



## Cisco WAE Live Data Store

This chapter describes how to install, upgrade, back up, and restore a WAE Live data store.

If you need to migrate a WAE Live data store from 5.4 or an earlier release, contact your support representative.

Many references in the documentation explicitly identify directories in which the software is installed. Otherwise, references to where the software resides are as follows:

- `$CARIDEN_ROOT`—Location of the WAE installation.  
If the defaults were used during installation, `$CARIDEN_ROOT` is the same as `/opt/cariden`.
- `$CARIDEN_HOME`—Sub-directory of `$CARIDEN_ROOT` that contains the WAE Design, WAE Live, and WAE Collector executables and binaries.  
If the defaults were used during installation, `$CARIDEN_HOME` is the same as `/opt/cariden/software/mate/current`.



### Caution

If you delete a previous mld installation directory, you may delete all data. To check current data location, enter the following command: `mld -diag -c | egrep ROOTPATH` (This can be also be a network path)



### Note

The WAE Live data store service it is not monitored like other WAE services.



### Note

Before starting, restarting, upgrading, or installing the mld server, you must stop other services. If you chose to migrate the Collector server files during the installation process, verify those files have been copied before stopping the web server.

## Installing the mld Server

The `mld` tool installs both the mld server and an empty data store directory, and it automatically starts the mld server.

- The `-demo` or `-storage` and `-memory` options are required. For more information on mld command options, see [Table 10-1](#).
- Best practices:

- Restore to the same version and then upgrade.
- For better performance, create a separate ext2 partition for the directory specified with the `-datastore` option.

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**Step 1** Stop the web server and all other services.

```
service <service_name> stop
```

Example: `service wae-web-server stop`

**Step 2** Enter command to install the data store. To change the default directories or view more mld option information, see [Table 10-1](#).

Example 1: To be prompted through installation and obtain sizing recommendations:

```
mld -installchk
```

Example 2: To install mld with a demo data store size, enter the following command:

```
mld -action install -demo true
```

Example 3: To install a small mld server into `$CARIDEN_ROOT/data/matelive`, reserve 2 CPUs, reserve 542 GB of disk storage and allocate 2.2 GB (2200 MB) of memory:

```
mld -action install -mldata /data/matelive -cpus 2 -storage 1:1:540 -memory 200:55:2000
```

**Step 3** Start the web server and if needed, start other services.

```
service <service_name> start
```

Example: `service wae-web-server start`

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**Table 10-1** *mld Options*

Options	Description	Default
-version	Displays the data store version.	
-action	<p>install—Installs a new mld server and data store, and start the mld server.</p> <p>upgrade—Updates an existing mld server and start the mld server.</p> <p>start—Alternative way to start the mld server.</p> <p>stop—Alternative way to stop the mld server.</p> <p>status—Alternative way to show the status of the mld server.</p> <p>restart—Alternative way to stop and then restart the mld server.</p>	Default installation directory \$CARIDEN_ROOT/software/mld/current
-installchk	Prompts you through installation and gives sizing recommendations.	

**Use only with -action install**

(If an option is not given, the installation will perform the same tasks as -installchk.)

-demo true	Installs a demo data store.  <b>Note</b> If both -demo and -storage options are used, -demo takes precedence.	
-storage <n:n:n>	Allocates the disk and memory based on the anticipated data store size, where <n:n:n> is data:indices:timeseries in GB. For details and recommended values, use -installchk and -verbose options.  <b>Note</b> If the data store is larger than the demo size, this option is required when using -action install.	
-memory <n:n:n>	Allocates the requested memory of the data store, where <n:n:n> is data:indices:timeseries in MB. For details and recommended values, use -installchk and -verbose options.	
-mldata <directory>	Specifies directory where all application data is stored. This includes the data store, report output, and other application data.	\$CARIDEN_ROOT/data/mldata
-datastore <directory>	Specifies directory where the data store is initialized. Once set, this directory cannot be changed. You can, however, use symbolic links.	\$CARIDEN_ROOT/data/mldata/datastore
-cpus <#>	Reserves the number of CPUs for the data store and the mld server.	Half of the total CPUs

**Table 10-1** *mld Options (continued)*

Options	Description	Default
<b>Use only with -action install or -action upgrade</b>		
-mld <directory>	Specifies directory where the mld server is installed. Once set, this directory cannot be changed. You can, however, use symbolic links.	\$CARIDEN_ROOT/software/mld/current
-backup <directory>	Specifies directory for saving data store backups. You can override this for a single backup. See <a href="#">Backing Up the Data Store</a> .	\$CARIDEN_ROOT/data/mldata/backup

## Upgrading the Data Store to a New Server



### Note

The new server must have the same WAE Live software version as the original server before you upgrade.

If you are upgrading to another server, you must do the following:

- Step 1** Perform a Level 0 (`ml_backup -L 0`) data store backup from the original server. For more information, see [Backing Up the Data Store](#).
- Step 2** Restore the backup from the original server to the new server. For more information, see [Restoring the Data Store](#).
- Step 3** Install the latest WAE software on the new server. For more information, see [WAE Planning Software Installation](#).
- Step 4** Upgrade the data store. For more information, see [Upgrading the Data Store](#).

## Upgrading the Data Store

The `mld` tool upgrades the WAE Live data store from one release to another, and also starts the `mld` server.



### Note

To upgrade the data store, you must use the same username as when you installed the `mld` server.

- Step 1** Stop the web server and all other services.  

```
service <service_name> stop
```

Example: `service wae-web-server stop`
- Step 2** Stop the `mld` server.  

```
mld -action stop
```

- Step 3** Enter the following command to upgrade the data store. To change the default mld server directory or backup directory, use the options described in [Table 10-1](#).

Minimal requirement: `mld -action upgrade`

- Step 4** Start the web server and if needed, start other services.

```
service <service_name> start
```

Example: `service wae-web-server start`

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## Starting and Restarting the mld Server

**Note**

To start or restart the mld server, you must use the same username as when you installed it.

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- Step 1** Stop the web server and all other services.

```
service <service_name> stop
```

Example: `service wae-web-server stop`

- Step 2** To start or restart the mld server, enter the following commands:

Start: `mld -action start`

Restart: `mld -action restart`

- Step 3** Start the web server and if needed, start other services.

```
service <service_name> start
```

Example: `service wae-web-server start`

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## Stopping the mld Server and Getting Current Status

To stop the data store or get its current status, enter these service commands:

Stop: `mld -action stop`

Status: `mld -action status`

## Backing Up the Data Store

WAE Live backs up the time-series derived data from plan files. It does not back up transaction logs or other WAE Live data, such as application data and report data.

The required amount of space for backups depend on the installation size and how long a system has been running.

## Best Practices

- Perform the backup to a different disk drive, or copy the backup to a different physical device once you finish the backup.
- Perform backups outside of peak traffic hours.
- Use a backup directory that is on a different physical disk, and set this when you first install the mld server and data store. Doing so sets the default backup directory for all backups.  

```
mld -action install -backup <backup_directory>
```
- The backup process makes a copy of the data store, but it does not back up other WAE Live data, such as application data and report data. Therefore, with some regularity, copy this other data to a safe location, such as to a different physical disk.
- Perform a full backup at least weekly or monthly, with numerous incremental backups in between them.
- Rather than running manual backups, call `ml_backup` from a cron job.
- Perform only one backup at a time so that their schedules do not overlap. Running simultaneous backups are not supported. Ensure there is at least one hour between each backup. Once completed, verify that the backup was completed within the hour.

## Backup Steps



### Caution

If you delete the previous mld installation directory, you may delete all data. To check current location, enter the following command: `mld -diag -c | egrep ROOTPATH`

The `ml_backup` tool enables you to perform multiple levels of backups to save disk space. An OS file system backup cannot be used to restore the data store. You must use `ml_backup` to perform a complete backup to use for data store restoration.

You can execute `ml_backup` to run a manual backup at any time. However, the first time you use backup levels, you must perform backups in this sequence.



### Note

Keep both the data store and the web server (`wae-web-server`) running.

Sequence	Enter	Description
1	<code>ml_backup</code> or <code>ml_backup -L 0</code>	Level 0—Back up everything.
2	<code>ml_backup -L 1</code>	Level 1—Back up everything since the most recent Level 0 backup was performed.
3	<code>ml_backup -L 2</code>	Level 2—Back up everything since the most recent Level 1 backup was performed.

**Note**

For larger systems that frequently run plan file processes, less incremental Level 1 and Level 2 backups are available in between Level 0 backups. The following error appears when a Level 1 or Level 2 backup is not available: Archive failed - The existing level-0 backup for DBspace rootdbs is too old to allow any incremental backup. When this error appears, run a Level 0 backup.

To run a backup using all defaults, you need only enter the following. This uses the default backup directory, and creates a full backup.

```
ml_backup
```

- To override the default backup directory, use the `-directory` option. The default backup directory is `$CARIDEN_ROOT/data/mldata/backup`.
- To set a different backup level, use the `-L` option.

Example: This example sets the backup directory to `$CARIDEN_ROOT/data/waelive/backups` and backs up only data that is new since the last level 0 backup was run. This assumes that you ran `ml_backup` one time using the default level of 0.

```
ml_backup -directory /data/waelive/backups -L 1
```

## Additional Backups

A best practice is to back up the following directories by making copies of them. By default, these are located in `$CARIDEN_ROOT/data/mldata`. Otherwise, they are stored in the directory specified upon installation (`mld -mldata <directory>`).

**Note**

Before copying, stop the `mld` server. Remember to immediately restart the `mld` server when you are finished copying.

- **archive**—Stores the template (`template.pln`) and plan files used in the Map. Note that files sizes can be large, depending on the size of the network and how long the collection has been running.
- **appdata**—Application data, such as report definitions, user parameters, and report history.
- **datastore**—WAE Live data store, which contains network measurements accumulated over time.
- **jobs**—Error log files for plan file insertions.
- **plans**—Queue of plan files waiting to be inserted.
- **reports**—Every report that can be run caches its output in this directory for quick retrieval.

Additionally, it is a best practice to make copies of the following:

- `config.xml` file, which is located in one of these three places: `~/.cariden/etc/config`, `$CARIDEN_ROOT/etc/config`, or `$CARIDEN_HOME/etc/config`
- `$CARIDEN_HOME/etc/user_manager`, which is the directory in which users are defined

# Restoring the Data Store

**Note**

This section references collection methods. For information on collecting data from WAE Collector, see the *Cisco WAE Platform Configuration Guide*.

## Prerequisites

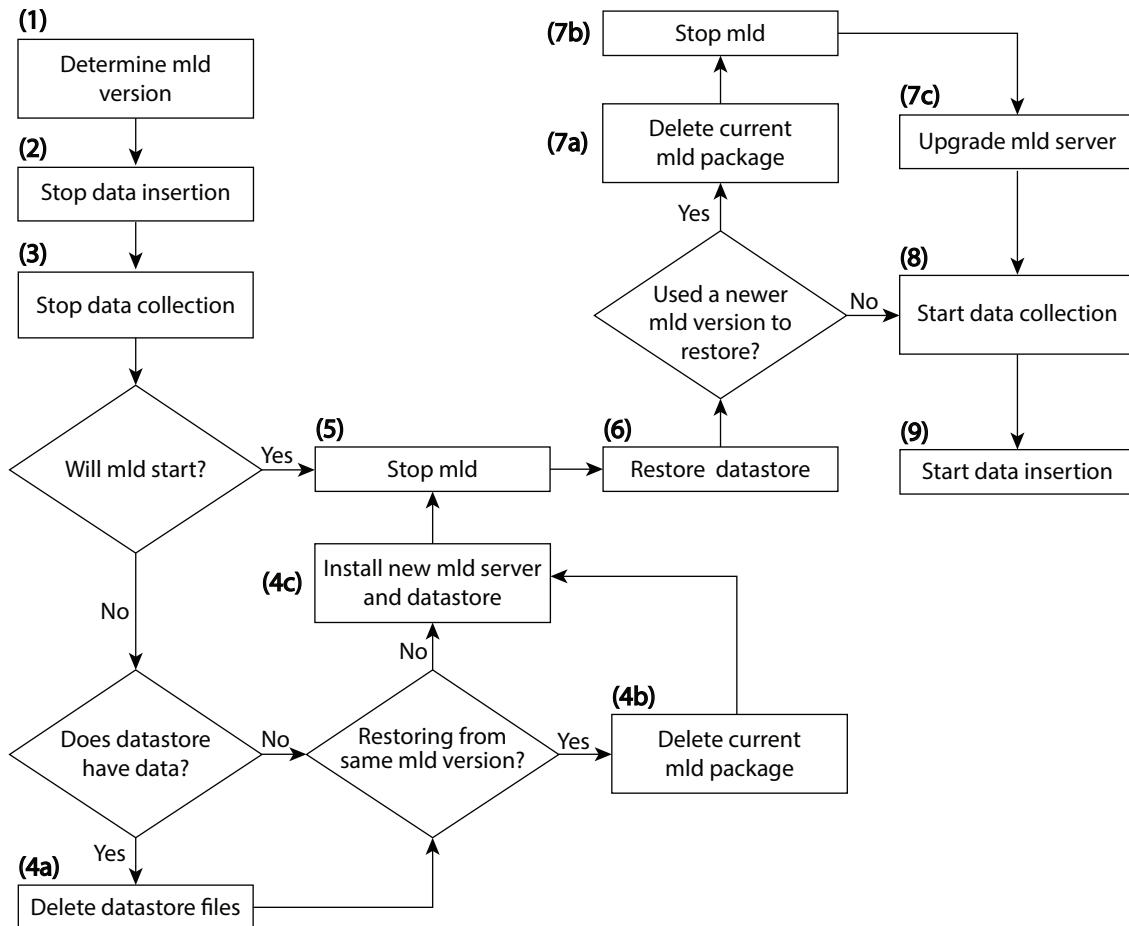
- To restore a data store, you must have a backup of it. See the [Backing Up the Data Store](#) section.
- Ensure you have a proper disk and disk space. For example, if your data was corrupted, you would need a new disk. If the restoration is due to a space issue, add more space to the existing disk.
- If you have a single-device configuration, the collection of data will be interrupted during the restoration of a WAE Live data store. Note that this affects the WAE Design Archive application if you are running it in addition to WAE Live.
- If the backup data store resides on a different device, ensure the following prerequisites are met.
  - The username and user ID (uid) of both devices must be the same.
  - The backup data store name uses a hostname as a portion of its name. This hostname portion of the backup data store name must be changed to be the same as the hostname on the device to which it is being restored.

Example: The backup data store name is akdobi.acme.com\_1\_L0. The hostname on the device on which the data store is being restored is akgudei.acme.com. In this case, change the backup data store name to akgudei.acme.com\_1\_L0.



## Restoration Steps

Figure 10-1 Data Store Restoration Workflow



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- Step 1** Determine the version of the mld software package. If you have only one version, it is listed in `/opt/cariden/software/mld`. If you have multiple versions, determine which one is currently being used by entering the following from `/opt/cariden/software/mld`.
- ```
ls -l | grep current
```
- Step 2** Stop the insertion of data.
- If using augmented or manual snapshots, disable the insertion using the following command within the snapshot. Note that currently running insertions continue until completion.
- ```
ml_insert_ctl -disable-scheduler
```
- If insertion is configured through the WAE Live UI, open this UI and stop the insertion from the Settings page. Set the Data Collection option to None, and click Apply.
- Step 3** Stop the collection of data.

- If using augmented or manual snapshots, after the most recent snapshot has finished, stop further snapshots from running by disabling the cron job (using comments #). To determine if a snapshot has finished, check the system process table or check the log file, which by default is in

```
$CARIDEN_ROOT/logs.
```

- If collection is configured solely through the WAE Collector UI or if using augmented snapshots, open the WAE Collector UI. Stop the collection from the Collection > Schedule page by clicking the Stop button. Then stop the web server.

```
service wae-web-server stop
```

If the mld server will start, skip to step 5.

**Step 4** If the mld server will not start, follow these steps.

- a. If you have data, delete the data files. If there is no data, such as when restoring to a new disk, skip to step 4b.

```
rm -rf /opt/cariden/data/mldata/datastore/*
```

- b. If using the same mld version that was used to generate the restored data store, delete the current mld package. If using a newer mld version than was used to generate the data store, skip to Step 4c.

```
rm -rf /opt/cariden/software/mld/<package_name>
```

- c. Install a new mld server and data store. This action also starts the mld server.

```
mld -action install -storage <n:n:n>
```

**Step 5** Stop the mld server.

```
mld -action stop
```

**Step 6** Restore the data store data.

- If you used the default backup directory when setting up the backups, you do not need to give `-directory` a value.
- If you did not use the default backup directory, the `-directory` value must be the same as configured when installing the data store or the same as configured in the config.xml file (in

```
$CARIDEN_ROOT/etc/configs).
```

```
ml_restore -directory <backup_data_store_directory>
```

**Step 7** If you used a newer mld version than was used to generate the data store, follow these steps.

- a. Delete the current mld package.

```
rm -rf /opt/cariden/software/mld/<package_name>
```

- b. Stop the mld server.

```
mld -action stop
```

- c. Upgrade the mld server. See [Table 10-1](#) for information on the two available options: `-mld <directory>` and `-backup <directory>`.

```
mld -action upgrade
```

**Step 8** Restart the collection of data.

- If using augmented or manual snapshots, test the snapshot process by running it as a single instance.

Augmented: `snapshot -config-file /opt/cariden/etc/snapshot_augment_collector.txt`

Manual: `snapshot -config-file /opt/cariden/etc/snapshot.txt`

If you are satisfied that the data is valid, restart the cron job. To determine if a snapshot has finished, check the system process table or check the log file, which by default is in `$CARIDEN_ROOT/logs`.

- If collection is configured solely through the WAE Collector UI or if using augmented snapshots, start the web server.

```
service wae-web-server start
```

Open the WAE Collector UI, and start the collection from the Collection > Schedule page.

**Step 9** Restart the insertion of data.

- If using augmented or manual snapshots, enable the insertion using the following command within the snapshot.

```
ml_insert_ctl -enable-scheduler
```

- If insertion is configured through the WAE Live UI, open this UI and stop the insertion from the Settings page. Set the Data Collection option to the appropriate server or archive, and click Apply.
-

