



CloudBees Flow 9.1 DevOps Foresight Installation and User Guide

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Most CloudBees products are commonly referred to by their short names—Accelerator, Automation Platform, Flow, Deploy, Foresight, Release, ElectricInsight, and Electric Make—throughout various types of CloudBees product-specific documentation.

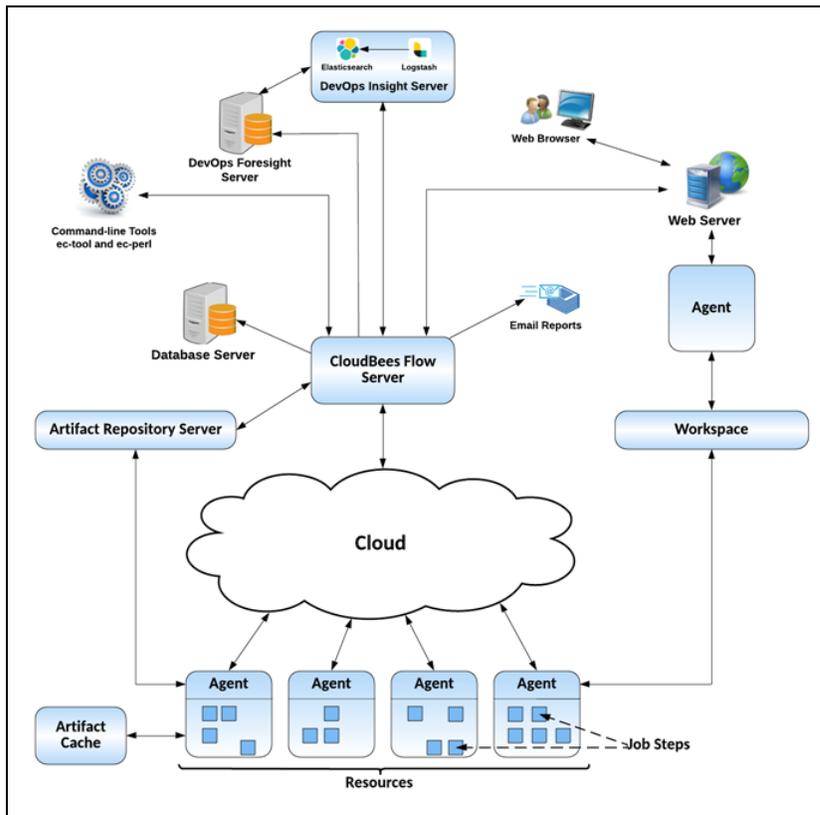
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Chapter 1: Introduction to DevOps Foresight

DevOps Foresight is a predictive analytics solution that works by performing machine learning on the mountains of data collected from key parts of the DevOps tool chain. Using self-adjusting algorithms, DevOps Foresight is capable of deeply analyzing data already present in the entire DevOps tool chain, from application life cycle management (ALM) all the way to information technology (IT) service management tools, to identify the patterns hidden in that data that predict the success or failure of builds, tests, deployments, or overall releases.

Within the CloudBees Flow enterprise, the DevOps Foresight server collects data from the DevOps Insight server for use in running analytics for CI risk predictions.



License Requirements

CloudBees Flow DevOps Foresight requires a separate license to use with CloudBees Flow. Contact CloudBees support team for details.

Chapter 2: System Requirements and Supported Platforms

This section describes hardware and software specifications and configurations for installing and running the DevOps Foresight server on Windows or UNIX systems. All version requirements for operating systems and databases are routinely tested and fully supported by CloudBees. Contact CloudBees technical support if you have any questions regarding newer software versions.

Supported Server Platforms

DevOps Foresight has been tested on these platforms:

- Windows Server 2008
- Ubuntu v18.04

Minimum hardware requirements:

- Processor clock rate: 2.5 GHz or higher
- Memory: minimum 16GB available RAM
- Processors: 4 core CPU

Software Licenses

After installation, your enterprise DevOps Foresight license active. To see your software usage entitlements, go to the **Licenses** page in the Automation Platform web UI. To do so, browse to `https://<CloudBees_Flow_server>/commander/`, and then click **Administration > Licenses**.

For information about how to import licenses, delete licenses, and view license usage statistics, see the “Licenses” section in the “Automation Platform” chapter of the *CloudBees Flow User Guide* at http://docs.electric-cloud.com/eflow_doc/FlowIndex.html. The section also discusses the various types of licensing, which is based on concurrent steps, concurrent hosts, concurrent users, proxied hosts, registered hosts and users, and creation of applications and microservices.

Chapter 3: Installing DevOps Foresight

This section describes the methods for installing the DevOps Foresight server in a new environment.

- Graphical User Interface Installation on page 9
- Interactive Command-Line Installation on page 11
- Silent Unattended Installation on page 13

Prerequisites

Before starting the DevOps Foresight server installation, the DevOps Insight server must be installed and collecting data. In addition, you need the following in order to complete the DevOps Foresight installation:

- DevOps Foresight server license—this server is licensed separately from CloudBees Flow and DevOps Insight.
- DevOps Insight host name and port number
- DevOps Insight Elasticsearch port number
- DevOps Insight server user name and password
- CloudBees Flow server host name, user name, and password

System Considerations for DevOps Foresight Server Installation

General considerations

For a production environment, CloudBees recommends that you install the DevOps Foresight server on a system other than systems running other CloudBees Flow components (such as the CloudBees Flow server, web server, repository server, or agent).

System-level considerations

Windows Server 2008	<ul style="list-style-type: none"> In cases where the installer runs under account <i>x</i>, but services will run under account <i>y</i>, the system administrator may need to disable User Account Control (UAC) so that user <i>y</i> has access to the installation directories, both program and data. This applies particularly to data directories.
Ubuntu 18.04 (64-bit)	<ul style="list-style-type: none"> Choosing the Ubuntu User Do not choose <code>nobody</code> for the Ubuntu user. Ubuntu does not allow a command such as <code>su - nobody -c foo.sh</code>, because it is not a shell account. Fixing the <code>raise ValueError, 'need a file or string'</code> error If you receive an error during installation similar to the following, <pre>File "/usr/lib/lsb/install_initd", line 3, in <module> import sys, re, os, initdutils File "/usr/lib/lsb/initdutils.py", line 18 raise ValueError, 'need a file or string ^ SyntaxError: invalid syntax</pre> run the following command: <pre>sudo sed -i "s/python3/python/" /usr/lib/lsb/install_initd</pre> This error is a known Ubuntu bug.

Graphical User Interface Installation

The graphical user interface installation method is supported by Windows platforms and Linux platforms running the X Window System.

1. Double-click the following file to run the full installer.

- Linux: `CloudBeesFlowDevOpsForesightServer-x64-<version>`
- Windows: `CloudBeesFlowDevOpsForesightServer-x64-<version>.exe`

Click **Next** to continue.

2. As required, click **Browse** to specify different directory locations. Click **Next** to continue; the **Service Account** screen appears.
3. Complete the information on the **Service Account** screen as follows.

Windows systems:

- **User Name**—Name of the user who will run the CloudBees Flow DevOps Foresight server services.
- **Password**—Password of the user who will run the CloudBees Flow DevOps Foresight server services.
- **Domain**—Domain name information for the user. For example, `electric-cloud.com`. Leave this field blank if this is a local user.
- **Use the local system account**—Determines if the CloudBees Flow DevOps Foresight server services will run as the local Windows system account.

Linux systems:

- **User Name**—Name of the user who owns the CloudBees Flow DevOps Foresight server processes.
- **Group Name**—Name of the group who owns the CloudBees Flow DevOps Foresight server processes.

Click **Next** to continue; the **Configure Service** screen appears.

4. Complete the information on the **Configure Service** as follows:

- **Hostname or IP address**—Name of the host that will be used to access the installed CloudBees Flow DevOps Foresight server.
- **DevOps Foresight server port**—Port number to be used to access the DevOps Foresight server.
- The DevOps Foresight server uses the Elasticsearch search engine from the DevOps Insight Server to gather data from the CloudBees Flow server for use in its various dashboards. Supply DevOps Insight Server hostname or IP and Elasticsearch port.
- **DevOps Insight Server Hostname or IP address**—The DevOps Insight server host name or IP address that DevOps Foresight will access.
- **Elasticsearch port**—Port number to be used to store information in Elasticsearch.
- **DevOps Insight Server allows unsecured access**—Uncheck this field if you want to use a secure protocol and authentication when accessing the DevOps Insight server. If you do so, the **User name** and **Password** fields appear to let you enter DevOps Insight Server credentials:
- Unsecured access is not recommended for use in a production environment.
- **User name**—The user name for your DevOps Insight Server.
- **Password**—The password for your DevOps Insight Server.

Click **Next** to continue.

5. The installer attempts to access the DevOps Insight Server with the credentials just provided.

The CloudBees Flow Server configures access to the DevOps Foresight server. Supply your CloudBees Flow Server host name.

- **Server host name**—CloudBees Flow Server host name.
- **CloudBees Flow user name**—The user name for your CloudBees Flow Server.
- **Password**—The password for your CloudBees Flow Server.
- **DevOps Foresight License**—Enter, or browse to, the file name containing your DevOps Foresight license.

6. Complete the information on the **Remote CloudBees Flow Server** screen.

Click **Next** to continue; the **Ready to Install** appears.

7. Review this screen to verify your selections. Use the **Back** button to change any of your settings if needed.

8. Click **Begin Install**.

The installer displays a status bar to show the progress of the installation process, which can take a few minutes. When the installation process is complete, the **Install Wizard Complete** screen appears.

9. **Click Finish** to close the wizard.

Interactive Command-Line Installation

The command-line user interface installation method is supported only by Linux platforms. In this mode, additional command line parameters that are listed in Silent Unattended Installation on page 13 can be used.

1. Choose one of the following commands to start the full installer.
 - From a command line, enter
`sudo ./CloudBeesFlowDevOpsForesightServer-x64-<version>`
 - On Linux platforms with the X Window System, the installer invokes the graphical user interface. To override this behavior, enter
`sudo ./CloudBeesFlowDevOpsForesightServer-x64-<version> --mode console.`

The following message appears:

```
Logging to "/tmp/ijtmp_00CB8424-9E21-C4E5-3357-0E5B11BADFA6/installer-
EFlowReportServ.log"
Copyright (c) 2010-2019, CloudBees, Inc. All rights reserved.
This will install CloudBees Flow DevOps Foresight Server on your
computer. Continue? [n/Y]
```

2. Continue the installation by entering `y`.

The following message appears:

```
Specify the install directory (for binaries)
[/opt/electriccloud/electriccommander]
```

3. Press `Enter` to accept the default installation directory, or enter a new installation directory path for program files and binaries.

The following message appears:

```
Specify the data directory (for data files, configurations and logs)
[/opt/electriccloud/electriccommander]
```

4. Press `Enter` to accept the default installation directory, or enter a new installation directory path for data files, configurations, and logs.

The following message appears:

```
Specify the user the services will run as [<primary user>]
```

5. Enter the name of the user who owns the CloudBees Flow DevOps Foresight server processes.

The following message appears:

```
Specify the group the services will run as [<primary group>]
```

6. Enter the name of the group who owns the CloudBees Flow DevOps Foresight server processes, or accept the default primary group of the chosen user by pressing `Enter`.

The following message appears:

```
Specify the host name or IP address on which the installed service will
be available [ip-10-0-0-162.us-west-1.compute.internal]
```

The host name or IP address of the system on which the DevOps Foresight server is being installed.

7. If you want to specify a non-default host name, enter it, or accept the default host name by pressing `Enter`.

The following message appears:

```
Choose the port which will be used by server [9100]
```

This port is used by the DevOps Foresight server.

8. If you want specify a non-default port number, enter that number, or accept the default port number by pressing `Enter`.

The following message appears:

```
Specify the host of the remote CloudBees Flow DevOps Insight server []
```

9. Enter the host name of DevOps Insight server and press `Enter` You must specify a host.

The following message appears:

```
Specify the port of the remote CloudBees Flow DevOps Insight server
[9200]
```

10. Enter the port number for your DevOps Insight Server, or accept default and press `Enter`.

The following message appears:

```
Does the CloudBees Flow DevOps Insight server on "e5590-phair" use
authentication? [n/Y]
```

11. In most cases, it does use authentication. Continue the installation by entering `y`.

The following message appears:

```
Specify the user name with which to login to "e5590-phair" [reportuser]
```

12. Enter the user name you configured during the DevOps Insight Server install, or accept the default by pressing `Enter`.

The following message appears:

```
Specify the password for "reportuser" on "e5590-phair" [changme]
```

13. Enter the password you configured during the DevOps Insight Server install, or accept the default by pressing `Enter`.

The following message appears:

```
Specify the host[:port] of the remote CloudBees Flow server []
```

14. Enter the name of the CloudBees Flow server that will communicate with this DevOps Foresight server. If the remote server is using a non-default HTTPS port, you must specify the host name as `<host>:<port>`. If you do not specify a port, HTTPS port 8443 is assumed (the same as the CloudBees Flow server default port).

The following message appears:

```
Specify the user name with which to login to "<remote host>" [admin]
```

15. Enter the name of a CloudBees Flow user on the CloudBees Flow server who has sufficient privileges to edit server settings. This field defaults to the CloudBees Flow-supplied `admin` user.

The following message appears:

```
Specify the password for "<remote user>" on "<remote host>" []
```

16. Enter the password for the CloudBees Flow user. The default password for the `admin` user is `changeme`.

The following message appears:

```
The CloudBees Flow DevOps Foresight Server will be configured on  
CloudBees Flow server version <version> on <remote host>
```

The CloudBees Flow software is installed on the machine. When the installation completes successfully, a message that contains the line `Installation complete` appears.

Silent Unattended Installation

You can run the CloudBees Flow DevOps Foresight server installer in unattended (silent) mode with no user interface on either Windows or Linux.

Installing the DevOps Foresight Server

Enter one of the following commands from a command line.

- **Linux:** `sudo ./CloudBeesFlowDevOpsForesightServer-x64-<version> --mode silent <arguments>`
- **Windows:** `CloudBeesFlowDevOpsForesightServer-x64-<version>.exe --mode silent <arguments>`

where:

- `<version>` is your CloudBees Flow DevOps Foresight server version number.
- `<arguments>` represents any additional silent install arguments.

For a successful installation in this mode, you must specify the following:

- **Linux:** Use the `--unixServerUser` and `--unixServerGroup` options to specify the user name and group that the CloudBees Flow DevOps Foresight server service runs as.
- **Windows:** Use the `--windowsServerUser`, `--windowsServerPassword`, and `--WindowsServerDomain` options to specify the user name, password, and domain (if the account is not local) of the account the CloudBees Flow DevOps Foresight server service runs as or the `--windowsServerLocalSystem` option to use the local system account.

Arguments

The following table lists installation arguments. You can view the full installer help by entering `CloudBees FlowDevOpsForesightServer-x64-<version> --help`.

<code>--dataDirectory <argument></code>	<p>Directory used to store binaries:</p> <ul style="list-style-type: none"> • Default value on Linux: /opt/electriccloud/electriccommander. • Default value on Windows: %ProgramFiles%\electriccloud\ElectricCommander (usually: C:\Program Files\electriccloud\ElectricCommander)
<code>--devopsInsightServer <argument></code>	Host name of the remote DevOps Insight Server server.
<code>--devopsInsightServerPassword <argument></code>	Password of the remote DevOps Insight Server server.
<code>--devopsInsightServerPort <argument></code>	Port of the remote DevOps Insight Server server.
<code>--devopsInsightServerUser <argument></code>	User name to use when logging in to the remote CloudBees Flow server.
<code>--help</code>	Display the information in this table
<code>--hostName <argument></code>	Host name or IP address to be used by the remote CloudBees Flow server to communicate with the DevOps Foresight server. The default value is the current host name of the machine.
<code>--installDirectory <argument></code>	<p>Directory used to store binaries.</p> <p>Default value on Linux: /opt/electriccloud/electriccommander</p> <p>Default value on Windows: %ProgramFiles%\electriccloud\ElectricCommander (usually: C:\Program Files\electriccloud\ElectricCommander)</p>
<code>--licenseFile <argument></code>	The file name of the license file.
<code>--mode <arguments></code>	<p>Set the installer mode:</p> <ul style="list-style-type: none"> • Available values on Linux: console, silent or standard. • Available values on Windows: silent or standard.
<code>--remoteServer <argument></code>	<code><host>[:<port>]</code> of the remote CloudBees Flow server

<code>--remoteServerPassword <argument></code>	Password to use when logging in to the remote CloudBees Flow server.
<code>--remoteServerUser <argument></code>	User name to use when logging in to the remote CloudBees Flow server.
<code>--temp <argument></code>	Set the temporary directory used by this program
<code>--unixServerGroup <argument></code>	(Linux only) Group name that the CloudBees Flow DevOps Foresight server services run as Note: This is required for silent installation on Linux.
<code>--unixServerUser <argument></code>	(Linux only) User name that the CloudBees Flow DevOps Foresight server services run as Note: This is required for silent installation on Linux.
<code>--version</code>	Display installer version information
<code>--windowsServerDomain <argument></code>	(Windows only) Domain of the account the CloudBees Flow DevOps Foresight server services will run as on Windows Note: Do not use this parameter if a local account used.
<code>--windowsServerLocalSystem</code>	(Windows only) Run the CloudBees Flow DevOps Foresight server services as the local system account
<code>--windowsServerPassword <argument></code>	(Windows only) Password of the account that the CloudBees Flow DevOps Foresight server services will run as Note: This is required for silent installation on Windows if the <code>--windowsServerLocalSystem</code> option is not specified.
<code>--windowsServerUser <argument></code>	User name of the account the CloudBees Flow DevOps Foresight server services will run as on Windows Note: This is required for silent installation on Windows if the <code>--windowsServerLocalSystem</code> option is not specified.

Chapter 4: Configuration

Configure DevOps Foresight in CloudBees Flow



1. Sign in to CloudBees Flow and go to **Self-Service Catalogs** by selecting the icon on the top of the screen.
2. Navigate to the **Configure DevOps Foresight** item and click **Configure**.
3. Enter the DevOps Foresight Server URL . This is the URL for accessing the DevOps Foresight server; for example, `http://<foresight_server_hostname>:8080`.

The screenshot shows a dialog box titled "Configure DevOps Foresight". It contains two input fields. The first field is labeled "DevOps Foresight Server URL" and is empty. The second field is labeled "Frequency at which to run analytics for CI risk predictions (in minutes)" and contains the value "360". At the bottom right of the dialog, there are two buttons: "Cancel" and "OK".

4. Enter the **Frequency at which to run analytics for CI risk predictions (in minutes)**.
5. Click **OK** to configure DevOps Foresight.

DevOps Foresight basic configuration is complete.

Configure Data Collection

CloudBees Flow includes several plugins in the that you can configure to periodically collect Continuous Integration (CI) data from third-party tools and send it to the DevOps Insight server. DevOps Foresight uses this data for predictive analytics. The following table shows the CI-related data sets and corresponding plugins that can be used to collect data.

Data set	Third-party Tool	CloudBees Flow Plugin
Build, and Change sets	Jenkins	EC-Jenkins
Code Commits	Git	ECSCM-Git
Code Quality (static code analysis)	SonarQube	EC-SonarQube

As part of DevOps Foresight, a utility procedure is added in the CloudBees project, out of the box, to aide in plugin setup. These procedures are available from CloudBees Flow via the **Platform/projects** page in the Automation Platform web UI: browse to https://<CloudBees Flow_server>/commander/, and then click **Administration > Platform/projects**. For more information about them see the *CloudBees Flow User Guide*.

Utility Procedure in CloudBees Project	Plugin	Description
Jenkins Setup for Command Center - build and quality	EC-Jenkins	This is an existing procedure that is also used to setup EC-Jenkins for the Release Command Center. If the procedure was already used to set up Release Command Center, then the schedule that was created for the same may be updated as required for DevOps Foresight.
Git Setup for DevOps Insight	ECSCM-Git	This is a new procedure added as part of DevOps Foresight.
SonarQube Setup for DevOps Foresight	EC-SonarQube	This is a new procedure added as part of DevOps Foresight.

Once the CI risk predictions analytics start running on the scheduled frequency, you can start seeing **Risk Predictions**, and more, through DevOps Foresight.

