Commvault®

Documentation PDF
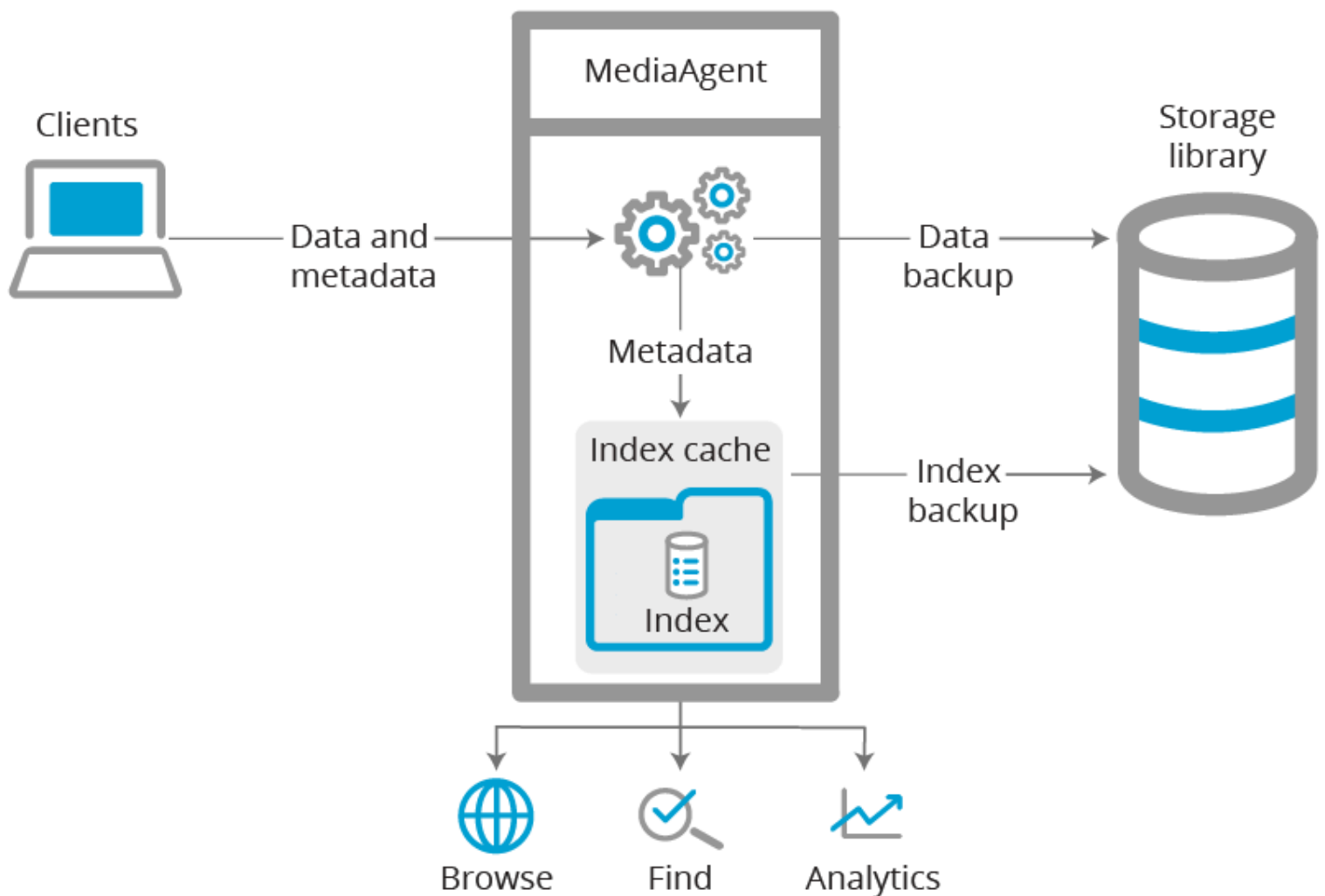
Protect. Access. Comply. Share.

Indexing Version 1

📅 Updated Monday, October 21, 2024

Indexing Version 1, the original Commvault indexing architecture, occurs at the subclient level. During a backup utilizing Indexing Version 1, the system writes an index file to a local directory, called the index cache, on the MediaAgent that controls the data backup. Each data backup job produces its own index on a single MediaAgent. When the data backup has been completely written to a storage library, the system creates a copy of the index and moves the copy to the same library.

The Indexing Version 1 operation occurs inline with the backup operation itself, so success of the backup operation depends on the success of the indexing operation, and vice versa. Additional incremental or differential backups restore the prior index for the cycle, append their index data to it, and then back up the resulting complete index. Thus, the index for the cycle grows substantially with each successive incremental or differential backup.

The following diagram illustrates the Indexing Version 1 architecture:

Terminology

Client	A logical grouping of the agents installed on a computer. A client level is created in the CommCell Console the first time an agent is installed on a computer.
Index	A database containing the metadata for backed-up data. The index is used by find, browse, restore, and other operations.
Index cache	The working area where metadata and action logs are kept before creating the index. By default, the index cache is created on the MediaAgent by the software installation process, and is located in the software installation directory on a local disk in the MediaAgent that produces the index. Index cache data files are not normally deleted immediately when the job completes, but may be aged out later to obtain more working space if needed.
MediaAgent	A logical grouping of software, server, and local storage that manages and provides high performance data movement between clients and data storage libraries. The MediaAgent software can be installed in physical, virtual, and clustered environments.
Metadata	Characteristics about the data being backed up, such as file name, file size, creation date, the subject of an email, etc. This metadata is useful because it allows certain processes to obtain information about backed-up files without searching through the actual backup itself.

Agents that Use Indexing (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The following table shows agent compatibility with Indexing Version 1 and Indexing Version 2.

Agent	Supports Indexing Version 1	Supports Indexing Version 2	Supports Migrating to Indexing Version 2
Active Directory	Yes	No	No
Alibaba Cloud	Yes	Yes	No
Amazon Virtual Server Agent	Yes	Yes	Yes
Apache Cassandra	No	Yes	N/A
Citrix Xen Virtual Server Agent	Yes	Yes	No
ContinuousDataReplicator	Yes	No	No
DB2	Yes	Yes	Yes
DB2 MultiNode	Yes	Yes	Yes
Documentum	Yes	No	No
Domino Mailbox Archiver	Yes	No	No
Dropbox	Yes	No	No
Exchange Compliance Archiver Agent	Yes	No	No
Exchange Database Agent	Yes	No	No
Exchange Database Agent with IntelliSnap (for IntelliSnap move-to-tape operation)	Yes	No	No
Exchange Mailbox Agent	Yes	Yes	No
Exchange Mailbox (Classic) Agent	Yes	No	No

Exchange Mailbox Archiver Agent	Yes	No	No
Exchange Public Folder Agent	Yes	No	No
Exchange Public Folder Archiver Agent	Yes	No	No
External Data Connector	Yes	No	No
FusionCompute Virtual Server Agent	Yes	Yes	No
Google Cloud	Yes	Yes	No
Hadoop	No	Yes	N/A
Huawei FusionCompute	Yes	Yes	No
IBM i File System Agent	Yes	No	No
Kubernetes	No	Yes	No
Lotus Notes Database	Yes	No	No
Macintosh Agent	Yes	Yes	Yes
Microsoft Azure Stack Hub	Yes	Yes	Yes
Microsoft Azure Virtual Server Agent	Yes	Yes	Yes
Microsoft Hyper-V Virtual Server Agent	Yes	Yes	Yes
Microsoft OneDrive	Yes	Yes	No
Microsoft SharePoint Server	Yes	Yes, for Microsoft SharePoint Office 365 only	No

Microsoft SQL Server	Yes	Yes Block-level and IntelliSnap backups only 🚩 **Note** If block-level backup is enabled on a subclient, the Microsoft SQL Server agent automatically converts to using Indexing Version 2. For more information, see [Enabling Block-Level Backups for SQL Databases From the Command Center](#).	No
Microsoft Windows File Systems Agent	Yes	Yes	Yes
MySQL Agent	Yes	Yes	No
NDMP Agent	Yes	Yes	Yes
Notes Database (Database files only)	Yes	No	No
Notes Document	Yes	No	No
Nutanix AHV Virtual Server Agent	Yes	Yes	Yes
OnePass for Exchange Mailbox (Classic)	Yes	No	No
OpenVMS File System Agent	Yes	No	No
OES File System Agent	Yes	No	No
OpenStack Virtual Server Agent	Yes	Yes	Yes
Oracle	Yes	Yes	Yes
Oracle RAC	Yes	Yes	Yes
Oracle VM Virtual Server Agent	Yes	Yes	No
PostgreSQL	Yes	Yes	Yes

Red Hat Enterprise Virtualization Virtual Server Agent	Yes	Yes	No
Salesforce	No	Yes	N/A
SAP for Oracle	Yes	Yes	Yes
SAP HANA	Yes	Yes	Yes
Sybase	Yes	No	No
UNIX File System Agent	Yes	Yes	Yes
vCloud Virtual Server Agent	Yes	Yes	Yes
VMware Virtual Server Agent	Yes	Yes. For more information see "Enabling VM-Centric Operations" in [Requirements for VM-Centric Operations with VMware](#).	Yes

Related Topics

- [Migration of Clients to Indexing Version 2](#)

- [Migration of Virtualization Clients to Indexing Version 2](#)

- The Index Version Status report lists each client in a CommCell, each agent installed in the client, and its indexing version (Indexing Version 1 or Indexing Version 2). For more information, see [Indexing Version Status Report](#).

System and Hardware Requirements (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index Hardware Requirements

Whenever installing or reconfiguring a MediaAgent, ensure proper index cache sizing by verifying that the volume hosting the index cache has sufficient disk space. The following table shows recommended minimum system and hardware requirements for the MediaAgent.

Components	Extra Large	Large	Medium	Small	Extra Small
Backend Size[1, 2]	Up to 200 TB	Up to 150 TB	Up to 60 TB	Up to 30 TB	Up to 15 TB
CPU/RAM	16 CPU cores, 128 GB RAM	12 CPU cores, 64 GB RAM	8 CPU cores, 32 GB RAM (or 12 vCPUs/48 GB)	4 CPU cores, 24 GB RAM (or 6 vCPUs/32 GB)	2 CPU cores, 16 GB RAM (or 4 vCPUs/24 GB)
OS or Software Disk	400 GB SSD class disk	400 GB usable disk; minimum four spindles of 15K RPM or higher, or SSD-class disk	400 GB usable disk; minimum of four 15K RPM spindles	400 GB usable disk, minimum of two 15K RPM spindles	400 GB usable disk, minimum of two 15K RPM spindles
Index Cache Disk[3, 4]	2 TB SSD class disk with 5K+ dedicated random IOPS [2]	1 TB SSD class disk with 5K+ dedicated random IOPS	1 TB local disk space with 400+ random IOPS	400 GB local disk space with 200+ random IOPs	400 GB local disk space with 200+ random IOPs
Number of Objects	2 billion	1 billion	1 billion	500 million	500 million

Footnotes:

1. Assumes standard retention of up to 90 days. Larger retention will affect back end size managed by this configuration. The front end capacity remains the same.

2. Recommendation for unstructured data types like files, VMs and granular messages. Structured data types like application, databases and so on need significantly less index cache.

3. The index cache directory must be on a local drive. Network drives are not supported.

4. GlusterFS is not supported.

Additional Information

Use of SSD Disk

To improve the indexing performance, it is recommended that you store your index data on a solid-state drive (SSD).

The following agents and cases require the best possible indexing performance:

- Exchange Mailbox (Classic) Agent

- Virtual Server agents (Indexing Version 1 only)

- NAS filers running NDMP backups

- Backing up large file servers

- SharePoint agents

- Any other case requiring maximum performance

Use of Primary Tape Backup

If your data protection environment uses tape for its primary backups, consider implementing Secondary Index Server (Indexing Version 1 only) to reduce the need for off-site tape recalls.

Configuration (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index Cache Configuration (Indexing Version 1)

Enabling or Disabling Index Cache Access (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can configure whether access to the index cache on a MediaAgent is enabled or disabled. Disabling access to the index cache will make the index offline and unavailable for browse operations on associated subclients.

Procedure

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. Click the **Catalog** tab in the **MediaAgent Properties** dialog box.

4. Select or deselect the **Enable this Access Path** check box to enable or disable access to the index cache. If you disable access to the index cache, you can optionally enter details or a reason in the **Offline Reason** field.

5. Click the **OK** button.

Index Retention Parameters (Indexing Version 1)

📅 Updated Monday, October 21, 2024

After being backed up, a subclient's index and log files are kept in the MediaAgent's index cache for a set number of days, which is defined by an indexing retention parameter called **Retain index for n days** (the default setting for this parameter is 15 days).

However, if the index cache is low on free space, the system may override the **Retain index for n days** retention parameter and delete the index files immediately. This form of cleanup, called an event-driven cleanup, can be configured by additional retention parameters described below. For more information about cleanup processes, including event-driven cleanup, see [Index Cache Directory Cleanup](#).

Procedure

> 🚩 **Note**
>
> You can change the retention properties for index caches on multiple MediaAgents by [running the Change Index Cache Configuration workflow](#).

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent* > **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, change the value of the **Retain index for n days** parameter as desired. When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

4. Change additional event-driven retention parameters as desired. These settings trigger the event-driven cleanup based on the amount of space allocated to the index cache and the amount of that allocated space that remains available, either as a percentage or an actual quantity. These settings are shown below.

   > 🚩 **Note**
   >
   > Statistics about the current space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory) are shown at the bottom of the **Catalog** tab of the **MediaAgent Properties** dialog box. For a full description of these statistics, see [Viewing Index Cache Directory Usage Statistics](#).

Generate alerts when free space falls below n GB: If the amount of free space in the index cache falls below this parameter (default = 50GB), the system sends alerts to the administrator email account. For more information, see the predefined alert "Disk space low on MediaAgent" in [Alerts and Notifications - Predefined Alerts](#).

> 🚩 **Note**
>
> If you want to set this parameter to 10 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 10 GB or less in the **MediaAgent Properties** dialog box.

Take the Index offline when free space falls below n GB: This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10GB), the system takes the index cache offline and begins event-driven cleanup. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

> 🚩 **Note**
>
> If you want to set this parameter to 1 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 1 GB or less in the **MediaAgent Properties** dialog box.

Cleanup until free space is at least: During an event-driven cleanup, the system checks to see if the percentage of free space remaining is greater than or equal to this parameter. If the percentage of free space remaining is less than this parameter, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

5. Click **OK**.

Viewing Index Cache Offline Reason (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

If the index cache is offline, you can view the reason for the issue.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the reason in the **Offline Reason** field.

4. Click the **OK** button.

Viewing Index Cache Usage Statistics (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can view statistics about the current disk space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory).

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the **Index Directory Space** pie chart and statistics, which are defined as follows:

   Total Size: MB/GB: The total disk space (in MB or GB) that is available in the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

   Index: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Other Data: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by data other than index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Free Space: MB/GB (%): Free disk space (in MB or GB) available in the index cache directory. The number in parentheses shows the free disk space as a percentage of the **Total** disk space of the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

4. Click the **OK** button.

Index Cache Storage Forecasting (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The index cache storage forecasting feature predicts when index cache storage in a CommCell environment might become full. To perform this forecasting, the system analyzes historical data use and available storage space for the index caches, and accounts for future data growth within the CommCell environment.

If the system predicts that an index cache's storage might become full within the next 30 days, or if the storage is currently full, then the system sends you an email alert. You can enable the alert and modify alert settings through the CommCell dashboard. For more information, see the following topics:

- [Enabling Storage Forecasting Alerts for Worldwide Dashboard on Web Console](#)

- [Enabling Storage Forecasting Alerts for the CommCell Dashboard on the Web Console](#)

- [Enabling Alerts for the CommCell Dashboard on the Cloud Services Website](#)

- [Enabling Alerts for Company Dashboard on Cloud Services](#)

- [Enabling Storage Forecasting Alerts for CommCell Group Dashboard on Web Console](#)

- [Configuring Storage Forecasting Alert Settings](#)

You can information about index cache in a CommCell environment, including disk usage statistics, status of indexes, and forecasting thresholds, by accessing the CommCell's [Index Cache Location Report](#).

Changing the Location of the Index Cache Directory (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory.

> 🚩 **Note**
>
> - To change the location of the index cache directory for restore-only or deconfigured MediaAgents, see [Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents.](#)
>
> - You can change the location of index caches on multiple MediaAgents by running the Change Index Cache Configuration workflow. For more information, see [Change Index Cache Configuration Workflow](#).

Before You Begin

- Confirm that the hardware requirements have been addressed for the new index cache directory. For more information, see [Indexing Planning](#).

- When changing the location of the index cache directory, the system copies the contents of the original index cache directory to the new index cache directory. If the new index cache directory will reside on the same volume as the original index cache directory, ensure that the volume has enough free space to hold two complete copies of the index cache directory's contents.

- Review the index cache directory requirements. For more information, see [Index Cache Directory Requirements](#).

Procedure

> 🚩 **Important**
>
> During this procedure, all backup jobs that use the index are automatically suspended.

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click *MediaAgent_name* > **Properties > Catalog**.

The current location of the index cache appears in **Index Directory**.

3. To specify a new index cache directory, follow either substep a or substep b, as follows:

> 🚩 **Important**
>
> The length of the complete path to the index cache directory, including the name of the directory itself, cannot be more than 75 characters total.

    a. **To select a folder that already exists:** Follow either substep i. or substep ii, below:

        i. Type an existing path name in **Index Directory**. Skip to Step 4, below.

        ii. Click the **Browse** button, browse to and click an existing folder, and then click the **OK** button. Skip to Step 4, below.

    b. **To create a new folder and then select it:** Click the **Browse** button, browse to and click an existing folder under which you wish to create the new folder, click the **New Folder...** button, enter a name for the new folder, and then click the **OK** button twice. Skip to Step 4, below.

4. Click **OK**.

5. The system will copy the contents of the original index cache directory to the newly specified index cache directory, and then direct the system to write all subsequent index entries to the new directory. To see the status of the job, look for a Catalog Migration job in the **Job Controller** tab of the Commcell Console.

6. The system does not delete the contents of the original index cache directory after copying them to the newly specified index cache directory. Therefore, if desired, you can manually delete the original index cache directory and its contents, in order to free up the disk space that it originally occupied.

Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory for restore-only or deconfigured MediaAgents.

Procedure

- Run the following command on the MediaAgent:

```
CatalogMigration.exe -vm <your instance> -cn <MA client name> -source <current
index cache path> -target <new index cache path>
```

Index Cache Directory Requirements

📅 Updated Monday, October 21, 2024

When changing the location of the index cache directory, note the following requirements.

- Use a file system dedicated to index data, so that non-index data does not consume index capacity.

- Estimate your index cache space requirements with a sufficient margin of safety by allocating more space rather than less. If you are maintaining backward-compatible content indexes generated by a previous software version, the index cache directory may require more space. For more information, see [Indexing Version 1: System and Hardware Requirements](#).

- For best performance, locate the index cache directory on a solid state drive (SSD).

- Do not locate the index cache directory on a compressed drive.

- For Windows, note the following:

    - Do not place the index cache directory directly under the root directory of the drive.

    - Do not place the index cache directory directly under the *software_installation_directory*.

- For UNIX, do not specify **root** as the index cache directory.

- When entering the index cache directory path, note the following:

    - The path may not exceed a total of 75 characters.

    - The path may not contain special characters.

    - The path may not contain Unicode characters.

    - The path may not contain the word "temp" (for example, **c:\Indexcache_temp**)

- Do not locate the index cache directory on the CommServe computer, unless you only have one MediaAgent and that MediaAgent is located on that computer.

Changing the Location of the Index Log Cache Directory (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can change the location of the index log cache directory on a MediaAgent, in order to help distribute the MediaAgent's disk resources.

By default, the **IndexCache** directory stores all index databases and all index action logs.

After you change the location of the index log cache directory, content is stored as follows:

- **IndexCache** directory: Stores only the index databases

- New index log cache directory: Stores the index action logs and other non-essential index data

> 🏳 **Important**
>
> During this procedure, all backup jobs that use the index are automatically suspended.

Before You Begin

- If the new index log cache directory will reside on the same volume as the **IndexCache** directory, verify that the volume has enough free space to hold two complete copies of the index action logs. This amount of free space is required because, when you change the location of the index log cache directory, the system copies the index action logs from the **IndexCache** directory to the new index log cache directory.

- When you change the location of the index log cache directory, note the following:

  - Use a file system that is dedicated to index data, so that non-index data does not consume index capacity.

  - Do not place the index log cache directory on a compressed drive.

  - Do not place the index log cache directory directly under the *software_installation_directory*.

  - The index log cache directory path must meet the following requirements:

    - The path cannot contain more than 75 characters.

    - The path cannot contain special characters.

    - The path cannot contain Unicode characters.

- The path cannot contain the word "temp". For example, the path cannot be **C:\Indexlogcache_temp**.

- Do not place the index log cache directory on the CommServe computer, unless you have only one MediaAgent and that MediaAgent is located on the CommServe computer.

- For UNIX, do not specify **root** as the index log cache directory.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click *MediaAgent_name*, and then select **Properties > Catalog**.

   The current location of the index log cache appears in **Index Log Directory**.

3. Select **Use alternate path for Index Log**.

4. Specify the new location for the index log cache directory by either selecting an existing location or creating and then selecting a new folder.

   > **⚑ Important**
   >
   > The length of the complete path to the index log cache directory, including the name of the directory itself, cannot contain more than 75 characters.

5. Click **OK**.

What to Do Next

- The system copies the log cache directories and files to the newly specified index log cache directory, and then directs the system to write all subsequent log cache files to the new directory. To see the status of the job, look for a Catalog Migration job in the **Job Controller** tab of the Commcell Console.

- The system does not delete the contents of the original index log cache directories and files after copying them to the newly specified directory. Therefore, if desired, you can manually delete the original index log cache directories and files, in order to free up the disk space that it originally occupied.

Secondary Index Server (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Secondary index server automatically creates a copy of an index onto another MediaAgent, called a secondary MediaAgent, which is usually physically separate from the MediaAgent on which the primary index was created. Having a copy of an index ensures that it remains available if the primary index gets erased during a cleanup operation. Each secondary index server can support multiple MediaAgents.

This feature is useful for setups that would otherwise rely on tape recalls when a primary index is no longer available (for example, it was aged off or otherwise deleted from the primary MediaAgent).

Requirements

Implementing secondary index server requires a MediaAgent, which in most cases will be a separate MediaAgent, to hold a copy of the primary index. The secondary MediaAgent should have sufficient storage space in its index cache directory to store indexes for all of the MediaAgents for which it serves as a secondary index server. If the secondary MediaAgent is also serving as a primary MediaAgent for clients of its own, it should have additional sufficient storage space to act as a MediaAgent.

Examples

The following are secondary index server examples:

- MediaAgents MA1 and MA2 perform backups for clients. Each MediaAgent index directory has 500 GB of storage space.

- MediaAgent MA3 performs backups for clients, and requires 500 GB for its own indexes.

- If MA3 is deployed as the secondary index server for MA1 and MA2, then MA3 should have 1.5 TB total space allocated to its index directory.

Operational Information

The following is operational information related to secondary index server:

- During a backup job, an index is created on the primary index server MediaAgent. This MediaAgent copies the completed index to the secondary index server MediaAgent every 30 minutes in the background.

- An index restore operation automatically copies the restored index to the secondary MediaAgent.

- During browse, find, or restore operations, if the required index is not present on the primary MediaAgent, the copy of the index is automatically downloaded from the secondary index server.

- Indexes present on the primary MediaAgent at the time that the secondary index server feature is enabled are not uploaded to the secondary index server. Jobs that are run after the secondary index server feature is enabled will upload their indexes to the secondary index server.

- If the client name of the secondary index server MediaAgent is changed (via the **Client Properties** dialog box for the secondary MediaAgent), the sSECONDARYINDEXSERVERNAME additional setting on each primary MediaAgent that uses that secondary MediaAgent must be updated with the new name, and the MediaAgent **Services** on those primary MediaAgents must be restarted.

Retention and Cleanup

Index copies are saved in the **CatalogServer** folder, which is in the index cache directory. To ensure availability, the secondary copy of an index is subject to the following retention rules:

- Secondary indexes are not subject to *event-based* cleanup operations, but *scheduled* cleanups are performed on them. Aging for each index is determined by the retention rules set on the secondary MediaAgent. See [Index Directory Cleanup](#).

- Setting a longer retention time on the secondary MediaAgent ensures that secondary indexes are retained longer than primary indexes.

Configuration

📅 Updated Monday, October 21, 2024

Configuration Settings

A secondary index server is configured through the following two additional settings:

- The first setting, bISSECONDARYINDEXSERVER, is added to the MediaAgent that hosts the copy of the index (that is, the secondary index server).

- The second setting, sSECONDARYINDEXSERVERNAME, which is added to the primary index server MediaAgent, identifies the secondary index server MediaAgent.

These two additional settings use the following parameters:

Setting Name	Platform	Description	Category	Type	Value
bISSECONDARYINDEXSERVER	Secondary MediaAgent	Makes the MediaAgent a Secondary Index Server.	MediaAgent	INTEGER	1
sSECONDARYINDEXSERVERNAME	Primary MediaAgent	The name of the secondary MediaAgent to which each index is copied after being created on the primary MediaAgent.	MediaAgent	STRING	The hostname of the secondary MediaAgent

Procedure

1. Add the first setting, bISSECONDARYINDEXSERVER, to the secondary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

2. Add the second setting, sSECONDARYINDEXSERVERNAME, to the primary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

3. On the primary index server MediaAgent, restart the **Commvault Media Mount Manager** service.

Secondary Index Server - FAQ

📅 Updated Monday, October 21, 2024

Does a backup job fail if the MediaAgent cannot access the secondary index server?

No, the backup does not fail. The index is copied to the secondary index server when the secondary MediaAgent becomes available again.

Can a MediaAgent use itself as a secondary index server?

Yes, but this removes some of the advantage of having a secondary copy. For example, the MediaAgent host computer may experience a hardware failure. If both copies of the index are on that one computer, both copies may be temporarily unavailable or even permanently lost. Also, having the index copied to a separate MediaAgent means that it is subject to a different (normally longer) retention policy, giving more opportunity for recovery if needed.

Can the primary and secondary MediaAgents be hosted on different operating systems?

Yes. For example, a primary MediaAgent can be hosted on a Windows computer while its designated secondary MediaAgent is hosted on a UNIX computer.

Transitioning from a Shared Cache to a Local Index Cache (Indexing Version 1)

📅 Updated Monday, October 21, 2024

If you want to upgrade to Version 11, but currently have a shared index cache arrangement configured (that is, an index cache server or index cache using network share), then you must transition to a local index cache.

Based on your environment and operational considerations, you can transition to a local index cache using one of three methods.

Before You Begin

1. Verify that the computer on which you wish to locate an index cache has sufficient internal hard disk space of the type required to accommodate the cache (see Index Cache: Planning).

2. Choose one of the following three transition methods that works best for your transition case:

   - Method 1: Set up a MediaAgent as a secondary index server, and then copy the shared index cache contents to the secondary index server.

     Operation: As each job that requires a prior index runs, the prior index is restored from the secondary index server. New indexes are written to the local index cache directory, and a copy is uploaded to the secondary index server.

     Considerations: This method is best suited to most transition cases, and is especially recommended if you use tape as your primary backup medium.

   - Method 2: Configure a local index cache directory on each MediaAgent. Do not copy any data to it when you set it up.

     Operation: Full backups create a new index in the local index cache directory. Incremental backup jobs that require a prior index restore it from the former shared index cache location, and then save it to the local index cache. Eventually, the old shared cache is not needed.

     Considerations: This method may not be suitable if you are using tape for primary backup storage (because of tape restore delay), and is not suitable if those backup tapes are being exported to an offsite location.

   - Method 3: Copy the entire contents of the shared index cache to each MediaAgent that had been using the share.

     Operation: Full backups create a new index in the local index cache directory. As an incremental backup job runs, the prior index is restored from the local disk. As index cache data ages out, disk space is recovered for MediaAgents no longer being supported by the cache, so that over

time, the space used on the disk is reduced to only that required for the MediaAgent hosting the local index cache directory.

Considerations: This method requires that all MediaAgents initially have sufficient available local disk space to hold all shared cache data for all MediaAgents that had been using the share.

Method 1: Copy Index Cache Contents to Secondary Index Server

Use this method to copy the existing index cache contents to a secondary index server.

1. If you have not already set up a secondary index server for your operation, do that now. See [Secondary Index Server: Configuration](#).

2. Allow all running backup jobs to complete, and then stop all Commvault services on the MediaAgent that is hosting the index cache sharing arrangement.

3. Using available operating system tools, copy the index cache data from its old location to its new location on the secondary index server, as follows:

   a. If the old location of the index cache was a network share, create a folder named **CatalogServer** on the secondary index server under its *software_installation_directory*/**IndexCache/** folder, and then copy the *index_cache_directory*/**CV_Index** folder from the network share to that new **CatalogServer** folder. The resulting path on the secondary index server will be *software_installation_directory*/**IndexCache/CatalogServer/CV_Index**, with **CV_Index** containing the index data from the old network share.

   b. If the old location was an index cache server, copy the contents of the old shared index cache folder to the *software_installation_directory*/**IndexCache/** folder on the secondary index server. See [Data to Copy from the Share](#), below.

4. If the MediaAgent that you stopped services on in Step 2, above, is used for other purposes, restart the services on it.

Method 2: Configure Local Index Cache on Each MediaAgent

Use this method to configure an index cache directory on a local disk on each MediaAgent.

For each MediaAgent, perform the following steps:

1. From the CommCell Console, expand **Storage Resources > MediaAgents**.

2. Right-click the MediaAgent, and then click **Properties**.

3. Click the **Catalog** tab.

4. Click **Browse**, navigate to the local index cache folder, and then click **OK**.

Method 3: Copy Index Cache Contents to MediaAgent Local Disk

Use this method to set up a local index cache directory on each MediaAgent, and then copy all of the contents of the existing shared index cache to all of the MediaAgents.

1. Allow all running backup jobs to complete, and then stop all Commvault services on the MediaAgent that is hosting the index cache sharing arrangement.

2. Configure the new index cache directory as follows:

   a. In the CommCell Console, expand **Storage Resources > MediaAgents**.

   b. Right-click the MediaAgent where you will be placing the local index cache, and then click **Properties**.

   c. Click the **Catalog** tab.

   d. Click **Browse**, navigate to the local index cache folder, and then click **OK**.

3. Using available operating system tools, copy the data from the old shared index cache directory (network share or cache server) to the directory you just configured. See [Data to Copy from the Share](#), below.

4. If the MediaAgent that you stopped services on in Step 1, above, is used for other purposes, restart the services.

Data to Copy from the Share

The folders in the shared index cache directory that contain the index data to copy to your secondary index server include the following:

- **CV_ErasedItems**

- **CV_FcsIndex**

- **CV_Index**

- **CV_Opt1**

- **CV_SnapMetadata**

- **CatalogServer**

Copy only the folders (and their contents) that you find in the shared index cache directory. Do not copy any files.

> 🚩 **Note**
>
> Depending on their configuration, most MediaAgents will have only some of the folders named above, not all of them.

Change Index Cache Configuration Workflow (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The Change Index Cache Configuration workflow allows you to change the location and retention properties for index caches on multiple MediaAgents.

Before You Begin

- The Commvault Workflow solution must be deployed in your CommCell environment. Typically the Workflow Engine is installed with the CommServe software. If you need to install the Workflow Engine separately, see [Installing the Workflow Engine](#).

- Download the Change Index Cache Configuration workflow from the Commvault Store. See [Download Workflows from the Commvault Store](#).

Procedure

> 🚩 **Important**
>
> While the update index cache path process (see Step 5b, below) is running, all backup jobs that use the index are automatically suspended.

1. In the CommCell Browser, open **Workflows**.

2. In the **Workflows** tab, right-click **Change Index Cache Settings**, point to **All Tasks**, and then click **Execute**.

3. In the **ChangeIndexCacheConfig** dialog, click the **Run workflow on** list, and then select the Workflow Engine that you want to use to perform the workflow.

4. Select the **MA Client Group** or the **MA Client Name** to run the workflow on.

5. Configure the workflow for one or more MediaAgents as follows:

   a. Select the **Update Index Cache Retention Properties** checkbox (for Indexing Version 1 only), and then enter the following:

      i. **Retain index for (Days)**: When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

ii. **Generate alerts when free space falls below (in GB)**: If the amount of free space in the index cache falls below this parameter (default = 50 GB), the system sends alerts to the administrator email account. For more information on this predefined alert, see [Disk space low on MediaAgent](#).

iii. **Take the Index offline when free space falls below n GB:** This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10 GB), the index cache is taken offline and event-driven cleanup begins. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

iv. **Cleanup until free space is at least:** When an event-driven cleanup runs, the system will check to see if the percentage of free space remaining is greater than or equal to this parameter. If it's not, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

b. Select the **Update Index Cache Path** checkbox, and then enter the new index cache path in the **New Index Cache Path** field.

c. In the **Number of Parallel Upgrades**, enter the maximum number of clients that you want to allow the workflow to process simultaneously. You can enter a value from 1 to 20.

6. Click **OK** to begin the workflow job.

The **Change Index Cache Configuration** job appears in the **Job Controller** tab.

Index Cache Cleanup (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Cleanup Process

The process of removing unneeded data from the index cache is called cleanup. The Commvault software provides an automated cleanup process and a report that lists files not deleted during normal cleanup, as well as reasons the files were not deleted.

> 🚩 **Notes**
>
> - Index cache cleanup is an automated, configurable process that is controlled by [Retention Parameters](#).
>
> - Indexes in the index cache are deleted by the Centralized Cleanup Service that runs on the MediaAgent system. Cleanups run daily (see [Scheduled Cleanup](#)), but may also run between scheduled cleanups when certain conditions are met (see [Event-Driven Cleanup](#)).
>
> - Values referenced in these sections, such as **Free Space**, are found on the **MediaAgent Properties** dialog box, on the **Catalog** tab.
>
> - For index directory sizing guidelines, see the **Index Cache Disk** entry in the Index Hardware Requirements table in [System and Hardware Requirements](#).

Scheduled Cleanup

📅 Updated Monday, October 21, 2024

Every 24 hours, the Centralized Cleanup Service runs and deletes indexes that are older than the number of days set for **Retain index for *n* days** on the **MediaAgent Properties** > **Catalog** tab.

For example, if **Retain index for *n* days** is set to 60 days, the Centralized Cleanup Service deletes indexes that are more than 60 days old.

The scheduled cleanup deletes indexes for any subclient that does not have active, running jobs, including de-configured and hard-deleted subclients. This way, index data is pruned for subclients whose data has been aged (see [Data Aging: Overview](#)) and can no longer be browsed.

Related Topics

- [Addressing Cleanup Issues](#)

Event-Driven Cleanup

📅 Updated Monday, October 21, 2024

Cleanup is performed between scheduled cleanups in the following two cases:

1. **Free Space** size falls below the **Generate alerts when free space falls below** value (default = 50GB).

   In this case, the cleanup process performs the following operations:

   a. An event message is created in the **Event Viewer**, which indicates a low disk space condition.

   b. Indexes older than the **Retain index for *n* days** setting (**default:** 15 days) are deleted until **Clean up until free space is at least *n* percent** is reached (default = 15 percent).

   c. In the event that, after removing the old indexes, the used disk space still exceeds **Clean up until free space is at least *n* percent**, the process continues by removing the least-recently-used indexes in the directory, until the **Free Space** percent becomes equal to or greater than the **Clean up until free space is at least *n* percent** setting.

2. **Free Space** size falls below the value in **Take the Index offline when free space falls below *n* GB** (default = 10GB).

   In this case, the cleanup process performs the following operations:

   a. The MediaAgent is brought offline.

   b. Indexes older than the **Retain index for *n* days** setting (default = 15 days) are deleted.

   c. If the used disk space still exceeds the percentage specified by **Clean up until free space is at least *n* percent** (**default:** 15 percent), the process removes the least-recently-used index files in the directory, until the **Free Space** becomes equal to or greater than the **Clean up until free space is at least *n* percent** setting.

   d. Within 20 minutes of the MediaAgent being taken offline, if cleanup activities have brought the disk utilization to or above the free space percent setting, the MediaAgent is brought back online. If after 20 minutes the disk utilization percent setting still has not been met, the MediaAgent is left offline, and administrative staff must manually delete data from the Index Directory (see [Correcting Cleanup Issues](#)), and then bring the MediaAgent back online manually (see [Enable or Disable a MediaAgent](#)) or wait for the next run of the scheduled job to bring it back online.

Examples

- **Preconditions**

  ○ **Total Size** is 300 GB

- **Retain index for _n_ days** = 15 days

- **Generate alerts when free space falls below** is set to 50.0 GB

- **Take the Index offline when free space falls below _n_ GB** is set to 10.0 GB

- **Clean up until free space is at least _n_ percent** is set to 15 percent

- Cases

  - Indexes are found to be old

    While an event-driven cleanup is running, some index files are found to be 16 or more days old, and are deleted.

  - **Free Space** indicates 18 GB (6.00%)

    Because the amount of free space is less than 50 gigabytes, but more than 10 gigabytes, the MediaAgent places an event message into the Event Viewer and, if alerts are configured, sends an alert to the administrator. An event-driven cleanup begins. It ends when **Free Space** is 15 percent or more.

  - **Free Space** indicates 8 GB (2.67%)

    Because the amount of free space is less than 10 gigabytes, the MediaAgent goes offline and places an event message into the Event Viewer. If alerts are configured, the MediaAgent sends an alert to the administrator. An event-driven cleanup begins. Within 20 minutes, if the **Free Space** percent is 15 percent or more, the MediaAgent comes back online. If **Free Space** is still less than 15 percent, the MediaAgent stays offline, and administrative staff should perform a manual cleanup, then bring the MediaAgent back online when ready.

  - **Free Space** percent shows 9.00 percent (273 gigabytes used)

    The percentage of available disk space has fallen below **Clean up until free space is at least _n_ percent**, so the MediaAgent begins deleting index files that are older than the **Retain index for _n_ days** setting, until the percentage of available disk space is equal to or more than the **Clean up until** setting. If this is not sufficient, it continues by deleting least-recently-used indexes until enough space is recovered to meet the free space percentage requirement.

    In this example, at least 18 GB worth of indexes are aged out in order to cross below the 255 GB threshold dictated by the **Clean up until free space is at least _n_ percent** setting.

Related Topics

- [Addressing Cleanup Issues](#)

Addressing Cleanup Issues

📅 Updated Monday, October 21, 2024

If cleanup operations driven by the retention settings do not remove enough index data to satisfy the free space requirement (the **Clean up until free space is at least *n* percent** setting), you have the following options:

- Change the [retention parameters](#) to more accurately reflect your actual disk space usage and requirements.

- Increase the disk available to the index directory or move it to another disk (see [Moving the Index Directory](#)).

Procedure

To determine how much disk space is currently allocated and being used, and to change your retention settings (if necessary), perform the following steps:

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent_name* > **Properties > Catalog**.

3. Change the [retention parameters](#) settings if needed.

4. Click **OK**.

Index Cache Cleanup Report (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index files are subject to cleanup every 24 hours as described in **Scheduled Cleanup**. When this process runs, some files that were selected for deletion (based on retention settings) may not be deleted. The Index Directory Cleanup Report is a log that contains a list of these index files, along with the reasons that these files were not deleted.

> 🚩 **Note**
>
> Index files that reside in the intermediate index cache are not included in this report.

When To Use the Report

The Index Cache Cleanup Report is useful in the following cases:

- When an aged index did not get pruned or deleted during cleanup.

  For example: A job may have locked the index or the index may have been corrupted.

- To analyze the number of index files present in the MediaAgent computer.

  For example: The presence of too many index files may require aggressive cleanup activity.

Where To Find the Report

The Index Cache Cleanup Report is created on the MediaAgent computer, in the following directory:

*MediaAgent_name/index_cache/***IndexCacheCleanupReport.csv**

Output

The Index Cache Cleanup Report is saved as a CSV file. When opened in a spreadsheet application such as Microsoft Excel, the report looks like the following:

A	B	C
CV_Index\2\1\1427638248	234881274	Index was accessed recently.
CV_Index\2\1\1427724761	234881274	Index was accessed recently.
CV_Index\2\1\1427811348	234881273	Index is in use by a running job.
CV_Index\2\1\1427897725	234881274	Index was accessed recently.
CV_Index\2\1\1427983978	234881274	Index was accessed recently.
CV_Index\2\42\1427995897	234881274	Index was accessed recently.
CV_Index\2\1\1428070358	234881278	Failed to verify state of index.

The report contains the following three columns:

Column	Description
Index Directory folder	The location of an index file that was not deleted during the automatic cleanup operation.
Event ID	A numeric identifier that corresponds to the event message in the Retention Reason column. The following are common Event IDs: • 234881273: Index is in use by a running job. • 234881274: Index was accessed recently. • 234881275: Index is in use. • 234881276: Failed to open index. Check **IndexCacheCleanup.log** for more details. • 234881277: Failed to delete index. Check **IndexCacheCleanup.log** for more details. • 234881278: Failed to verify state of index.
Retention Reason	The reason why the index file was not deleted.

Disabling Automatic Generation of the Report

By default, the Index Cache Cleanup Report is automatically generated.

You can enable or disable the report by [Adding or Modifying Additional Settings from the CommCell Console](#) to the MediaAgent:

Setting Name	[disableIndexCacheCleanupReport](#)
Category	MediaAgent
Type	INTEGER

Valid Values	1 = disable the report
	0 = enable the report (default)

Best Practices (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Apply the following best practices to obtain the best results with local index storage:

- Use a volume dedicated to the index cache directory, formatted with a block allocation size of 32K.

- Configure antivirus exclusions for [Windows](#) and [UNIX](#).

- For Microsoft Windows MediaAgents, disable Microsoft Windows indexing service on the drive. For more information, see Microsoft documentation.

- For Microsoft Windows MediaAgents, do not enable Windows Deduplication on a volume that contains the index cache directory, as this may cause a significant drop in performance and may cause jobs to fail.

- Do not locate the index cache directory on the system drive of the MediaAgent hosting it.

- Do not locate the index cache directory on a compressed drive.

- For best performance, locate the index cache directory on a solid state drive (SSD).

- Do not locate the index cache directory folder directly under the *<software_installation_directory>*.

- For Unix, do not specify **root** as the index cache directory.

- When entering the index cache directory path or the index log cache directory path, note the following:

  - The path may not exceed a total of 75 characters.

  - The path may not contain special characters.

  - The path may not contain Unicode characters.

  - The path may not contain the word "temp" (for example, **c:\Indexcache_temp**)

FAQ (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Why is the index getting restored very often?

Several conditions can cause frequent index restores. The index gets restored when one or more of the following are true:

- Index retention criteria prompted the system to perform cleanup on an existing index. These criteria may be set more strictly than necessary. See Retention Parameters.

- Space is not sufficient on the disk that hosts the index directory, causing frequent event-driven cleanup operations. See Index Directory Cleanup Process.

- An index grew larger than 2 GB, and was automatically renamed.

Can the Index cache be placed on a network drive?

The Commvault software only supports placing the index cache on a local drive.

Must the MediaAgents participating in GridStor be running the same software version?

Yes. MediaAgents that participate in GridStor should be upgraded together, so that all MediaAgents in the group are running the same version of Commvault software.

Why is the Index Directory full even after setting aggressive retention rules?

The aged index files may not be getting cleaned up. Verify this by analyzing the Index Directory Cleanup Report on the MediaAgent computer:

MediaAgent/*index_directory*/**IndexCacheCleanupReport.csv**

This report displays a list of index files that were not cleaned up during the cleanup operation, along with a reason for their retention. See Index Directory Cleanup Report.

What happens to an incremental backup when the prior index is not in the index cache?

If the prior index is not on the local drive of the MediaAgent that is running an incremental backup job, the prior index is copied to that MediaAgent from another source, and the incremental backup proceeds. The order in which the prior index is obtained is as follows:

1. If the prior index is available from the MediaAgent on which it was created or last updated, it is copied from that MediaAgent.

2. If the prior index is not available from the MediaAgent on which it was created or last updated, it is restored from the storage media to which it was written (such as a tape).

How do I recover the index cache following a drive failure?

After replacing the drive, perform the following steps:

1. Go to the **Catalog** tab of the **MediaAgent Properties** dialog box.

2. Set the **Index Directory** to a location on the new drive (see [Moving the Index Cache Directory](#)).

   A **Confirm** dialog box appears.

3. Click **No** to tell the process not to copy data to the new location. Indexes are automatically restored to the new location when jobs that require indexes are run.

Troubleshooting (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Backup is pending with error code [14.96] [14.95] "Failed to start createIndex on MediaAgent..."

For more information, see KB Article IND0009.

Backup is pending with error code [32:406]

This error code can have either of these basic descriptions:

- The index cache for the MediaAgent is disabled.

- The MediaAgent is not active.

For more information, see KB Article IND0004.

Backup is pending with error code [82:156] "The destination encountered an error while processing the data from the source"

For more information, see KB Article IND0005.

Cannot Upgrade to Indexing V2 Because of Missing Index

For more information, see KB Article IND0006.

Error Code [14:72] "Out of cache space after trying to free...blocks in cache area..."

For more information, see KB Article IND0010.

Index Server MediaAgent is Taken Offline because Index Cache is Full (Indexing Version 2 only)

For more information, see KB article IND0012.

Online Help

You can use the **Catalog** tab of the **MediaAgent Properties** dialog box to view and modify index file parameters and retention criteria.

Index Directory

Enable this Access Path

Select this check box to make the path in index directory active.

Index Directory

The directory where index data is stored.

You can change this directory. If it does not already exist, the MediaAgent software creates it in the default location, *software_installation_directory/***IndexCache**.

When you change this setting, the MediaAgent copies the existing cache contents to the newly specified index cache directory, and directs all new cache entries to the new directory. Because the Windows MediaAgent copies the existing cache contents, you can manually delete the original directory to free up disk space.

> **⚐ Notes**
>
> - Use a file system dedicated to index data, so that non-index data does not consume index capacity.
>
> - Estimate your index cache space requirements with a sufficient margin of safety by allocating more space rather than less. If you are maintaining backward-compatible content indexes generated by a previous software version, the index cache directory may require more space.
>
> - For best performance, locate the index cache directory on a solid state drive (SSD).
>
> - Do not locate the index cache directory on a compressed drive.
>
> - For Windows, do not place the index cache directory directly under the *software_installation_directory*.
>
> - For UNIX, do not specify **root** as the index directory.
>
> - The index cache directory path must meet the following requirements:
>
>   - It may not exceed 75 characters.
>
>   - It may not contain the "!" character.
>
>   - It may not contain Unicode characters.
>
> - Do not host the index cache directory on your CommServe computer, unless you only have one MediaAgent and that MediaAgent is located on that computer.

Browse

Click to locate the index cache directory in a Windows tree, and then set it.

Offline Reason

If the index cache directory is offline, this field displays the reason.

Index Retention

Retain index for n days

> **⚐ Note**
>
> This option does not apply to Indexing Version 2. For information about index retention in Indexing Version 2, see [Index Cleanup and Compaction Operations (Indexing Version 2)](#).

When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

Generate alerts when free space falls below n GB

If the amount of free space in the index cache falls below this parameter (default = 50GB), the system sends alerts to the administrator email account. For more information, see the predefined alert "Disk space low on MediaAgent" in [Alerts and Notifications - Predefined Alerts](#).

> **⚑ Note**
>
> If you want to set this parameter to 10 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 10 GB or less in the **MediaAgent Properties** dialog box.

Take the Index offline when free space falls below n GB

This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10GB), the system takes the index cache offline and begins event-driven cleanup. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

> **⚑ Note**
>
> If you want to set this parameter to 1 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 1 GB or less in the **MediaAgent Properties** dialog box.

Cleanup until free space is at least

> **⚑ Note**
>
> This option does not apply to Indexing Version 2. For information about index retention in Indexing Version 2, see [Index Cleanup and Compaction Operations (Indexing Version 2)](#).

During an event-driven cleanup, the system checks to see if the percentage of free space remaining is greater than or equal to this parameter. If the percentage of free space remaining is less than this parameter, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

Index Directory Space

These fields display the current state of index cache directory space usage. For more information about index space requirements, see [Planning (Indexing Version 1)](#) or [Planning (Indexing Version 2)](#).

Total Size

The total volume size (in MB or GB) that the index cache directory resides on.

Index

Index cache directory disk space (in MB or GB) currently used by index files. The number in parentheses shows the usage as a percentage of the **Total Size** disk space. Note that when index files are changed, added, or deleted, it make take up to 30 minutes for the **Index** value to update.

Other Data

Index cache directory disk space (in MB or GB) currently used by data other than index files. The number in parentheses shows the usage as a percentage of the **Total Size** disk space.

Free Space

Free disk space (in MB or GB) available to the index cache directory. The number in parentheses shows the free disk space as a percentage of the **Total Size** disk space.

Agents that Use Indexing (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The following table shows agent compatibility with Indexing Version 1 and Indexing Version 2.

Agent	Supports Indexing Version 1	Supports Indexing Version 2	Supports Migrating to Indexing Version 2
Active Directory	Yes	No	No
Alibaba Cloud	Yes	Yes	No
Amazon Virtual Server Agent	Yes	Yes	Yes
Apache Cassandra	No	Yes	N/A
Citrix Xen Virtual Server Agent	Yes	Yes	No
ContinuousDataReplicator	Yes	No	No
DB2	Yes	Yes	Yes
DB2 MultiNode	Yes	Yes	Yes
Documentum	Yes	No	No
Domino Mailbox Archiver	Yes	No	No
Dropbox	Yes	No	No
Exchange Compliance Archiver Agent	Yes	No	No
Exchange Database Agent	Yes	No	No
Exchange Database Agent with IntelliSnap (for IntelliSnap move-to-tape operation)	Yes	No	No
Exchange Mailbox Agent	Yes	Yes	No
Exchange Mailbox (Classic) Agent	Yes	No	No

Exchange Mailbox Archiver Agent	Yes	No	No
Exchange Public Folder Agent	Yes	No	No
Exchange Public Folder Archiver Agent	Yes	No	No
External Data Connector	Yes	No	No
FusionCompute Virtual Server Agent	Yes	Yes	No
Google Cloud	Yes	Yes	No
Hadoop	No	Yes	N/A
Huawei FusionCompute	Yes	Yes	No
IBM i File System Agent	Yes	No	No
Kubernetes	No	Yes	No
Lotus Notes Database	Yes	No	No
Macintosh Agent	Yes	Yes	Yes
Microsoft Azure Stack Hub	Yes	Yes	Yes
Microsoft Azure Virtual Server Agent	Yes	Yes	Yes
Microsoft Hyper-V Virtual Server Agent	Yes	Yes	Yes
Microsoft OneDrive	Yes	Yes	No
Microsoft SharePoint Server	Yes	Yes, for Microsoft SharePoint Office 365 only	No

Microsoft SQL Server	Yes	Yes Block-level and IntelliSnap backups only 🚩 **Note** If block-level backup is enabled on a subclient, the Microsoft SQL Server agent automatically converts to using Indexing Version 2. For more information, see [Enabling Block-Level Backups for SQL Databases From the Command Center](#).	No
Microsoft Windows File Systems Agent	Yes	Yes	Yes
MySQL Agent	Yes	Yes	No
NDMP Agent	Yes	Yes	Yes
Notes Database (Database files only)	Yes	No	No
Notes Document	Yes	No	No
Nutanix AHV Virtual Server Agent	Yes	Yes	Yes
OnePass for Exchange Mailbox (Classic)	Yes	No	No
OpenVMS File System Agent	Yes	No	No
OES File System Agent	Yes	No	No
OpenStack Virtual Server Agent	Yes	Yes	Yes
Oracle	Yes	Yes	Yes
Oracle RAC	Yes	Yes	Yes
Oracle VM Virtual Server Agent	Yes	Yes	No
PostgreSQL	Yes	Yes	Yes

Red Hat Enterprise Virtualization Virtual Server Agent	Yes	Yes	No
Salesforce	No	Yes	N/A
SAP for Oracle	Yes	Yes	Yes
SAP HANA	Yes	Yes	Yes
Sybase	Yes	No	No
UNIX File System Agent	Yes	Yes	Yes
vCloud Virtual Server Agent	Yes	Yes	Yes
VMware Virtual Server Agent	Yes	Yes. For more information see "Enabling VM-Centric Operations" in [Requirements for VM-Centric Operations with VMware](#).	Yes

Related Topics

- [Migration of Clients to Indexing Version 2](#)

- [Migration of Virtualization Clients to Indexing Version 2](#)

- The Index Version Status report lists each client in a CommCell, each agent installed in the client, and its indexing version (Indexing Version 1 or Indexing Version 2). For more information, see [Indexing Version Status Report](#).

System and Hardware Requirements (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index Hardware Requirements

Whenever installing or reconfiguring a MediaAgent, ensure proper index cache sizing by verifying that the volume hosting the index cache has sufficient disk space. The following table shows recommended minimum system and hardware requirements for the MediaAgent.

Components	Extra Large	Large	Medium	Small	Extra Small
Backend Size[1, 2]	Up to 200 TB	Up to 150 TB	Up to 60 TB	Up to 30 TB	Up to 15 TB
CPU/RAM	16 CPU cores, 128 GB RAM	12 CPU cores, 64 GB RAM	8 CPU cores, 32 GB RAM (or 12 vCPUs/48 GB)	4 CPU cores, 24 GB RAM (or 6 vCPUs/32 GB)	2 CPU cores, 16 GB RAM (or 4 vCPUs/24 GB)
OS or Software Disk	400 GB SSD class disk	400 GB usable disk; minimum four spindles of 15K RPM or higher, or SSD-class disk	400 GB usable disk; minimum of four 15K RPM spindles	400 GB usable disk, minimum of two 15K RPM spindles	400 GB usable disk, minimum of two 15K RPM spindles
Index Cache Disk[3, 4]	2 TB SSD class disk with 5K+ dedicated random IOPS [2]	1 TB SSD class disk with 5K+ dedicated random IOPS	1 TB local disk space with 400+ random IOPS	400 GB local disk space with 200+ random IOPs	400 GB local disk space with 200+ random IOPs
Number of Objects	2 billion	1 billion	1 billion	500 million	500 million

Footnotes:

1. Assumes standard retention of up to 90 days. Larger retention will affect back end size managed by this configuration. The front end capacity remains the same.

2. Recommendation for unstructured data types like files, VMs and granular messages. Structured data types like application, databases and so on need significantly less index cache.

3. The index cache directory must be on a local drive. Network drives are not supported.

4. GlusterFS is not supported.

Additional Information

Use of SSD Disk

To improve the indexing performance, it is recommended that you store your index data on a solid-state drive (SSD).

The following agents and cases require the best possible indexing performance:

- Exchange Mailbox (Classic) Agent

- Virtual Server agents (Indexing Version 1 only)

- NAS filers running NDMP backups

- Backing up large file servers

- SharePoint agents

- Any other case requiring maximum performance

Use of Primary Tape Backup

If your data protection environment uses tape for its primary backups, consider implementing Secondary Index Server (Indexing Version 1 only) to reduce the need for off-site tape recalls.

Configuration (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index Cache Configuration (Indexing Version 1)

Enabling or Disabling Index Cache Access (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can configure whether access to the index cache on a MediaAgent is enabled or disabled. Disabling access to the index cache will make the index offline and unavailable for browse operations on associated subclients.

Procedure

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. Click the **Catalog** tab in the **MediaAgent Properties** dialog box.

4. Select or deselect the **Enable this Access Path** check box to enable or disable access to the index cache. If you disable access to the index cache, you can optionally enter details or a reason in the **Offline Reason** field.

5. Click the **OK** button.

Index Retention Parameters (Indexing Version 1)

📅 Updated Monday, October 21, 2024

After being backed up, a subclient's index and log files are kept in the MediaAgent's index cache for a set number of days, which is defined by an indexing retention parameter called **Retain index for n days** (the default setting for this parameter is 15 days).

However, if the index cache is low on free space, the system may override the **Retain index for n days** retention parameter and delete the index files immediately. This form of cleanup, called an event-driven cleanup, can be configured by additional retention parameters described below. For more information about cleanup processes, including event-driven cleanup, see [Index Cache Directory Cleanup](#).

Procedure

> 🚩 **Note**
>
> You can change the retention properties for index caches on multiple MediaAgents by [running the Change Index Cache Configuration workflow](#).

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent* > **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, change the value of the **Retain index for n days** parameter as desired. When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

4. Change additional event-driven retention parameters as desired. These settings trigger the event-driven cleanup based on the amount of space allocated to the index cache and the amount of that allocated space that remains available, either as a percentage or an actual quantity. These settings are shown below.

   > 🚩 **Note**
   >
   > Statistics about the current space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory) are shown at the bottom of the **Catalog** tab of the **MediaAgent Properties** dialog box. For a full description of these statistics, see [Viewing Index Cache Directory Usage Statistics](#).

Generate alerts when free space falls below n GB: If the amount of free space in the index cache falls below this parameter (default = 50GB), the system sends alerts to the administrator email account. For more information, see the predefined alert "Disk space low on MediaAgent" in [Alerts and Notifications - Predefined Alerts](#).

> 🚩 **Note**
>
> If you want to set this parameter to 10 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 10 GB or less in the **MediaAgent Properties** dialog box.

Take the Index offline when free space falls below n GB: This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10GB), the system takes the index cache offline and begins event-driven cleanup. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

> 🚩 **Note**
>
> If you want to set this parameter to 1 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 1 GB or less in the **MediaAgent Properties** dialog box.

Cleanup until free space is at least: During an event-driven cleanup, the system checks to see if the percentage of free space remaining is greater than or equal to this parameter. If the percentage of free space remaining is less than this parameter, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

5. Click **OK**.

Viewing Index Cache Offline Reason (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

If the index cache is offline, you can view the reason for the issue.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the reason in the **Offline Reason** field.

4. Click the **OK** button.

Viewing Index Cache Usage Statistics (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can view statistics about the current disk space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory).

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the **Index Directory Space** pie chart and statistics, which are defined as follows:

   Total Size: MB/GB: The total disk space (in MB or GB) that is available in the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

   Index: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Other Data: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by data other than index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Free Space: MB/GB (%): Free disk space (in MB or GB) available in the index cache directory. The number in parentheses shows the free disk space as a percentage of the **Total** disk space of the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

4. Click the **OK** button.

Index Cache Storage Forecasting (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The index cache storage forecasting feature predicts when index cache storage in a CommCell environment might become full. To perform this forecasting, the system analyzes historical data use and available storage space for the index caches, and accounts for future data growth within the CommCell environment.

If the system predicts that an index cache's storage might become full within the next 30 days, or if the storage is currently full, then the system sends you an email alert. You can enable the alert and modify alert settings through the CommCell dashboard. For more information, see the following topics:

- [Enabling Storage Forecasting Alerts for Worldwide Dashboard on Web Console](#)

- [Enabling Storage Forecasting Alerts for the CommCell Dashboard on the Web Console](#)

- [Enabling Alerts for the CommCell Dashboard on the Cloud Services Website](#)

- [Enabling Alerts for Company Dashboard on Cloud Services](#)

- [Enabling Storage Forecasting Alerts for CommCell Group Dashboard on Web Console](#)

- [Configuring Storage Forecasting Alert Settings](#)

You can information about index cache in a CommCell environment, including disk usage statistics, status of indexes, and forecasting thresholds, by accessing the CommCell's [Index Cache Location Report](#).

Changing the Location of the Index Cache Directory (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory.

> 🚩 **Note**
>
> - To change the location of the index cache directory for restore-only or deconfigured MediaAgents, see [Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents.](#)
>
> - You can change the location of index caches on multiple MediaAgents by running the Change Index Cache Configuration workflow. For more information, see [Change Index Cache Configuration Workflow](#).

Before You Begin

- Confirm that the hardware requirements have been addressed for the new index cache directory. For more information, see [Indexing Planning](#).

- When changing the location of the index cache directory, the system copies the contents of the original index cache directory to the new index cache directory. If the new index cache directory will reside on the same volume as the original index cache directory, ensure that the volume has enough free space to hold two complete copies of the index cache directory's contents.

- Review the index cache directory requirements. For more information, see [Index Cache Directory Requirements](#).

Procedure

> 🚩 **Important**
>
> During this procedure, all backup jobs that use the index are automatically suspended.

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click *MediaAgent_name* > **Properties > Catalog**.

The current location of the index cache appears in **Index Directory**.

3. To specify a new index cache directory, follow either substep a or substep b, as follows:

> 🏳 **Important**
>
> The length of the complete path to the index cache directory, including the name of the directory itself, cannot be more than 75 characters total.

    a. **To select a folder that already exists:** Follow either substep i. or substep ii, below:

       i. Type an existing path name in **Index Directory**. Skip to Step 4, below.

       ii. Click the **Browse** button, browse to and click an existing folder, and then click the **OK** button. Skip to Step 4, below.

    b. **To create a new folder and then select it:** Click the **Browse** button, browse to and click an existing folder under which you wish to create the new folder, click the **New Folder...** button, enter a name for the new folder, and then click the **OK** button twice. Skip to Step 4, below.

4. Click **OK**.

5. The system will copy the contents of the original index cache directory to the newly specified index cache directory, and then direct the system to write all subsequent index entries to the new directory. To see the status of the job, look for a Catalog Migration job in the **Job Controller** tab of the Commcell Console.

6. The system does not delete the contents of the original index cache directory after copying them to the newly specified index cache directory. Therefore, if desired, you can manually delete the original index cache directory and its contents, in order to free up the disk space that it originally occupied.

Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory for restore-only or deconfigured MediaAgents.

Procedure

- Run the following command on the MediaAgent:

```
CatalogMigration.exe -vm <your instance> -cn <MA client name> -source <current
index cache path> -target <new index cache path>
```

Index Cache Directory Requirements

When changing the location of the index cache directory, note the following requirements.

- Use a file system dedicated to index data, so that non-index data does not consume index capacity.

- Estimate your index cache space requirements with a sufficient margin of safety by allocating more space rather than less. If you are maintaining backward-compatible content indexes generated by a previous software version, the index cache directory may require more space. For more information, see **Indexing Version 1: System and Hardware Requirements**.

- For best performance, locate the index cache directory on a solid state drive (SSD).

- Do not locate the index cache directory on a compressed drive.

- For Windows, note the following:

    - Do not place the index cache directory directly under the root directory of the drive.

    - Do not place the index cache directory directly under the *software_installation_directory*.

- For UNIX, do not specify **root** as the index cache directory.

- When entering the index cache directory path, note the following:

    - The path may not exceed a total of 75 characters.

    - The path may not contain special characters.

    - The path may not contain Unicode characters.

    - The path may not contain the word "temp" (for example, **c:\Indexcache_temp**)

- Do not locate the index cache directory on the CommServe computer, unless you only have one MediaAgent and that MediaAgent is located on that computer.

Changing the Location of the Index Log Cache Directory (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can change the location of the index log cache directory on a MediaAgent, in order to help distribute the MediaAgent's disk resources.

By default, the **IndexCache** directory stores all index databases and all index action logs.

After you change the location of the index log cache directory, content is stored as follows:

- **IndexCache** directory: Stores only the index databases

- New index log cache directory: Stores the index action logs and other non-essential index data

> 🚩 **Important**
>
> During this procedure, all backup jobs that use the index are automatically suspended.

Before You Begin

- If the new index log cache directory will reside on the same volume as the **IndexCache** directory, verify that the volume has enough free space to hold two complete copies of the index action logs. This amount of free space is required because, when you change the location of the index log cache directory, the system copies the index action logs from the **IndexCache** directory to the new index log cache directory.

- When you change the location of the index log cache directory, note the following:

  - Use a file system that is dedicated to index data, so that non-index data does not consume index capacity.

  - Do not place the index log cache directory on a compressed drive.

  - Do not place the index log cache directory directly under the *software_installation_directory*.

  - The index log cache directory path must meet the following requirements:

    - The path cannot contain more than 75 characters.

    - The path cannot contain special characters.

    - The path cannot contain Unicode characters.

- The path cannot contain the word "temp". For example, the path cannot be **C:\Indexlogcache_temp**.

  - Do not place the index log cache directory on the CommServe computer, unless you have only one MediaAgent and that MediaAgent is located on the CommServe computer.

  - For UNIX, do not specify **root** as the index log cache directory.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click *MediaAgent_name*, and then select **Properties > Catalog**.

   The current location of the index log cache appears in **Index Log Directory**.

3. Select **Use alternate path for Index Log**.

4. Specify the new location for the index log cache directory by either selecting an existing location or creating and then selecting a new folder.

   > ⚑ **Important**
   >
   > The length of the complete path to the index log cache directory, including the name of the directory itself, cannot contain more than 75 characters.

5. Click **OK**.

What to Do Next

- The system copies the log cache directories and files to the newly specified index log cache directory, and then directs the system to write all subsequent log cache files to the new directory. To see the status of the job, look for a Catalog Migration job in the **Job Controller** tab of the Commcell Console.

- The system does not delete the contents of the original index log cache directories and files after copying them to the newly specified directory. Therefore, if desired, you can manually delete the original index log cache directories and files, in order to free up the disk space that it originally occupied.

Secondary Index Server (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Secondary index server automatically creates a copy of an index onto another MediaAgent, called a secondary MediaAgent, which is usually physically separate from the MediaAgent on which the primary index was created. Having a copy of an index ensures that it remains available if the primary index gets erased during a cleanup operation. Each secondary index server can support multiple MediaAgents.

This feature is useful for setups that would otherwise rely on tape recalls when a primary index is no longer available (for example, it was aged off or otherwise deleted from the primary MediaAgent).

Requirements

Implementing secondary index server requires a MediaAgent, which in most cases will be a separate MediaAgent, to hold a copy of the primary index. The secondary MediaAgent should have sufficient storage space in its index cache directory to store indexes for all of the MediaAgents for which it serves as a secondary index server. If the secondary MediaAgent is also serving as a primary MediaAgent for clients of its own, it should have additional sufficient storage space to act as a MediaAgent.

Examples

The following are secondary index server examples:

- MediaAgents MA1 and MA2 perform backups for clients. Each MediaAgent index directory has 500 GB of storage space.

- MediaAgent MA3 performs backups for clients, and requires 500 GB for its own indexes.

- If MA3 is deployed as the secondary index server for MA1 and MA2, then MA3 should have 1.5 TB total space allocated to its index directory.

Operational Information

The following is operational information related to secondary index server:

- During a backup job, an index is created on the primary index server MediaAgent. This MediaAgent copies the completed index to the secondary index server MediaAgent every 30 minutes in the background.

- An index restore operation automatically copies the restored index to the secondary MediaAgent.

- During browse, find, or restore operations, if the required index is not present on the primary MediaAgent, the copy of the index is automatically downloaded from the secondary index server.

- Indexes present on the primary MediaAgent at the time that the secondary index server feature is enabled are not uploaded to the secondary index server. Jobs that are run after the secondary index server feature is enabled will upload their indexes to the secondary index server.

- If the client name of the secondary index server MediaAgent is changed (via the **Client Properties** dialog box for the secondary MediaAgent), the sSECONDARYINDEXSERVERNAME additional setting on each primary MediaAgent that uses that secondary MediaAgent must be updated with the new name, and the MediaAgent **Services** on those primary MediaAgents must be restarted.

Retention and Cleanup

Index copies are saved in the **CatalogServer** folder, which is in the index cache directory. To ensure availability, the secondary copy of an index is subject to the following retention rules:

- Secondary indexes are not subject to *event-based* cleanup operations, but *scheduled* cleanups are performed on them. Aging for each index is determined by the retention rules set on the secondary MediaAgent. See [Index Directory Cleanup](#).

- Setting a longer retention time on the secondary MediaAgent ensures that secondary indexes are retained longer than primary indexes.

Configuration

📅 Updated Monday, October 21, 2024

Configuration Settings

A secondary index server is configured through the following two additional settings:

- The first setting, bISSECONDARYINDEXSERVER, is added to the MediaAgent that hosts the copy of the index (that is, the secondary index server).

- The second setting, sSECONDARYINDEXSERVERNAME, which is added to the primary index server MediaAgent, identifies the secondary index server MediaAgent.

These two additional settings use the following parameters:

Setting Name	Platform	Description	Category	Type	Value
bISSECONDARYINDEXSERVER	Secondary MediaAgent	Makes the MediaAgent a Secondary Index Server.	MediaAgent	INTEGER	1
sSECONDARYINDEXSERVERNAME	Primary MediaAgent	The name of the secondary MediaAgent to which each index is copied after being created on the primary MediaAgent.	MediaAgent	STRING	The hostname of the secondary MediaAgent

Procedure

1. Add the first setting, bISSECONDARYINDEXSERVER, to the secondary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

2. Add the second setting, sSECONDARYINDEXSERVERNAME, to the primary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

3. On the primary index server MediaAgent, restart the **Commvault Media Mount Manager** service.

Secondary Index Server - FAQ

📅 Updated Monday, October 21, 2024

Does a backup job fail if the MediaAgent cannot access the secondary index server?

No, the backup does not fail. The index is copied to the secondary index server when the secondary MediaAgent becomes available again.

Can a MediaAgent use itself as a secondary index server?

Yes, but this removes some of the advantage of having a secondary copy. For example, the MediaAgent host computer may experience a hardware failure. If both copies of the index are on that one computer, both copies may be temporarily unavailable or even permanently lost. Also, having the index copied to a separate MediaAgent means that it is subject to a different (normally longer) retention policy, giving more opportunity for recovery if needed.

Can the primary and secondary MediaAgents be hosted on different operating systems?

Yes. For example, a primary MediaAgent can be hosted on a Windows computer while its designated secondary MediaAgent is hosted on a UNIX computer.

Transitioning from a Shared Cache to a Local Index Cache (Indexing Version 1)

📅 Updated Monday, October 21, 2024

If you want to upgrade to Version 11, but currently have a shared index cache arrangement configured (that is, an index cache server or index cache using network share), then you must transition to a local index cache.

Based on your environment and operational considerations, you can transition to a local index cache using one of three methods.

Before You Begin

1. Verify that the computer on which you wish to locate an index cache has sufficient internal hard disk space of the type required to accommodate the cache (see Index Cache: Planning).

2. Choose one of the following three transition methods that works best for your transition case:

   - **Method 1**: Set up a MediaAgent as a secondary index server, and then copy the shared index cache contents to the secondary index server.

     Operation: As each job that requires a prior index runs, the prior index is restored from the secondary index server. New indexes are written to the local index cache directory, and a copy is uploaded to the secondary index server.

     Considerations: This method is best suited to most transition cases, and is especially recommended if you use tape as your primary backup medium.

   - **Method 2**: Configure a local index cache directory on each MediaAgent. Do not copy any data to it when you set it up.

     Operation: Full backups create a new index in the local index cache directory. Incremental backup jobs that require a prior index restore it from the former shared index cache location, and then save it to the local index cache. Eventually, the old shared cache is not needed.

     Considerations: This method may not be suitable if you are using tape for primary backup storage (because of tape restore delay), and is not suitable if those backup tapes are being exported to an offsite location.

   - **Method 3**: Copy the entire contents of the shared index cache to each MediaAgent that had been using the share.

     Operation: Full backups create a new index in the local index cache directory. As an incremental backup job runs, the prior index is restored from the local disk. As index cache data ages out, disk space is recovered for MediaAgents no longer being supported by the cache, so that over

time, the space used on the disk is reduced to only that required for the MediaAgent hosting the local index cache directory.

Considerations: This method requires that all MediaAgents initially have sufficient available local disk space to hold all shared cache data for all MediaAgents that had been using the share.

Method 1: Copy Index Cache Contents to Secondary Index Server

Use this method to copy the existing index cache contents to a secondary index server.

1. If you have not already set up a secondary index server for your operation, do that now. See [Secondary Index Server: Configuration](#).

2. Allow all running backup jobs to complete, and then stop all Commvault services on the MediaAgent that is hosting the index cache sharing arrangement.

3. Using available operating system tools, copy the index cache data from its old location to its new location on the secondary index server, as follows:

   a. If the old location of the index cache was a network share, create a folder named **CatalogServer** on the secondary index server under its *software_installation_directory*/**IndexCache/** folder, and then copy the *index_cache_directory*/**CV_Index** folder from the network share to that new **CatalogServer** folder. The resulting path on the secondary index server will be *software_installation_directory*/**IndexCache/CatalogServer/CV_Index**, with **CV_Index** containing the index data from the old network share.

   b. If the old location was an index cache server, copy the contents of the old shared index cache folder to the *software_installation_directory*/**IndexCache/** folder on the secondary index server. See [Data to Copy from the Share](#), below.

4. If the MediaAgent that you stopped services on in Step 2, above, is used for other purposes, restart the services on it.

Method 2: Configure Local Index Cache on Each MediaAgent

Use this method to configure an index cache directory on a local disk on each MediaAgent.

For each MediaAgent, perform the following steps:

1. From the CommCell Console, expand **Storage Resources > MediaAgents**.

2. Right-click the MediaAgent, and then click **Properties**.

3. Click the **Catalog** tab.

4. Click **Browse**, navigate to the local index cache folder, and then click **OK**.

Method 3: Copy Index Cache Contents to MediaAgent Local Disk

Use this method to set up a local index cache directory on each MediaAgent, and then copy all of the contents of the existing shared index cache to all of the MediaAgents.

1. Allow all running backup jobs to complete, and then stop all Commvault services on the MediaAgent that is hosting the index cache sharing arrangement.

2. Configure the new index cache directory as follows:

   a. In the CommCell Console, expand **Storage Resources > MediaAgents**.

   b. Right-click the MediaAgent where you will be placing the local index cache, and then click **Properties**.

   c. Click the **Catalog** tab.

   d. Click **Browse**, navigate to the local index cache folder, and then click **OK**.

3. Using available operating system tools, copy the data from the old shared index cache directory (network share or cache server) to the directory you just configured. See [Data to Copy from the Share](#), below.

4. If the MediaAgent that you stopped services on in Step 1, above, is used for other purposes, restart the services.

Data to Copy from the Share

The folders in the shared index cache directory that contain the index data to copy to your secondary index server include the following:

- **CV_ErasedItems**

- **CV_FcsIndex**

- **CV_Index**

- **CV_Opt1**

- **CV_SnapMetadata**

- **CatalogServer**

Copy only the folders (and their contents) that you find in the shared index cache directory. Do not copy any files.

> 🚩 **Note**
>
> Depending on their configuration, most MediaAgents will have only some of the folders named above, not all of them.

Change Index Cache Configuration Workflow (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The Change Index Cache Configuration workflow allows you to change the location and retention properties for index caches on multiple MediaAgents.

Before You Begin

- The Commvault Workflow solution must be deployed in your CommCell environment. Typically the Workflow Engine is installed with the CommServe software. If you need to install the Workflow Engine separately, see [Installing the Workflow Engine](#).

- Download the Change Index Cache Configuration workflow from the Commvault Store. See [Download Workflows from the Commvault Store](#).

Procedure

> 🚩 **Important**
>
> While the update index cache path process (see Step 5b, below) is running, all backup jobs that use the index are automatically suspended.

1. In the CommCell Browser, open **Workflows**.

2. In the **Workflows** tab, right-click **Change Index Cache Settings**, point to **All Tasks**, and then click **Execute**.

3. In the **ChangeIndexCacheConfig** dialog, click the **Run workflow on** list, and then select the Workflow Engine that you want to use to perform the workflow.

4. Select the **MA Client Group** or the **MA Client Name** to run the workflow on.

5. Configure the workflow for one or more MediaAgents as follows:

   a. Select the **Update Index Cache Retention Properties** checkbox (for Indexing Version 1 only), and then enter the following:

      i. **Retain index for (Days)**: When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

ii. **Generate alerts when free space falls below (in GB)**: If the amount of free space in the index cache falls below this parameter (default = 50 GB), the system sends alerts to the administrator email account. For more information on this predefined alert, see [Disk space low on MediaAgent](#).

iii. **Take the Index offline when free space falls below n GB:** This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10 GB), the index cache is taken offline and event-driven cleanup begins. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

iv. **Cleanup until free space is at least:** When an event-driven cleanup runs, the system will check to see if the percentage of free space remaining is greater than or equal to this parameter. If it's not, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

b. Select the **Update Index Cache Path** checkbox, and then enter the new index cache path in the **New Index Cache Path** field.

c. In the **Number of Parallel Upgrades**, enter the maximum number of clients that you want to allow the workflow to process simultaneously. You can enter a value from 1 to 20.

6. Click **OK** to begin the workflow job.

The **Change Index Cache Configuration** job appears in the **Job Controller** tab.

Index Cache Configuration (Indexing Version 1)

Enabling or Disabling Index Cache Access (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can configure whether access to the index cache on a MediaAgent is enabled or disabled. Disabling access to the index cache will make the index offline and unavailable for browse operations on associated subclients.

Procedure

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. Click the **Catalog** tab in the **MediaAgent Properties** dialog box.

4. Select or deselect the **Enable this Access Path** check box to enable or disable access to the index cache. If you disable access to the index cache, you can optionally enter details or a reason in the **Offline Reason** field.

5. Click the **OK** button.

Index Retention Parameters (Indexing Version 1)

📅 Updated Monday, October 21, 2024

After being backed up, a subclient's index and log files are kept in the MediaAgent's index cache for a set number of days, which is defined by an indexing retention parameter called **Retain index for n days** (the default setting for this parameter is 15 days).

However, if the index cache is low on free space, the system may override the **Retain index for n days** retention parameter and delete the index files immediately. This form of cleanup, called an event-driven cleanup, can be configured by additional retention parameters described below. For more information about cleanup processes, including event-driven cleanup, see [Index Cache Directory Cleanup](#).

Procedure

> 🚩 **Note**
>
> You can change the retention properties for index caches on multiple MediaAgents by [running the Change Index Cache Configuration workflow](#).

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent* > **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, change the value of the **Retain index for n days** parameter as desired. When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

4. Change additional event-driven retention parameters as desired. These settings trigger the event-driven cleanup based on the amount of space allocated to the index cache and the amount of that allocated space that remains available, either as a percentage or an actual quantity. These settings are shown below.

   > 🚩 **Note**
   >
   > Statistics about the current space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory) are shown at the bottom of the **Catalog** tab of the **MediaAgent Properties** dialog box. For a full description of these statistics, see [Viewing Index Cache Directory Usage Statistics](#).

Generate alerts when free space falls below n GB: If the amount of free space in the index cache falls below this parameter (default = 50GB), the system sends alerts to the administrator email account. For more information, see the predefined alert "Disk space low on MediaAgent" in [Alerts and Notifications - Predefined Alerts](#).

> 🚩 **Note**
>
> If you want to set this parameter to 10 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 10 GB or less in the **MediaAgent Properties** dialog box.

Take the Index offline when free space falls below n GB: This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10GB), the system takes the index cache offline and begins event-driven cleanup. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

> 🚩 **Note**
>
> If you want to set this parameter to 1 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 1 GB or less in the **MediaAgent Properties** dialog box.

Cleanup until free space is at least: During an event-driven cleanup, the system checks to see if the percentage of free space remaining is greater than or equal to this parameter. If the percentage of free space remaining is less than this parameter, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

5. Click **OK**.

Viewing Index Cache Offline Reason (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

If the index cache is offline, you can view the reason for the issue.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the reason in the **Offline Reason** field.

4. Click the **OK** button.

Viewing Index Cache Usage Statistics (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can view statistics about the current disk space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory).

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the **Index Directory Space** pie chart and statistics, which are defined as follows:

   Total Size: MB/GB: The total disk space (in MB or GB) that is available in the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

   Index: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Other Data: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by data other than index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Free Space: MB/GB (%): Free disk space (in MB or GB) available in the index cache directory. The number in parentheses shows the free disk space as a percentage of the **Total** disk space of the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

4. Click the **OK** button.

Enabling or Disabling Index Cache Access (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can configure whether access to the index cache on a MediaAgent is enabled or disabled. Disabling access to the index cache will make the index offline and unavailable for browse operations on associated subclients.

Procedure

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. Click the **Catalog** tab in the **MediaAgent Properties** dialog box.

4. Select or deselect the **Enable this Access Path** check box to enable or disable access to the index cache. If you disable access to the index cache, you can optionally enter details or a reason in the **Offline Reason** field.

5. Click the **OK** button.

Index Retention Parameters (Indexing Version 1)

📅 Updated Monday, October 21, 2024

After being backed up, a subclient's index and log files are kept in the MediaAgent's index cache for a set number of days, which is defined by an indexing retention parameter called **Retain index for n days** (the default setting for this parameter is 15 days).

However, if the index cache is low on free space, the system may override the **Retain index for n days** retention parameter and delete the index files immediately. This form of cleanup, called an event-driven cleanup, can be configured by additional retention parameters described below. For more information about cleanup processes, including event-driven cleanup, see [Index Cache Directory Cleanup](#).

Procedure

> 🚩 **Note**
>
> You can change the retention properties for index caches on multiple MediaAgents by [running the Change Index Cache Configuration workflow](#).

1. From the CommCell Browser, expand **Storage Resources** > **MediaAgents**.

2. Right-click the *MediaAgent* > **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, change the value of the **Retain index for n days** parameter as desired. When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

4. Change additional event-driven retention parameters as desired. These settings trigger the event-driven cleanup based on the amount of space allocated to the index cache and the amount of that allocated space that remains available, either as a percentage or an actual quantity. These settings are shown below.

   > 🚩 **Note**
   >
   > Statistics about the current space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory) are shown at the bottom of the **Catalog** tab of the **MediaAgent Properties** dialog box. For a full description of these statistics, see [Viewing Index Cache Directory Usage Statistics](#).

Generate alerts when free space falls below n GB: If the amount of free space in the index cache falls below this parameter (default = 50GB), the system sends alerts to the administrator email account. For more information, see the predefined alert "Disk space low on MediaAgent" in [Alerts and Notifications - Predefined Alerts](#).

> 🚩 **Note**
>
> If you want to set this parameter to 10 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 10 GB or less in the **MediaAgent Properties** dialog box.

Take the Index offline when free space falls below n GB: This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10GB), the system takes the index cache offline and begins event-driven cleanup. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

> 🚩 **Note**
>
> If you want to set this parameter to 1 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 1 GB or less in the **MediaAgent Properties** dialog box.

Cleanup until free space is at least: During an event-driven cleanup, the system checks to see if the percentage of free space remaining is greater than or equal to this parameter. If the percentage of free space remaining is less than this parameter, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

5. Click **OK**.

Viewing Index Cache Offline Reason (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

If the index cache is offline, you can view the reason for the issue.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the reason in the **Offline Reason** field.

4. Click the **OK** button.

Viewing Index Cache Usage Statistics (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can view statistics about the current disk space usage of the index cache (for example, total index cache directory size, disk space used by index files, disk space used by other files, and free space in the directory).

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent name*, and then click **Properties**.

3. On the **Catalog** tab of the **MediaAgent Properties** dialog box, view the **Index Directory Space** pie chart and statistics, which are defined as follows:

   Total Size: MB/GB: The total disk space (in MB or GB) that is available in the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

   Index: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Other Data: MB/GB (%): Index cache directory disk space (in MB or GB) currently used by data other than index files. The number in parentheses shows the usage as a percentage of the **Total** disk space of the index cache directory.

   Free Space: MB/GB (%): Free disk space (in MB or GB) available in the index cache directory. The number in parentheses shows the free disk space as a percentage of the **Total** disk space of the index cache directory. (Note that when the [index cache directory is changed](#), it may take up to 30 minutes for the new **Total Size** value to reflect the size of the new index cache directory.)

4. Click the **OK** button.

Index Cache Storage Forecasting (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The index cache storage forecasting feature predicts when index cache storage in a CommCell environment might become full. To perform this forecasting, the system analyzes historical data use and available storage space for the index caches, and accounts for future data growth within the CommCell environment.

If the system predicts that an index cache's storage might become full within the next 30 days, or if the storage is currently full, then the system sends you an email alert. You can enable the alert and modify alert settings through the CommCell dashboard. For more information, see the following topics:

- [Enabling Storage Forecasting Alerts for Worldwide Dashboard on Web Console](#)

- [Enabling Storage Forecasting Alerts for the CommCell Dashboard on the Web Console](#)

- [Enabling Alerts for the CommCell Dashboard on the Cloud Services Website](#)

- [Enabling Alerts for Company Dashboard on Cloud Services](#)

- [Enabling Storage Forecasting Alerts for CommCell Group Dashboard on Web Console](#)

- [Configuring Storage Forecasting Alert Settings](#)

You can information about index cache in a CommCell environment, including disk usage statistics, status of indexes, and forecasting thresholds, by accessing the CommCell's [Index Cache Location Report](#).

Changing the Location of the Index Cache Directory (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory.

> 🚩 **Note**
>
> - To change the location of the index cache directory for restore-only or deconfigured MediaAgents, see [Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents.](#)
>
> - You can change the location of index caches on multiple MediaAgents by running the Change Index Cache Configuration workflow. For more information, see [Change Index Cache Configuration Workflow](#).

Before You Begin

- Confirm that the hardware requirements have been addressed for the new index cache directory. For more information, see [Indexing Planning](#).

- When changing the location of the index cache directory, the system copies the contents of the original index cache directory to the new index cache directory. If the new index cache directory will reside on the same volume as the original index cache directory, ensure that the volume has enough free space to hold two complete copies of the index cache directory's contents.

- Review the index cache directory requirements. For more information, see [Index Cache Directory Requirements](#).

Procedure

> 🚩 **Important**
>
> During this procedure, all backup jobs that use the index are automatically suspended.

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click *MediaAgent_name* > **Properties > Catalog**.

The current location of the index cache appears in **Index Directory**.

3. To specify a new index cache directory, follow either substep a or substep b, as follows:

> 🚩 **Important**
>
> The length of the complete path to the index cache directory, including the name of the directory itself, cannot be more than 75 characters total.

    a. **To select a folder that already exists:** Follow either substep i. or substep ii, below:

        i. Type an existing path name in **Index Directory**. Skip to Step 4, below.

        ii. Click the **Browse** button, browse to and click an existing folder, and then click the **OK** button. Skip to Step 4, below.

    b. **To create a new folder and then select it:** Click the **Browse** button, browse to and click an existing folder under which you wish to create the new folder, click the **New Folder...** button, enter a name for the new folder, and then click the **OK** button twice. Skip to Step 4, below.

4. Click **OK**.

5. The system will copy the contents of the original index cache directory to the newly specified index cache directory, and then direct the system to write all subsequent index entries to the new directory. To see the status of the job, look for a Catalog Migration job in the **Job Controller** tab of the Commcell Console.

6. The system does not delete the contents of the original index cache directory after copying them to the newly specified index cache directory. Therefore, if desired, you can manually delete the original index cache directory and its contents, in order to free up the disk space that it originally occupied.

Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory for restore-only or deconfigured MediaAgents.

Procedure

- Run the following command on the MediaAgent:

```
CatalogMigration.exe -vm <your instance> -cn <MA client name> -source <current
index cache path> -target <new index cache path>
```

Index Cache Directory Requirements

📅 Updated Monday, October 21, 2024

When changing the location of the index cache directory, note the following requirements.

- Use a file system dedicated to index data, so that non-index data does not consume index capacity.

- Estimate your index cache space requirements with a sufficient margin of safety by allocating more space rather than less. If you are maintaining backward-compatible content indexes generated by a previous software version, the index cache directory may require more space. For more information, see [Indexing Version 1: System and Hardware Requirements](#).

- For best performance, locate the index cache directory on a solid state drive (SSD).

- Do not locate the index cache directory on a compressed drive.

- For Windows, note the following:

  - Do not place the index cache directory directly under the root directory of the drive.

  - Do not place the index cache directory directly under the *software_installation_directory*.

- For UNIX, do not specify **root** as the index cache directory.

- When entering the index cache directory path, note the following:

  - The path may not exceed a total of 75 characters.

  - The path may not contain special characters.

  - The path may not contain Unicode characters.

  - The path may not contain the word "temp" (for example, **c:\Indexcache_temp**)

- Do not locate the index cache directory on the CommServe computer, unless you only have one MediaAgent and that MediaAgent is located on that computer.

Changing the Location of the Index Cache Directory for Restore-Only or Deconfigured MediaAgents

📅 Updated Monday, October 21, 2024

You can change the location of the index cache directory for restore-only or deconfigured MediaAgents.

Procedure

- Run the following command on the MediaAgent:

```
CatalogMigration.exe -vm <your instance> -cn <MA client name> -source <current index cache path> -target <new index cache path>
```

Index Cache Directory Requirements

📅 Updated Monday, October 21, 2024

When changing the location of the index cache directory, note the following requirements.

- Use a file system dedicated to index data, so that non-index data does not consume index capacity.

- Estimate your index cache space requirements with a sufficient margin of safety by allocating more space rather than less. If you are maintaining backward-compatible content indexes generated by a previous software version, the index cache directory may require more space. For more information, see [Indexing Version 1: System and Hardware Requirements](#).

- For best performance, locate the index cache directory on a solid state drive (SSD).

- Do not locate the index cache directory on a compressed drive.

- For Windows, note the following:

    - Do not place the index cache directory directly under the root directory of the drive.

    - Do not place the index cache directory directly under the *software_installation_directory*.

- For UNIX, do not specify **root** as the index cache directory.

- When entering the index cache directory path, note the following:

    - The path may not exceed a total of 75 characters.

    - The path may not contain special characters.

    - The path may not contain Unicode characters.

    - The path may not contain the word "temp" (for example, **c:\Indexcache_temp**)

- Do not locate the index cache directory on the CommServe computer, unless you only have one MediaAgent and that MediaAgent is located on that computer.

Changing the Location of the Index Log Cache Directory (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

You can change the location of the index log cache directory on a MediaAgent, in order to help distribute the MediaAgent's disk resources.

By default, the **IndexCache** directory stores all index databases and all index action logs.

After you change the location of the index log cache directory, content is stored as follows:

- **IndexCache** directory: Stores only the index databases

- New index log cache directory: Stores the index action logs and other non-essential index data

> 🚩 **Important**
>
> During this procedure, all backup jobs that use the index are automatically suspended.

Before You Begin

- If the new index log cache directory will reside on the same volume as the **IndexCache** directory, verify that the volume has enough free space to hold two complete copies of the index action logs. This amount of free space is required because, when you change the location of the index log cache directory, the system copies the index action logs from the **IndexCache** directory to the new index log cache directory.

- When you change the location of the index log cache directory, note the following:

  - Use a file system that is dedicated to index data, so that non-index data does not consume index capacity.

  - Do not place the index log cache directory on a compressed drive.

  - Do not place the index log cache directory directly under the *software_installation_directory*.

  - The index log cache directory path must meet the following requirements:

    - The path cannot contain more than 75 characters.

    - The path cannot contain special characters.

    - The path cannot contain Unicode characters.

- The path cannot contain the word "temp". For example, the path cannot be **C:\Indexlogcache_temp**.

- Do not place the index log cache directory on the CommServe computer, unless you have only one MediaAgent and that MediaAgent is located on the CommServe computer.

- For UNIX, do not specify **root** as the index log cache directory.

Procedure

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click *MediaAgent_name*, and then select **Properties > Catalog**.

   The current location of the index log cache appears in **Index Log Directory**.

3. Select **Use alternate path for Index Log**.

4. Specify the new location for the index log cache directory by either selecting an existing location or creating and then selecting a new folder.

   > ⚑ **Important**
   >
   > The length of the complete path to the index log cache directory, including the name of the directory itself, cannot contain more than 75 characters.

5. Click **OK**.

What to Do Next

- The system copies the log cache directories and files to the newly specified index log cache directory, and then directs the system to write all subsequent log cache files to the new directory. To see the status of the job, look for a Catalog Migration job in the **Job Controller** tab of the Commcell Console.

- The system does not delete the contents of the original index log cache directories and files after copying them to the newly specified directory. Therefore, if desired, you can manually delete the original index log cache directories and files, in order to free up the disk space that it originally occupied.

Secondary Index Server (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Secondary index server automatically creates a copy of an index onto another MediaAgent, called a secondary MediaAgent, which is usually physically separate from the MediaAgent on which the primary index was created. Having a copy of an index ensures that it remains available if the primary index gets erased during a cleanup operation. Each secondary index server can support multiple MediaAgents.

This feature is useful for setups that would otherwise rely on tape recalls when a primary index is no longer available (for example, it was aged off or otherwise deleted from the primary MediaAgent).

Requirements

Implementing secondary index server requires a MediaAgent, which in most cases will be a separate MediaAgent, to hold a copy of the primary index. The secondary MediaAgent should have sufficient storage space in its index cache directory to store indexes for all of the MediaAgents for which it serves as a secondary index server. If the secondary MediaAgent is also serving as a primary MediaAgent for clients of its own, it should have additional sufficient storage space to act as a MediaAgent.

Examples

The following are secondary index server examples:

- MediaAgents MA1 and MA2 perform backups for clients. Each MediaAgent index directory has 500 GB of storage space.

- MediaAgent MA3 performs backups for clients, and requires 500 GB for its own indexes.

- If MA3 is deployed as the secondary index server for MA1 and MA2, then MA3 should have 1.5 TB total space allocated to its index directory.

Operational Information

The following is operational information related to secondary index server:

- During a backup job, an index is created on the primary index server MediaAgent. This MediaAgent copies the completed index to the secondary index server MediaAgent every 30 minutes in the background.

- An index restore operation automatically copies the restored index to the secondary MediaAgent.

- During browse, find, or restore operations, if the required index is not present on the primary MediaAgent, the copy of the index is automatically downloaded from the secondary index server.

- Indexes present on the primary MediaAgent at the time that the secondary index server feature is enabled are not uploaded to the secondary index server. Jobs that are run after the secondary index server feature is enabled will upload their indexes to the secondary index server.

- If the client name of the secondary index server MediaAgent is changed (via the **Client Properties** dialog box for the secondary MediaAgent), the sSECONDARYINDEXSERVERNAME additional setting on each primary MediaAgent that uses that secondary MediaAgent must be updated with the new name, and the MediaAgent **Services** on those primary MediaAgents must be restarted.

Retention and Cleanup

Index copies are saved in the **CatalogServer** folder, which is in the index cache directory. To ensure availability, the secondary copy of an index is subject to the following retention rules:

- Secondary indexes are not subject to *event-based* cleanup operations, but *scheduled* cleanups are performed on them. Aging for each index is determined by the retention rules set on the secondary MediaAgent. See [Index Directory Cleanup](#).

- Setting a longer retention time on the secondary MediaAgent ensures that secondary indexes are retained longer than primary indexes.

Configuration

📅 Updated Monday, October 21, 2024

Configuration Settings

A secondary index server is configured through the following two additional settings:

- The first setting, bISSECONDARYINDEXSERVER, is added to the MediaAgent that hosts the copy of the index (that is, the secondary index server).

- The second setting, sSECONDARYINDEXSERVERNAME, which is added to the primary index server MediaAgent, identifies the secondary index server MediaAgent.

These two additional settings use the following parameters:

Setting Name	Platform	Description	Category	Type	Value
bISSECONDARYINDEXSERVER	Secondary MediaAgent	Makes the MediaAgent a Secondary Index Server.	MediaAgent	INTEGER	1
sSECONDARYINDEXSERVERNAME	Primary MediaAgent	The name of the secondary MediaAgent to which each index is copied after being created on the primary MediaAgent.	MediaAgent	STRING	The hostname of the secondary MediaAgent

Procedure

1. Add the first setting, bISSECONDARYINDEXSERVER, to the secondary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

2. Add the second setting, sSECONDARYINDEXSERVERNAME, to the primary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

3. On the primary index server MediaAgent, restart the **Commvault Media Mount Manager** service.

Secondary Index Server - FAQ

📅 Updated Monday, October 21, 2024

Does a backup job fail if the MediaAgent cannot access the secondary index server?

No, the backup does not fail. The index is copied to the secondary index server when the secondary MediaAgent becomes available again.

Can a MediaAgent use itself as a secondary index server?

Yes, but this removes some of the advantage of having a secondary copy. For example, the MediaAgent host computer may experience a hardware failure. If both copies of the index are on that one computer, both copies may be temporarily unavailable or even permanently lost. Also, having the index copied to a separate MediaAgent means that it is subject to a different (normally longer) retention policy, giving more opportunity for recovery if needed.

Can the primary and secondary MediaAgents be hosted on different operating systems?

Yes. For example, a primary MediaAgent can be hosted on a Windows computer while its designated secondary MediaAgent is hosted on a UNIX computer.

Configuration

📅 Updated Monday, October 21, 2024

Configuration Settings

A secondary index server is configured through the following two additional settings:

- The first setting, bISSECONDARYINDEXSERVER, is added to the MediaAgent that hosts the copy of the index (that is, the secondary index server).

- The second setting, sSECONDARYINDEXSERVERNAME, which is added to the primary index server MediaAgent, identifies the secondary index server MediaAgent.

These two additional settings use the following parameters:

Setting Name	Platform	Description	Category	Type	Value
bISSECONDARYINDEXSERVER	Secondary MediaAgent	Makes the MediaAgent a Secondary Index Server.	MediaAgent	INTEGER	1
sSECONDARYINDEXSERVERNAME	Primary MediaAgent	The name of the secondary MediaAgent to which each index is copied after being created on the primary MediaAgent.	MediaAgent	STRING	The hostname of the secondary MediaAgent

Procedure

1. Add the first setting, bISSECONDARYINDEXSERVER, to the secondary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

2. Add the second setting, sSECONDARYINDEXSERVERNAME, to the primary index server MediaAgent by following the steps described in Adding or Modifying Additional Settings from the CommCell Console.

3. On the primary index server MediaAgent, restart the **Commvault Media Mount Manager** service.

Secondary Index Server - FAQ

📅 Updated Monday, October 21, 2024

Does a backup job fail if the MediaAgent cannot access the secondary index server?

No, the backup does not fail. The index is copied to the secondary index server when the secondary MediaAgent becomes available again.

Can a MediaAgent use itself as a secondary index server?

Yes, but this removes some of the advantage of having a secondary copy. For example, the MediaAgent host computer may experience a hardware failure. If both copies of the index are on that one computer, both copies may be temporarily unavailable or even permanently lost. Also, having the index copied to a separate MediaAgent means that it is subject to a different (normally longer) retention policy, giving more opportunity for recovery if needed.

Can the primary and secondary MediaAgents be hosted on different operating systems?

Yes. For example, a primary MediaAgent can be hosted on a Windows computer while its designated secondary MediaAgent is hosted on a UNIX computer.

Transitioning from a Shared Cache to a Local Index Cache (Indexing Version 1)

📅 Updated Monday, October 21, 2024

If you want to upgrade to Version 11, but currently have a shared index cache arrangement configured (that is, an index cache server or index cache using network share), then you must transition to a local index cache.

Based on your environment and operational considerations, you can transition to a local index cache using one of three methods.

Before You Begin

1. Verify that the computer on which you wish to locate an index cache has sufficient internal hard disk space of the type required to accommodate the cache (see [Index Cache: Planning](#)).

2. Choose one of the following three transition methods that works best for your transition case:

   - [Method 1](#): Set up a MediaAgent as a secondary index server, and then copy the shared index cache contents to the secondary index server.

     Operation: As each job that requires a prior index runs, the prior index is restored from the secondary index server. New indexes are written to the local index cache directory, and a copy is uploaded to the secondary index server.

     Considerations: This method is best suited to most transition cases, and is especially recommended if you use tape as your primary backup medium.

   - [Method 2](#): Configure a local index cache directory on each MediaAgent. Do not copy any data to it when you set it up.

     Operation: Full backups create a new index in the local index cache directory. Incremental backup jobs that require a prior index restore it from the former shared index cache location, and then save it to the local index cache. Eventually, the old shared cache is not needed.

     Considerations: This method may not be suitable if you are using tape for primary backup storage (because of tape restore delay), and is not suitable if those backup tapes are being exported to an offsite location.

   - [Method 3](#): Copy the entire contents of the shared index cache to each MediaAgent that had been using the share.

     Operation: Full backups create a new index in the local index cache directory. As an incremental backup job runs, the prior index is restored from the local disk. As index cache data ages out, disk space is recovered for MediaAgents no longer being supported by the cache, so that over

time, the space used on the disk is reduced to only that required for the MediaAgent hosting the local index cache directory.

Considerations: This method requires that all MediaAgents initially have sufficient available local disk space to hold all shared cache data for all MediaAgents that had been using the share.

Method 1: Copy Index Cache Contents to Secondary Index Server

Use this method to copy the existing index cache contents to a secondary index server.

1. If you have not already set up a secondary index server for your operation, do that now. See [Secondary Index Server: Configuration](#).

2. Allow all running backup jobs to complete, and then stop all Commvault services on the MediaAgent that is hosting the index cache sharing arrangement.

3. Using available operating system tools, copy the index cache data from its old location to its new location on the secondary index server, as follows:

   a. If the old location of the index cache was a network share, create a folder named **CatalogServer** on the secondary index server under its *software_installation_directory*/**IndexCache/** folder, and then copy the *index_cache_directory*/**CV_Index** folder from the network share to that new **CatalogServer** folder. The resulting path on the secondary index server will be *software_installation_directory*/**IndexCache/CatalogServer/CV_Index**, with **CV_Index** containing the index data from the old network share.

   b. If the old location was an index cache server, copy the contents of the old shared index cache folder to the *software_installation_directory*/**IndexCache/** folder on the secondary index server. See [Data to Copy from the Share](#), below.

4. If the MediaAgent that you stopped services on in Step 2, above, is used for other purposes, restart the services on it.

Method 2: Configure Local Index Cache on Each MediaAgent

Use this method to configure an index cache directory on a local disk on each MediaAgent.

For each MediaAgent, perform the following steps:

1. From the CommCell Console, expand **Storage Resources > MediaAgents**.

2. Right-click the MediaAgent, and then click **Properties**.

3. Click the **Catalog** tab.

4. Click **Browse**, navigate to the local index cache folder, and then click **OK**.

Method 3: Copy Index Cache Contents to MediaAgent Local Disk

Use this method to set up a local index cache directory on each MediaAgent, and then copy all of the contents of the existing shared index cache to all of the MediaAgents.

1. Allow all running backup jobs to complete, and then stop all Commvault services on the MediaAgent that is hosting the index cache sharing arrangement.

2. Configure the new index cache directory as follows:

   a. In the CommCell Console, expand **Storage Resources > MediaAgents**.

   b. Right-click the MediaAgent where you will be placing the local index cache, and then click **Properties**.

   c. Click the **Catalog** tab.

   d. Click **Browse**, navigate to the local index cache folder, and then click **OK**.

3. Using available operating system tools, copy the data from the old shared index cache directory (network share or cache server) to the directory you just configured. See [Data to Copy from the Share](#), below.

4. If the MediaAgent that you stopped services on in Step 1, above, is used for other purposes, restart the services.

Data to Copy from the Share

The folders in the shared index cache directory that contain the index data to copy to your secondary index server include the following:

- **CV_ErasedItems**

- **CV_FcsIndex**

- **CV_Index**

- **CV_Opt1**

- **CV_SnapMetadata**

- **CatalogServer**

Copy only the folders (and their contents) that you find in the shared index cache directory. Do not copy any files.

> 🚩 **Note**
>
> Depending on their configuration, most MediaAgents will have only some of the folders named above, not all of them.

Change Index Cache Configuration Workflow (Indexing Version 1 and Indexing Version 2)

📅 Updated Monday, October 21, 2024

The Change Index Cache Configuration workflow allows you to change the location and retention properties for index caches on multiple MediaAgents.

Before You Begin

- The Commvault Workflow solution must be deployed in your CommCell environment. Typically the Workflow Engine is installed with the CommServe software. If you need to install the Workflow Engine separately, see [Installing the Workflow Engine](#).

- Download the Change Index Cache Configuration workflow from the Commvault Store. See [Download Workflows from the Commvault Store](#).

Procedure

> 🏳 **Important**
>
> While the update index cache path process (see Step 5b, below) is running, all backup jobs that use the index are automatically suspended.

1. In the CommCell Browser, open **Workflows**.

2. In the **Workflows** tab, right-click **Change Index Cache Settings**, point to **All Tasks**, and then click **Execute**.

3. In the **ChangeIndexCacheConfig** dialog, click the **Run workflow on** list, and then select the Workflow Engine that you want to use to perform the workflow.

4. Select the **MA Client Group** or the **MA Client Name** to run the workflow on.

5. Configure the workflow for one or more MediaAgents as follows:

   a. Select the **Update Index Cache Retention Properties** checkbox (for Indexing Version 1 only), and then enter the following:

      i. **Retain index for (Days)**: When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

ii. **Generate alerts when free space falls below (in GB)**: If the amount of free space in the index cache falls below this parameter (default = 50 GB), the system sends alerts to the administrator email account. For more information on this predefined alert, see [Disk space low on MediaAgent](#).

iii. **Take the Index offline when free space falls below n GB:** This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10 GB), the index cache is taken offline and event-driven cleanup begins. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

iv. **Cleanup until free space is at least:** When an event-driven cleanup runs, the system will check to see if the percentage of free space remaining is greater than or equal to this parameter. If it's not, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

b. Select the **Update Index Cache Path** checkbox, and then enter the new index cache path in the **New Index Cache Path** field.

c. In the **Number of Parallel Upgrades**, enter the maximum number of clients that you want to allow the workflow to process simultaneously. You can enter a value from 1 to 20.

6. Click **OK** to begin the workflow job.

The **Change Index Cache Configuration** job appears in the **Job Controller** tab.

Index Cache Cleanup (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Cleanup Process

The process of removing unneeded data from the index cache is called cleanup. The Commvault software provides an automated cleanup process and a report that lists files not deleted during normal cleanup, as well as reasons the files were not deleted.

> 🏴 **Notes**
>
> - Index cache cleanup is an automated, configurable process that is controlled by [Retention Parameters](#).
>
> - Indexes in the index cache are deleted by the Centralized Cleanup Service that runs on the MediaAgent system. Cleanups run daily (see [Scheduled Cleanup](#)), but may also run between scheduled cleanups when certain conditions are met (see [Event-Driven Cleanup](#)).
>
> - Values referenced in these sections, such as **Free Space**, are found on the **MediaAgent Properties** dialog box, on the **Catalog** tab.
>
> - For index directory sizing guidelines, see the **Index Cache Disk** entry in the Index Hardware Requirements table in [System and Hardware Requirements](#).

Scheduled Cleanup

📅 Updated Monday, October 21, 2024

Every 24 hours, the Centralized Cleanup Service runs and deletes indexes that are older than the number of days set for **Retain index for *n* days** on the **MediaAgent Properties** > **Catalog** tab.

For example, if **Retain index for *n* days** is set to 60 days, the Centralized Cleanup Service deletes indexes that are more than 60 days old.

The scheduled cleanup deletes indexes for any subclient that does not have active, running jobs, including de-configured and hard-deleted subclients. This way, index data is pruned for subclients whose data has been aged (see **Data Aging: Overview**) and can no longer be browsed.

Related Topics

- **Addressing Cleanup Issues**

Event-Driven Cleanup

📅 Updated Monday, October 21, 2024

Cleanup is performed between scheduled cleanups in the following two cases:

1. **Free Space** size falls below the **Generate alerts when free space falls below** value (default = 50GB).

   In this case, the cleanup process performs the following operations:

   a. An event message is created in the **Event Viewer**, which indicates a low disk space condition.

   b. Indexes older than the **Retain index for *n* days** setting (**default:** 15 days) are deleted until **Clean up until free space is at least *n* percent** is reached (default = 15 percent).

   c. In the event that, after removing the old indexes, the used disk space still exceeds **Clean up until free space is at least *n* percent**, the process continues by removing the least-recently-used indexes in the directory, until the **Free Space** percent becomes equal to or greater than the **Clean up until free space is at least *n* percent** setting.

2. **Free Space** size falls below the value in **Take the Index offline when free space falls below *n* GB** (default = 10GB).

   In this case, the cleanup process performs the following operations:

   a. The MediaAgent is brought offline.

   b. Indexes older than the **Retain index for *n* days** setting (default = 15 days) are deleted.

   c. If the used disk space still exceeds the percentage specified by **Clean up until free space is at least *n* percent** (**default:** 15 percent), the process removes the least-recently-used index files in the directory, until the **Free Space** becomes equal to or greater than the **Clean up until free space is at least *n* percent** setting.

   d. Within 20 minutes of the MediaAgent being taken offline, if cleanup activities have brought the disk utilization to or above the free space percent setting, the MediaAgent is brought back online. If after 20 minutes the disk utilization percent setting still has not been met, the MediaAgent is left offline, and administrative staff must manually delete data from the Index Directory (see [Correcting Cleanup Issues](#)), and then bring the MediaAgent back online manually (see [Enable or Disable a MediaAgent](#)) or wait for the next run of the scheduled job to bring it back online.

Examples

- **Preconditions**
    - **Total Size** is 300 GB

- **Retain index for *n* days** = 15 days

- **Generate alerts when free space falls below** is set to 50.0 GB

- **Take the Index offline when free space falls below *n* GB** is set to 10.0 GB

- **Clean up until free space is at least *n* percent** is set to 15 percent

- Cases

  - Indexes are found to be old

    While an event-driven cleanup is running, some index files are found to be 16 or more days old, and are deleted.

  - **Free Space** indicates 18 GB (6.00%)

    Because the amount of free space is less than 50 gigabytes, but more than 10 gigabytes, the MediaAgent places an event message into the Event Viewer and, if alerts are configured, sends an alert to the administrator. An event-driven cleanup begins. It ends when **Free Space** is 15 percent or more.

  - **Free Space** indicates 8 GB (2.67%)

    Because the amount of free space is less than 10 gigabytes, the MediaAgent goes offline and places an event message into the Event Viewer. If alerts are configured, the MediaAgent sends an alert to the administrator. An event-driven cleanup begins. Within 20 minutes, if the **Free Space** percent is 15 percent or more, the MediaAgent comes back online. If **Free Space** is still less than 15 percent, the MediaAgent stays offline, and administrative staff should perform a manual cleanup, then bring the MediaAgent back online when ready.

  - **Free Space** percent shows 9.00 percent (273 gigabytes used)

    The percentage of available disk space has fallen below **Clean up until free space is at least *n* percent**, so the MediaAgent begins deleting index files that are older than the **Retain index for *n* days** setting, until the percentage of available disk space is equal to or more than the **Clean up until** setting. If this is not sufficient, it continues by deleting least-recently-used indexes until enough space is recovered to meet the free space percentage requirement.

    In this example, at least 18 GB worth of indexes are aged out in order to cross below the 255 GB threshold dictated by the **Clean up until free space is at least *n* percent** setting.

Related Topics

- Addressing Cleanup Issues

Addressing Cleanup Issues

📅 Updated Monday, October 21, 2024

If cleanup operations driven by the retention settings do not remove enough index data to satisfy the free space requirement (the **Clean up until free space is at least _n_ percent** setting), you have the following options:

- Change the [retention parameters](#) to more accurately reflect your actual disk space usage and requirements.

- Increase the disk available to the index directory or move it to another disk (see [Moving the Index Directory](#)).

Procedure

To determine how much disk space is currently allocated and being used, and to change your retention settings (if necessary), perform the following steps:

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the _**MediaAgent_name**_ > **Properties > Catalog**.

3. Change the [retention parameters](#) settings if needed.

4. Click **OK**.

Index Cache Cleanup Report (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index files are subject to cleanup every 24 hours as described in **Scheduled Cleanup**. When this process runs, some files that were selected for deletion (based on retention settings) may not be deleted. The Index Directory Cleanup Report is a log that contains a list of these index files, along with the reasons that these files were not deleted.

> 🏴 **Note**
>
> Index files that reside in the intermediate index cache are not included in this report.

When To Use the Report

The Index Cache Cleanup Report is useful in the following cases:

- When an aged index did not get pruned or deleted during cleanup.

  For example: A job may have locked the index or the index may have been corrupted.

- To analyze the number of index files present in the MediaAgent computer.

  For example: The presence of too many index files may require aggressive cleanup activity.

Where To Find the Report

The Index Cache Cleanup Report is created on the MediaAgent computer, in the following directory:

*MediaAgent_name/index_cache/***IndexCacheCleanupReport.csv**

Output

The Index Cache Cleanup Report is saved as a CSV file. When opened in a spreadsheet application such as Microsoft Excel, the report looks like the following:

A	B	C
CV_Index\2\1\1427638248	234881274	Index was accessed recently.
CV_Index\2\1\1427724761	234881274	Index was accessed recently.
CV_Index\2\1\1427811348	234881273	Index is in use by a running job.
CV_Index\2\1\1427897725	234881274	Index was accessed recently.
CV_Index\2\1\1427983978	234881274	Index was accessed recently.
CV_Index\2\42\1427995897	234881274	Index was accessed recently.
CV_Index\2\1\1428070358	234881278	Failed to verify state of index.

The report contains the following three columns:

Column	Description
Index Directory folder	The location of an index file that was not deleted during the automatic cleanup operation.
Event ID	A numeric identifier that corresponds to the event message in the Retention Reason column. The following are common Event IDs: • 234881273: Index is in use by a running job. • 234881274: Index was accessed recently. • 234881275: Index is in use. • 234881276: Failed to open index. Check **IndexCacheCleanup.log** for more details. • 234881277: Failed to delete index. Check **IndexCacheCleanup.log** for more details. • 234881278: Failed to verify state of index.
Retention Reason	The reason why the index file was not deleted.

Disabling Automatic Generation of the Report

By default, the Index Cache Cleanup Report is automatically generated.

You can enable or disable the report by [Adding or Modifying Additional Settings from the CommCell Console](#) to the MediaAgent:

Setting Name	[disableIndexCacheCleanupReport](#)
Category	MediaAgent
Type	INTEGER

Valid Values	1 = disable the report
	0 = enable the report (default)

Scheduled Cleanup

📅 Updated Monday, October 21, 2024

Every 24 hours, the Centralized Cleanup Service runs and deletes indexes that are older than the number of days set for **Retain index for _n_ days** on the **MediaAgent Properties** > **Catalog** tab.

For example, if **Retain index for _n_ days** is set to 60 days, the Centralized Cleanup Service deletes indexes that are more than 60 days old.

The scheduled cleanup deletes indexes for any subclient that does not have active, running jobs, including de-configured and hard-deleted subclients. This way, index data is pruned for subclients whose data has been aged (see [Data Aging: Overview](#)) and can no longer be browsed.

Related Topics

- [Addressing Cleanup Issues](#)

Event-Driven Cleanup

📅 Updated Monday, October 21, 2024

Cleanup is performed between scheduled cleanups in the following two cases:

1. **Free Space** size falls below the **Generate alerts when free space falls below** value (default = 50GB).

   In this case, the cleanup process performs the following operations:

   a. An event message is created in the **Event Viewer**, which indicates a low disk space condition.

   b. Indexes older than the **Retain index for *n* days** setting (**default:** 15 days) are deleted until **Clean up until free space is at least *n* percent** is reached (default = 15 percent).

   c. In the event that, after removing the old indexes, the used disk space still exceeds **Clean up until free space is at least *n* percent**, the process continues by removing the least-recently-used indexes in the directory, until the **Free Space** percent becomes equal to or greater than the **Clean up until free space is at least *n* percent** setting.

2. **Free Space** size falls below the value in **Take the Index offline when free space falls below *n* GB** (default = 10GB).

   In this case, the cleanup process performs the following operations:

   a. The MediaAgent is brought offline.

   b. Indexes older than the **Retain index for *n* days** setting (default = 15 days) are deleted.

   c. If the used disk space still exceeds the percentage specified by **Clean up until free space is at least *n* percent** (**default:** 15 percent), the process removes the least-recently-used index files in the directory, until the **Free Space** becomes equal to or greater than the **Clean up until free spaceis at least *n* percent** setting.

   d. Within 20 minutes of the MediaAgent being taken offline, if cleanup activities have brought the disk utilization to or above the free space percent setting, the MediaAgent is brought back online. If after 20 minutes the disk utilization percent setting still has not been met, the MediaAgent is left offline, and administrative staff must manually delete data from the Index Directory (see [Correcting Cleanup Issues](#)), and then bring the MediaAgent back online manually (see [Enable or Disable a MediaAgent](#)) or wait for the next run of the scheduled job to bring it back online.

Examples

- **Preconditions**

  - **Total Size** is 300 GB

- **Retain index for *n* days** = 15 days

- **Generate alerts when free space falls below** is set to 50.0 GB

- **Take the Index offline when free space falls below *n* GB** is set to 10.0 GB

- **Clean up until free space is at least *n* percent** is set to 15 percent

- Cases

  - Indexes are found to be old

    While an event-driven cleanup is running, some index files are found to be 16 or more days old, and are deleted.

  - **Free Space** indicates 18 GB (6.00%)

    Because the amount of free space is less than 50 gigabytes, but more than 10 gigabytes, the MediaAgent places an event message into the Event Viewer and, if alerts are configured, sends an alert to the administrator. An event-driven cleanup begins. It ends when **Free Space** is 15 percent or more.

  - **Free Space** indicates 8 GB (2.67%)

    Because the amount of free space is less than 10 gigabytes, the MediaAgent goes offline and places an event message into the Event Viewer. If alerts are configured, the MediaAgent sends an alert to the administrator. An event-driven cleanup begins. Within 20 minutes, if the **Free Space** percent is 15 percent or more, the MediaAgent comes back online. If **Free Space** is still less than 15 percent, the MediaAgent stays offline, and administrative staff should perform a manual cleanup, then bring the MediaAgent back online when ready.

  - **Free Space** percent shows 9.00 percent (273 gigabytes used)

    The percentage of available disk space has fallen below **Clean up until free space is at least *n* percent**, so the MediaAgent begins deleting index files that are older than the **Retain index for *n* days** setting, until the percentage of available disk space is equal to or more than the **Clean up until** setting. If this is not sufficient, it continues by deleting least-recently-used indexes until enough space is recovered to meet the free space percentage requirement.

    In this example, at least 18 GB worth of indexes are aged out in order to cross below the 255 GB threshold dictated by the **Clean up until free space is at least *n* percent** setting.

Related Topics

- Addressing Cleanup Issues

Addressing Cleanup Issues

📅 Updated Monday, October 21, 2024

If cleanup operations driven by the retention settings do not remove enough index data to satisfy the free space requirement (the **Clean up until free space is at least *n* percent** setting), you have the following options:

- Change the [retention parameters](#) to more accurately reflect your actual disk space usage and requirements.

- Increase the disk available to the index directory or move it to another disk (see [Moving the Index Directory](#)).

Procedure

To determine how much disk space is currently allocated and being used, and to change your retention settings (if necessary), perform the following steps:

1. From the CommCell Browser, expand **Storage Resources > MediaAgents**.

2. Right-click the *MediaAgent_name* > **Properties > Catalog**.

3. Change the [retention parameters](#) settings if needed.

4. Click **OK**.

Index Cache Cleanup Report (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Index files are subject to cleanup every 24 hours as described in **Scheduled Cleanup**. When this process runs, some files that were selected for deletion (based on retention settings) may not be deleted. The Index Directory Cleanup Report is a log that contains a list of these index files, along with the reasons that these files were not deleted.

> 🚩 **Note**
>
> Index files that reside in the intermediate index cache are not included in this report.

When To Use the Report

The Index Cache Cleanup Report is useful in the following cases:

- When an aged index did not get pruned or deleted during cleanup.

  For example: A job may have locked the index or the index may have been corrupted.

- To analyze the number of index files present in the MediaAgent computer.

  For example: The presence of too many index files may require aggressive cleanup activity.

Where To Find the Report

The Index Cache Cleanup Report is created on the MediaAgent computer, in the following directory:

*MediaAgent_name/index_cache/***IndexCacheCleanupReport.csv**

Output

The Index Cache Cleanup Report is saved as a CSV file. When opened in a spreadsheet application such as Microsoft Excel, the report looks like the following:

A	B	C
CV_Index\2\1\1427638248	234881274	Index was accessed recently.
CV_Index\2\1\1427724761	234881274	Index was accessed recently.
CV_Index\2\1\1427811348	234881273	Index is in use by a running job.
CV_Index\2\1\1427897725	234881274	Index was accessed recently.
CV_Index\2\1\1427983978	234881274	Index was accessed recently.
CV_Index\2\42\1427995897	234881274	Index was accessed recently.
CV_Index\2\1\1428070358	234881278	Failed to verify state of index.

The report contains the following three columns:

Column	Description
Index Directory folder	The location of an index file that was not deleted during the automatic cleanup operation.
Event ID	A numeric identifier that corresponds to the event message in the Retention Reason column. The following are common Event IDs: • 234881273: Index is in use by a running job. • 234881274: Index was accessed recently. • 234881275: Index is in use. • 234881276: Failed to open index. Check **IndexCacheCleanup.log** for more details. • 234881277: Failed to delete index. Check **IndexCacheCleanup.log** for more details. • 234881278: Failed to verify state of index.
Retention Reason	The reason why the index file was not deleted.

Disabling Automatic Generation of the Report

By default, the Index Cache Cleanup Report is automatically generated.

You can enable or disable the report by Adding or Modifying Additional Settings from the CommCell Console to the MediaAgent:

Setting Name	disableIndexCacheCleanupReport
Category	MediaAgent
Type	INTEGER

Valid Values	1 = disable the report
	0 = enable the report (default)

Best Practices (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Apply the following best practices to obtain the best results with local index storage:

- Use a volume dedicated to the index cache directory, formatted with a block allocation size of 32K.

- Configure antivirus exclusions for [Windows](#) and [UNIX](#).

- For Microsoft Windows MediaAgents, disable Microsoft Windows indexing service on the drive. For more information, see Microsoft documentation.

- For Microsoft Windows MediaAgents, do not enable Windows Deduplication on a volume that contains the index cache directory, as this may cause a significant drop in performance and may cause jobs to fail.

- Do not locate the index cache directory on the system drive of the MediaAgent hosting it.

- Do not locate the index cache directory on a compressed drive.

- For best performance, locate the index cache directory on a solid state drive (SSD).

- Do not locate the index cache directory folder directly under the *<software_installation_directory>*.

- For Unix, do not specify **root** as the index cache directory.

- When entering the index cache directory path or the index log cache directory path, note the following:

  - The path may not exceed a total of 75 characters.

  - The path may not contain special characters.

  - The path may not contain Unicode characters.

  - The path may not contain the word "temp" (for example, **c:\Indexcache_temp**)

FAQ (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Why is the index getting restored very often?

Several conditions can cause frequent index restores. The index gets restored when one or more of the following are true:

- Index retention criteria prompted the system to perform cleanup on an existing index. These criteria may be set more strictly than necessary. See Retention Parameters.

- Space is not sufficient on the disk that hosts the index directory, causing frequent event-driven cleanup operations. See Index Directory Cleanup Process.

- An index grew larger than 2 GB, and was automatically renamed.

Can the Index cache be placed on a network drive?

The Commvault software only supports placing the index cache on a local drive.

Must the MediaAgents participating in GridStor be running the same software version?

Yes. MediaAgents that participate in GridStor should be upgraded together, so that all MediaAgents in the group are running the same version of Commvault software.

Why is the Index Directory full even after setting aggressive retention rules?

The aged index files may not be getting cleaned up. Verify this by analyzing the Index Directory Cleanup Report on the MediaAgent computer:

MediaAgent/*index_directory*/**IndexCacheCleanupReport.csv**

This report displays a list of index files that were not cleaned up during the cleanup operation, along with a reason for their retention. See Index Directory Cleanup Report.

What happens to an incremental backup when the prior index is not in the index cache?

If the prior index is not on the local drive of the MediaAgent that is running an incremental backup job, the prior index is copied to that MediaAgent from another source, and the incremental backup proceeds. The order in which the prior index is obtained is as follows:

1. If the prior index is available from the MediaAgent on which it was created or last updated, it is copied from that MediaAgent.

2. If the prior index is not available from the MediaAgent on which it was created or last updated, it is restored from the storage media to which it was written (such as a tape).

How do I recover the index cache following a drive failure?

After replacing the drive, perform the following steps:

1. Go to the **Catalog** tab of the **MediaAgent Properties** dialog box.

2. Set the **Index Directory** to a location on the new drive (see [Moving the Index Cache Directory](#)).

   A **Confirm** dialog box appears.

3. Click **No** to tell the process not to copy data to the new location. Indexes are automatically restored to the new location when jobs that require indexes are run.

Troubleshooting (Indexing Version 1)

📅 Updated Monday, October 21, 2024

Backup is pending with error code [14.96] [14.95] "Failed to start createIndex on MediaAgent..."

For more information, see KB Article IND0009.

Backup is pending with error code [32:406]

This error code can have either of these basic descriptions:

- The index cache for the MediaAgent is disabled.

- The MediaAgent is not active.

For more information, see KB Article IND0004.

Backup is pending with error code [82:156] "The destination encountered an error while processing the data from the source"

For more information, see KB Article IND0005.

Cannot Upgrade to Indexing V2 Because of Missing Index

For more information, see KB Article IND0006.

Error Code [14:72] "Out of cache space after trying to free...blocks in cache area..."

For more information, see KB Article IND0010.

Index Server MediaAgent is Taken Offline because Index Cache is Full (Indexing Version 2 only)

For more information, see KB article IND0012.

Online Help

You can use the **Catalog** tab of the **MediaAgent Properties** dialog box to view and modify index file parameters and retention criteria.

Index Directory

Enable this Access Path

Select this check box to make the path in index directory active.

Index Directory

The directory where index data is stored.

You can change this directory. If it does not already exist, the MediaAgent software creates it in the default location, *software_installation_directory/***IndexCache**.

When you change this setting, the MediaAgent copies the existing cache contents to the newly specified index cache directory, and directs all new cache entries to the new directory. Because the Windows MediaAgent copies the existing cache contents, you can manually delete the original directory to free up disk space.

> **Notes**
>
> - Use a file system dedicated to index data, so that non-index data does not consume index capacity.
>
> - Estimate your index cache space requirements with a sufficient margin of safety by allocating more space rather than less. If you are maintaining backward-compatible content indexes generated by a previous software version, the index cache directory may require more space.
>
> - For best performance, locate the index cache directory on a solid state drive (SSD).
>
> - Do not locate the index cache directory on a compressed drive.
>
> - For Windows, do not place the index cache directory directly under the *software_installation_directory*.
>
> - For UNIX, do not specify **root** as the index directory.
>
> - The index cache directory path must meet the following requirements:
>
>   - It may not exceed 75 characters.
>
>   - It may not contain the "!" character.
>
>   - It may not contain Unicode characters.
>
> - Do not host the index cache directory on your CommServe computer, unless you only have one MediaAgent and that MediaAgent is located on that computer.

Browse

Click to locate the index cache directory in a Windows tree, and then set it.

Offline Reason

If the index cache directory is offline, this field displays the reason.

Index Retention

Retain index for n days

> **Note**
>
> This option does not apply to Indexing Version 2. For information about index retention in Indexing Version 2, see [Index Cleanup and Compaction Operations (Indexing Version 2)](#).

When an index becomes older than this parameter, the system runs a cleanup job that automatically deletes the index and log files within 24 hours.

Generate alerts when free space falls below n GB

If the amount of free space in the index cache falls below this parameter (default = 50GB), the system sends alerts to the administrator email account. For more information, see the predefined alert "Disk space low on MediaAgent" in [Alerts and Notifications - Predefined Alerts](#).

> 🚩 **Note**
>
> If you want to set this parameter to 10 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 10 GB or less in the **MediaAgent Properties** dialog box.

Take the Index offline when free space falls below n GB

This is the total space that must be available in the index cache for it to remain online. If free space falls below this parameter (default = 10GB), the system takes the index cache offline and begins event-driven cleanup. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

> 🚩 **Note**
>
> If you want to set this parameter to 1 GB or less, you must use the [Change Index Cache Configuration workflow](#). You cannot set this parameter to 1 GB or less in the **MediaAgent Properties** dialog box.

Cleanup until free space is at least

> 🚩 **Note**
>
> This option does not apply to Indexing Version 2. For information about index retention in Indexing Version 2, see [Index Cleanup and Compaction Operations (Indexing Version 2)](#).

During an event-driven cleanup, the system checks to see if the percentage of free space remaining is greater than or equal to this parameter. If the percentage of free space remaining is less than this parameter, even after aged indexes are deleted, then additional indexes will be removed on a least-recently-used basis, until the free disk space percentage becomes greater than or equal to this value. For more information, see "Event-Driven Cleanup" in [Index Cache Directory Cleanup](#).

Index Directory Space

These fields display the current state of index cache directory space usage. For more information about index space requirements, see [Planning (Indexing Version 1)](#) or [Planning (Indexing Version 2)](#).

Total Size

The total volume size (in MB or GB) that the index cache directory resides on.

Index

Index cache directory disk space (in MB or GB) currently used by index files. The number in parentheses shows the usage as a percentage of the **Total Size** disk space. Note that when index files are changed, added, or deleted, it make take up to 30 minutes for the **Index** value to update.

Other Data

Index cache directory disk space (in MB or GB) currently used by data other than index files. The number in parentheses shows the usage as a percentage of the **Total Size** disk space.

Free Space

Free disk space (in MB or GB) available to the index cache directory. The number in parentheses shows the free disk space as a percentage of the **Total Size** disk space.

Commvault

For more information about Commvault® softwaremodules and solutions,
and for up-to-date system requirements, please contact us:
www.commvault.com | 888.746.3849 | get-info@commvault.com

CommvaultWorldwide Headquarters

1 Commvault Way | Tinton Falls, NJ07724 | Phone: 888.746.3849 | Fax: 732.870.4525

Commvault Regional Offices

United States | Europe | Middle East & Africa | Asia-Pacific | Latin America & Caribbean | Canada | India | Oceania