



MetroCluster® Systems Running ONTAP®

Tiebreaker Software 1.2 Installation and Configuration Guide

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MetroCluster documentation

There are a number of documents that can help you configure, operate, and monitor a MetroCluster configuration.

MetroCluster and ONTAP libraries

Library	Content
<i>NetApp Documentation: MetroCluster in clustered Data ONTAP</i>	All MetroCluster guides
<i>NetApp Documentation: Clustered Data ONTAP Express Guides</i>	All ONTAP express guides
<i>NetApp Documentation: ONTAP 9</i>	All ONTAP guides

MetroCluster and miscellaneous guides

Guide	Content
<i>NetApp Technical Report 4375: MetroCluster for Data ONTAP Version 8.3 Overview and Best Practices</i>	- A technical overview of the MetroCluster configuration and operation. - Best practices for MetroCluster configuration.
<i>ONTAP 9.0 Fabric-attached MetroCluster Installation and Configuration Guide</i>	- Fabric-attached MetroCluster architecture - Cabling the configuration - Configuring the FC-to-SAS bridges - Configuring the FC switches - Configuring the MetroCluster in ONTAP
<i>ONTAP 9.0 Stretch MetroCluster Installation and Configuration Guide</i>	- Stretch MetroCluster architecture - Cabling the configuration - Configuring the FC-to-SAS bridges - Configuring the MetroCluster in ONTAP
<i>ONTAP 9.0 MetroCluster Management and Disaster Recovery Guide</i>	- Understanding the MetroCluster configuration - Switchover, healing and switchback - Disaster recovery

Guide	Content
<i>MetroCluster Service Guide</i>	• Guidelines for maintenance in a MetroCluster configuration • Hardware replacement and firmware upgrade procedures for FC-to-SAS bridges and FC switches • Hot-adding a disk shelf • Hot-removing a disk shelf • Replacing hardware at a disaster site • Expanding a two-node MetroCluster configuration to a four-node MetroCluster configuration. • Expanding a four-node MetroCluster configuration to an eight-node MetroCluster configuration.
<i>ONTAP 9.0 Data Protection Guide Using SnapMirror and SnapVault Technology</i>	• How mirrored aggregates work • SyncMirror • SnapMirror • SnapVault
<i>NetApp Documentation: OnCommand Unified Manager Core Package (current releases)</i>	• Monitoring the MetroCluster configuration
<i>NetApp Documentation: OnCommand Performance Manager for Clustered Data ONTAP</i>	• Monitoring MetroCluster performance
<i>7-Mode Transition Tool 3.0 Copy-Based Transition Guide</i>	• Transitioning data from 7-Mode storage systems to clustered storage systems

Overview of the Tiebreaker software

It is helpful to understand what the NetApp MetroCluster Tiebreaker software is and how it distinguishes between types of failures so that you can monitor your MetroCluster configurations efficiently. You use the Tiebreaker CLI to manage settings and monitor the status and operations of MetroCluster configurations.

Supported MetroCluster configurations

The MetroCluster Tiebreaker software supports all MetroCluster configurations supported in ONTAP 9.0.

The MetroCluster Tiebreaker software does not require any special configuration for the different MetroCluster configurations.

Feature	Fabric-attached configurations		Stretch configurations	
	Eight- or four-node	Two-node	Two-node bridge-attached	Two-node direct-attached
Number of controllers	Eight or four	Two	Two	Two
Uses an FC switch storage fabric	Yes	Yes	No	No
Uses FC-to-SAS bridges	Yes	Yes	Yes	No
Uses direct-attached SAS storage	No	No	No	Yes
Supports local HA	Yes	No	No	No
Supports automatic switchover	Yes	Yes	Yes	Yes

Detecting failures with NetApp MetroCluster Tiebreaker software

The Tiebreaker software resides on a Linux host. You need the Tiebreaker software only if you want to monitor two clusters and the connectivity status between them from a third site. Doing so enables each partner in a cluster to distinguish between an ISL failure, when inter-site links are down, from a site failure.

After you install the Tiebreaker software on a Linux host, you can configure the clusters in a MetroCluster configuration to monitor for disaster conditions.

How the Tiebreaker software detects site failures

NetApp MetroCluster Tiebreaker software checks the reachability of the nodes in a MetroCluster configuration and the cluster to determine whether a site failure has occurred. The Tiebreaker software also triggers an alert under certain conditions.

Monitoring the nodes and clusters

The Tiebreaker software monitors each controller in the MetroCluster configuration by establishing redundant connections through multiple paths to a node management LIF and to the cluster management LIF, both hosted on the IP network.

The Tiebreaker software monitors the following components in the MetroCluster configuration:

- Nodes through local node interfaces
- Cluster through the cluster-designated interfaces
- Surviving cluster to evaluate whether it has connectivity to the disaster site (FCVI, storage, and intercluster peering)

When there is a loss of connection between the Tiebreaker software and all the nodes in the cluster and to the cluster itself, the cluster will be declared as “not reachable” by the Tiebreaker software. It takes around three to five seconds to detect a connection failure. If a cluster is unreachable from the Tiebreaker software, the surviving cluster (the cluster that is still reachable) must indicate that all links to the partner cluster are severed before the Tiebreaker software triggers an alert.

Note: All links are severed, if the surviving cluster can no longer communicate with the cluster at the disaster site through FC (FCVI and storage) and intercluster peering.

Triggering alert in certain failure scenarios

The Tiebreaker software triggers an alert when the cluster (all nodes) at the disaster site is down or unreachable and the cluster at the surviving site indicates the “backhoe” status.

The Tiebreaker software will not trigger an alert in the following scenarios:

- If in an eight-node MetroCluster configuration one HA pair at the disaster site is down.
- In a situation where the cluster (all nodes) at the disaster site is down, one HA pair at the surviving site is down, and the cluster at the surviving site indicates the “backhoe” status, the Tiebreaker software triggers an alert, but ONTAP vetoes it. In this situation, a manual switchover is also vetoed.
- Any scenario in which the Tiebreaker software can either reach at least one node or the cluster interface at the disaster site, or if the surviving site still can reach either node at the disaster site through either FC (FCVI and storage) or intercluster peering.

How the Tiebreaker software detects ISL failures

MetroCluster Tiebreaker software alerts you to possible failures in the network paths between the MetroCluster clusters. A loss of connection between a node and DR partner triggers an automatic health check of the intercluster peering network to detect an Inter-Switch Link (ISL) failure.

Types of network paths

Depending on the configuration, there are two types of network paths between the two clusters in a MetroCluster configuration:

FC network (present in fabric-attached MetroCluster configurations)

This type of network is composed of two redundant FC switch fabrics. Each switch fabric has two FC switches, with one switch of each switch fabric co-located with a cluster. Each cluster has two FC switches, one from each switch fabric. Each switch fabric includes Inter-Switch Links (ISLs) of up to 200 km that connect the clusters. All the nodes have FC (FC-VI and FCP initiator) connectivity to each of the co-located FC switches. Data is replicated from cluster to cluster over the ISL.

Intercluster peering network

This type of network is composed of a redundant IP network path between the two clusters. The cluster peering network provides the connectivity needed to mirror the Storage Virtual Machine (SVM) configuration. The configuration of all SVMs on one cluster is mirrored by the partner cluster.

Monitoring the intercluster peering network

The Tiebreaker software regularly pings the intercluster peering network to monitor its health. If the FC-VI connection is lost between the node and its DR partner cluster and the intercluster peering network does not respond to pings, the Tiebreaker software assumes that the network is isolated. Isolation occurs when the nodes are reachable but the intersite links are down.

About the Tiebreaker CLI and man pages

The Tiebreaker CLI provides commands that enable you to remotely configure the Tiebreaker software and monitor the MetroCluster configurations.

The CLI command prompt is represented as `NetApp MetroCluster Tiebreaker::>`.

The man pages are available in the CLI by entering the applicable command name at the prompt.

Installing the Tiebreaker software

The Tiebreaker software provides monitoring capabilities for a clustered storage environment. It also sends SNMP notifications in the event of node connectivity issues and site disasters.

Before you begin

The MetroCluster software must be installed and configured.

System requirements for installing or upgrading Tiebreaker software

The Tiebreaker software is installed on a third site, which allows it to distinguish between an ISL failure, when inter-site links are down, and a site failure. Your host system must meet certain requirements before you can install or upgrade the Tiebreaker software on your local computer to monitor the MetroCluster configuration.

- Hardware and software:
 - RedHat Enterprise Linux (RHEL) 6.4 to 6.7 64-bit (physical installation or virtual machine)
 - 1.5 to 2 GB RAM
 - Open Java Runtime Environment 8 or later
 - MySQL Server 5.5.30 or later
 - P7zip
- Disk capacity: 2 GB RAM
- User: Root access other than the default root users in Linux
- Firewall:
 - Direct access for setting up AutoSupport messages; proxy servers not supported
 - SSH (port 22/TCP), HTTPS (port 443/TCP), and ping (ICMP)

Installing MySQL Server 5.5.30 or later versions

You must install MySQL Server 5.5.30 or later on your host system before installing or upgrading the Tiebreaker software.

Steps

1. Log in as root to the host system.

Example

```
login as: root
root@mcctb's password:
Last login: Fri Jan 8 21:33:00 2016 from host.domain.com
```

2. Add the MySQL repository to your host system:

```
[root@mcctb ~]# yum localinstall http://dev.mysql.com/get/mysql-community-release-el6-5.noarch.rpm
```

Example

```

loaded plugins: product-id, refresh-packagekit, security, subscription-manager
Setting up Local Package Process
Examining /var/tmp/yum-root-LLUw0r/mysql-community-release-el6-5.noarch.rpm: mysql-
community-release-el6-5.noarch
Marking /var/tmp/yum-root-LLUw0r/mysql-community-release-el6-5.noarch.rpm to be installed
Resolving Dependencies
--> Running transaction check
--> Package mysql-community-release.noarch 0:el6-5 will be installed
--> Finished Dependency Resolution
Dependencies Resolved

=====
Package                Arch      Version                               Repository                               Size
=====
Installing:
mysql-community-release
                                noarch el6-5 /mysql-community-release-el6-5.noarch 4.3 k

Transaction Summary
=====
Install      1 Package(s)
Total size: 4.3 k
Installed size: 4.3 k
Is this ok [y/N]: y
Downloading Packages:
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing : mysql-community-release-el6-5.noarch                1/1
  Verifying  : mysql-community-release-el6-5.noarch                1/1
Installed:
mysql-community-release.noarch 0:el6-5
Complete!

```

- ### 3. Enable the repository:

```
[root@mcctb ~]# yum repolist enabled | grep "mysql.*-community.*"
```

Example

mysql-connectors-community	MySQL Connectors Community	21
mysql-tools-community	MySQL Tools Community	35
mysql56-community	MySQL 5.6 Community Server	231

- #### 4. Install the MySQL Community server:

```
[root@mcctb ~]# yum install mysql-community-server
```

Example

```
Loaded plugins: product-id, refresh-packagekit, security, subscription-manager
This system is not registered to Red Hat Subscription Management. You can use
subscription-manager
to register.
Setting up Install Process
Resolving Dependencies
--> Running transaction check
...Output truncated...
--> Package mysql-community-libs-compat.x86_64 0:5.6.29-2.el6 will be obsoleting
--> Finished Dependency Resolution
Dependencies Resolved

=====
=====
Package                               Arch      Version
Repository                            Size
=====
=====
Installing:
mysql-community-client                x86_64    5.6.29-2.el6    mysql56-
community 18 M
    replacing mysql.x86_64 5.1.71-1.el6
mysql-community-libs                  x86_64    5.6.29-2.el6    mysql56-
```

```

community 1.9 M
  replacing mysql-libs.x86_64 5.1.71-1.el6
mysql-community-libs-compat x86_64 5.6.29-2.el6 mysql56-
community 1.6 M
  replacing mysql-libs.x86_64 5.1.71-1.el6
mysql-community-server x86_64 5.6.29-2.el6 mysql56-
community 53 M
  replacing mysql-server.x86_64 5.1.71-1.el6
Installing for dependencies:
mysql-community-common x86_64 5.6.29-2.el6 mysql56-
community 308 k

Transaction Summary
=====
Install      5 Package(s)
Total download size: 74 M
Is this ok [y/N]: y
Downloading Packages:
(1/5): mysql-community-client-5.6.29-2.el6.x86_64.rpm | 18
MB 00:28
(2/5): mysql-community-common-5.6.29-2.el6.x86_64.rpm | 308
kB 00:01
(3/5): mysql-community-libs-5.6.29-2.el6.x86_64.rpm | 1.9
MB 00:05
(4/5): mysql-community-libs-compat-5.6.29-2.el6.x86_64.rpm | 1.6
MB 00:05
(5/5): mysql-community-server-5.6.29-2.el6.x86_64.rpm | 53
MB 03:42
-----
Total 289 kB/s | 74
MB 04:24
warning: rpmts_HdrFromFdno: Header V3 DSA/SHA1 Signature, key ID 5072e1f5: NOKEY
Retrieving key from file:/etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
Importing GPG key 0x5072E1F5:
  Userid : MySQL Release Engineering <mysql-build@oss.oracle.com>
  Package: mysql-community-release-el6-5.noarch (@/mysql-community-release-el6-5.noarch)
  From : file:/etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
Is this ok [y/N]: y
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing : mysql-community-common-5.6.29-2.el6.x86_64
  ....Output truncated....
  1.el6.x86_64
  7/8
  Verifying :
mysql-5.1.71-1.el6.x86_64 8/8

Installed:
  mysql-community-client.x86_64 0:5.6.29-2.el6 mysql-community-libs.x86_64
0:5.6.29-2.el6
  mysql-community-libs-compat.x86_64 0:5.6.29-2.el6 mysql-community-server.x86_64
0:5.6.29-2.el6

Dependency Installed:
  mysql-community-common.x86_64 0:5.6.29-2.el6

Replaced:
  mysql.x86_64 0:5.1.71-1.el6 mysql-libs.x86_64 0:5.1.71-1.el6 mysql-server.x86_64
0:5.1.71-1.el6
Complete!

```

5. Start MySQL:

```
[root@mcctb ~]# service mysqld start
```

Example

```

Initializing MySQL database: 2016-04-05 19:44:38 0 [Warning] TIMESTAMP with implicit
DEFAULT
value is deprecated. Please use --explicit_defaults_for_timestamp server option (see
documentation
for more details).
2016-04-05 19:44:38 0 [Note] /usr/sbin/mysqld (mysqld 5.6.29) starting as process 2487 ...
2016-04-05 19:44:38 2487 [Note] InnoDB: Using atomics to ref count buffer pool pages
2016-04-05 19:44:38 2487 [Note] InnoDB: The InnoDB memory heap is disabled
....Output truncated....
2016-04-05 19:44:42 2509 [Note] InnoDB: Shutdown completed; log sequence number 1625987

PLEASE REMEMBER TO SET A PASSWORD FOR THE MySQL root USER!
To do so, start the server, then issue the following commands:

/usr/bin/mysqladmin -u root password 'new-password'

```

```

/usr/bin/mysqladmin -u root -h mcctb password 'new-password'

Alternatively, you can run:
/usr/bin/mysql_secure_installation

which will also give you the option of removing the test
databases and anonymous user created by default. This is
strongly recommended for production servers.
...Output truncated...
WARNING: Default config file /etc/my.cnf exists on the system
This file will be read by default by the MySQL server
If you do not want to use this, either remove it, or use the
--defaults-file argument to mysqld_safe when starting the server

Starting mysqld: [ OK ]

```

6. Confirm that MySQL is running:

```
[root@mcctb ~]# service mysqld status
```

Example

```
mysqld (pid 2739) is running...
```

7. Configure security and password settings:

```
[root@mcctb ~]# mysql_secure_installation
```

Example

```

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MySQL
SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MySQL to secure it, we'll need the current
password for the root user. If you've just installed MySQL, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none): <== on default install hit enter here
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MySQL
root user without the proper authorisation.

Set root password? [Y/n] y
New password:
Re-enter new password:
Password updated successfully!
Reloading privilege tables..
... Success!

By default, a MySQL installation has an anonymous user, allowing anyone
to log into MySQL without having to have a user account created for
them. This is intended only for testing, and to make the installation
go a bit smoother. You should remove them before moving into a
production environment.

Remove anonymous users? [Y/n] y
... Success!

Normally, root should only be allowed to connect from 'localhost'. This
ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] y
... Success!

By default, MySQL comes with a database named 'test' that anyone can
access. This is also intended only for testing, and should be removed
before moving into a production environment.

Remove test database and access to it? [Y/n] y
- Dropping test database...
ERROR 1008 (HY000) at line 1: Can't drop database 'test'; database doesn't exist
... Failed! Not critical, keep moving...
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

```

```

Reload privilege tables now? [Y/n] y
... Success!

All done! If you've completed all of the above steps, your MySQL
installation should now be secure.

Thanks for using MySQL!

Cleaning up...

```

8. Verify that the MySQL login is working:

```
[root@mcctb ~]# mysql -u root -p
```

Example

```

Enter password: <configured_password>
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 17
Server version: 5.6.29 MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql>

```

If the MySQL login is working, the output will end at the `mysql>` prompt.

Enabling the MySQL autostart setting

You should ensure that the autostart feature is turned on for the MySQL daemon. Turning on the MySQL daemon automatically restarts MySQL if the system on which the MetroCluster Tiebreaker software resides reboots. If the MySQL daemon is not running, the Tiebreaker software continues running, but it cannot be restarted and configuration changes cannot be made.

See the MySQL documentation to enable autostart on your installation.

Installing or upgrading the software package

You need to install or upgrade the Tiebreaker software on your local computer to monitor the MetroCluster configuration.

Before you begin

- Your storage system must be running ONTAP 8.3.x or later.
- You must have installed OpenJDK by using the `yum install java-1.8.0-openjdk` command.

Steps

1. Download the `NetApp-MetroCluster-Tiebreaker-Software-1.2-1.x86_64.rpm` file.
[NetApp Support](#)
2. Log in to the host as root.
3. Install or upgrade the Tiebreaker software:

If you are...	Issue this command...
Performing a new installation	<pre data-bbox="670 247 1240 302">rpm -ivh NetApp-MetroCluster-Tiebreaker-Software-1.2-1.x86_64.rpm</pre> The system displays the following output for a successful installation: <pre data-bbox="683 396 1349 663">Preparing... ##### [100%] 1:NetApp-MetroCluster- Tie##### [100%] Post installation start Mon Jul 6 12:04:17 EDT 2015 Please enter mysql root password when prompted Enter password: Enabled autostart of NetApp MetroCluster Tiebreaker software daemon during boot Starting NetApp MetroCluster Tiebreaker software daemon [OK] Created symbolic link for NetApp MetroCluster Tiebreaker software CLI Post installation end Mon Jul 6 12:04:21 EDT 2015 Successfully installed NetApp MetroCluster Tiebreaker software version 1.2</pre>
Upgrading an existing installation	<pre data-bbox="670 709 1240 764">rpm -Uvh NetApp-MetroCluster-Tiebreaker-Software-1.2-1.x86_64.rpm</pre> The system displays the following output for a successful upgrade: <pre data-bbox="683 840 1349 1178">Preparing... ##### [100%] Upgrading NetApp MetroCluster Tiebreaker software... Stopping NetApp MetroCluster Tiebreaker software services before upgrade. Stopping NetApp MetroCluster Tiebreaker software daemon [OK] 1:NetApp-MetroCluster- Tie##### [100%] Post installation start Tue Jul 7 10:06:18 EDT 2015 Please enter mysql root password when prompted Enter password: Enabled autostart of NetApp MetroCluster Tiebreaker software daemon during boot Starting NetApp MetroCluster Tiebreaker software daemon [OK] Created symbolic link for NetApp MetroCluster Tiebreaker software CLI Post installation end Tue Jul 7 10:06:20 EDT 2015 Successfully installed NetApp MetroCluster Tiebreaker software version 1.2</pre>

If you enter the wrong MySQL root password, the Tiebreaker software indicates that it was installed successfully, but displays “Access denied” messages. To resolve the issue, you must uninstall the Tiebreaker software using the `rpm -e` command, and then reinstall it using the correct MySQL root password.

Related information

[NetApp Support](#)

Selecting the NTP source for the Tiebreaker software

You should use a local Network Time Protocol (NTP) source for the Tiebreaker software. It should not use the same source as the MetroCluster sites that the Tiebreaker software monitors.

Configuring the Tiebreaker software

After installation of the Tiebreaker software, you can add or modify MetroCluster configurations, or remove them from the Tiebreaker software.

Launching the Tiebreaker software CLI

After installing the Tiebreaker software you must launch its CLI to configure the software.

Step

1. Launch the CLI from the prompt of the host on which you installed the software:

```
netapp-metrocluster-tiebreaker-software-cli
```

Adding MetroCluster configurations

After installing the NetApp MetroCluster Tiebreaker software for the first time, you must add the MetroCluster configurations on both clusters, one at a time. You can add more than two MetroCluster configurations and use this procedure at any time.

Before you begin

You must have installed the MetroCluster configuration in a clustered Data ONTAP environment and enabled the settings in the software.

Steps

1. Use the Tiebreaker CLI `monitor add` command to add MetroCluster configurations.

If you are using the host name, it must be the fully qualified domain name (FQDN).

Example

The following example shows the configuration of `cluster_A`:

```
NetApp MetroCluster Tiebreaker :> monitor add wizard
Enter monitor Name: cluster_A
Enter Cluster IP Address: 10.222.196.130
Enter Cluster Username: admin
Enter Cluster Password:
Enter Peer Cluster IP Address: 222.196.140
Enter Peer Cluster Username: admin
Enter Peer Cluster Password:
Successfully added monitor to NetApp MetroCluster Tiebreaker software.
```

2. Confirm that the MetroCluster configuration is added properly by using the Tiebreaker CLI `monitor show -status` command.

Example

```
NetApp MetroCluster Tiebreaker :> monitor show -status
```

Modifying MetroCluster configurations

You can modify the MetroCluster configuration whenever you need to change the settings.

Steps

1. Use the Tiebreaker CLI `monitor modify` command with any of the following options:

Option	Description
<code>-monitor-name</code>	Name of the MetroCluster configuration
<code>-enable-monitor</code>	Enables and disables monitoring of the MetroCluster configuration
<code>-silent-period</code>	Period in seconds for which the MetroCluster Tiebreaker software waits to confirm a site failure after detection

Example

```
NetApp MetroCluster Tiebreaker :> monitor modify -monitor-name
cluster_B -silent-period 15
Successfully modified monitor in NetApp MetroCluster Tiebreaker
software.
```

2. Confirm that the MetroCluster configuration is modified properly by using the Tiebreaker CLI `monitor show -status` command.

Removing MetroCluster configurations

You can remove the MetroCluster configuration that is being monitored by the Tiebreaker software when you no longer want to monitor a MetroCluster configuration.

Steps

1. Use the Tiebreaker CLI `monitor remove` command to remove the MetroCluster configuration.

Example

In the following example, `cluster_B` is removed from the software:

```
NetApp MetroCluster Tiebreaker :> monitor remove -monitor-name
cluster_B
Successfully removed monitor from NetApp MetroCluster Tiebreaker
software.
```

2. Confirm that the MetroCluster configuration is removed properly by using the Tiebreaker CLI `monitor show -status` command.

Example

```
NetApp MetroCluster Tiebreaker :> monitor show -status
```

Configuring SNMP settings for Tiebreaker software

To use SNMP with the Tiebreaker software, you must configure SNMP settings.

Steps

1. Use the Tiebreaker CLI `snmp config wizard` command to add MetroCluster configurations.

Example

The following example shows the configuration of an SNMP receiver that supports SNMP V1 with an IP address of 10.222.210.234, port number 162 for trap messages, and the community string set to **public**:

```
NetApp MetroCluster Tiebreaker :> snmp config wizard
Enter SNMP Version [V1/V3]: V1
Enter SNMP Host: 10.222.210.234
Enter SNMP Port: 162
Enter SNMP V1 Community: public
Successfully added SNMP properties to NetApp MetroCluster Tiebreaker
software.
NetApp MetroCluster Tiebreaker :>
```

The Tiebreaker software is ready to send traps to the SNMP receiver that you specified.

2. Verify that the SNMP settings are configured:

snmp config test

Example

The following example shows that the Tiebreaker software can send an SNMP trap for the event TEST_SNMP_CONFIG:

```
NetApp MetroCluster Tiebreaker :> snmp config test
Sending SNMP trap to localhost. Version : V1.
Successfully sent SNMP trap for event TEST_SNMP_CONFIG
NetApp MetroCluster Tiebreaker :>
```

Monitoring the MetroCluster configuration

MetroCluster Tiebreaker software automates the recovery process by enabling you to monitor the MetroCluster configuration status, evaluate SNMP events and traps that are sent to NetApp customer support, and view the status of monitoring operations.

Configuring AutoSupport

By default, AutoSupport messages are sent to NetApp a week after installation of the Tiebreaker software. Events that trigger AutoSupport notification include Tiebreaker software panics, detection of disaster conditions on MetroCluster configurations, or unknown MetroCluster configuration status.

Before you begin

You should have a direct access for setting up AutoSupport messages; proxy servers are not supported.

Step

1. Use the Tiebreaker CLI `autosupport` command with any of the following options:

Option	Description
-invoke	Sends an AutoSupport message to customer support
-enable	Enables AutoSupport notification (This is the default.)
-disable	Disables AutoSupport notification
-show	Displays AutoSupport status

Example

The following example shows that AutoSupport is enabled and AutoSupport content was sent to customer support:

```
NetApp MetroCluster Tiebreaker :> autosupport enable
Successfully enabled AutoSupport

NetApp MetroCluster Tiebreaker :> autosupport show
AutoSupport is enabled.

NetApp MetroCluster Tiebreaker :> autosupport invoke
Successfully sent AutoSupport data to NetApp.
```

SNMP events and traps

NetApp MetroCluster Tiebreaker software uses SNMP traps to notify you of significant events. These traps are part of the NetApp MIB file. Each trap contains the following information: trap name, severity, impact level, timestamp, and message.

Event name	Event detail	Trap number
MetroCluster Tie-Breaker is unable to reach the MetroCluster configuration	Warns the administrator that the software cannot detect a disaster. This event occurs when both clusters are not reachable.	25000
MetroCluster Tie-Breaker is unable to reach cluster	Warns the administrator that the software cannot reach one of the clusters.	25001
MetroCluster Tie-Breaker detected disaster at cluster	Notifies the administrator that the software detects a site failure. A notification will be delivered.	25002
All links between partner cluster are severed.	The software detects that both clusters are reachable, but all the network paths between the two cluster are down, and the clusters cannot communicate with each other.	25005

Displaying the status of monitoring operations

You can display the overall status of monitoring operations for the MetroCluster configuration.

Step

1. Use the Tiebreaker CLI `monitor show -status` command to display the status of a MetroCluster operation with any of the following options:

Option	Description
-monitor-name	Displays status for the specified monitor name
-operation-history	Displays up to 10 monitoring operations last performed on a cluster
-stats	Prints the statistics related to the specified cluster
-status	Prints the status of the specified cluster

Example

The following example shows that the clusters `cluster_Ba` and `cluster_Bb` are connected and healthy:

```

NetApp MetroCluster Tiebreaker:> monitor show -status
MetroCluster: cluster_B
  Disaster: false
  Monitor State: Normal
  Observer Mode: true
  Silent Period: 15
  Override Vetoes: false
  Cluster: cluster_Ba(UUID:4d9ccf24-080f-11e4-9df2-00a098168e7c)
    Reachable: true
    All-Links-Severed: FALSE
      Node: mcc5-a1(UUID:78b44707-0809-11e4-9be1-e50dab9e83e1)
        Reachable: true
        All-Links-Severed: FALSE
        State: normal
      Node: mcc5-a2(UUID:9a8b1059-0809-11e4-9f5e-8d97cdec7102)
        Reachable: true
        All-Links-Severed: FALSE
        State: normal
  Cluster: cluster_Bb(UUID:70dacd3b-0823-11e4-a7b9-00a0981693c4)
    Reachable: true
    All-Links-Severed: FALSE
      Node: mcc5-b1(UUID:961fce7d-081d-11e4-9ebf-2f295df8fcb3)
        Reachable: true
        All-Links-Severed: FALSE
        State: normal
      Node: mcc5-b2(UUID:9393262d-081d-11e4-80d5-6b30884058dc)
        Reachable: true
        All-Links-Severed: FALSE
        State: normal

```

Example

In the following example, the last seven operations run on cluster_B are displayed:

```

NetApp MetroCluster Tiebreaker:> monitor show -operation-history
MetroCluster: cluster_B
[ 2014-09-15 04:48:32.274 ] MetroCluster Monitor is initialized
[ 2014-09-15 04:48:32.278 ] Started Discovery and validation of
MetroCluster Setup
[ 2014-09-15 04:48:35.078 ] Discovery and validation of MetroCluster
Setup succeeded. Started monitoring.
[ 2014-09-15 04:48:35.246 ] NetApp MetroCluster Tiebreaker software
is able to reach cluster "mcc5a"
[ 2014-09-15 04:48:35.256 ] NetApp MetroCluster Tiebreaker software
is able to reach cluster "mcc5b"
[ 2014-09-15 04:48:35.298 ] Link to remote DR cluster is up for
cluster "mcc5a"
[ 2014-09-15 04:48:35.308 ] Link to remote DR cluster is up for
cluster "mcc5b"

```

Displaying MetroCluster configuration information

You can display the monitor name and IP address of all instances of MetroCluster configurations in the Tiebreaker software.

Step

1. Use the Tiebreaker CLI configuration `show` command to display the MetroCluster configuration information.

Example

The following example shows the information for clusters mcc5a and mcc5b:

```
MetroCluster: North America
  Monitor Enabled: true
  ClusterA name: cluster_A
  ClusterA IPAddress: 192.168.56.88
  ClusterB name: cluster_B
  ClusterB IPAddress: 192.168.56.84
```

Creating dump files

You save the overall status the Tiebreaker software to a dump file for debugging purposes.

Step

1. Use the Tiebreaker CLI `monitor dump -status` command to create a dump file of the overall status of all MetroCluster configurations.

Example

The following example shows the successful creation of the `/var/log/netapp/mcctb/metrocluster-tiebreaker-status.xml` dump file:

```
NetApp MetroCluster Tiebreaker :> monitor dump -status
MCCTB status successfully dumped in file /var/log/netapp/mcctb/
metrocluster-tiebreaker-status.xml
```

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