BLACKDUCK

Installing, Configuring, and Using the Hub Plugin for TeamCity

Version 1.4.2

This edition of the *Installing, Configuring, and Using the Hub Plugin for TeamCity* refers to version 1.4.2 of the Black Duck Hub Plugin for TeamCity.

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Chapter 1: Hub TeamCity Plugin Overview

Black Duck Hub is a new risk management application designed to help you manage the logistics of using open source software in your organization.

Black Duck Hub Scanner is the software component scanning functionality in Black Duck Hub that provides an automated way to determine the set of open source software (OSS) components that make up a software application. Hub Scanner is designed to help organizations manage their use of open source binaries by identifying and cataloging OSS components to provide additional metadata such as license, vulnerability, and OSS project health for those components.

TeamCity is an open source continuous integration tool that monitors executions of repeated jobs, such as building a software project or cron jobs. TeamCity focuses on building and testing software projects continuously and monitoring execution of externally run jobs.

As a Hub and TeamCity user, the Hub TeamCity plugin enables you to:

- Run a component scan in a TeamCity job:
    - Scan multiple targets within the job workspace.
    - Define the component scan command line interface (CLI) as a tool.
    - Create projects and releases in Black Duck Hub through the TeamCity job.
    - Associate the scanned code with the project/version in the Hub.
- After a scan is complete, the results are available on the Hub server.

Using the Hub TeamCity Plugin together with Hub Scanner lets you use TeamCity to automatically create Hub projects from your TeamCity projects.

1.1 Hub TeamCity Plugin Requirements

Software Requirements

The installation instructions in this document assume that you have the following installed and configured on your system:

- Access to Black Duck Hub 2.0 server or higher
- TeamCity 7.1 or higher (we recommend the latest LTS release)
- Maven 3
- Java SE 7
- Open Source distribution on Black Duck Hub version 2.3 or higher
- Microsoft Build version 11 or 12. Note that Visual Studio 2012 installs Microsoft Build 11, and Visual Studio 2013 installs Microsoft Build 12.
- Microsoft .NET Framework version 4.5

Note: The Hub Scanner CLI client requires Java Runtime Environment (JRE) version 1.7.0_40 or later to be installed on the computer where it is run. For Hub 3.0 versions and higher, the installation of the JRE is not required.

The TeamCity plugin is supported on the same operating systems and browsers as Black Duck Hub. For the complete listing of operating systems supported by Black Duck, refer to the *Black Duck Hardware Software Specifications.*

Network Requirements

The Hub TeamCity plugin requires internet connectivity. The machine that hosts your TeamCity server must be able to connect to the Hub server.

1.2 Supported Archive Types

The Black Duck Component Scanning can extract the following archive types:

- AR
- ARJ
- CPIO
- DUMP
- TAR
- RPM
- ZIP
- 7z

Archives may optionally be compressed using any of the following compression algorithms:

- Bzip2
- Gzip
- Pack200
- XZ
- LZMA
- Snappy
- Z (compress)
- DEFLATE

Note: If you attempt to scan an individual archive file that is not a supported type, Hub Scanner finds no matches.

Tip: For additional information, refer to the Black Duck Hub online documentation.

1.3 Troubleshooting the Hub TeamCity Plugin

If an error message is generated that states *During development and testing the following errors were encountered*, use the following solutions:

- If you try to use Java 6 instead of Java 7, instead of getting an *Unsupported major:minor version error* message, the plugin sometimes throws a false *java.lang.OutOfMemoryError: Java heap space* message instead.
- If you get a message that reads *Service Unavailable*, either the Hub server can't be reached, or the request to the server is invalid. Contact your Hub server administrator.
- If you get a message that reads *Precondition failed*, the request to the server is invalid. Verify that your global configuration is correct, and verify that the job configuration is correct. If you are still getting this message after you have checked your configuration, contact Black Duck support.
- If you get a message that reads *Not Found (404) - Not Found*, the request to the server is invalid. Contact Black Duck support.

Tip: After major releases of Hub, check for updated versions of your Black Duck plugins. Changes to the APIs, schema, and SDK versions may require updated versions of the integration plugins.

- If you try to use the Hub TeamCity integration, and you configure a job with a project and version, and that project already exists but the current Hub user is not assigned to it, then the following errors display:
    - In the job configuration **Project Name** field, a notification displays *This project does not exist on the Hub Server.* Clicking **Create project/version** displays a message reading *This version may already exist. com.blackducksoftware.integration.hub.exception.BDRestException: There was a problem creating this Hub project. Error Code: 412*.
    - If you run the build, the following displays:

        Status : 412

        Response : {"errorMessage":"project name already exists","arguments":{"fieldName":"name"},"errors":[{"errorMessage":"project name already exists","arguments":{"fieldName":"name"},"errorCode":"{central.constraint_violation.project_name_duplicate_not_allowed}"}],"errorCode":"{central.constraint_violation.project_name_duplicate_not_allowed}"}

        Problem creating the project.

        Assigning the current user to the existing project with this name resolves the issue.

1.4 Best Practices for the Hub TeamCity plugin

Setting a variable for the CLI location in each agent configuration is the best way to minimize the effort for the job/task configuration. For more information, refer to Agent Level Build Parameters.

Chapter 2: Installation Overview

Note: You can find TeamCity documentation at:
https://www.jetbrains.com/teamcity/documentation/

2.1 Installation Prerequisites

Before you install the Hub TeamCity Plugin, ensure that:

- Your TeamCity instance is up-to-date and fully patched.
- You know the host name and port number for the Hub server.
- For Hub users, you must have the code scanner role.
- You have connectivity to the internet. The machine that hosts your TeamCity server must be able to connect to the Protex server.

Note: Hub users do not perform the installation; this is done by the TeamCity user.

2.2 Downloading and Installing the Hub TeamCity Plugin

To download the Hub TeamCity plugin:

1. Navigate to https://github.com/blackducksoftware/hub-teamcity/releases.
2. Download and save the `.zip` file to a temporary location.

To install the Hub TeamCity plugin:

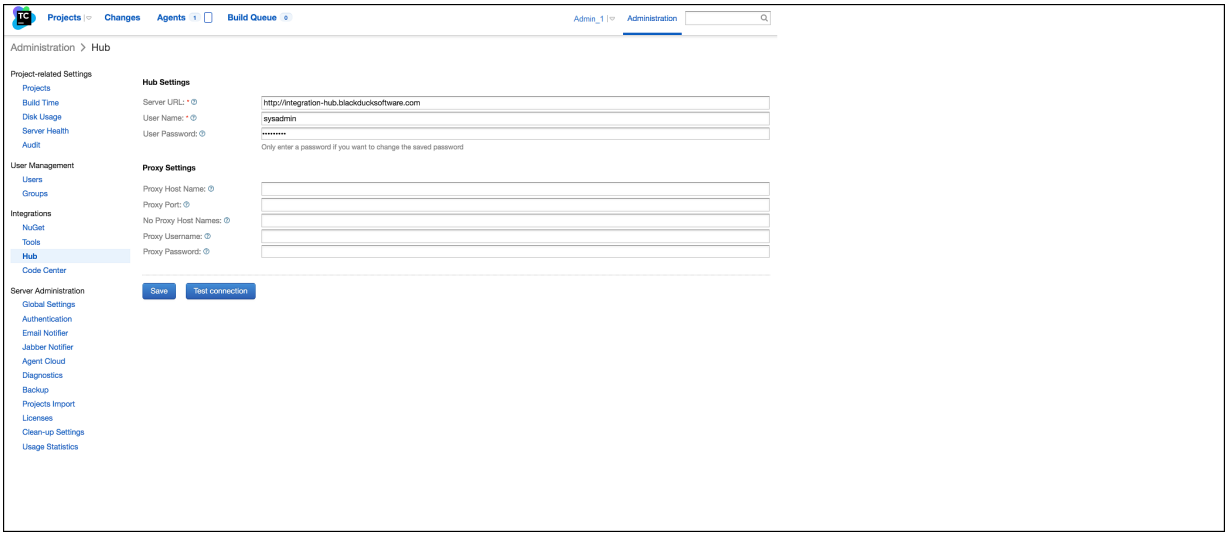
1. Click **Administration** at the upper right.
2. Click **Plugins List** at the bottom left.
3. Click **Upload Plug-in** link at the top left. This navigates to the zip file downloaded from Hub server.
4. Restart the TeamCity server from the Linux command prompt using the following commands:
    a. `runall.sh -stop`
    b. `runall.sh -start`
5. Check your **Plugin List** to ensure the plugin is successfully installed.

Chapter 3: Configuring the Hub TeamCity Plugin

Configure the Hub TeamCity plugin using the following procedure.

To configure the Hub TeamCity plugin:

1. Log into the TeamCity server.
2. Navigate to the **Administration** section.
3. Under **Integrations**, select **Hub**.
4. Enter your credentials for the Hub server:
    a. Server URL
    b. User name
    c. User password
5. Click **Test connection**.
6. If the connection is successful, click **Save**.



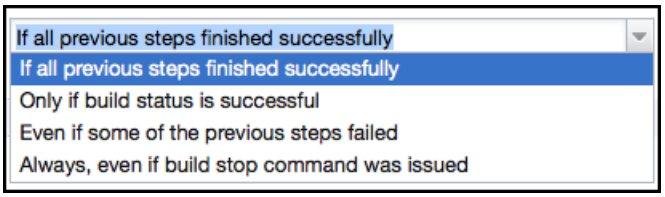
Note: In Hub TeamCity if you are running builds on a Windows agent, you cannot configure a project name and version using non-Windows encoding characters; for example, Chinese characters. Therefore, the project name and version cannot contain Unicode characters. This is not an issue in Linux or Mac operating systems.

3.1 Configuring a Build Job

You can configure a build job (a new project) using the following procedure.

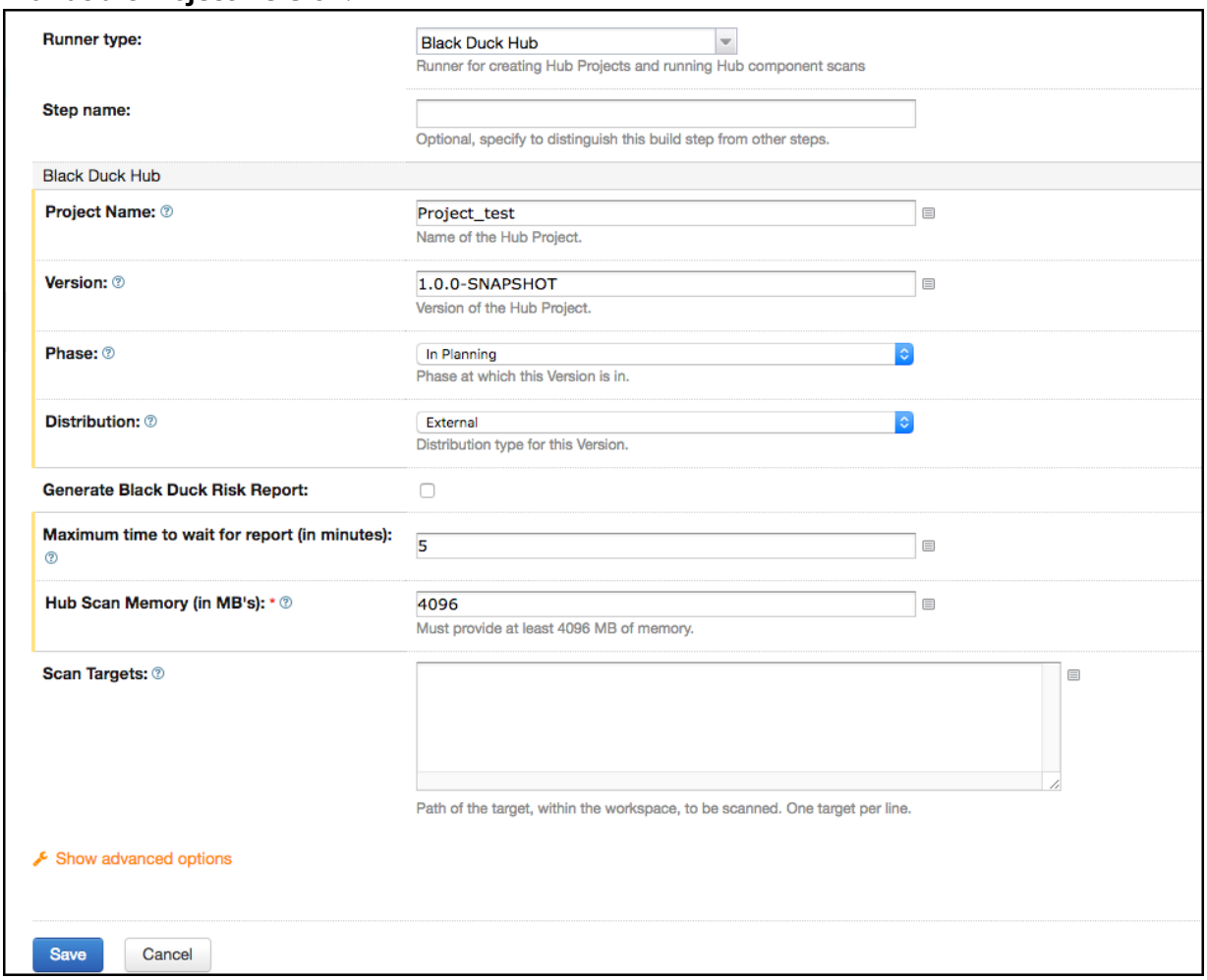
✱ To configure a build job:

1. To start a new project in TeamCity:
    a. Navigate to **Administration** > **Project Related Settings** > **Projects**.
    b. Click **Create project**.
    c. Enter a new project name.
    d. Click **Create**.
    e. Click **Create build configuration**.
    f. Complete the required information.
    g. Click **VCS settings**.
    h. Click **Add Build Step**.
    i. Select Black Duck Hub from the **Runner Type** drop-down list.
2. For an existing project:
    a. Navigate to **Projects**.
    b. Select and open a project.
    c. Open the build for the selected project.
    d. Select **Edit Configuration Settings**.
    e. Click **Add Build Step**.
    f. Select Black Duck Hub from the **Runner Type** drop-down list.
3. **Step name**: *(Optional)* Specify a step name to distinguish this step from other steps. The name specified here displays in the UI.
4. **Execute step**: Click the drop-down box, and select a condition for when the step (Hub Scan) should be run.



5. Provide the **Project Name**.

6. Provide the **Project Version**.



Note: Leave the **Project Name** and **Version** fields blank if you do not want the scans mapped to a particular version. The resulting scans for the specified scan targets are automatically mapped to the specified project version.

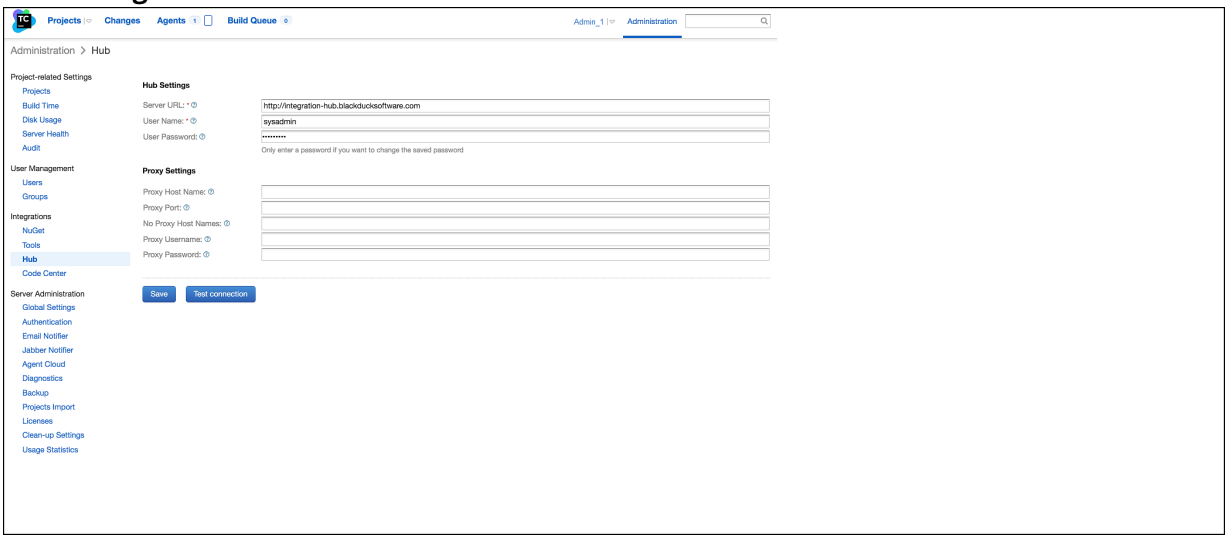
7. **Phase** and **Distribution**: If you are creating a new version, select the **Phase** and **Distribution** types for this version. The phase and distribution is used to create new versions; the phase and distribution of existing versions is not updated. If the project or version does not exist, it is created during the build.
8. **Hub Scan Memory**: Determine the memory to allocate to the Black Duck scan in megabytes; the default is 4096MB.
9. **Scan Targets**: type the targets to scan; enter one target per line. If no target is specified, then the entire workspace is scanned.

3.2 Configuring a Proxy

Note: Black Duck does not currently support proxies with authentication.

✱ To configure the TeamCity plugin to use a proxy:

1. Log in to TeamCity as administrator.
2. Go to **Administration**.
3. Select **Integrations** > **Hub**.



4. Under **Proxy Settings**, enter information for the proxy you would like to use:
   - **Proxy Host Name**
   - **Proxy Port**
   - **No Proxy Host Names**: enter a comma-separated list of host names that should not have requests sent through the proxy; for example, *Local/In-Network servers*.
   - **Proxy Username**
   - **Proxy Password**
5. Click **Save**.

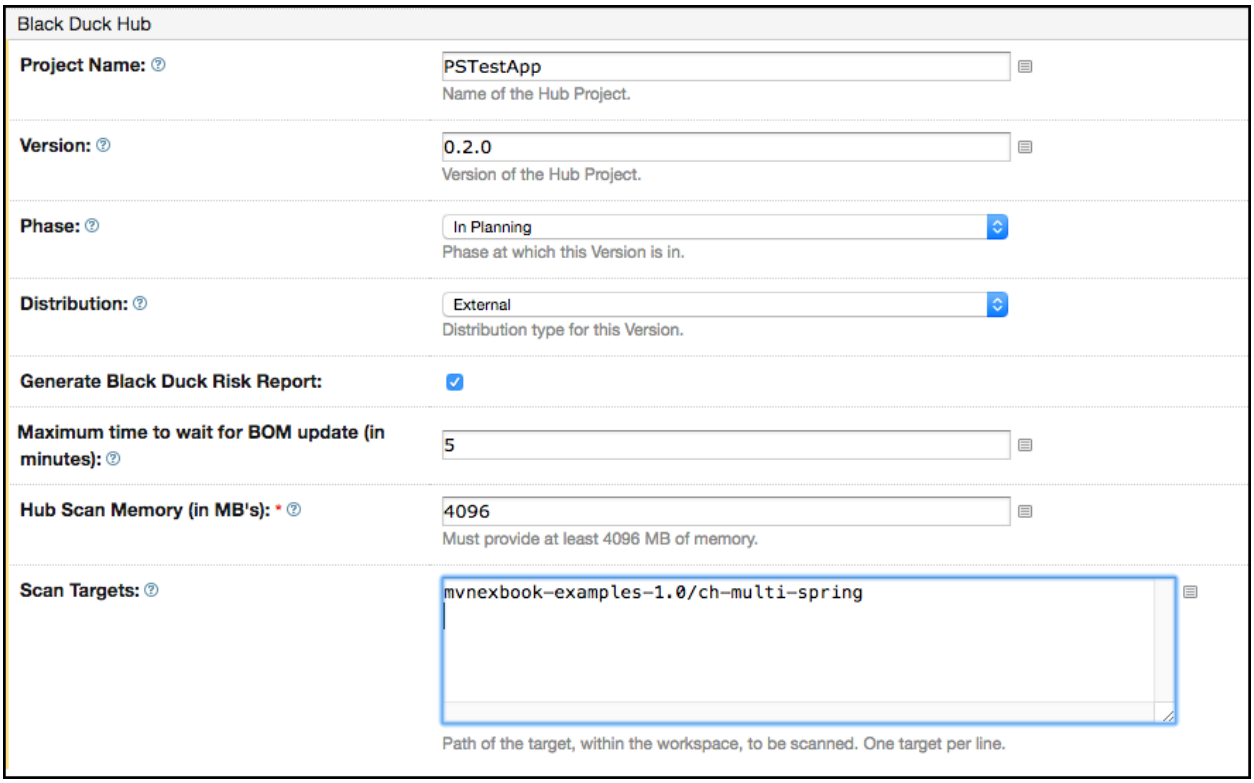
Tip: If you have a proxy configured for Internet access, but don't need it for accessing your Hub instance, add the hostname to the **No Proxy Host** list.

3.3 Configuring a Risk Report

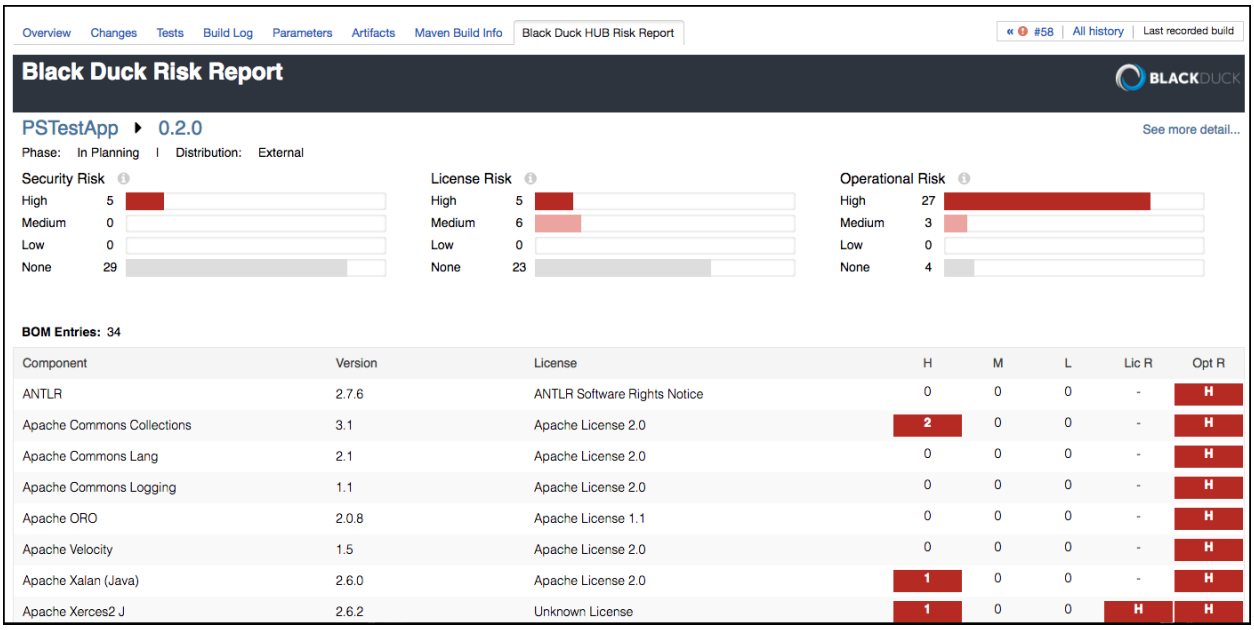
You can configure risk reports for your Hub Team City builds.

✱ To configure a risk report:

1. Edit the job configuration.
2. Edit the Black Duck Hub build step.
3. Click the **Generate Black Duck Risk Report** check box.



4. When the build completes, select the build from the list.
5. Click the **Black Duck Hub Risk Report** tab in the build results screen. The risk report displays. Note that as of version 1.4.2, the risk report now displays the specific components that violate a policy.



To use the TeamCity plugin to scan a job:

1. In TeamCity **Projects**, select **Run** for the build configuration you want to run.
2. Click the link next to the build number to go to the build results for that build.
3. To see the output of the build, navigate to the **Build Log**.
4. When the build is complete, the build logs are available in the workspace inside the `HubScansLog` folder.

4.1 Configuring Hub TeamCity Logging

Beginning with Hub TeamCity version 1.4.1, you can configure your logging level.

In configuring the logging level, Hub TeamCity examines the `HUB_LOG_LEVEL` environment variable.

- If this variable is set with a valid value, this value defines the logging level.
- If this variable is not set, then the default `INFO` logging level is used.

Note: The log level set in the configuration parameters takes precedence.

Setting the logging level

To set the logging environment variable:

1. Navigate to **Edit Configuration** > **Build Parameters** > **Add New Parameter**.
2. In the **Configuration Parameters**, enter:
    a. **Name:** HUB_LOG_LEVEL
    b. **Value:** INFO/ERROR/...

Logging level values

You can specify the following values for the log levels.

- OFF
- ERROR
- WARN
- INFO
- DEBUG
- TRACE

Examples

- *Warning*: Includes Error, Warning
- *Info*: Includes Error, Warning, and Info
- *Debug*: Includes Error, Warning, Info, and Debug messages
- *Trace*: Includes Error, Warning, Info, Debug, and Trace messages

Note: The *Env Inject* plugin is required for the job level logging configuration.

Chapter 5: Hub TeamCity Plugin Release Notes

Changes in Release 1.4.2

Issues Resolved

- Failure conditions now work as expected.
- The build number is now treated as a string instead of an integer.
- The Risk report now shows which components violate a policy.
- The CLI now requires an environment variable for the password.
- When using Firefox version 45.x and clicking **Save Configuration**, you are now directed to a **Save** status dialog box.
- When using Firefox versions 44.x and 45.x, clicking **Test Connection** now displays a status dialog box containing a **Close** button.

Changes in Release 1.4.1

New Features

- The level of logging is now configurable.

Issues Resolved

- Login credentials are now encrypted in the Artifact `build.properties` files.
- Risk counts containing more than four digits are now fully visible.
- The risk report is now generated when a build is failed due to policy violations. If the build fails before the report has finished publishing, then the report is not generated.
- In the **Add Build Failure Condition** options, there is now an option for product-specific build failure conditions.
- Labels in the **Risk Report** UI are now updated.

Changes in Release 1.4.0

New Features

- Failure conditions based on the policy API support are now available:
    - You can configure the failure condition based on policy through the UI.
    - The build fails if there are any counts regarding policy violations.
    - The build logs the policy counts.

  - A version of the Hub that does not support the policy API logs that it is not compatible for the policy API.
  - The build passes even if the policy failure condition is not configured.
- Risk reports for Hub TeamCity builds are now available.

Issues Resolved

- Addressed an issue wherein project scan failure conditions now wait for the Bill of Materials to be updated.
- Addressed an issue wherein duplicate scan targets were not validated.
- Addressed an issue wherein TeamCity builds were failing if the target already existed.
- If an authenticated proxy server has been configured, then all communications from the plugin to Black Duck Hub are now done through the authenticated proxy server.

Changes in Release 1.3.1

- Addressed an issue with project names containing special characters.

5.1 Known Issues for Hub TeamCity

The following are known issues for the Hub TeamCity plugin.

- If more than one process tries to perform the CLI install at the same time to the same directory (on the same machine), then the processes collide with each other and start deleting files while another creates them.
  - Workaround: When a process finds that the currently installed CLI must be updated (downloaded for the first time or to change the current files), then it should create a `.locked` file (or a similar and appropriate file name), then perform the update, and remove the `.locked` file when the update is complete. If another process starts to perform the install, it should first check for the `.locked` file, if it exists, then it should wait until the `.locked` file is deleted before performing its check.
- After installing version 1.4.1 of the Hub TeamCity plugin, you must manually select a policy violation from the Policy Violation drop-down menu.
- TeamCity jobs may fail to simultaneously update in the CLI.

Chapter 6: Black Duck Support

If you have questions or find issues, contact Black Duck Software.

For the latest in web-based support, access the Black Duck Software Customer Support Web Site: https://www.blackducksoftware.com/support/contact-support

To access a range of informational resources, services and support, as well as access to Black Duck experts, visit the Black Duck Customer Success portal at: https://www2.blackducksoftware.com/support/customer-success

You can also contact Black Duck Support in the following ways:

- **Email**: support@blackducksoftware.com
- **Phone**: +1 781.891.5100, ext. 5
- **Fax**: +1 781.891.5145
- **Standard working hours**: Monday through Friday 8:00 AM to 8:00 PM EST

Note: Customers on the **Enhanced Customer Support Plan** are able to contact customer support 24 hours a day, 7 days a week to obtain Tier 1 support.

If you are reporting an issue, please include the following information to help us investigate your issue:

- Name and version of the plugin.
- Black Duck product name and version number.
- Third-party integrated product and version; for example, Artifactory, Eclipse, Jenkins, Maven, and others. For Black Duck Hub, only Jenkins, TeamCity, and Bamboo is supported.
- Java version.
- Black Duck KnowledgeBase version, where applicable.
- Operating system and version.
- Source control management system and version.
- If possible, the log files, configuration files, and Project Object Model (POM) XML files.

6.1 Training

Black Duck training courses are available for purchase. Learn more at https://www.blackducksoftware.com/services/training.

View the full catalog of our online offerings: https://www.blackducksoftware.com/academy-catalog.

When you are ready to learn, you can log in or sign up for an account: https://www.blackducksoftware.com/academy.

6.2 Services

If you would like someone to perform Black Duck Software tasks for you, please contact the Black Duck Services group. They offer a full range of services, from planning, to implementation, to analysis. They also offer a variety of training options on all Black Duck products. Refer to https://www.blackducksoftware.com/services/ for more information.