NetApp

Archive to tape through TSM middleware

StorageGRID

NetApp
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Table of Contents

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You can configure an Archive Node to target a Tivoli Storage Manager (TSM) server that provides a logical interface for storing and retrieving object data to random or sequential access storage devices, including tape libraries.

The Archive Node's ARC service acts as a client to the TSM server, using Tivoli Storage Manager as middleware for communicating with the archival storage system.

TSM management classes

Management classes defined by the TSM middleware outline how the TSM's backup and archive operations function, and can be used to specify rules for content that are applied by the TSM server. Such rules operate independently of the StorageGRID system's ILM policy, and must be consistent with the StorageGRID system's requirement that objects are stored permanently and are always available for retrieval by the Archive Node. After object data is sent to a TSM server by the Archive Node, the TSM lifecycle and retention rules are applied while the object data is stored to tape managed by the TSM server.

The TSM management class is used by the TSM server to apply rules for data location or retention after objects are sent to the TSM server by the Archive Node. For example, objects identified as database backups (temporary content that can be overwritten with newer data) could be treated differently than application data (fixed content that must be retained indefinitely).

Configure connections to TSM middleware

Before the Archive Node can communicate with Tivoli Storage Manager (TSM) middleware, you must configure a number of settings.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have specific access permissions.

About this task

Until these settings are configured, the ARC service remains in a Major alarm state as it is unable to communicate with the Tivoli Storage Manager.

Steps

1. Select **SUPPORT** > **Tools** > **Grid topology**.
2. Select *Archive Node* > **ARC** > **Target**.
3. Select **Configuration** > **Main**.

Configuration: ARC (DC1-ARC1-98-165) - Target
Updated: 2015-09-28 09:56:36 PDT

| Overview | Alarms | Reports | Configuration |

Main   Alarms

| Target Type: | Tivoli Storage Manager (TSM) |
| Tivoli Storage Manager State: | Online |

Target (TSM) Account

Server IP or Hostname:	10.10.10.123
Server Port:	1500
Node Name:	ARC-USER
User Name:	arc-user
Password:	••••••
Management Class:	sg-mgmtclass
Number of Sessions:	2
Maximum Retrieve Sessions:	1
Maximum Store Sessions:	1

Apply Changes ▶

4. From the **Target Type** drop-down list, select **Tivoli Storage Manager (TSM)**.

5. For the **Tivoli Storage Manager State**, select **Offline** to prevent retrievals from the TSM middleware server.

   By default, the Tivoli Storage Manager State is set to Online, which means that the Archive Node is able to retrieve object data from the TSM middleware server.

6. Complete the following information:

   ◦ **Server IP or Hostname**: Specify the IP address or fully qualified domain name of the TSM middleware server used by the ARC service. The default IP address is 127.0.0.1.

   ◦ **Server Port**: Specify the port number on the TSM middleware server that the ARC service will connect to. The default is 1500.

   ◦ **Node Name**: Specify the name of the Archive Node. You must enter the name (arc-user) that you registered on the TSM middleware server.

   ◦ **User Name**: Specify the user name the ARC service uses to log in to the TSM server. Enter the default user name (arc-user) or the administrative user you specified for the Archive Node.

   ◦ **Password**: Specify the password used by the ARC service to log in to the TSM server.

   ◦ **Management Class**: Specify the default management class to use if a management class is not specified when the object is being saved to the StorageGRID system, or the specified management class is not defined on the TSM middleware server.

   ◦ **Number of Sessions**: Specify the number of tape drives on the TSM middleware server that are dedicated to the Archive Node. The Archive Node concurrently creates a maximum of one session per mount point plus a small number of additional sessions (less than five).

You must change this value to be the same as the value set for MAXNUMMP (maximum number of mount points) when the Archive Node was registered or updated. (In the register command, the default value of MAXNUMMP used is 1, if no value is set.)

You must also change the value of MAXSESSIONS for the TSM server to a number that is at least as large as the Number of Sessions set for the ARC service. The default value of MAXSESSIONS on the TSM server is 25.

- **Maximum Retrieve Sessions**: Specify the maximum number of sessions that the ARC service can open to the TSM middleware server for retrieve operations. In most cases, the appropriate value is Number of Sessions minus Maximum Store Sessions. If you need to share one tape drive for storage and retrieval, specify a value equal to the Number of Sessions.

- **Maximum Store Sessions**: Specify the maximum number of concurrent sessions that the ARC service can open to the TSM middleware server for archive operations.

  This value should be set to one except when the targeted archival storage system is full and only retrievals can be performed. Set this value to zero to use all sessions for retrievals.

7. Select **Apply Changes**.

Optimize an Archive Node for TSM middleware sessions

You can optimize the performance of an Archive Node that connects to Tivoli Server Manager (TSM) by configuring the Archive Node's sessions.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have specific access permissions.

About this task

Typically, the number of concurrent sessions that the Archive Node has open to the TSM middleware server is set to the number of tape drives the TSM server has dedicated to the Archive Node. One tape drive is allocated for storage while the rest are allocated for retrieval. However, in situations where a Storage Node is being rebuilt from Archive Node copies or the Archive Node is operating in Read-only mode, you can optimize TSM server performance by setting the maximum number of retrieve sessions to be the same as number of concurrent sessions. The result is that all drives can be used concurrently for retrieval, and, at most, one of these drives can also be used for storage if applicable.

Steps

1. Select **SUPPORT** > **Tools** > **Grid topology**.
2. Select *Archive Node* > **ARC** > **Target**.
3. Select **Configuration** > **Main**.
4. Change **Maximum Retrieve Sessions** to be the same as **Number of Sessions**.

Configuration: ARC (DC1-ARC1-98-165) - Target
Updated: 2015-09-28 09:56:36 PDT

Target Type:	Tivoli Storage Manager (TSM)
Tivoli Storage Manager State:	Online

Target (TSM) Account

Server IP or Hostname:	10.10.10.123
Server Port:	1500
Node Name:	ARC-USER
User Name:	arc-user
Password:	•••••
Management Class:	sg-mgmtclass
Number of Sessions:	2
Maximum Retrieve Sessions:	2
Maximum Store Sessions:	1

Apply Changes

5. Select **Apply Changes**.

Configure the archive state and counters for TSM

If your Archive Node connects to a TSM middleware server, you can configure an Archive Node's archive store state to Online or Offline. You can also disable the archive store when the Archive Node first starts up, or reset the failure count being tracked for the associated alarm.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have specific access permissions.

Steps

1. Select **SUPPORT** > **Tools** > **Grid topology**.
2. Select *Archive Node* > **ARC** > **Store**.
3. Select **Configuration** > **Main**.

Configuration: ARC (DC1-ARC1-98-165) - Store
Updated: 2015-09-29 17:10:12 PDT

Store State	Online
Archive Store Disabled on Startup	☐
Reset Store Failure Count	☐

Apply Changes →

4. Modify the following settings, as necessary:

   ◦ Store State: Set the component state to either:

      ▪ Online: The Archive Node is available to process object data for storage to the archival storage system.

      ▪ Offline: The Archive Node is not available to process object data for storage to the archival storage system.

   ◦ Archive Store Disabled on Startup: When selected, the Archive Store component remains in the Read-only state when restarted. Used to persistently disable storage to the targeted the archival storage system. Useful when the targeted archival storage system is unable to accept content.

   ◦ Reset Store Failure Count: Reset the counter for store failures. This can be used to clear the ARVF (Stores Failure) alarm.

5. Select **Apply Changes**.

Related information

Manage an Archive Node when TSM server reaches capacity

Manage an Archive Node when TSM server reaches capacity

The TSM server has no way to notify the Archive Node when either the TSM database or the archival media storage managed by the TSM server is nearing capacity. This situation can be avoided through proactive monitoring of the TSM server.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have specific access permissions.

About this task

The Archive Node continues to accept object data for transfer to the TSM server after the TSM server stops accepting new content. This content cannot be written to media managed by the TSM server. An alarm is triggered if this happens.

Prevent ARC service from sending content to TSM server

To prevent the ARC service from sending further content to the TSM server, you can take the Archive Node offline by taking its **ARC** > **Store** component offline. This procedure can also be useful in preventing alarms when the TSM server is unavailable for maintenance.

Steps

1. Select **SUPPORT** > **Tools** > **Grid topology**.

2. Select *Archive Node* > **ARC** > **Store**.

3. Select **Configuration** > **Main**.
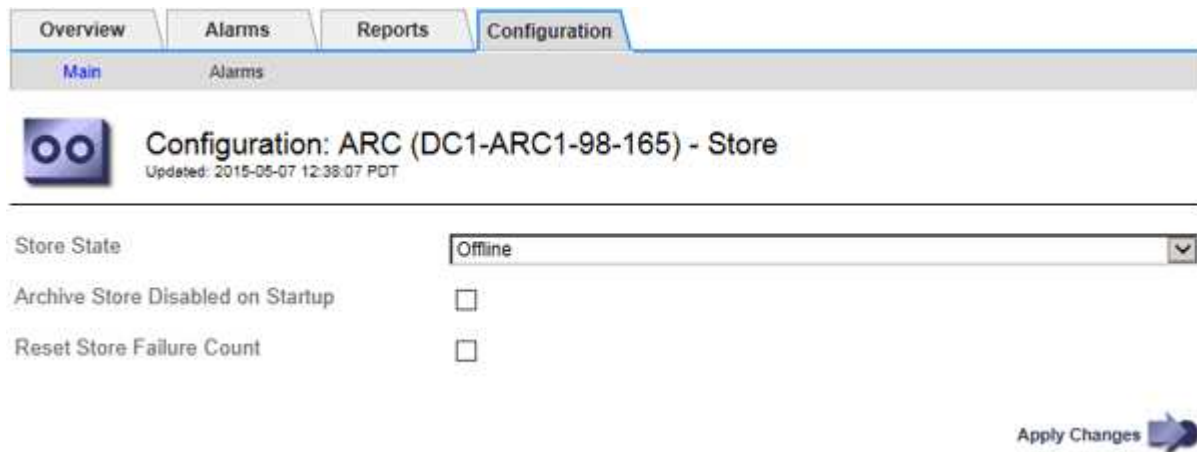
4. Change **Store State** to `Offline`.

5. Select **Archive Store Disabled on Startup**.

6. Select **Apply Changes**.

Set Archive Node to read-only if TSM middleware reaches capacity

If the targeted TSM middleware server reaches capacity, the Archive Node can be optimized to only perform retrievals.

Steps

1. Select **SUPPORT** > **Tools** > **Grid topology**.

2. Select *Archive Node* > **ARC** > **Target**.

3. Select **Configuration** > **Main**.

4. Change Maximum Retrieve Sessions to be the same as the number of concurrent sessions listed in Number of Sessions.

5. Change Maximum Store Sessions to 0.

> (i) Changing Maximum Store Sessions to 0 is not necessary if the Archive Node is Read-only. Store sessions will not be created.

6. Select **Apply Changes**.