



Electric Cloud
ElectricAccelerator
version 6.2

Release Notes

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These Release Notes contain supplemental information about ElectricAccelerator, version 6.2. Topics include:

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Product Description

ElectricAccelerator® is a software build accelerator that dramatically reduces software build times by distributing the build over a large cluster of inexpensive servers. Using a patented dependency management system, ElectricAccelerator identifies and fixes 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 enables individual developers to leverage the multiple cores in a personal workstation. Instead of running a build sequentially on a single core, ElectricAccelerator Developer Edition runs all of the build's 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
- Electrify

Note: The Cluster Manager is a component of ElectricAccelerator only.

New Features or Added Functionality

- Additional platform support - ElectricAccelerator now supports the following platforms:
 - Ubuntu 12.04
 - Ubuntu 11.10
 - SUSE Linux Enterprise Server 11 SP2
- Added the `#pragma multi` directive, which is an extension for building multiple targets simultaneously in GNU Make emulation. For a detailed explanation of its use, refer to the *ElectricAccelerator Electric Make Guide*, page 5-15.
- Added support for Visual Studio 2012

Other Improvements

- The "last ping time" for an agent now tracks the time of the last heartbeat from the agent instead of the last time the Cluster Manager sent an explicit ping to the agent (EC-9464).
- Fixed an issue related to escaped characters that resulted in eMake's generating incorrect XML for annotation (EC-9461).
- Improved the speed of the Linux agent installer (EC-9443).
- Added the "Build access limited to owner" option to the Permissions page, which enables you to limit access to build information to the build's owner and the administrator (EC-9436, EC-9254).
- Fixed a locale incompatibility that caused some ElectricAccelerator 6.1.0 cluster builds to fail to release the cluster, until timed out. This incompatibility affected locales that do not use "." for decimal points (EC-9433).
- On 32-bit Linux, ElectricAccelerator now makes more use of Pentium 4 instructions (EC-9426).

- Modified the preemption policy. The modification alters the default preemption policy behavior so that locked agents are no longer preempted from a build that still has its minimum number of agents. Also, `lock interval=0` now means no locking will occur; previously it meant to lock as soon as possible. Additional information about how the preemption policy works is discussed in the Agent Policies topic in online help (EC-9423).
- Corrected an issue where `ecclusterupgrade` gives wrong summary information after a successful upgrade (EC-9403).
- Changed the ElectricAccelerator Developer Edition silent install mode so that the number of agents is not automatically reduced after detecting the number of cores on the machine (EC-9395).
- Added a new Electric Make command line option: `--emake-platform`. This new option allows emulations of make to run on different platforms, while the existing `--emake-emulation` option allows the emulation of different versions of make. For more details about this option, see [The --emake-platform option](#) later in this document (EC-9394).
- Corrected an issue related to the premature destruction of a `vfsmount`, which could cause a kernel panic (EC-9392).
- Corrected an issue in which a Linux agent may attempt to use an unmounted EFS root as if it were mounted, resulting in a kernel panic (EC-9381).
- Added a missing `libexpat.dll`, which prevented `anno2log` from running (EC-9378).
- Implemented `lofs` improvements (EC-9365).
- Implemented a method to kill daemonized processes when a job finishes (EC-9350).
- Added a View Messages link to the Build Details page (EC-9340).
- Added support Windows-on-Windows 64-bit registry key redirection. This enables proper handling of registry keys when running 32-bit Windows applications on a 64-bit Windows operating system (EC-9325).
- Corrected a bug in eMake that failed to detect a conflict for `rmdir` after the submake (EC-9320).
- Fixed an EFS bug that could cause intermittent Linux kernel panics (EC-9261).
- Added the Cluster Manager name/IP address to EC3xxx messages (EC-9247).
- Electrify now automatically finds the correct `electrifymon` directory regardless of operating system bitness, eliminating the need to specify an environment variable except in cases when the default install location is not used (EC-9215).
- Added the Resource and Platform columns to the Cluster Manager Build Classes page (EC-9198).
- The Cluster Manager can now transmit compressed annotation when downloading build logs (EC-7649).
- The agent now proactively terminates daemon processes that linger before trying to unmount the EFS (EC-7338).
- The EFS now prohibits access to its files by processes that were not started as part of the build (EC-4161).

System Requirements and Supported Platforms

This section lists system requirement and supported platform differences [only] from the previous major, minor, or patch product release. For complete information, see this Electric Cloud Knowledge Base article or the ElectricAccelerator Installation and Configuration Guide v6.2, Chapter 2, “System Requirements and Supported Platforms,” available in the ElectricAccelerator section of the Electric Cloud FTP site.

- Additional platform support - ElectricAccelerator now supports the following platforms:
 - Ubuntu 12.04
 - Ubuntu 11.10
 - SUSE Linux Enterprise Server 11 SP2

Linux platforms require additional libraries to run MySQL on the Cluster Manager

ElectricAccelerator updated its toolchain to include MySQL 5.5.16 (updated from MySQL 5.0). To run MySQL 5.5.16, the **Cluster Manager must have the 32-bit version of the following libraries:**

- libaio.so.1
- libncurses.so.5

You may need to add those libraries to the Cluster Manager machine.

RHEL example using a package manager:

```
yum install libaio.i686
yum install ncurses-libs.i686
```

RHEL example without a package manager:

```
up2date --nox --arch=i386 libaio
up2date --nox --arch=i386 ncurses
```

Ubuntu example using a package manager:

```
apt-get install libaio1
```

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 may encounter reduced performance on both ext3 and ext4 filesystems. Symptoms may 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 a different version of the precompiled 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 later.

To install the upstream kernel, do the following, for example:

```
sudo add-apt-repository ppa:kernel-ppa/ppa
sudo aptitude update
sudo apt-get install linux-image-2.6.35-15-generic
sudo apt-get install linux-headers-2.6.35-15-generic
sudo apt-get install linux-maverick-source-2.6.35 linux-maverick-headers-2.6 (optional)
```

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

Before You Upgrade

Before upgrading the Cluster Manager...

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

For additional security, perform a database backup following the recommended procedure for your respective database system.

Installation/Upgrade Notes

Linux platforms require additional libraries to run MySQL on the Cluster Manager

Make sure your Linux Cluster Manager machine has the additional libraries (`libaio.so.1` and `libncurses.so.5`) required to run MySQL 5.5.16. See for additional information. If the required libraries are not present, MySQL (and the Cluster Manager) cannot run.

The installer will notify you if the libraries are missing but will complete the installation process with a message similar to the following: The upgrade of MySQL to 5.5 had problems. Please contact customer support for additional help. The install log will also contain a message similar to the following: FATAL ERROR: Can't execute '/opt/ecloud/i686_Linux/mysql/bin/mysql'

If you attempt to start the Cluster Manager without the required libraries, the UI may display a Server Startup Status page with a Server State of `databaseConnection`.

Cluster Manager installs

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

ECLOCK_TIMEOUT_DELAY

If you currently set the `eclock ECLOCK_TIMEOUT_DELAY` environment variable, it 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 previously 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.

Known Issues

This version of ElectricAccelerator has the following known issues :

- For Visual Studio 2012, the project build order under eMake may be different to Visual Studio if project dependencies are not fully defined.

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

Documentation Issues

Extension for Building Multiple Targets Simultaneously

The following text from *ElectricAccelerator Electric Make Users Guide*, page 5-15, has been replaced:

Sometimes you may want a rule that creates multiple outputs, and using a pattern rule may not be a suitable solution.

The replacement text is:

Sometimes you may want one rule that creates multiple outputs simultaneously, and using a pattern rule may not be a suitable solution.

The --emake-platform option

The following text was omitted from *ElectricAccelerator Electric Make Users Guide*, chapter 10, Electric Make Command-line Options and Environment Variables:

The `--emake-platform` option splits platform from emulation. Think of `--emake-platform` as allowing emulations of make to run on different platforms, while the `--emake-emulation` option allows the emulation of different versions of make. You can use this option in conjunction with `--emake-emulation`.

As an example, you could set `--emake-platform=cygwin --emake-emulation=gmake3.81` (to use cygwin's version of gmake3.81), or you could set `--emake-platform=mingw --emake-emulation=gmake3.81` (to use mingw's version of gmake3.81).

Valid names for `--emake-platform=<name>` are: `mingw` and `cygwin`.

- Setting `--emake-platform=mingw` emulates MinGW run under Windows and enables minimal support for MinGW make.
- Setting `--emake-platform=cygwin` forces `--emake-cygwin=y`. Requires `cygwin1.dll`.

Clarification - 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 that 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/bsb896649.aspx>) to eliminate the need to log in and log out multiple times. Using this tool is

more efficient because some applications such as Visual Studio or Excel store user settings in the registry and create files in "My Documents."

If you install Visual Studio after installing ElectricAccelerator, 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 later, reduce the number of parallel builds Visual Studio performs:

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

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

Documentation

All ElectricAccelerator documentation is available in PDF format on the Electric Cloud FTP site and the Community Web Site. ElectricAccelerator 6.2 provides the following product documentation:

- ElectricAccelerator Installation and Configuration Guide, v6.2
- ElectricAccelerator Electric Make Users Guide, v6.2, also available within the online help system.
- ElectricAccelerator cmtool Reference and Users Guide, v6.2, also available within the online help system.
- 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 (information also available in online help topics).
- ElectricAccelerator Technical Notes:
 - ElectricAccelerator - Visual Studio IDE Add-in
 - ElectricAccelerator - Solution Support Add-in
- ElectricAccelerator Release Notes

Troubleshooting and Getting Help

Contacting Technical Support:

Before you contact our technical support staff, please have the following information available.

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

Hours: 8AM - 5PM PST (Monday-Friday, except Holidays)

Phone: 408-419-4300, Option #2

Email: support@electric-cloud.com

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