ElectricAccelerator
Release Notes

Version 8.1

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

New or Updated Cluster Manager Reports

This release introduces several reports for the Cluster Manager, including new reports for the JobCache add-on (which requires a separately-purchased license and is available only on Linux and Solaris). This release also improves several existing reports and replaces several existing reports.

The following reports are introduced:

- JobCache License Allocation. This report is a skyline chart that shows concurrent builds at any time (stacked by JobCache license request results) to show how many were able to use JobCache. (EC-11565)

- JobCache Usage Summary. This report is several pie charts that show job cache requests and their results. (EC-11563)

- Build Summary. This report is a table that shows aggregate statistics (average wait time and total workload) that are grouped by either build class or build name. This report replaces the Build Users report. (EC-11561)

- Concurrent Builds. This report is a skyline chart that shows the number of running builds at any time and how many were of each build class or build name pattern as specified. (EC-11560).

- Build Duration vs. Conflict. This report is a scatter plot of build duration versus the number of conflicts per build. (EC-11558)

- Build Duration vs. Job Count. This report is a scatter plot of build duration versus the number of jobs per build. (EC-11557)

- Effective Agent Allocation Per Day. This report is a stacked bar chart that shows the effective agent allocation percentage that is reported by eMake per day. This report replaces the Build Agent Allocation Per Day report. (EC-11553)

- Effective Agent Allocation Summary. This report is a pie chart that shows the effective agent allocation percentage that is reported by eMake for a specified time period. This report replaces the Build Agent Allocation report. (EC-11551)

The following reports are updated:

- Cluster Utilization. This report is two stacked, stepped line charts that represent average agent demand and average builds running over a specified time period. (EC-11562)

- Build Wait Time. This report is a scatter plot that shows the wait times for builds over a specified time period. (EC-11555)

- Build Duration. This report is a scatter plot that shows the durations of builds over a specified time period. (EC-11554)

- Agent Usage. This report is a stacked area chart that shows the agent license count and agents available versus agent demand in a specified time period. (EC-11550)

For more information about the new and updated reports in version 8.1, see the *ElectricAccelerator Help* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html.

Improved Error Messages and Error Message Documentation

- Each error message now includes a URL for a web page that provides a description and troubleshooting information for that specific message. (EC-11609)

- The *ElectricAccelerator Error Messages Guide* is introduced. This guide lists and describes common error messages in ElectricAccelerator and also provides troubleshooting information for each of those messages. To view the guide, go to http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-11606)

Other New Features and Functionality

- Basic annotation is now enabled by default in cluster mode. For disabling all annotation, the `--emakeannodetail=none` eMake option is introduced. This option disables basic annotation, even when the `--emake-annofile` eMake option is used. (EC-11448)

- (Linux platforms) Parse job performance is improved in Android builds in environments with moderate-to-high network latency. (EC-11405)

- You can now replay a cached parse result in a different workspace, if all input files are the same and have the same path relative to your eMake roots. (EC-9761)

Behavior Changes

- eMake now substitutes `$^` (all explicit prerequisites) for the `$?` (all newer prerequisites) automatic variable in makefile rules for jobs that are out of date because of eDepend. (EC-11433)

- The online help for the Cluster Manager web UI is no longer included in the Cluster Manager installation. It is now loaded from the Electric Cloud documentation website. (EC-11359)

Resolved Issues

- (Windows platforms) Fixed the issue where the `ecconfig` utility did not properly detect the operating system architecture, because the `mach_type.exe` utility failed. (EC-11573)

- Fixed an issue where agents required a restart after they hung and became inaccessible. (EC-11548)

- (Windows platforms) Fixed the issue where the `ecconfig -secureconsole y` option did not ensure that the secure agent console port was used by the agent host. (EC-11456)

- (Linux platforms) Fixed an incorrect `RPATH` setting in the Cluster Manager PHP binaries. (EC-11423)

- Fixed the issue where the installation proceeded without adequate disk space. (EC-10197)

New Platforms

Support is added for the following platforms:

- RHEL 7.1 (kernel 3.10.0-229) (64-bit)

- SLES 12 (kernel 3.12.28) (64-bit)

- Ubuntu Linux 15.04 (kernel 3.19) (64-bit)

- Ubuntu Linux 14.10 (kernel 3.16) (64-bit)

- Ubuntu Linux 14.04 (kernel 3.13) (32-bit and 64-bit)

Updated Browser Support

Web browser support is updated. The updated list is as follows.

Desktop Browsers

- Chrome 43 or newer

- Firefox 31.8 or newer

- Internet Explorer 10 or newer

- Safari 7 or newer

Mobile Browsers

- Chrome on Android 4.4 (KitKat) or newer

- Internet Explorer Mobile 11 or newer

- iOS 7 or newer

Installation and Upgrade Notes

MariaDB Replaces MySQL as the Default Local Database

Electric Cloud no longer bundles MySQL as the default local database for Accelerator on the Cluster Manager. Electric Cloud now bundles MariaDB and installs it as the default local database. 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. You can alternatively use the MySQL, Oracle, or SQL Server databases. See the Cluster Manager online help topic "Database Configuration" for information about configuring Accelerator to use an external database.

Hardware Requirements

- Accelerator 7.2 and newer versions require a Pentium 4 or newer processor when running in a 32-bit Solaris *x*86 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

- Back up the `/opt/ecloud/<arch>/cloud` directory for Linux and Solaris or `C:\ECloud\<arch>` 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.

Installing JDBC Drivers for MySQL or Oracle Databases

Electric Cloud no longer distributes 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 8.0 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 (or /opt/ecloud/i686_Linux/64/bin/execserver, if you are running 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 is 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` eMake 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 ElectricAccelerator 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).

Fixes for Systems Running Ubuntu 10.04

You should consider upgrading to kernel 2.6.35 or newer. To install the upstream kernel, follow 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 linux-maverick-source-2.6.35 linux-maverick-headers-2.6 (optional)
```

A kernel upgrade 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.

Other Known Issues

- (Linux platforms) Agent nodes might accumulate orphan inodes in the file system after builds completed. (EC-11452)

- Results in the Cluster Usage report in the Cluster Manager might not appear in Internet Explorer 10. To work around this issue, choose **Tools > Compatibility View** from the browser menu and then re-run the report. (EC-11608)

- Options in the `emake.conf` configuration file override options that are set using Accelerator 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. If a build fails because a prerequisite project was not built, you can work around this issue by adding an explicit project dependency to the solution.

- 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 built into the Cluster Manager

Documentation on the website is updated periodically.

Cluster Manager Online Help and Tooltips

Built into the Cluster Manager are the following:

- A complete, robust, context-sensitive online help system (click the Help link 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

You will be asked to provide the following information:

- 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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