



## Cisco WAE Live Datastore

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

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If you need to migrate a WAE Live datastore 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`.



### Note

The mld server is started, restarted, and stopped as the `wae-mld` service. However, it is not monitored like the other WAE services are. For information on services, see the *Cisco WAE System Administration Guide*.



### 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. For information on the migration process and which files to check, see the *Cisco WAE Server Installation Guide*.

# Install mld Server

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

- The `-size` option is required. The values are D (demo), S (small), M (medium), and L (large). For assistance in which value to use, contact your support representative.
- Best practices:
  - Use the `-backup` option to change the default backup directory to one that is on a different physical disk.
  - For better performance, create a separate ext2 partition for the directory specified with the `-datastore` option.

Step 1

Stop the web server and all other services.  

```
service <service_name> stop
```

 Example: `service wae-web-server stop`

Step 2

Enter the following command to install the datastore. To change the default directories, use the options described in [Table 2-1](#).  
  
 Minimal requirement: `mld -action install -size <D,S,M,L>`  
 Best practice: `mld -action install -size <D,S,M,L> -backup <backup_directory>`

Step 3

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

```
service <service_name> start
```

 Example: `service wae-web-server start`

## mld Options

Table 2-1 mld Options

Options	Description	Default
-version	Display the datastore version	
-action	install —Install a new mld server and datastore, and start the mld server.  upgrade —Update an existing mld server and start the mld server.  start —Alternative way to start the mld server.  stop —Alternative way to stop the mld server.  status —Alternative way to show the status of the mld server.  restart —Alternative way to stop and then restart the mld server.	Default installation directory \$CARIDEN_ROOT/software/mld/current

Table 2-1 mld Options (continued)

Options	Description	Default
<b>Use only with -action install</b>		
-size= [DSML]	Size of the datastore. Required if using -action install.	
-mldata <directory>	Directory where all application data is stored. This includes the datastore, report output, and other application data.	\$CARIDEN_ROOT/data/mldata
-datastore <directory>	Directory where the datastore is initialized. Once set, this directory cannot be changed. You can, however, use symbolic links.	\$CARIDEN_ROOT/data/mldata/datastore
-cpus <#>	Number of CPUs reserved for the datastore and the mld server. If using -size D, this must be set to 1.	Half of the total CPUs
<b>Use only with -action install or -action upgrade</b>		
-mld <directory>	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>	Directory for saving datastore backups. You can override this for a single backup. See the <a href="#">Back Up Datastore</a> section.	\$CARIDEN_ROOT/data/mldata/backup

## Upgrade Datastore

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



### Note

To upgrade the datastore, 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.

```
service wae-mld stop
```

**Step 3** Enter the following command to upgrade the datastore. To change the default mld server directory or backup directory, use the options described in [Table 2-1](#).

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`

# Start and Restart mld Server

Start and restart the mld server as the `wae-mld` service. Upgrading and installing the mld server also start it.



## Note

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

**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 these `service` commands.

Start: `service wae-mld start`

Restart: `service wae-mld restart`

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

```
service <service_name> start
```

Example: `service wae-web-server start`

## Stop mld Server and Get Status

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

Stop: `service wae-mld stop`

Status: `service wae-mld status`

## Back Up Datastore

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.

Backups require approximately 1 TB of space.

## 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 datastore. Doing so sets the default backup directory for all backups.

```
mld -action install -backup <backup_directory>
```

- The backup process makes a copy of the datastore, 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. Ensure there is at least one hour between each backup. Once completed, verify that the backup was completed within the hour.

## Backup Steps



### Note

Keep both the datastore (`wae-ml-d`) and the web server (`wae-web-server`) running.

You can execute `ml_backup` to run a manual backup at any time.

The default backup directory is `$CARIDEN_ROOT/data/mldata/backup` unless this was changed when installing the datastore.

The `ml_backup` tool enables you to perform multiple levels of backups to save disk space, though the first time using these levels, you must perform backups in this sequence.

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

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.
- 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 have run `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 datastore, 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

## Restore Datastore



### Note

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

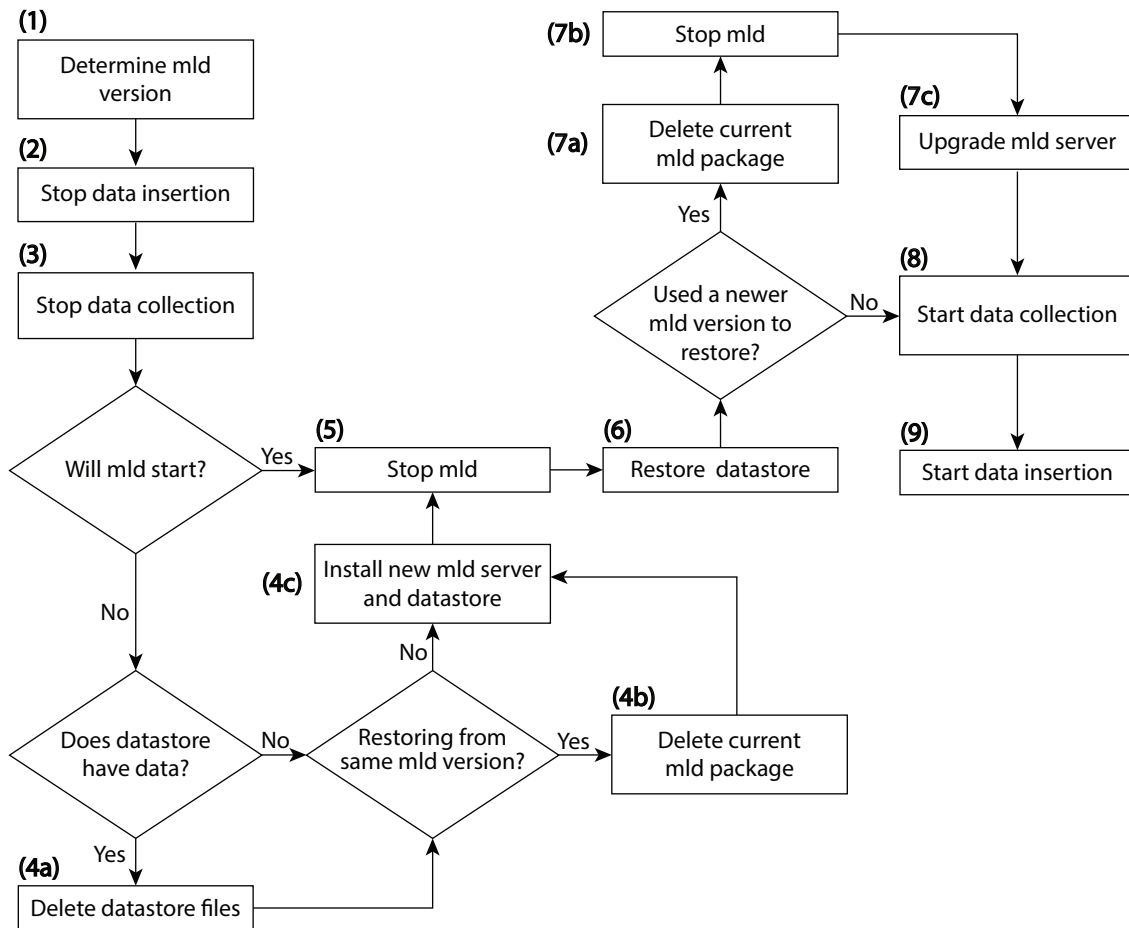
## Prerequisites

- To restore a datastore, you must have a backup of it. See the [Back Up Datastore](#) 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 datastore. Note that this affects the WAE Design Archive application if you are running it in addition to WAE Live.
- If the backup datastore 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 datastore name uses a hostname as a portion of its name. This hostname portion of the backup datastore name must be changed to be the same as the hostname on the device to which it is being restored.

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

## Restoration Steps

**Figure 2-1** Datastore 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.

- 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/*
```

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

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

- Install a new mld server and datastore. This action also starts the mld server.

```
mld -action install -size <D,S,M,L>
```

**Step 5** Stop the mld server.

```
service wae-mld stop
```

**Step 6** Restore the datastore 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 datastore or the same as configured in the config.xml file (in `$CARIDEN_ROOT/etc/configs`).

```
ml_restore -directory <backup_datastore_directory>
```

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

- Delete the current mld package.

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

- Stop the mld server.

```
service wae-mld stop
```

- Upgrade the mld server. See [Table 2-1](#) 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.
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