



Release Notes

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These Release Notes contain supplemental information about ElectricAccelerator® version 7.2.

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Product Description

ElectricAccelerator® is a software build accelerator that dramatically reduces build times by distributing the build over a large cluster of inexpensive servers. ElectricAccelerator uses a patented dependency-management system to identify and fix problems in real time that would break traditional parallel builds. ElectricAccelerator plugs into existing software development environments seamlessly and includes web-based management and reporting tools.

Electric Cloud also offers ElectricAccelerator Developer Edition, which lets individual developers leverage the multiple cores in a personal workstation. Instead of running a build sequentially on a single core, ElectricAccelerator Developer Edition runs the build's entire workload in parallel on multiple cores on the local developer desktop.

ElectricAccelerator and ElectricAccelerator Developer Edition include the following components:

- Electric Make® (eMake)
- Electric File System (EFS)
- ElectricAccelerator Agents (Electric Agent or Agent)

- Cluster Manager (a component of ElectricAccelerator)
- Electrify

What's New for Version 7.2

New Features and Functionality

- Performance is significantly improved for certain jobs that run multi-threaded processes. (EC-10417)
- An additional value of `unknown` for the `--emake-ledger` command line option is introduced. This value specifies that Ledger consider a target to be out of date if the Ledger database contains no entry for the target. This addresses an issue where behavior of the Ledger feature for new rules was incompatible with eMake 7.0. (EC-10331)
- The default for the maximum number of agents that a Cluster Manager build class can use for a build is increased from 30 to 64. (EC-10244)
- A configuration file is introduced that eMake reads to discover default command options. The path to the file is `<ECloud install>/<arch>/conf/emake.conf` (on Linux and UNIX) or `<ECloud install>\<arch>\conf\emake.conf` (on Windows), where `<ECloud install>` is the top installation directory containing the eMake program, and `<arch>` is the architecture (such as `i686_Linux` or `sun4u_SunOS`). For information about editing and using this file, see the *Electric Make Users Guide* for version 7.2.
- (Linux platforms) The Electric File System now reports file type information in directory read results using `readdir()` and related system calls. This results in dramatic performance improvements for certain types of jobs, such as those using the 'find' utility. This also addresses a rare problem where tools that incorrectly require that information will fail, such as `dtbtool`. (EC-10134)
- An eMake command line option `--emake-ignore-all-intermediate=1` is added. This option causes eMake to not treat `.SECONDARY` targets having no prerequisites as meaning that all targets are intermediate. This option might increase performance on certain large builds with thousands of `.SECONDARY` targets and reduce eMake runtime memory requirements (but breaks strict compatibility with GNU Make when emulating GNU Make 3.81 and later). (EC-10036)
- A pragma is added to instruct parse avoidance to detect the dependence of a parse result upon path wildcard match results. This pragma makes the parse cache sensitive to the existence (or nonexistence) of specific files in directories that it reads as well as in new subdirectories thereof. (eMake does not detect matching files in just any new subdirectory, but only those that are subdirectories of directories read in the original job and their subdirectories, recursively.) (EC-9921)

You can specify more than one glob pattern, as in the following pragma:

```
#pragma cache parse -readdir *.h -readdir *.c
```

In addition, Javadoc caching now supports more than one glob pattern. For Android-specific information about parse avoidance and other Android best practices, see KB article KBEA-00130 at <https://electriccloud.zendesk.com/entries/23213988-KBEA-00130-Best-practices-for-Android-builds>.

- (UNIX and Linux platforms) A new option for the `ecconfig` command lets you set the maximum number of open file descriptors for agents. (The number is recorded via the `MAX_OPEN_FDS` field in the `ecagent.conf` file.) To clear the number and revert to the operating system default, enter `ecconfig --maxopenfds ""`.

This option ensures that the maximum number is preserved after upgrades. This addresses an issue where agents started by the ElectricAccelerator `clusterexec` command do not acquire settings from a modified `/etc/security/limits.conf` file after a reboot and must be restarted (because at the time agents are started, no user is logged in). (EC-9772)

Behavior Changes

- The default setting for the `--emake-localagents=` option is now `y` if you request a cluster manager or if local agents appear to be running on that system, and `n` if neither of those is the case. If you have installed local agents (and they are currently running), but you do not want to use them, then specify `--emake-localagents=n` (with or without the `--emake-cm` option). In other scenarios, you do not need to use the `--emake-localagents` option. This lets you use cluster agents only (without needing to shut down running local agents). (EC-10621 and EC-10406)
- Two agent-related licensing error messages (EC1181 and EC2124) are replaced by EC1289 (`No valid eMake licenses...`). This error message indicates a problem with a local agent license: The cluster manager handles agent licensing for cluster agents, but the eMake client restricts the use of local agents based on a local license. This error message appears if the license is invalid, or if you are using local agents without a cluster and no license exists. (EC-10586)

Resolved Issues

- (Linux platforms) Fixed the issue where the installer erroneously displayed a warning that stated that Red Hat Enterprise Linux (RHEL) 6.4 was unsupported. (EC-10661)
- The following errors appeared in certain reports in the Cluster Manager. (EC-10622)

Chart results:

```
-----
+ Cannot get the result set metadata.
SQL statement does not return a ResultSet object.
SQL error #1: Query was empty
```

- Electrify now splits large annotation files into smaller pieces for compatibility with ElectricInsight. (EC-10513)
- The Loopback File System (LOFS) sometimes erroneously indicated that an existing file does not exist. (EC-10489)
- The Cluster Manager command-line tool (`cmtool`) encountered an "InternalError: NullPointerException" error when using the `cmtool exportData` command. (EC-10361)
- (Windows platforms) Using Simple/Dynamic disk types caused cluster builds to fail when Electrify was used. (EC-10349)
- Recursive Makes crashed because of a lost network connection (socket error) to an agent. (EC-10335)

- ElectricAccelerator version 7.1 did not install and run on Windows Server 2003: Apache failed to start upon reboot, Windows Event Viewer indicated multiple errors, and the Installation log indicated issues with OpenSSL. (EC-10200)
- eMake version 7.0 core dumped with a "std_bad_alloc" message. (EC-10058)
- eMake version 7.0 core dumped with a "std::bad_alloc" error. (EC-9973)

Platform Support

- Support is added for RHEL 6.5 (kernel 2.6.32-431).
- Support is added for Ubuntu Linux 13.04 (kernel 3.8).

Installation and Upgrade Notes

Before You Upgrade

Ensure that you back up the directory `/opt/ecloud/<arch>/cloud` for UNIX or `C:\ECloud\i686_win32` for Windows to a safe location. The upgrade process does not preserve the existing files.

For additional security, perform a database backup following the recommended procedure from your database vendor.

Hardware Requirements

ElectricAccelerator version 7.2 and newer versions require a Pentium 4 or newer processor when running in a 32-bit Solaris x86 environment. (EC-10282)

Cluster Manager Fresh Installations

If Apache fails to start properly after a fresh Cluster Manager installation, reboot the system.

MariaDB Replaces MySQL as Default Local Database

Electric Cloud no longer bundles MySQL as the default local database for ElectricAccelerator. Starting with ElectricAccelerator version 7.1, Electric Cloud bundles MariaDB and installs it as the default local database on the Cluster Manager. When you upgrade the Cluster Manager, MariaDB replaces the local MySQL database (if applicable) and migrates all information from it.

MariaDB is an open-source database that is fully compatible with MySQL. Because it is open-source software, MariaDB has no enterprise license support model. If using an open-source database is of concern to your organization, you can still use the MySQL, Oracle, or SQL Server databases instead. See the online help topic "Database Configuration" for information about configuring Accelerator to use an external database.

Installing JDBC Drivers for MySQL or Oracle Databases

Electric Cloud does not distribute the JDBC drivers for MySQL or Oracle databases. If you want to use one of these databases, you must download its driver directly from the Oracle website, copy it to the appropriate directory on the Cluster Manager server, and restart the Cluster Manager service. For more information, see the "Installing JDBC Database Drivers" section in Chapter 3 of the *ElectricAccelerator 7.2 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html.

Known Linux Kernel Issue and ElectricAccelerator Performance

Affected Kernel Versions

- RHEL versions later than 2.6.18-194.32 and earlier than 2.6.32-131
- Ubuntu versions 2.6.31, 32, 33, and 34

Symptoms

Affected systems might encounter reduced performance on both ext3 and ext4 filesystems. Symptoms might include:

- `hung_task_timeout_secs` messages in system `dmesg` logs
- Widely variable agent availability (entering and exiting agent “penalty” status frequently)
- Contention over the `ecagent.state` file
- Slower builds (with unexplained variances)

To help determine if your environment has this kernel issue, run

```
dmesg | grep hung_task_timeout
```

If `hung_task_timeout` errors are present, this indicates that a known Linux kernel issue is present. Contact your kernel provider to obtain another version of the pre-compiled kernel.

Corrective Actions

For Systems Running RHEL 5.6, 5.7, 5.8, and 6.0

Consider upgrading to 2.6.32-131 (RHEL 6.1) or downgrading to 2.6.18-194.32 (RHEL 5.5).

For Systems Running Ubuntu 10.04

Consider upgrading to kernel version 2.6.35 or newer.

To install the upstream kernel, use the example below (replace `*` with the version that you want to install):

```
sudo add-apt-repository ppa:kernel-ppa/ppa
sudo aptitude update
sudo apt-get install linux-image-2.6.35-*--generic
sudo apt-get install linux-headers-2.6.35-*--generic
sudo apt-get install linux-maverick-source-2.6.35 linux-maverick-headers-2.6 (optional)
```

Upgrading the kernel might require you to reinstall kernel modules such as video drivers, `efs`, and `vm-tools`. You can do so by running `apt-get dist-upgrade` and then rebooting.

ECLOCK_TIMEOUT_DELAY

The `eclock ECLOCK_TIMEOUT_DELAY` environment variable is no longer used and can be deleted. To replace the environment variable’s behavior, divide the value of `ECLOCK_TIMEOUT_DELAY` by 100 and set `ECLOCK_BUSY_WAIT` to the resulting value. (The `ECLOCK_BUSY_WAIT` default value is 100, so you do not need to set it to that value explicitly.)

Linux Automounted Filesystems

If you implemented a workaround for automounted filesystems on Linux (such as hard mounting filesystems or manually changing the automounter configuration), you can undo those changes after you upgrade to the latest version of ElectricAccelerator.

Windows Application Setup

Any Windows applications that store user-specific data must be run (on all hosts) by the user who owns the agent processes on those hosts. For example, if you plan to use Microsoft Visual Studio, you must log in to each agent host and run `devenv` as the user who owns the respective agent processes (usually `ECloudInternalUser1`, `ECloudInternalUser2`, and so on). You can use the `Psexec` tool (downloadable from <http://technet.microsoft.com/en-us/sysinternals/bb897553.aspx>) to eliminate the need to log in and log out multiple times. Using this tool is more efficient, because applications such as Visual Studio or Excel store user settings in the registry and create files in the My Documents folder.

If you install Visual Studio after installing ElectricAccelerator, you must register the add-in on the hosts by running `install_ecaddin<N>.bat`, where *N* is 70, 71, 80, 90, 100, or 110 depending on your Visual Studio version.

If you are using Visual Studio 2005 or newer, you should reduce the number of parallel builds that Visual Studio performs:

1. In Visual Studio, select **Tools > Options**.
2. In the **Options** dialog, open **Projects and Solutions > Build and Run**.
3. Set the maximum number of parallel project builds to 1.

When setting up Windows, be sure to initialize the Customer Experience Improvement Program setting.

Known Issues

- Options in the `emake.conf` configuration file override options that are set using ElectricAccelerator environment variables (such as `EMAKE_CM`). (EC-10272)
- Because of a Linux kernel compatibility issue with LOFS, Accelerator agents cannot be installed on Ubuntu 12.10.
- For Visual Studio 2012, if project dependencies are not fully defined, the project build order under `eMake` might be different to Visual Studio.

Workaround: If a build fails because a prerequisite project was not built, add an explicit project dependency in the solution.

Documentation

ElectricAccelerator documentation is available at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. Updated documentation will be available on this web site, if updates are made after the release.

ElectricAccelerator provides the following product documentation:

- A complete, robust online help system (click any Help link in the upper-right corner of each web page)
- Tooltips with information to help fill in form fields (also available in online help topics)
- *ElectricAccelerator Installation and Configuration Guide* (also available within the online help system)
- *ElectricAccelerator Electric Make Users Guide* (also available within the online help system)
- *ElectricAccelerator cmtool Reference and Users Guide* (also available within the online help system)
- *ElectricAccelerator Visual Studio Integration Guide*
- *ElectricAccelerator Release Notes*

Troubleshooting and Getting Help

Technical Support

Contact Electric Cloud technical support:

- 408.419.4300, option 2. Hours are 9 A.M.–5 P.M. PT Monday–Friday (except holidays)
- support@electric-cloud.com

Before you contact technical support, have the following information available:

- Your name, title, company name, phone number, and email address
- Operating system and version number
- Product name and release version
- Problem description

Electric Cloud "Ask" Website

Go to <http://ask.electric-cloud.com>:

- Ask questions or read answers to questions from other users
- Get help with installation and configuration
- Submit feedback

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