Electric Cloud
ElectricAccelerator

version 7.0

Release Notes

April 12, 2013

These Release Notes contain supplemental information about ElectricAccelerator, version 7.0. Topics include:

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.

What's New for Version 7.0

Features and Functionality

- GNU Make performance optimization functionality
  - The dependency optimization feature can learn which dependencies are actually needed for a build. ElectricAccelerator then uses that information to improve performance in subsequent builds.
  - The parse avoidance feature can effectively eliminate makefile parse time in many builds. By caching and reusing parse result files, ElectricAccelerator can speed up both full builds and incremental builds. Parse avoidance works when emulating GNU Make with clusters and/or local agents (ElectricAccelerator Developer Edition).
  - The dependency optimization and parse avoidance features have been optimized for Android platform builds.

  Refer to the *Electric Make Users Guide* for information about using these new features.

- Additional platform support - ElectricAccelerator now supports the following platforms:
  - Red Hat Enterprise Linux 6.3
  - Ubuntu 12.10
  - Windows 8
- The Cluster Manager has a new report, Resource usage over time. This report shows the number of simultaneous builds that ran on each resource over a given period of time. (EC-9469)
- Upgraded PHP to 5.3.10. (EC-9438)
- Added support for multi-line variable definition types when GNU Make 3.82 emulation is enabled; other GNU Make 3.82 features are not yet supported. (EC-9383)

- The Ledger now automatically rebuilds a target when there is no existing entry in the ledger file. This means a build that is using the Ledger for the first time may take longer than expected. (EC-9372)

- On Linux, Electrify now allows you to use a process's entire command-line to determine if it should be sent to the cluster for execution. Refer to the *Electric Make Users Guide* for information about using this feature. (EC-9209)

- Removed the Default Min/Max Agents settings from the Cluster Manager's Agent Policies page. The minimum and maximum agent settings for a build class are set on the New Build Class page or the Edit Build Class page. (EC-8655)

- eMake NMAKE emulation now supports order-only prerequisites. (EC-8011)

- eMake now reports a history fitness metric to indicate how closely the history used for a given build "matched" that build. This metric is available in the annotation file and the log file when `--emake-debug=g` is specified. (EC-6523)

- eMake Ant emulation has been deprecated in this version of Accelerator and will be removed in a future version.

Resolved Issues

- Corrected a bug that could cause an agent to hang when "session trace all was used. (EC-9671)

- The clearmake option -J is ignored. (EC-9600)

- Changed the error that lofs returns when the actual underlying filesystem does not support extended attributes. Previously, a "Function not implemented" error was incorrectly returned. (EC-9574)

- Fixed a license location issue encountered in ElectricAccelerator Developer Edition when running hybrid mode. (EC-9545)

- Fixed a bug in the Accelerator v6.2 EFS for Linux that could cause build failures mentioning "Input/output error". (EC-9538, EC-9536)

- modprobe was unable to find lofs, which caused lofs to be rebuilt each time it was loaded. The mechanism that installs the lofs kernel module was fixed. (EC-9530)

- Corrected an agent file permission issue. (EC-9528)

- Fixed a bug in eMake GNU Make 3.81 emulation that caused a "No rule to make target" message. (EC-9498)

- #pragma noautodep no longer prevents GNU Make special targets from working. (EC-9369)

- Build messages can now be viewed on the Build Details page. (EC-9340)

- Fixed a bug that caused emake to fail if MAKEFLAGS contains fake targets. (EC-9231)

- Corrected a Linux agent memory usage issue. (EC-9138)

Installation/Upgrade Notes

Before You Upgrade

Before upgrading the Cluster Manager...

Ensure you back up this directory: `/opt/ecloud/<arch>/cloud` 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.

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

If you are upgrading from an Accelerator version earlier than 6.2, be advised that the toolchain now includes 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
```

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.

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 (replace * with the version 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 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.

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.

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.

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

ElectricAccelerator documentation is available on the Electric Cloud Support web site at https://electriccloud.zendesk.com/entries/22575906-electricaccelerator-documentation. Updated documentation will be available on that page if any documents are updated post-release.

ElectricAccelerator provides the following product documentation:

- *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
- 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