



## **ElectricFlow 7.1 Release Notes**

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## **ElectricFlow 7.1**

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# Contents

ElectricFlow 7.1 .....	iii
Product Description .....	iii
What's New or Modified .....	iii
New Features and Functionality .....	iii
New Platforms .....	v
Database Support .....	v
New or Updated Bundled Plugins .....	v
Resolved Issues .....	vi
Installation and Upgrade Notes .....	vii
Upgrading Your Existing ElectricFlow Environment .....	vii
Configuration Notes .....	vii
Performing a Full Import .....	vii
Updating Component Plugin Versions in the Export File When Upgrading from 4.2.x to 7.x .....	viii
Registering a Custom Plugin Procedure for the Step Creation Dialog .....	viii
Diffie-Hellman Key Size Incompatibility .....	viii
Limitations .....	viii
Known Issues .....	ix
Performance and Scalability Issues .....	x
Documentation .....	xii
Troubleshooting and Getting Help .....	xii
Technical Support .....	xii
Electric Cloud "Ask" Website .....	xii
ElectricAccelerator Knowledge Base .....	xiii



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## ElectricFlow 7.1

ElectricFlow 7.1 is a feature release (FR). Feature releases make new features available more frequently than long-term support (LTS) releases (such as ElectricFlow 7.0). The features and enhancements introduced in feature releases are typically rolled into the subsequent LTS release.

## Product Description

ElectricFlow™ is an enterprise-grade DevOps Release Automation platform that simplifies provisioning, building, and releasing multi-tiered applications. Its model-driven approach to managing environments and applications lets teams coordinate multiple pipelines and releases across hybrid infrastructure in an efficient, predictable, and auditable way.

## What's New or Modified

### New Features and Functionality

ElectricFlow 7.1 provides the following updates to the Automation Platform and the ElectricFlow Deploy and Release modules.

#### *Microservice and Container Deployment*

Support is added for modeling and deploying microservice-based applications that use containers. After you build an application model using services, you can deploy them using one or more containers on the Google Container Engine (GCE) or Amazon EC2 Container Service (ECS) container platforms. You can:

- Create services and containers under applications. (CEV-12473 and CEV-12478)
- Create clusters in environments. (CEV-12483)
- Map services to clusters and set provider-specific values. (CEV-12817)

Two plugins are introduced to add these capabilities: EC-AmazonECS and EC-GoogleContainerEngine. These plugins are bundled with ElectricFlow.

For details about this functionality, see the “Microservice and Container Deployment” section of the *ElectricFlow 7.1 User Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

#### *Remote Agent Installations or Upgrades*

- The **Short name** option for the resource naming format is added, which uses installation target host names that do not include domain names. (NMB-24560)
- You can now select any previously-published version of an installer. (NMB-24522)
- The **Install Resource(s)** and **Upgrade Resource(s)** menu options are no longer visible if you do not have the required permissions. (NMB-24508 and NMB-24273)
- The names of target resources or hosts for installations and upgrades now allow any combination of the following separators: “space”, “;”, “,” and “newline.” (NMB-24562)
- The **Additional Parameters** field is added, which lets you specify agent installer arguments that are not directly exposed through the web interface. (NMB-24532 and NMB-24517)
- The **Upgrade targets** field now lets you manually enter the resources when upgrading through the web interface. (NMB-24523)
- You can now add a post-installation step to run custom scripts on resources that you just installed or upgraded. (NMB-24413)

For details about these features, see the “Installing or Upgrading Remote Agents” section in the “Installing ElectricFlow” chapter of the *ElectricFlow 7.1 Installation Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

## Installer Enhancements

### Graphical User Interface and Interactive Command-Line Installations

You can now specify `root` as the user to own the ElectricFlow agent process. For details, see the “Installing ElectricFlow” chapter of the *ElectricFlow 7.1 Installation Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

### Silent Installation

The following agent installer arguments are introduced:

- (Windows platforms) `--agentWindowsServiceStartType`: Lets you specify autostart or delayed autostart as the startup type. (NMB-24390)
- `--agentAllowRootUser`: Lets you specify `root` as the user to own the ElectricFlow agent process when you use the `--unixAgentUser` argument. (NMB-23481)
- `--agentMaxMemoryMB`, `--agentInitMemoryMB`, `--agentMaxMemory`, and `--agentInitMemory`: Specify nondefault amounts of agent memory. (NMB-22991)
- `--agentOutboundConnectTimeout`: Specifies the timeout for the ElectricFlow agent when establishing outbound connections. (NMB-24532)
- `--agentIdleConnectionTimeout`: Specifies the idle connection timeout for the ElectricFlow agent. (NMB-24532)
- `--agentMaxConnections`: Specifies the maximum number of network connections for the ElectricFlow agent. (NMB-24532)
- `--agentMaxConnectionsPerRoute`: Specifies the maximum number of network connections per route for the ElectricFlow agent. (NMB-24532)
- `--agentArtifactCache`: Specifies the directory containing cached artifact versions. (NMB-24532)

For details about these arguments, see the “Silent Install Arguments” section in the *ElectricFlow 7.1 Installation Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

## Other Enhancements

- You can now copy artifacts from a source artifact repository to one or more target repositories. The `SyncArtifactVersion` procedure is added to the EC-Artifact plugin. For details, see the “Synchronizing Artifacts to Multiple Repositories” section in the “Automation Platform” chapter in the *ElectricFlow 7.1 User Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html). (NMB-24618)
- Filtering by status is added to the Release dashboard, which lets you exclude releases with certain statuses (such as completed releases). (CEV-10308)
- Performance of the Release dashboard page is improved. (CEV-13015)
- You can now redefine an existing component or application process step to call another procedure rather than deleting the existing one and re-creating it. (CEV-5063)
- Logging for the artifact retrieval process is improved. Logging now includes information such as the number of retries, unsuccessful renames, and failed deletions or cleanups. To use the improved artifact retrieval logging when using agents, you must upgrade those agents to version 7.0.1. (NMB-24355 and NMB-24354)

- Parameters and environment variables for artifact retrieval retry attempts are introduced. (NMB-24350)
  - The following parameters are added to the Automation Platform server settings:
    - Number of retries for Retrieve Artifact**
    - Initial delay between retries for Retrieve Artifact**
    - Maximum delay between retries for Retrieve Artifact**
  - The following environment variables are added:
    - `COMMANDER_NUMBER_OF_RETRIES_FOR_RETRIEVE_ARTIFACT`
    - `COMMANDER_INITIAL_DELAY_BETWEEN_RETRIES_FOR_RETRIEVE_ARTIFACT`
    - `COMMANDER_MAXIMUM_DELAY_BETWEEN_RETRIES_FOR_RETRIEVE_ARTIFACT`
 You set these variables on a client machine before doing a manual retrieval from the client via the `ectool retrieveArtifactVersions` command.
- (RHEL 7 and CentOS 7 platforms) 32-bit compatibility libraries are now installed automatically if they are not already installed. (NMB-24339)
- You can now create automated gate tasks using `ectool` or DSL. (CEV-12986)
- Spaces are now allowed in pool names. To support spaces in pool names in the API, the `createResource --pools` and `modifyResource --pools` arguments are deprecated and replaced by the `createResource --resourcePools` and `modifyResource --resourcePools` arguments. (NMB-23336)
- You can now use the `start` and `finish` intrinsic properties in preconditions. (NMB-19047)

## New Platforms

Support is added for Ubuntu 16.04 (64-bit). (NMB-24437)

## Database Support

Support is added for Microsoft SQL Server 2016.

## New or Updated Bundled Plugins

The following plugins are new or updated. For a complete list of plugins, see the "Plugins That are Bundled with ElectricFlow" appendix in the *ElectricFlow 7.1 User Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

Name	New Version	Status
EC-AmazonECS	1.0.0.10	New
EC-EC2	2.3.4.88	Updated
EC-FileOps	2.0.5.113822	Updated
EC-GoogleContainerEngine	1.0.0.8	New
EC-JBoss	2.1.5.7	Updated
EC-OpenStack	1.3.3.219	Updated

EC-ServiceNow	2.1.0.15	New
EC-WebLogic	3.2.3.86	Updated
EC-WebSphere	2.2.3.132	Updated

## Resolved Issues

- In Internet Explorer 11, the issue is fixed in which searching for a project in the project selector dialog box failed and caused the page to freeze. (CEV-12978)
- Multiple consecutive spaces in names that were created from the command line are no longer converted to one space in the web interface. (CEV-12712)
- In the Deploy UI, the **Projects**, **Workflows**, and **Credentials** options are missing from the **Automations > Procedures** side-navigation menu. (CEV-12546)
- The issue is fixed in which a rollback job was not in the same pipeline context as the originator deployment process (which caused a failure when a rollback occurred). (CEV-12454)
- evalDsl no longer fails to modify `deployerApplication` if an `applicationProjectName` value was present. (CEV-12399)
- The issue where each task created in DSL inherited the stage condition is fixed. (CEV-12106)
- The symbol for the “change history” button in the Applications page is updated. (CEV-11281)
- Underscores in names in the Environments, Applications, and Pipelines pages now render properly at all browser zoom levels. (CEV-10896)
- The issue where the UI did not render parameter fields properly when a step invoked a plugin procedure is fixed. (NMB-24718 and NMB-22607)
- The issue where the value of a custom property named `path` (without quotes) came back empty is fixed. (NMB-24590, NMB-24353, and NMB-23019)
- The Estimate Job Duration procedure in the EC-Utilities default project no longer fails because of the following error: `/jobs/<job_id>/jobType' is not a settable property of job...` (NMB-24499)
- The issue in which job searches that were accessed via shortcuts on the **Home** page of the Automation Platform did not use the saved search criteria is fixed. (NMB-24495)
- The highlighting upon mouseover for links in the Automation Platform is now consistent. (NMB-24341)
- `evalDsl` can now attach more than one credential. (NMB-24333)
- For upgrades of remote agents, a resource name containing a space is no longer split into two resources. (NMB-24276)
- The `AccessDenied` error now shows the object name instead of the complex object ID (UUID). (NMB-23634)
- The **Agent heartbeat spread** server setting now functions properly. (NMB-22849)
- In the Automation Platform **Target Options** screen (in which you specify details for target host machines for installing remote agents), the issue where **Driving Resource** was not selectable is fixed. (NMB-18054)

- The `ectool setProperty` and `ectool getProperty` commands no longer cause a null pointer exception when an equal sign (=) is used in a property name within a property sheet. (CEV-12610)
- In the **Pipeline Run** page, the **Approve** and **Reject** buttons on gates no longer disappear when there is a long list of approvers or approvers with long user names. (CEV-12556)
- Approver group names in DSL are no longer case sensitive. (CEV-12061)

## Installation and Upgrade Notes

- New capabilities such as Release and Pipelines are part of a separately licensed ElectricFlow Release module.
- In `DATA_DIR/conf/wrapper.conf`, change the default prefix for StatsD as follows (NMB-22835):  
 from  

```
wrapper.java.additional.802=-DCOMMANDER_STATSD_PREFIX=commander
```

 to  

```
wrapper.java.additional.802=-DCOMMANDER_STATSD_PREFIX=flow
```
- In the Oracle database, set the `OPEN_CURSORS` parameter to at least 1000 to prevent ElectricFlow from running out of open cursors.

For complete installation and upgrade information, see the *ElectricFlow Installation Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

**IMPORTANT:** Before beginning the upgrade process, make sure you have backed up your existing ElectricFlow data.

## Upgrading Your Existing ElectricFlow Environment

- Upgrades to ElectricFlow 7.x are supported only from ElectricCommander 4.2.x or from ElectricFlow 5.x. Any ElectricCommander systems and servers that are pre-Commander 4.2 must be upgraded to an ElectricCommander 4.2.x release. For upgrade instructions, see the *ElectricFlow Installation Guide*.
- Upgrading to ElectricFlow 7.x from ElectricCommander 4.2.x requires a database upgrade.
- You cannot upgrade the ElectricCommander 4.2.x built-in database to an ElectricFlow 7.x database. If you want to continue using the built-in database in ElectricFlow 7.x, follow the database upgrade procedures described in the *ElectricFlow Installation Guide*.

## Configuration Notes

### Performing a Full Import

When you do a full import, the import operation might hang in the following scenarios. To successfully import into ElectricFlow 7.0, perform the appropriate workaround (CEV-11873):

- A manual process step in a process has formal parameters. The workaround is to remove the entry related to the property sheet for the job step that is associated with the manual process step.
- In the exported XML file from the earlier release, two pipelines are in different projects and both pipelines have no gate tasks. The flow associated with the pipeline is duplicated under both projects. The workaround is to remove the flow element under the projects.

## Updating Component Plugin Versions in the Export File When Upgrading from 4.2.x to 7.x

When you export your project data before upgrading from ElectricCommander 4.2.x to ElectricFlow 7.x, you must replace the component plugin versions, including EC-Artifact, in the export file before importing the project data to ElectricFlow 7.x. (CEV-6679)

## Registering a Custom Plugin Procedure for the Step Creation Dialog

You must register a user-developed plugin so that it appears as an option: (CEV-3649)

- When you use the plugin to configure a step in a component or application process.
- In a procedure in the automation platform.

For details, see the “Register your procedure for the step creation dialog” section in the “Examples and Tutorials” chapter of the *ElectricFlow Plugin Developer Guide* at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html).

## Diffie-Hellman Key Size Incompatibility

To enable ElectricFlow server versions 7.0 or newer to configure Diffie-Hellman cipher suites properly, ElectricFlow uses OpenSSL-1.0.1T with SSLv2 enabled. Because of OpenSSL and JRE changes, the minimum Diffie-Hellman key size requirement is increased to 1024 bits (from 768 bits) as of version 7.0.

Server versions 7.0 or newer use Jetty (a Java HTTP server), which listens on the 8000 (unsecure) and 8443 (secure) ports. Server versions 7.0 or newer use Java 1.8.0\_66, in which the ephemeral DH key size defaults to 1024 bits during SSL/TLS handshaking in the SunJSSE provider.

For details on the increase of the key size requirement as of Java 1.6-u101, see the Java release note at <http://www.oracle.com/technetwork/java/javase/overview-156328.html#6u101-b31>. For details as of Java 1.7-u85, see the Java release note at <http://www.oracle.com/technetwork/java/javase/7u85-relnotes-2587591.html>.

Because their minimum key size is 1024 bits, agent versions 7.0 or newer can connect only to:

- Server versions 5.4, 6.0.1, or 6.5 or higher via ectool
- External applications that require SSL with a minimum key size of 1024 bits

However, ElectricCommander agents of versions 5.0.6, 5.3, or 5.4 and ElectricFlow agent versions 6.0.1 or 6.5 or newer can connect to all ElectricFlow server versions (including 7.0 or newer) via ectool and ec-perl.

ElectricCommander server versions 5.0.6 or 5.3 or newer can run jobs using all agent versions (including 7.0 or newer). ElectricFlow server versions 7.0 or newer can run jobs using ElectricCommander agent versions 5.0.6 or 5.3 or newer.

## Limitations

- When an application is cloned from one project (the original project) to another (the destination project), the tier maps for the application will point to the environments with the same names in the destination project. If you want to deploy the application to the environments in the original project, you must create tier maps connecting the application to those environments.
- When an assignee is added in a manual process step or stage task through the web interface, the Search field displays only the users who have actually logged into the system.

- Session management limitations:
  - When a user logs out, the user is logged out only on the node where the logout occurred.
  - When a user is deleted from the system, the user's session is active until it expires.
  - When a job ends, the user's session is active until it expires.
- `jobType` is a new ElectricFlow intrinsic property for the Job object. If you use `setProperty` to set `jobType` as a custom property on a job, you might encounter errors such as `...'jobType' is not a settable property of job <job>` and must rename the property. (For example, you could add an organization-specific prefix to the name.)

## Known Issues

- Unexpected behavior might occur if the value for the "essential" parameter is overridden when a container is mapped to an ECS cluster. To avoid this issue, upgrade the EC-AmazonECS plugin to the latest version from the plugins catalog. (CEV-13154)
- Artifact staging does not use the specified artifact versions when a component retrieval step is absent. (CEV-13128)
- Filters do not update the total number of releases and pipelines in the Releases and Pipeline Runs pages. (CEV-13137)
- Object names with more than one consecutive space are not treated properly in the web interface. (CEV-13131)
- The environment snapshot details web interface does not display container information. (CEV-13087)
- Error messages for runtimes started by a schedule are not visible if the schedule was created with a missed configuration. (CEV-12363)
- Multiple deployer task runtime issues for the `startRelease` API command might occur. (CEV-12436)
- A `NonUniqueResultException` might occur when multiple runs of an application process against the same environment are launched simultaneously. (CEV-12403)
- The "rolling deploy" status icon in the Release Environment configuration appears even after the rolling deploy option is turned off at the environment level. (CEV-12167)
- Stage inclusion status in the Release Dashboard changes color after a stage is renamed. (CEV-12429)
- The first state of a workflow is not displayed after creation, and the second state appears incorrectly. (NMB-24245)
- Directory providers are destroyed after the built-in database configuration is changed to a MySQL configuration. (NMB-24237)
- When an application with snapshots created in ElectricFlow 6.1 or earlier is cloned and a project containing this application is imported to ElectricFlow 6.3, the import operation fails. (CEV-11106)
- An application deployment job will hang when a process step name is a number (for example, 1, 2, and so on) or has a slash (/ or \) in it. (CEV-10238)

The workaround is to change the process step name to be non-numeric and to not have a slash (/ or \).

- If the user email address is changed in the Active Directory server or the LDAP server for an existing external user, email notifications continue to use the old user email address. (NMB-24052)

The workaround is to delete the entry for the remote user in ElectricFlow. The next time the user entry is retrieved from the directory server (for example, upon user login), the external user record will get created in ElectricFlow with the updated email address.

- Before importing an export file, you must change the plugin name, including the plugin version, in the file.
- Change tracking:

**IMPORTANT:** It can take a while to restart the ElectricFlow server while new records are created for all tracked objects. This might take at least as long as an export or import of all projects (a large project can take 10 to 40 minutes).

- You can revert changes only for high-level design objects such as applications, procedures, procedure steps, workflow definitions, and state definitions.
- When you disable change tracking and then later re-enable it, the system performance may be reduced during this sequence of events:
  1. Change tracking is disabled at the server level.
  2. Change tracking is re-enabled at the server level.

The change history for all objects, including those not in projects, is now tracked.

It can take a while to restart the ElectricFlow server, because new records are being created for all the tracked objects. This may take at least as long as it would take to export or import all the projects (a large project can take long as 10 to 40 minutes).

- Pages in the ElectricFlow UI may be slow to render if the application or environment has too many tiers.

## Performance and Scalability Issues

- Enabling **Recursively Traverse Group Hierarchy** may impact the system performance when traversing the LDAP group hierarchy, depending on the system configurations of the ElectricFlow servers, the LDAP server, the depth of group hierarchy in the LDAP server, and the network latency between the servers. Make sure that your directory provider can handle the additional load for supporting nested group hierarchy traversal.

These were the response times recorded during our performance tests with nested LDAP groups support.

- Test Environment Details
  - ElectricFlow server:
    - CPU: Intel® Core™ i5-3210M CPU @ 2.50GHz
    - RAM: size: 3011MiB
    - Disk: product: VBOX HARDDISK
    - Size: 80 GiB (85 GB)

- Active Directory server:  
CPU: Intel Core i5-3210M CPU @ 2.50GHz  
RAM: size: 2 GB  
Operating System: Windows Server 2012 R2
- Performance data set used:  
Number of users: 5040  
Number of Groups: 126  
Average number of users per group: 40  
Average number of immediate groups per parent group: 2  
Maximum depth of group hierarchy: 6

- Response times with Active Directory

Average of 1000 API calls with user and group at the fifth nested level in the Active Directory group hierarchy.

API	ElectricFlow version 6.5 without recursive group hierarchy traversal	ElectricFlow version 6.5 with recursive group hierarchy traversal
login	1.066 seconds	1.195 seconds
getUser	1.086 seconds	1.213 seconds
getGroup	0.918 seconds	1.102 seconds

- Response times with OpenLDAP

Average of 1000 API calls with user and group at 5th nested level in the Active Directory group hierarchy.

API	ElectricFlow version 6.5 without recursive group hierarchy traversal	ElectricFlow version 6.5 with recursive group hierarchy traversal
login	0.744 seconds	0.753 seconds
getUser	0.705 seconds	0.714 seconds
getGroup	0.657 seconds	1.011 seconds

- For hundreds of parallel job steps, you may experience Job Scheduler performance issues at job startup. (NMB-16185)

- The amount of time needed to add a property to a job increases as the number of properties increases. (NMB-16120)
- The amount of time needed to add a step to a procedure increases as the number of steps increases. (NMB-16118)

## Documentation

ElectricFlow documentation is available at [http://docs.electric-cloud.com/eflow\\_doc/FlowIndex.html](http://docs.electric-cloud.com/eflow_doc/FlowIndex.html). Updated documentation will be available on that page when any documents are updated post-release.

ElectricFlow has the following product documentation:

- *ElectricFlow User Guide*
- *ElectricFlow Installation Guide*
- *ElectricFlow API Guide*
- A complete, robust online help system. Click any Help link in the upper-right corner of each web page in the platform UI
- *ElectricFlow Release Notes*
- Additional ElectricFlow documentation that accompanies the ElectricFlow release, but not necessarily updated with each ElectricFlow release
  - *Plugin Developers Guide*, which is used with the ElectricFlow SDK, is updated on its own release cycle
  - *ElectricFlow Plugin Developer Release Notes*

## 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](mailto: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.

### ElectricFlow 7.1

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