



ElectricAccelerator Release Notes

Version 9.1

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ElectricAccelerator Version 9.1

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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 (“Accelerator”) uses a patented dependency-management system to identify and fix problems in real time that break traditional parallel builds. Accelerator plugs seamlessly into existing software development environments and includes web-based management and reporting tools.

Accelerator includes the following components:

- Electric Make® (“eMake”)
- Electric File System (EFS)
- ElectricAccelerator Agents (“Agents”)
- Cluster Manager
- Electrify

What’s New or Modified

New Features and Functionality

Cluster Manager Performance and Scalability Improvements

(Linux platforms only) The Cluster Manager is upgraded to 64-bit for greater performance and scalability. Also, the amount of memory allocated to the Cluster Manager Java process is increased from 2 GB to 4 GB.

Updated Cluster Manager Web Interface

The web UI for the Cluster Manager is updated to match that of other Electric Cloud product web interfaces. For details about using the Cluster Manager, see the Cluster Manager online help (click the **Help** button in any page of the Cluster Manager web UI). (EC-12079)

Cluster Manager Web Page Updates

The following pages are redesigned or replaced with other functionality to provide more information and improve the user experience:

- The **Home** page is redesigned. It now provide a news feed with information about new feature releases and patch releases, links to documentation and other assistance, instruction for novice users, and real-time charts for agent usage and build durations during the past 24 hours.

This page also now provides the following key statistics about the cluster: Number of agents, number of running builds, number of CPU hours used, number of developer hours saved, and number of days remaining in the Cluster Manager license. (EC-12145).
- The **Filters** page is removed. This functionality is moved to the **Saved Filters** panel that appears on any list in the Cluster Manager web interface that supports filtering.

Redesigned Cluster Manager List Filtering

The functionality for creating and managing filters is simplified and improved. For details, see the *ElectricAccelerator 9.1 Help* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html or click the **Help** button in the Cluster Manager web interface.

gmake Support

Accelerator now supports the following GNU Make (gmake) functionality:

- Support for the `$(.SHELLSTATUS)` variable in gmake 4.2 is introduced. This variable is set to the exit status of the last `!=` or `$(shell ...)` function invoked in this instance of Make. The value is 0 if successful or > 0 if not successful. The value is unset if the `!=` or `$(shell ...)` function was not invoked. To enable this feature, use the `--emake-version=gmake4.2` option. (EC-12075)
- Support for the gmake shell assignment feature in gmake 4.0 and 4.1 is introduced, where `VAR!=<command>` is equivalent to `VAR:=$(shell <command>)`. To enable this feature, use the `--emake-version=gmake4.0` option. (EC-12063)

For details about enabling gmake emulation and using gmake with Accelerator, see the *ElectricAccelerator 9.1 Electric Make User Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12075, EC-12063, AND EC-12059)

Android 8 and Chromium Support

Accelerator now supports Android version 8 ("O") (previews 2 and 3) and Chromium builds by including the following functionality:

- The version of Ninja that eMake supports is upgraded from version 1.6.0 to version 1.7.2. For details about using Ninja with Accelerator, see the *ElectricAccelerator 9.1 Electric Make User Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12026)
- Support is added for Ninja's "depfile" feature to bootstrap dependencies for the Ninja file itself in an initial clean build. The depfile is a file containing additional prerequisite information for a target, in makefile format (such as `output: input`). (EC-12147)

Concurrent Build Licensing

For new ElectricAccelerator subscription licenses, the number of builds that you can run concurrently is now license-limited. The `noLicenseWaitTime` performance metric is introduced to indicate the amount of time that a build spent waiting for a concurrent build license because the number of concurrent builds reached the license limit. Also, JobCache is no longer separately licensed and is now included with the concurrent build license.

Customers using pre-9.1 ElectricAccelerator licenses may continue to use those licenses, including the licenses for the JobCache add-on.

For details about licensing for concurrent builds, see the *ElectricAccelerator 9.1 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12095)

Local Agent Licensing Updates

For a simpler, more consistent user experience, local agent usage is simplified so that Accelerator treats local agents and remote agents identically. This means that eMake uses local agents if they exist. (EC-12154)

- You can now run agents on Cluster Manager or eMake machines. You can now run builds from agent machines without requiring dedicated eMake machines.
- Existing installations can continue to use hybrid agent licensing, but it is not required to use local cores starting with version 9.1. eMake client licensing that allowed hybrid usage of local agents (in which eMake used both local agents and cluster agents) is removed.

You can use agents through a Cluster Manager (via the `--emake-cm=` option), or you can use only the agents on the local host (via `--emake-localagents=y`). If you specify neither option but eMake finds running agents on the host, then eMake uses them as if you specified `--emake-localagents=y`.

- The `--emake-maxlocalagents` option is deprecated and is treated like `--emake-maxagents`. You cannot force eMake to *not* to use local agents if they exist on the host.
- The `--emake-yield-localagents` option now has no effect.

For details about local agents, see the *ElectricAccelerator 9.1 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html.

Linux Third-Party Technology Stack Update for the Cluster Manager

For improved security, performance, and compatibility, the Cluster Manager's third-party technology stack is updated:

- Apache is upgraded to version 2.4.23 with Apache Portable Runtime (APR) 1.5.2 and APR-util 1.5.4. For details, see https://www.apache.org/dist/httpd/CHANGES_2.4 and https://httpd.apache.org/security/vulnerabilities_24.html.
- MariaDB is upgraded to version 10.1.20. For details, see <https://mariadb.com/kb/en/mariadb/mariadb-10120-changelog/>.
- PHP is upgraded to version 5.6.29. For details, see <https://secure.php.net/ChangeLog-5.php>.
- cURL is upgraded to version 7.22.0. For details, see <https://curl.haxx.se/changes.html>.
- Boost is upgraded to version 1.63.0. For details, see http://www.boost.org/users/history/version_1_63_0.html.

See the URLs listed above for lists of CVE vulnerabilities that were fixed in these versions.

Note: Windows Cluster Manager security updates are in review for a future release. If you are concerned with vulnerabilities on the Cluster Manager, Electric Cloud recommends that you migrate your Cluster Manager installations to Linux.

ElectricInsight

ElectricAccelerator ElectricInsight is now bundled with eMake and is installed automatically. The 32- and 64-bit executables for ElectricInsight are installed.

ElectricInsight is licensed separately from Accelerator. An ElectricInsight license file is required to run reports. All other functionality (view-only mode) is available without a license.

For information about the 32- and 64-bit executables for ElectricInsight and about using ElectricInsight, see the *ElectricInsight User Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12148)

Visual Studio Integration Update

The Visual Studio integration that is bundled with Accelerator is upgraded to version 5.2.2. For the list of new features and resolved issues, see the "What's New" section in the *ElectricAccelerator 5.2.2 Visual Studio Integration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html.

Other New Features and Functionality

- Ninja emulation now works in local mode. (EC-11867)
- Changes in CMake progress reporting files no longer cause JobCache to miss cache hits. (EC-12025)

Resolved Issues

- An issue where eMake with JobCache was slower than gmake with ccache for Android Open Source Project (AOSP) 8 full builds is fixed. (EC-12328)
- Agent shortage values appearing in the "Agent Usage" report while builds are running are now computed correctly. (EC-12298)
- Windows builds no longer intermittently fail with a `Permission denied` error when running tools such as `cl.exe`, `gawk.exe`, and `sort.exe`. (EC-12226)
- eMake no longer crashes when the `append`, `chmod`, and `rename` commands are used in that order in a makefile. (EC-12223)

- An issue with builds failing with an `Application` encountered an unexpected `Error` error when run in Cygwin is fixed. (EC-12210)
- An issue where eMake incorrectly serialized jobs created for pattern rules with multiple outputs when the outputs were a mix of intermediate and non-intermediate targets is fixed. (EC-12135)
- An installer issue where changing the Accelerator components to install multiple times failed to switch to the last-selected component is fixed. (EC-12130)
- The version of Ninja that eMake supports is upgraded from version 1.6.0 to version 1.7.2. (EC-12026)
- Changes in CMake progress reporting files no longer cause JobCache to miss cache hits. (EC-12025)
- eMake no longer crashes intermittently with `$(shell)` and cluster sharing. (EC-11987)

Platform Support

Support is added for the following platforms:

- RHEL 7.3 (kernel 3.10.0-514, 64-bit) (EC-12016)
- RHEL 6.9 (kernel 2.6.32-696) (64-bit for the Cluster Manager; 32- and 64-bit for eMake and agents)
- Windows Server 2016 (64-bit) (EC-12013)

Support is ended for the following platforms:

- RHEL 4.x
- The 32-bit variant of the Cluster Manager on all Linux platforms

Browser Support

Support is ended for the Safari browser (all versions). (EC-12140)

Installation and Upgrade Notes

Hardware Requirements

- Accelerator 7.2 and newer versions require a Pentium 4 or newer processor when running in a 32-bit Solaris x86 environment.
- The recommended total amount of RAM for an agent host is 2 GB *per agent* plus the amount of RAM normally needed to execute your build. For example, if you are running four agents, and your build normally needs 16 GB, you will need $((2 * 4) + 16) = 24$ GB.

Backing Up Before You Upgrade

- The upgrade process does not preserve the existing files. Back up the `/opt/ecloud/<arch>/cloud` directory for Linux and Solaris or the `C:\ECloud\<arch>` folder for Windows to a safe location.
- For additional security, back up the database by following the recommended procedure from your database vendor.

Installing JDBC Drivers for MySQL or Oracle Databases

Electric Cloud no longer distributes the JDBC drivers for MySQL or Oracle databases. To use one of these databases, you must download its driver directly from the Oracle website, then copy it to the appropriate directory on the Cluster Manager server, and then restart the Cluster Manager service. For details, see the “Installing JDBC Database Drivers” section in the “Installing ElectricAccelerator” chapter of the *ElectricAccelerator 9.1 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html.

Copying the execserver Executable to a New Location if You Relocate eMake

If you copy the `emake` executable to a new location, you must also copy the `execserver` executable to that location. By default, the path to the `execserver` executable is `/opt/ecloud/i686_Linux/bin/execserver` (for 32-bit eMake) or `/opt/ecloud/i686_Linux/64/bin/execserver` (for 64-bit eMake).

Regenerating History Files After an Upgrade

The identifier that is used to find certain types of jobs in the eMake history file changed in version 8.0. After an upgrade from version 7.2.2 or older versions to version 8.0 or newer versions, users should regenerate their history files by running their first build with the `--emake-history=create` option to avoid unnecessary serializations. This build might have more conflicts than normal (but subsequent builds should return to normal).

Known Issues

Linux Kernel Issue That Affects Accelerator Performance

Affected Kernel Versions

- RHEL kernel versions later than 2.6.18-194.32 and earlier than 2.6.32-131
- Ubuntu Linux kernel versions 2.6.31, 2.6.32, 2.6.33, and 2.6.34

Symptoms

Affected systems might encounter reduced performance on both ext3 and ext4 file systems. 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 this issue exists, run the `dmesg | grep hung_task_timeout command.hung_task_timeout` errors show that this issue is present. Contact your kernel provider for another version of the precompiled kernel.

Fixes for Systems Running RHEL 5.6, 5.7, 5.8, and 6.0

You should consider upgrading to 2.6.32-131 (RHEL 6.1) or downgrading to 2.6.18-194.32 (RHEL 5.5).

Other Known Issues

- The `cmtool importData` command does not import license properties (such as `maxAgents`). To work around this issue, re-import the license after using `importData`. (EC-12371)
- (Windows 10 only) `eMake.exe` might crash when trying to upload an annotation file to the Cluster Manager. (EC-12339)
- You cannot control breakpoints from the Cluster Manager. (EC-12322)
- Options in the `emake.conf` configuration file override options that are set using Accelerator environment variables (such as `EMAKE_CM`). (EC-10272)
- If Apache fails to start properly after a new Cluster Manager installation, reboot the system.

Documentation

Product Documentation

Accelerator documentation is available at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html as follows:

- *ElectricAccelerator Installation and Configuration Guide*
- *ElectricAccelerator Electric Make User Guide*
- *ElectricAccelerator cmtool Reference Guide*
- *ElectricAccelerator Error Messages Guide*
- *ElectricAccelerator Visual Studio Integration Guide*
- *ElectricAccelerator Release Notes* (this document)
- PDF, HTML, and mobile-optimized HTML versions of the online help that is also accessible from the Cluster Manager **Help** button.

Documentation on the website is updated periodically.

Cluster Manager Online Help and Tooltips

Built into the Cluster Manager are

- A complete, robust, context-sensitive online help system (click the **Help** button in any page of the Cluster Manager web UI). See the documentation website as described above for the latest updates to this information.
- Tooltips with information to help fill in form fields.

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
- <https://helpcenter.electric-cloud.com/> and then click **Submit a request** to submit or see your support tickets

Be prepared to provide your:

- Name, title, company name, phone number, and email address
- Operating system and version number
- Product name and release version
- Problem description
- Annotation file for the build involved

Electric Cloud “Ask” Website

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

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

ElectricAccelerator Knowledge Base

Go to <https://helpcenter.electric-cloud.com/hc/en-us/sections/200516893-Accelerator-KB/> to find in-depth explanations of specific topics and solutions for specific problems.