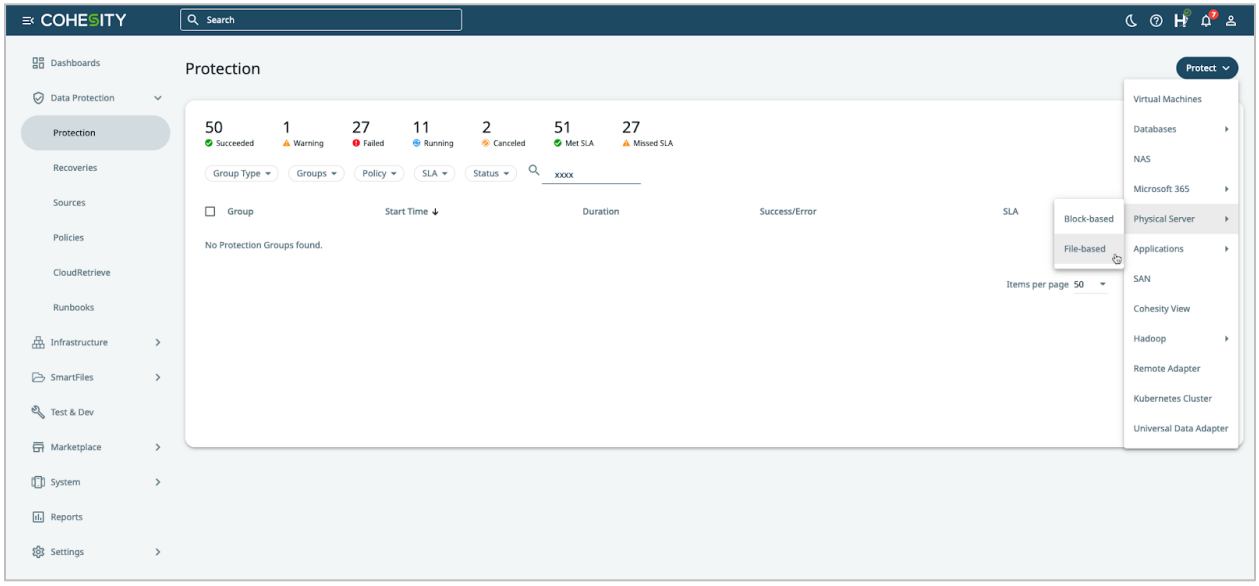
Epic File-Based Protection

After registering your mount point host in Cohesity, you can start configuring your Cohesity Protection Group.

Create a Protection Group

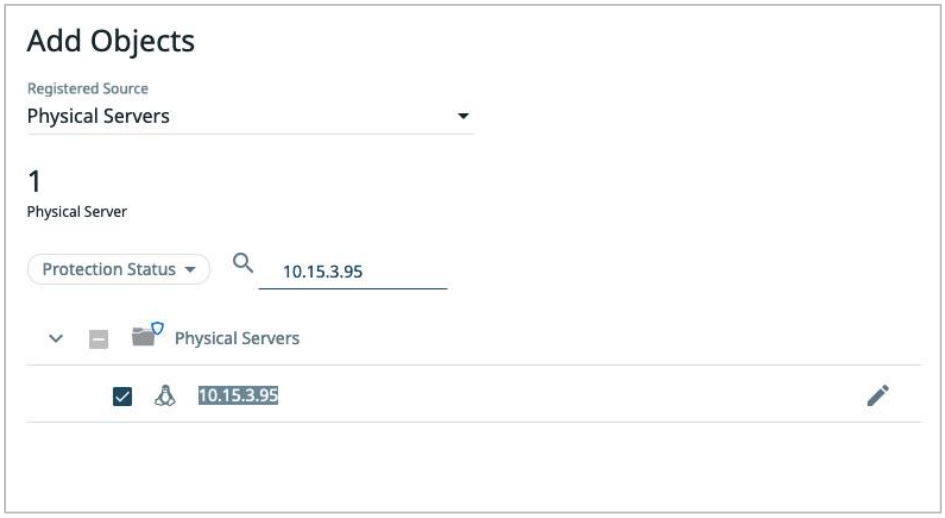
To create a Protection Group:

1. Log in to Cohesity and navigate to **Data Protection** > **Protection**. Then click **Protect** and select **Physical Server** > **File-based**.

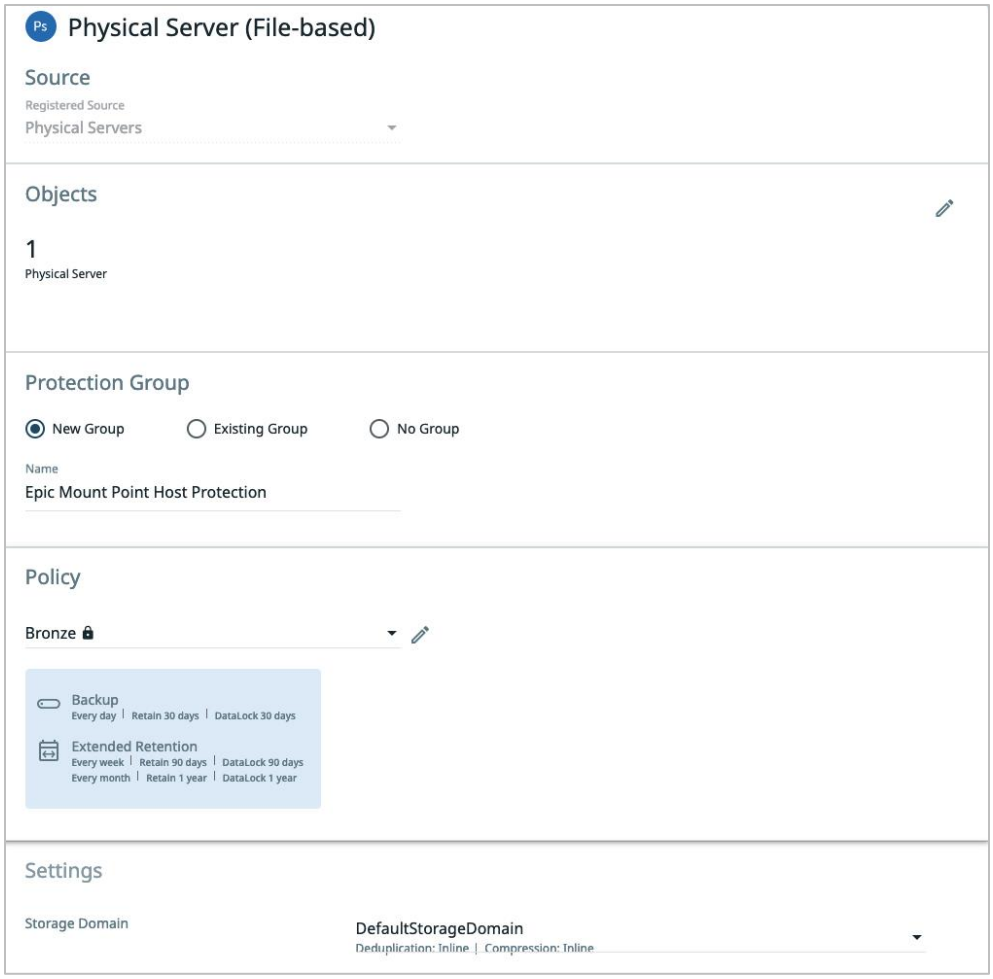


2. In the **New Protection -> Add Objects** under **Registered Source**, select the mount point server you registered earlier.

   Add Objects Form



3. Enter a unique Protection Group **Name** and continue**.**



4. Continue by selecting a **Policy.**
   You can use the default standard policies or create your own custom policies. Policies save time because you do not need to enter settings repetitively.

   A policy is a reusable set of settings that define how and when objects are protected, replicated, or archived. You select which policy to use when configuring a Protection Group.

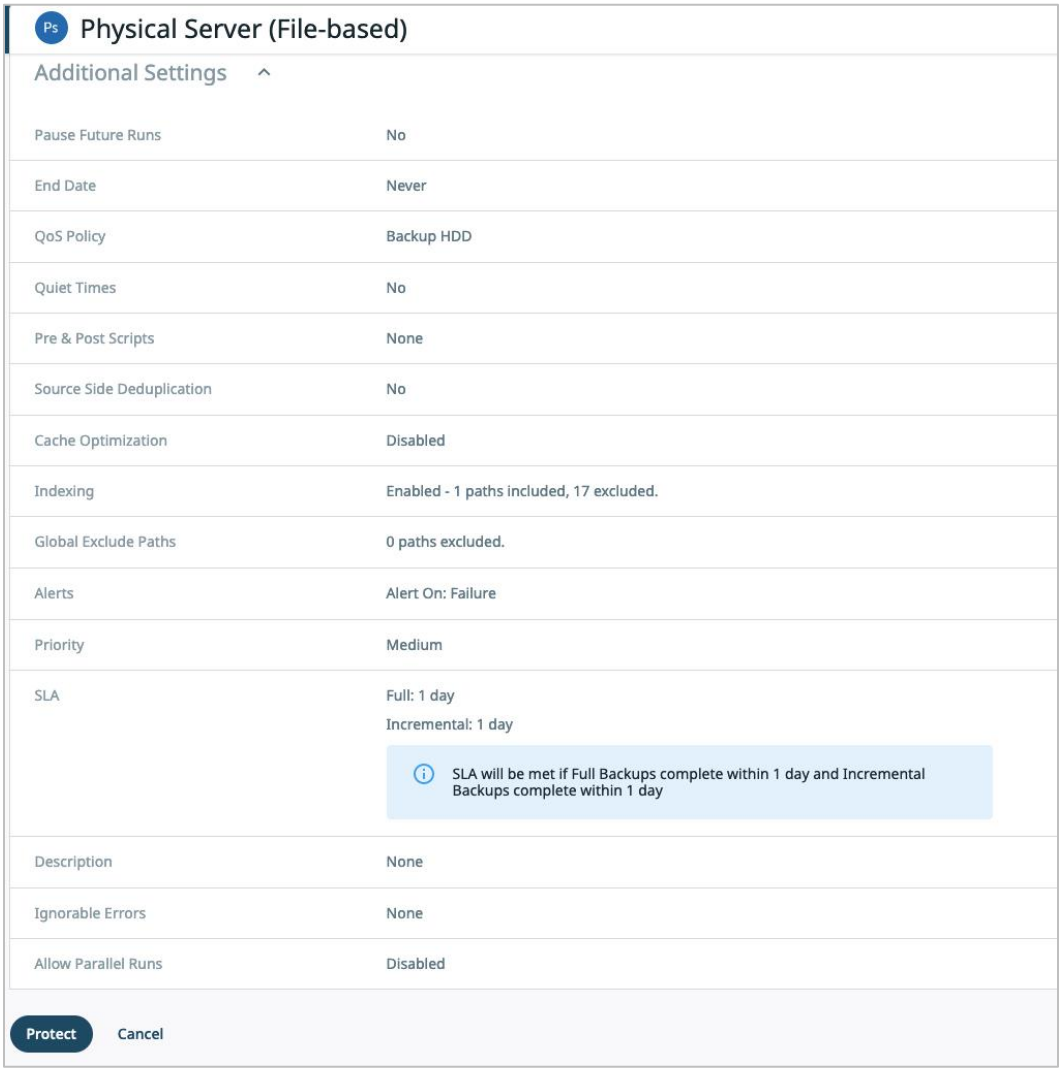
   Complete the form options as follows:

   a. **Storage Domain:** For maximum space savings and security, choose a Storage Domain with compression and deduplication enabled. For details, see Create or Edit Storage Domains in the online Help.
   b. **Start Time**: Take the default. You can modify this later.
   c. **SLA:** Take the default. You can modify this later.

For more information about Policy features, see Create or Edit a Standard Policy in the online Help.

5. Continue defining the **New Protection Group** by selecting the remaining settings.

   Additional Settings Section



a. **Pause Future Runs**
Toggle this option to stop future protection runs of the Protection Group from executing.

b. **End Date**
Toggle on and select the date when the Protection Group stops capturing snapshots.

c. **QoS Policy**
Select an appropriate quality of service (QoS) policy. Cohesity recommends specifying a Backup HDD, which is the default.

d. **Quiet Times**
Available only if the selected policy has at least one quiet time period. Toggle it on to specify that all currently executing protection runs should abort if a quiet time period specified for the Protection Group starts.

e. **Pre & Postscript**
Edit this option to run scripts on the protected server before and/or after a Protection Group runs.

f. **Source Side Deduplication**
Eliminate redundant data at the server level before transferring the data to the Cohesity cluster. This reduces the utilization of network bandwidth.

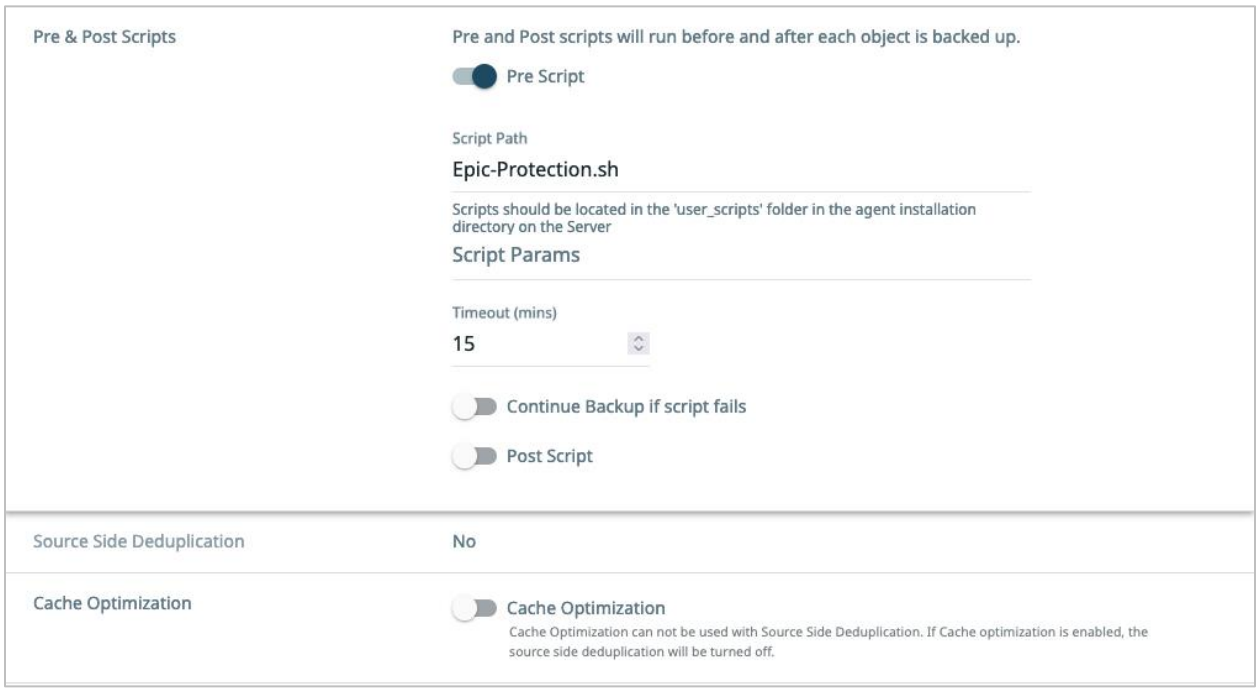
g. **Cache Optimization**
Cache Optimization is a modified source dedup functionality that offers optimized backup performance on the Cohesity cluster. It is targeted for large files(>64GiB). When enabled, only the changed blocks of the target files are backed up during the subsequent incremental backup runs instead of an entire file.

h. **Indexing**
Indexing is enabled by default and required for file recovery. The Cohesity cluster will scan all the files in the Protection Group and create an internal index that can be used later by a recovery task to locate files by name.

i. **Global Exclude Paths**
For a file-based Protection Group, specify the exclusion paths for all the servers that are part of the protection group.

Pre & Postscripts Settings

Pre & Postscripts Detail



Cohesity provides you the option to run user-defined scripts as a part of the Protection Group. When creating a Protection Group, you can configure:

- **Pre-Scripts:** Scripts that will be executed before the protection run.
- **Script Path:** A path to the script is not needed if the script is located in the directory `/opt/cohesity/agent/software/crux/bin/user_scripts` on the mount host.
- **Script Params:** Parameters entered here are appended to the script at runtime and are subject to PowerShell parsing rules.
- **Continue Backup if script fails:** Disable this option. By default, this option is enabled.

  Important: Cohesity recommends disabling this option so that the protection job can accurately report the success or failure of the run. Additionally, the script must have zero exit code to properly report success.

- **Postscripts:** Scripts that will be executed after the protection run.
- **Post Snapshot Scripts:** Scripts that will be executed after the snapshot has been created on the source.

  Warning: Cohesity does not validate the script's content and is not responsible for the script's content or any actions done by the script. You must verify the script actions before a script or executable is run.

You can find a more in-depth discussion of Pre & Post Script in Configure Pre & Post Scripts.

Your new Protection Group is now active and running and appears on the **Protection** page.

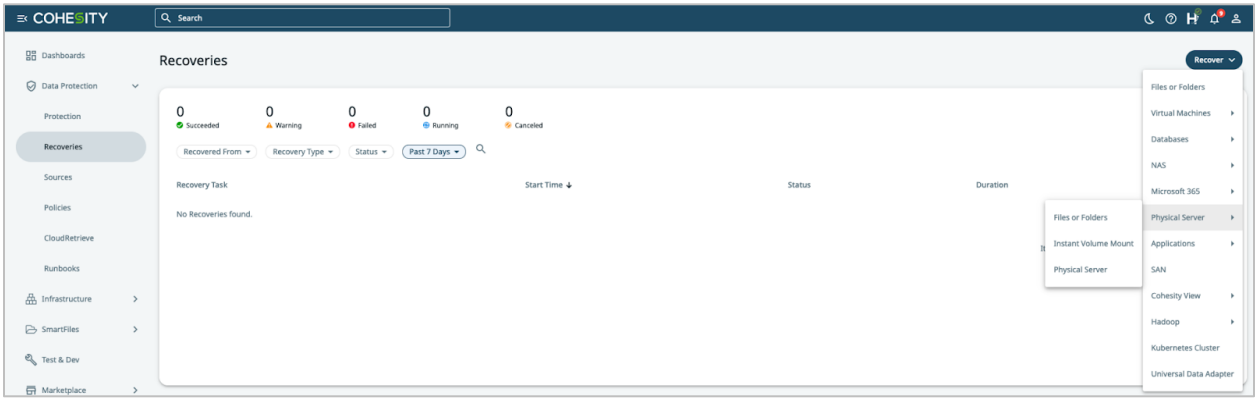
Epic Database Restore

Cohesity provides the ability to restore individual database files. You can restore them to their original location or an alternate location.

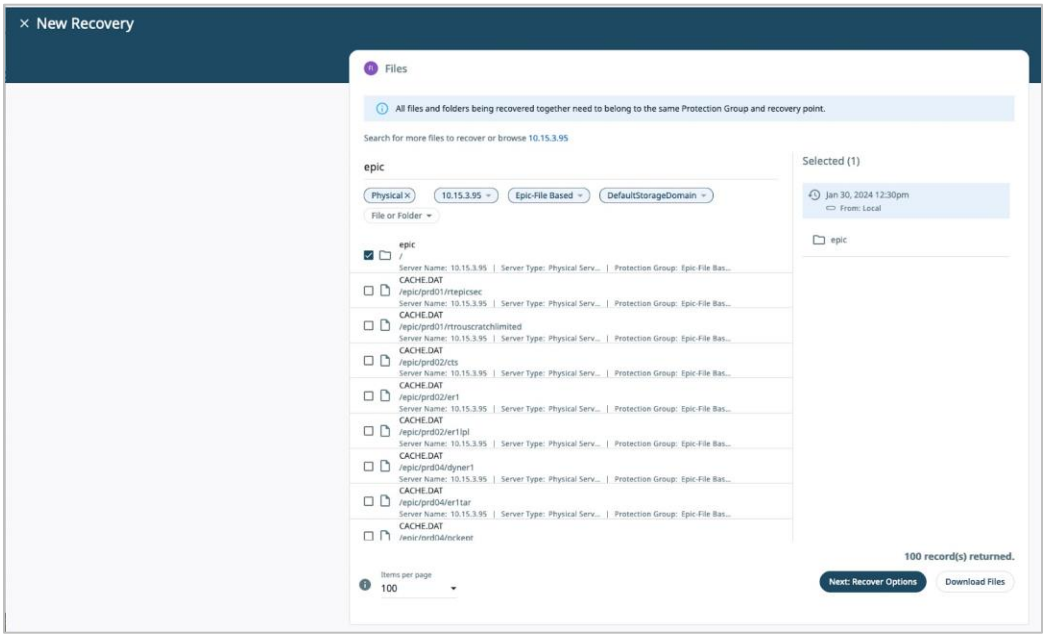
Restore Epic Files from Backup

To restore the database Files:

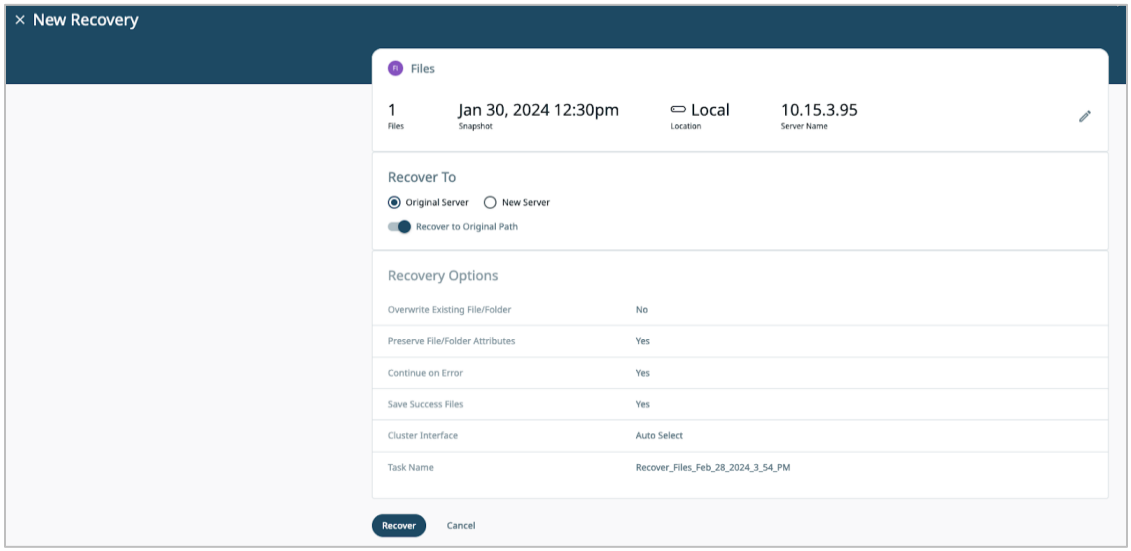
1. Log in to Cohesity and navigate to **Data Protection** > **Recoveries**. Then click **Recover** and select **Physical Server** > **File or Folders**.



2. Search for a backup. You can start with the wildcard “*” to get a general listing.
3. Select the Epic files you want to restore.



4. Using the **Edit Recovery Point** form for the backup, then **Select Recovery Point**. FULL and incremental snapshots are shown as blue dots.
5. Select the recovery point and complete the recovery options.



6. **Recover To:** Select Replace Original or New Object.
7. **Mount/VIPs:** Equal to the number of VIPs on the Cohesity cluster.
8. **Concurrency:** Enter two times the number of VIPs.

Once the Epic files are recovered, you must restart the Epic server.

Your Feedback

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About the Authors

Scott Lorenz is a Staff Solutions Engineer at Cohesity. In his role, Scott focuses on business-critical databases, applications, cloud storage, and enterprise data protection. Scott has over 26 years' experience as an enterprise DBA.

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Document Version History

VERSION	DATE	DOCUMENT HISTORY
1.0	Mar 2024	First release

ABOUT COHESITY

Cohesity is a leader in AI-powered data security and management. Aided by an extensive ecosystem of partners, Cohesity makes it easier to protect, manage, and get value from data – across the data center, edge, and cloud. Cohesity helps organizations defend against cybersecurity threats with comprehensive data security and management capabilities, including immutable backup snapshots, AI-based threat detection, monitoring for malicious behavior, and rapid recovery at scale. Cohesity solutions are delivered as a service, self-managed, or provided by a Cohesity-powered partner. Cohesity is headquartered in San Jose, CA, and is trusted by the world's largest enterprises, including six of the Fortune 10 and 42 of the Fortune 100.

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