ElectricAccelerator

Release Notes

Version 10.0

Electric
Cloud

ElectricAccelerator version 10.0

Trademarks

Contents

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

JobCache Performance Improvement

Build speed is improved substantially for full builds that use JobCache. The amount of improvement increases with the proportion of the build workload that is cached.

Android 8 Support

On Linux platforms, support for Android 8 ("O") builds is upgraded from Android preview versions 2 and 3 to Android 8.0.0. This upgrade provides better performance and greater compatibility with a wider variety of "real-world" Android 8-based builds.

For details about the template files included in Accelerator that you can modify to optimize Android builds, see the *KBEA-00130 - Best Practices for Android Builds* KB article. These files work together to provide optimal settings for Android 8.*x* as well as Android 7.x (Android N) and Android 6.x (Android M). (EC-12472)

Ninja Build System Support on Windows Platforms

eMake support of the Ninja build system is extended to Windows platforms. eMake can emulate Ninja in addition to the standard Accelerator make-based builds such as gmake and NMAKE. eMake supports Ninja version 1.7.2 and newer.

eMake with Ninja emulation supports schedule optimization, JobCache, parse avoidance, Ledger, eDepend (autodep), and pragmas. Dependency optimization is not supported.

For details about using Ninja with Accelerator, see the *ElectricAccelerator 10.0 Electric Make User Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12188)

64-Bit Support on Linux Platforms

64-Bit Platforms

- 64-bit installations no longer require 32-bit libraries.

- *<InstallDir>*/i686_Linux/bin is now a link to *<InstallDir>*/i686_Linux/64/bin.

- *<InstallDir>*/i686_Linux/lib is now a link to *<InstallDir>*/i686_Linux/64/lib.

32-Bit Platforms

- *<InstallDir>*/i686_Linux/bin is now a link to *<InstallDir>*/i686_Linux/32/bin.

- *<InstallDir>*/i686_Linux/lib is now a link to *<InstallDir>*/i686_Linux/32/lib.

All Platforms

- All scripts are now available in both *<InstallDir>*/i686_Linux/64/bin and *<InstallDir>*/i686_Linux32/bin.

Amazon EC2 Support

Accelerator now supports Amazon Elastic Compute Cloud (EC2). This integration lets you configure the Cluster Manager to use Amazon EC2 to spin up agents on demand. For details about using Accelerator with Amazon EC2, see the "Configuring ElectricAccelerator for Amazon EC2" section in the "Configuring ElectricAccelerator" chapter of the *ElectricAccelerator 10.0 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12469)

Docker Support

Support for running Accelerator in Docker containers on Linux platforms is introduced. This support includes the Cluster Manager, eMake, and agent modules. For details, see the *KBEA-00163 Configuring ElectricAccelerator to Run in Docker Containers* KB article. (EC-12274)

Visual Studio Integration Update

The Visual Studio integration that is bundled with Accelerator is upgraded to version 5.2.4. For the list of new features and resolved issues, see the "What's New" section in the *ElectricAccelerator 5.2.4 Visual Studio Integration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html.

Other New Features and Functionality

- The file name and line number that are recorded in annotation for a target in Ninja emulation mode are changed from build.ninja and 0 (regardless of where the target was actually defined) to the correct file name and line number. (EC-12586)

- Annotation now includes the content of Ninja response files. This content appears in the <inline> tag. This functionality is useful when Ninja response files are used for command lines that exceed the system command line length limitation. (EC-12584)

- The -repopulate option is added to the #pragma runlocal directive to let you specify where eMake must check for job output instead of checking the current working directory. For details about using this directive, see the "Specifying Pragmas in an Addendum File" and "Running a Local Job on the Make Machine" sections in the *ElectricAccelerator 10.0 Electric Make User Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12463)

- The `clang-cl` JobCache type is introduced. This type allows JobCache to cache cl-compatible .obj files produced by clang compiler emulation. The `--emake-jobcache=clang-cl` eMake option is now an alias for `--emake-jobcache=cl`. The Chromium build uses `clang-cl`. (EC-12448)

Behavior Changes

- Even in "exclusive" allocation mode, Accelerator no longer tries to manage clock synchronization between agent and eMake hosts. For details about other ways to ensure clock synchronization, see the "Ensuring a Consistent Build Environment" section in the "Supported Platforms and System Requirements" chapter of the *ElectricAccelerator 10.0 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12606 and EC-9315)

- The `--type custom` silent installer option is changed to `--type full`. The functionality of this option is unchanged. (EC-12398)

- The Cluster Manager now transmits anonymous build performance and feature usage data to Electric Cloud. This data is used to plan the strategic direction of the Accelerator product line. Proprietary user data is never transmitted.

  Examples of data that is transmitted are build start times and durations, total workload, and conflict counts. Examples of data that is never transmitted are file names, file contents, and command-line arguments.

  To opt out of (disable) data collection, go to the **Administration** > **Server Settings** tab in the Cluster Manager web interface and uncheck the **Report Usage Statistics** checkbox. (Opt-out is not available for trial usage.) (EC-12356)

Resolved Issues

- An issue is fixed in which builds that started without available agents remained in "Waiting for Agents" status even when agents subsequently became available. (EC-12618)

- In the "Job Caching" section of the *ElectricAccelerator 10.0 Electric Make User Guide*, an example is added to illustrate the explanation of the limitation in which JobCache does not cache results from compilation jobs that invoke eMake. (EC-12613)

- Agents now ignore virtual net file systems from containers running on the same host and no longer produce the following error message: `ERROR: Unable to start session after retry: while creating directories for mounts: "/efsroots/0" is inside sandbox but "/efsroots/0net:[4026532188]" is outside.` (EC-12532)

- The following installer message no longer appears during an upgrade of the Cluster Manager or agent machines from version 7.2.2, 8.0, or 8.0.1 to 8.0.2 or newer versions:

  ```
  Attention! You have chosen to install Cluster Manager, but this system has
  already been installed as Huddle Server. If you wish to change the type of
  ElectricAccelerator installation you must first uninstall the previous
  installation, then install using the new type. If you did not intend to change
  the installation type, back up and choose the correct type of installation.
  ```

  (EC-12529)

- The issue where filtering by build class name in the **Builds** > **Build Classes** subtab of the Cluster Manager web UI did not produce results is fixed. (EC-12473)

- (Windows platforms only) An EFS resource leak related to running 32-bit processes on 64-bit hosts (which sometimes caused system crashes) is fixed. (EC-12437)

- The "Configuring ElectricAccelerator on Windows" section of the *ElectricAccelerator 10.0 Installation and Configuration Guide* now includes the path to the 64-bit Windows agent executable to exclude from firewalls. (EC-12228)

- An issue where 32-bit eMake failed to append to large files and produced eMake error `EC1068` is fixed. (EC-12131)

- An issue where eMake failed with the `.EXPORT_ALL_VARIABLES` target name is fixed. (EC-9592)

Platform Support

Support is added for the following platforms.

- RHEL 7.4 (kernel 3.10.0-693)

- Ubuntu Linux 17.10 (kernel 4.13)

- Ubuntu Linux 17.04 (kernel 4.10)

- Ubuntu Linux 16.10 (kernel 4.8)

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 *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

- 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 10.0 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/32/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).

Concurrent Build Licensing

As of version 9.1, for new Accelerator subscription licenses, the number of builds that you can run concurrently is license-limited. The `noLicenseWaitTime` performance metric indicates 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, as of version 9.1, JobCache is not separately licensed and is now included with the concurrent build license.

Customers using pre-9.1 Accelerator 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 10.0 Installation and Configuration Guide* at http://docs.electric-cloud.com/accelerator_doc/AcceleratorIndex.html. (EC-12095)

Updating the Resource Manager Type If You Are Using LSF

During a Cluster Manager upgrade to Accelerator 10.0 or later, the installer changes the "cloud" resource manager type to "none." This means that if you are using LSF, you must move the scripts from the `<InstallDir>/<arch>/cloud/` directory to the `<InstallDir>/<arch>/cloud/lsf` directory. `<InstallDir>` is `/opt/ecloud` by default on Linux and `C:\ECloud` by default on Windows. `<arch>` is either `i686_Linux` or `i686_win32`.

Also, you must specify LSF as the resource manager to be used by the Cluster Manager. To do so, open the Cluster Manager web UI, then click **Administration** > **Server Settings**, then choose **LSF** from the **Resource Manager Type** menu, and then click **OK**. (EC-12579)

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:

- +1 408.419.4300, 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

Electric Cloud "Ask" Website

Go to http://ask.electric-cloud.com—a member-moderated community forum where you can:

- Ask and answer questions as well as comment on (and vote for) the questions of others and their answers

- 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.