BLACKDUCK

Installing, Configuring, and Using the Hub Email Extension

Version 1.1.0

This edition of the *Installing, Configuring, and Using the Hub Email Extension* refers to version 1.1.0 of the Black Duck Hub Email Extension.

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Please send your comments and suggestions to:

Black Duck Software, Incorporated
800 District Avenue
Suite 221
Burlington, MA 01803 USA.

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Chapter 1: Hub Email Extension Overview

The Black Duck Hub Email Extension runs independently from the Hub and provides additional functionality. It automatically sends email alerts and information that you need to know, based on your preferences.

Triggering events in the Hub generate an email alert. You can select the triggering events based on your personal preferences and workflow needs. Emails can be sent:

- Individually in real-time.
- Collectively in a daily digest format.
- Collectively in a digest, based on your custom schedule configuration.

As a Hub user, the Hub Email Extension enables you to:

- Select the email notifications you want to receive, based on your selected triggering events.
- Opt in or opt out of email notifications.
- Receive daily email digests of triggering event notifications.
- Receive real-time emails of triggering event notifications.
- Customize the email template to fit your workflow needs.
- Add your company logo to notification emails.

After installing and configuring the Hub Email Extension, email digests are automatically sent to all users that have opted-in for email notifications. No further user interaction is required. You can change the global configuration as needed, and you can edit your personal preferences at any time.

Chapter 2: Hub Email Extension Installation

Setup of the Hub Email Extension consists of three phases:

- Download
- Installation
- Configuration

These phases are detailed in the following sections.

2.1 Downloading the Hub Email Extension

The Hub Email Extension installer is available as a `.zip` file on the ..... website. Download the .zip file, and then install as follows.

To download the Hub Email Extension installer:

1. Navigate to the Git Hub download page.
2. Download the file `hub-email-extension-version_number.zip`.

2.2 Installing on a Hub Server

The following topics are specific to installations on a Hub server.

2.2.1 Installation Prerequisites for Hub Server Installations

Before you install the Hub Email Extensions, ensure that:

- You are running Black Duck Hub version 3.4 or higher.
- You know the host name and port for the Hub server.
- You know the host name and port for your email server.
- You have a user account with administrator privileges on the Hub system.
- You have connectivity to the internet.
- You have user rights to copy files onto your Hub system.
- You are a root user, or a user with Sudo access rights for configuring IP tables.

2.2.2 Installation Location

After you have downloaded the zip file as described in Downloading the Hub Email Extension on page 6, you must copy the zip file onto the Hub server. The default installation location for all Black Duck Hub software is the `/opt/blackduck/` directory. Typically, this includes `hub/` and `install/` sub-directories. For the email extension, you must create a sub-directory in the `/opt/blackduck` directory specifically for the email extension.

To create the install directory, run the following commands:

1. `cd /opt/blackduck`
2. `mkdir extensions`
3. Copy the file `hub-email-extension-<version>.zip` into the `/opt/blackduck/extensions` directory.
4. `cd /opt/blackduck/extensions`
5. `unzip hub-email-extension-<version>.zip`

You now have the directory `/opt/blackduck/extensions/hub-email-extension-<version>` on the Hub server.

2.2.3 Installation Permissions and Ownership

Before proceeding further, you must make sure that the owner of the `/opt/blackduck/extensions/hub-email-extension-<version>` directory is the *blckdck:blckdck* user and group. Additionally, the shell script used to start and stop the email extension must have its permissions changed to allow it to execute.

To perform these steps, run the following Linux commands:

1. `chown -R blckdck:blckdck /opt/blackduck/extensions/hub-email-extension-<version>`
2. `chmod 755 /opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh`

2.2.4 Setting Java Home

For the Hub Email Extension to work, the `JAVA_HOME` environment variable must be set. Since the extension is installed on a Hub server, it can use the same Java Runtime Environment (JRE) used by the Hub server. To configure this, the *hub-email-extension* script file must be edited to set the `JAVA_HOME` environment variable.

Note: Do not export the `JAVA_HOME` variable in your terminal, as it will only be a valid environment variable for that terminal session.

To configure JAVA_HOME:

1. 1. Execute the command: `vi /opt/blackduck/extensions/hub-email-extension-<version>/bin/hub-email-extension`.
2. Locate the `APP_BASE_NAME` in the file as follows:

```
APP_NAME="hub-email-extension"

APP_BASE_NAME=`basename "$0"`
```

3. Edit the file to define `JAVA_HOME='/opt/blackduck/hub/jre/CurrentVersion/'` as follows:

```
APP_NAME="hub-email-extension"
APP_BASE_NAME=`basename "$0"`
JAVA_HOME='/opt/blackduck/hub/jre/CurrentVersion'
```

4. Save the changes to the *hub-email-extension* script.

2.3 Installing in a non-Hub Environment

The following topics are specific to installations on a non-Hub system.

2.3.1 Installation Prerequisites for a non-Hub system

Before you install the Hub Email Extensions on a non-Hub system, ensure that:

- You know the host name and port for the Hub server.
- You know the host name and port for your email server.
- You have a user account with administrator privileges on the Hub system.
- You have connectivity to the internet.
- You are a root user, or a user with *Sudo* access rights for configuring IP tables.
- The non-Hub system is running Java JRE version 8.0 or higher.
- The JAVA_HOME environment variable is set.

2.3.2 Installation Configuration for a non-Hub System

After you have successfully downloaded the Hub Email Extension as described in Downloading the Hub Email Extension on page 6, installation is as follows.

To install the Hub Email Extension on a non-Hub system:

1. After the file has downloaded, unzip the `.zip` file. The contents are extracted to a folder named `hub-email-extension-version_number`.
2. In the `bin` folder:
   a. Linux: Run the `email_extension.sh` file. Prior to running this shell script, you must give the shell script executable privileges with the `chmod` command; for example, `chmod 755`.
   b. Windows: Using the command line, run the `hub-email-extension.bat` file.

Chapter 3: Basic Configuration of the Hub Email Extension

The following topics are configuration procedures that must be performed for both Hub server and non-Hub system environments.

3.1 Updating the Extension Properties File

The next installation configuration step is to configure the extension so it can run. The first step is to select an available port. By default, the extension contains port 8000 in its URL. However, based on your environment, this port may not be available.

Check Port Numbers

For more information on TCP and UDP port numbers, refer to https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers.

✱ **To check the port number:**

1. Switch to the *root* user by using the command `su`.
2. Get the list of ports in use by using the command `netstat -nap`.
3. Check if the intended port is in use.
4. Switch back to the original user by using the command `exit`.

To avoid collisions with known ports, port number 55000 will be used.

3.2 Updating the URL

Next, change the URL for the email extension to match the server name used to access the Hub. Change the port to 55000.

✱ **To edit the file:**

1. Execute the command: `vi /opt/blackduck/extensions/hub-email-extension-<version>/config/extension.properties`.
2. Find the `hub.extension.url` property:

   ```
   hub.extension.url=http\//:localhost\:8000
   ```

3. Edit the URL so that the host name matches the host name used to access the Hub, and change the port number to 55000:

   ```
   hub.extension.url=http://hub.server.url:55000
   ```

4. Save the changes to `extension.properties`.

3.3 Configuring for SSL

To configure the email extension to run over Secure Socket Layers (SSL), then the `extension.properties` file must be configured to be aware of the certificate in use. If the Hub server is running over SSL, then the certificate for Hub communication over SSL can be used here as well.

Prerequisites:

1. The certificate to use must be on the file system of the Hub server, and have read access by the user.
2. The password for the certificate keystore.
3. The password for the private key used with the keystore.
4. The type of keystore (PKCS12 or JKS).

To configure for SSL:

1. Execute the command: `vi /opt/blackduck/extensions/hub-email-extension-<version>/config/extension.properties`.
2. Find the section for SSL configuration:

```
# HTTPS optional config
hub.extension.ssl.keyStorePath=
hub.extension.ssl.keyStorePassword=
hub.extension.ssl.keyPassword=
hub.extension.ssl.keyStoreType=
```

3. Edit the path to the certificate file:

```
# HTTPS optional config
hub.extension.ssl.keyStorePath=/opt/blackduck/install/certificate.pkcs12
hub.extension.ssl.keyStorePassword=
hub.extension.ssl.keyPassword=
hub.extension.ssl.keyStoreType=
```

4. Edit the keystore password:

```
# HTTPS optional config
hub.extension.ssl.keyStorePath=/opt/blackduck/install/certificate.pkcs12
hub.extension.ssl.keyStorePassword=keystorepassword
hub.extension.ssl.keyPassword=
hub.extension.ssl.keyStoreType=
```

5. Edit the key password. Note that for PKCS12 keystores, the keystore password and the key password are the same.

```
# HTTPS optional config
```

```
hub.extension.ssl.keyStorePath=/opt/blackduck/install/certificate.pkcs12
hub.extension.ssl.keyStorePassword=keystorepassword
hub.extension.ssl.keyPassword=keystorepassword
hub.extension.ssl.keyStoreType=
```

6. Edit the keystore type:

```
# HTTPS optional config
hub.extension.ssl.keyStorePath=/opt/blackduck/install/certificate.pkcs12
hub.extension.ssl.keyStorePassword=keystorepassword
hub.extension.ssl.keyPassword=keystorepassword
hub.extension.ssl.keyStoreType=PKCS12
```

7. Save and close the `extension.properties` file.

Once this is configured, you can start the extension.

3.4 Testing Your Installation

At this point, the Hub Email Extension should be configured such that it can be started. Run the `email_extension.sh` script file as the original user.

Use the following commands for testing your configuration.

- Starting up the extension: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh start`.
- Stopping the extension: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh stop`.
- Checking the status: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh status`.

3.5 Checking the Logs

If the start command doesn't report a *pid* number, then the Hub Email Extension configuration may be wrong; specifically permissions on folders. Refer to the logs for more details.

Check the log file at: `/opt/blackduck/extensions/hub-email-extension-<version>/logs`.

The first time the extension starts, the log contains the following message:

```
09:28:27.362 [main] ERROR
com.blackducksoftware.integration.email.EmailEngine - Error Starting Email
Engine java.lang.IllegalStateException: No token present to refresh

at
com.blackducksoftware.integration.email.extension.server.oauth.TokenManage
r.refreshUserAccessToken(TokenManager.java:204) ~[hub-email-extension-
1.1.0.jar:?]
```

```
at
com.blackducksoftware.integration.email.extension.server.oauth.TokenManage
r.refreshToken(TokenManager.java:140) ~[hub-email-extension-1.1.0.jar:?]
at com.blackducksoftware.integration.email.EmailEngine.start
(EmailEngine.java:187) [hub-email-extension-1.1.0.jar:?]
at com.blackducksoftware.integration.email.Application.<init>
(Application.java:61) [hub-email-extension-1.1.0.jar:?]
at com.blackducksoftware.integration.email.Application.main
(Application.java:38) [hub-email-extension-1.1.0.jar:?]
```

This is not a failure of the extension to start. It indicates that the extension has not been authorized.

3.6 Extension Information URL

Once the extension is up and running, you can get the extension information through the URL:

`http(s)://hub.server.url:55000/extension/info`

If the URL for which the extension is configured doesn't work, make sure port 55000 is open for accepting connections. To do so, you must create `iptable` rules to open the ports. You may need to configure two rules to open the port for the extension

Note: Due to differences in Linux distributions, Black Duck recommends that you consult your IT department before performing the following steps.

To get the extension information from the URL:

1. Stop the email extension using the command: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh stop`.
2. Switch to a user that can execute the `iptables` command.
3. Execute the command: `iptables -I INPUT -m tcp -p tcp --dport 55000 -j ACCEPT`.
4. Execute the command: `iptables -I OUTPUT -m tcp -p tcp --dport 55000 -j ACCEPT`.
5. Start the email extension using the command: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh start`.
6. Retry accessing the extension URL.

3.7 Register the Extension to the Hub

Once the URL displays the JSON payload describing the extension, you can proceed to register the extension as normal.

Chapter 4: Advanced Configuration of the Hub Email Extension

After you have successfully installed the Hub Email Extension, you must authenticate and configure the extension. The steps are:

- Extension authentication
- Hub environment (*global* configuration).
- Individual preferences (*user* configuration).

These procedures are described in the following sections.

Additional configuration options including:

- JavaMail properties
- Using HTTPS with the Hub Email Extension

are also described in the following sections.

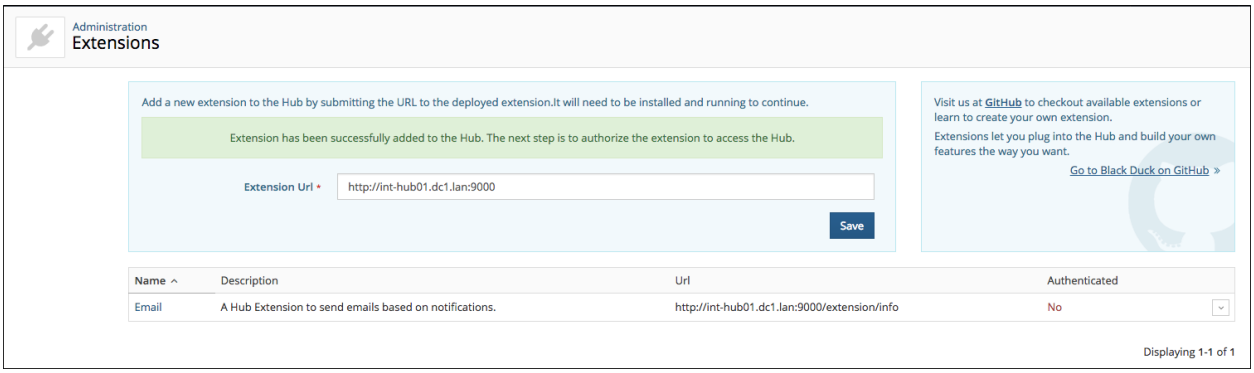
4.1 Hub Email Extension Authentication

After installing the Hub Email Extension, you must complete the extension authentication process.

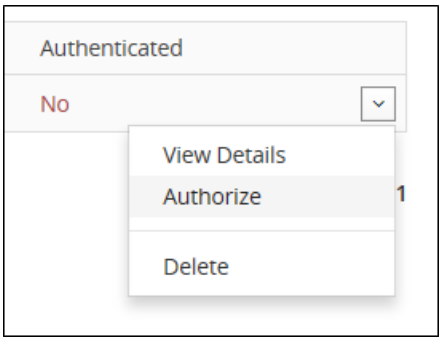
Note: You must have administrator rights to perform authentications.

To authenticate the Hub Email Extension:

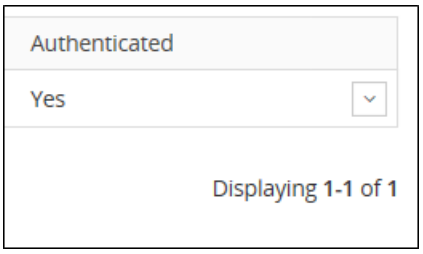
1. Log in to the Hub as administrator.
2. Click the hamburger menu in the upper left corner, and select **Administration** to open the **Administration** page.
3. On the **Administration** page, click **Extensions**. Note the status message in the green box, stating that the extension has been successfully added to the Hub.
4. In the **Extensions URL** field on the **Extensions** page, type the URL you used in the `hub.extension.url` field in the `extension.properties` file.



5. Click **Save**.
6. Below the **Extensions URL** field, click the drop-down selector at the right of the email extension entry, and select **Authorize**. This option is only available in the drop-down menu if the extension is installed, but not yet authorized. Note that an authorization status of **No** displays at the right of the extensions table in the **Authenticated** column.



7. In the confirmation box, click **Authorize**. The email extension is now authenticated, and you can complete the global configuration process. Note that an authorization status of **Yes** displays at the right of the extensions table in the **Authenticated** column.



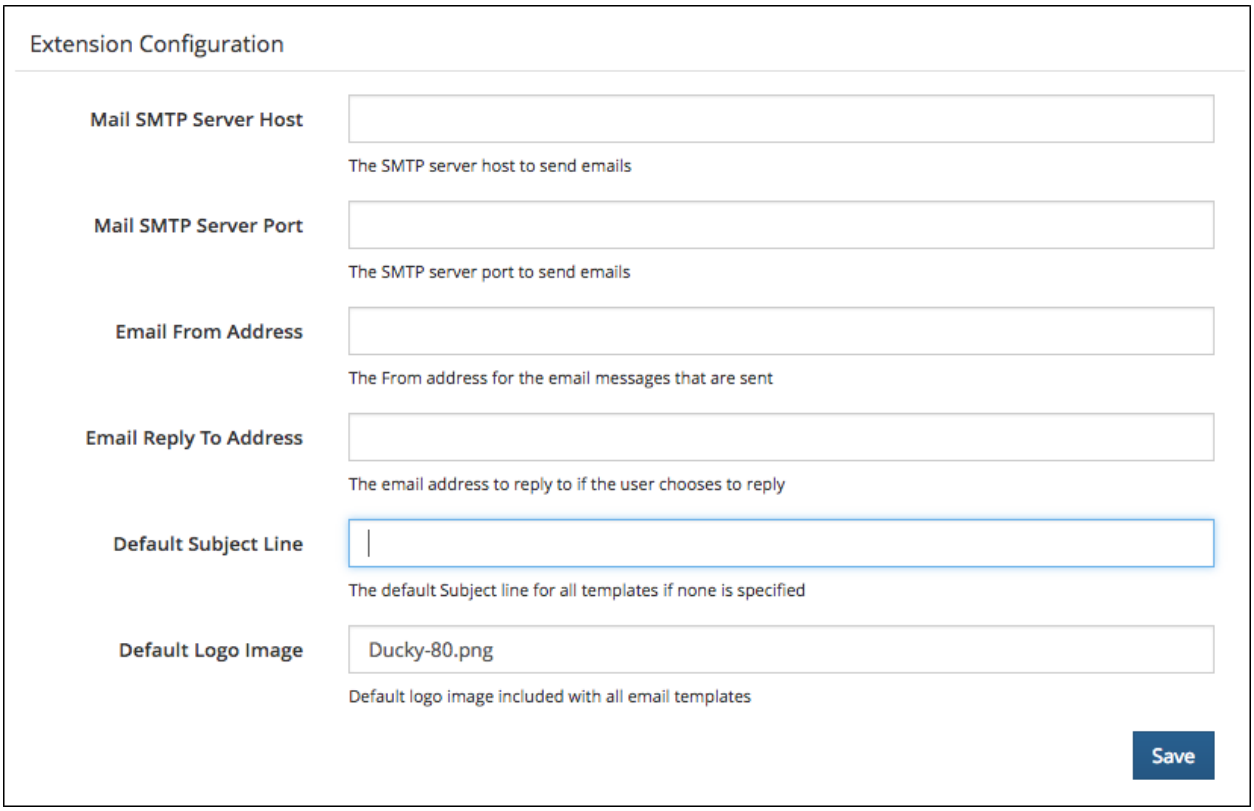
4.2 Hub Email Extension Global Configuration

After you have successfully installed and authenticated the Hub Email Extension, you must configure it for your environment. This is referred to as the *global* configuration. You must have administrator rights to configure the email extension.

Note: If the Hub Email Extension is not running, then the **Hub Email Extension** > **Extension Configuration** section does not display.

✱ To globally configure and authenticate the Hub Email Extension:

1. Log in to the Hub.
2. In the hamburger menu on the left, select **Administration**.
3. On the **Administration** page, select **Hub Extensions**.
4. On the **Hub Extensions** page, select **Hub Email Extension**.
5. On the **Hub Email Extension** page in the **Extension Configuration** section, complete the following fields:



   a. **Mail SMTP Server Host**: Type the URL for your email server. For authenticated SMTP servers, the user name and password must be manually configured in the `extension.properties` file. For more information on configuring a connection to authenticated SMTP servers, refer to JavaMail Configuration on page 18.

   b. **Mail SMTP Server Port**: Type the SMTP port number for your email server.

   c. **Email From Address**: Type the name which is seen by the email recipient as the email sender.

   d. **Email Reply To Address**: Type the email *from* address which is seen by the email recipient. This is used as the reply address if the recipient chooses to reply.

   e. **Default Subject Line**: Type the email subject line. It can be helpful to recipients if you specify *Daily* digest in the subject line.

f. **Default Logo Image**(optional): Type the path to the image to be used for your custom logo that appears in emails. If no custom logo is specified, the default logo image is the Black Duck logo. If only a file name is provided, then the system looks to see if the file exists in the `Images` folder of the Hub Email Extension. If the full path for the image is provided, the system verifies that the image file exists at the path specified on the system where the extension is running.

6. Click **Save**.

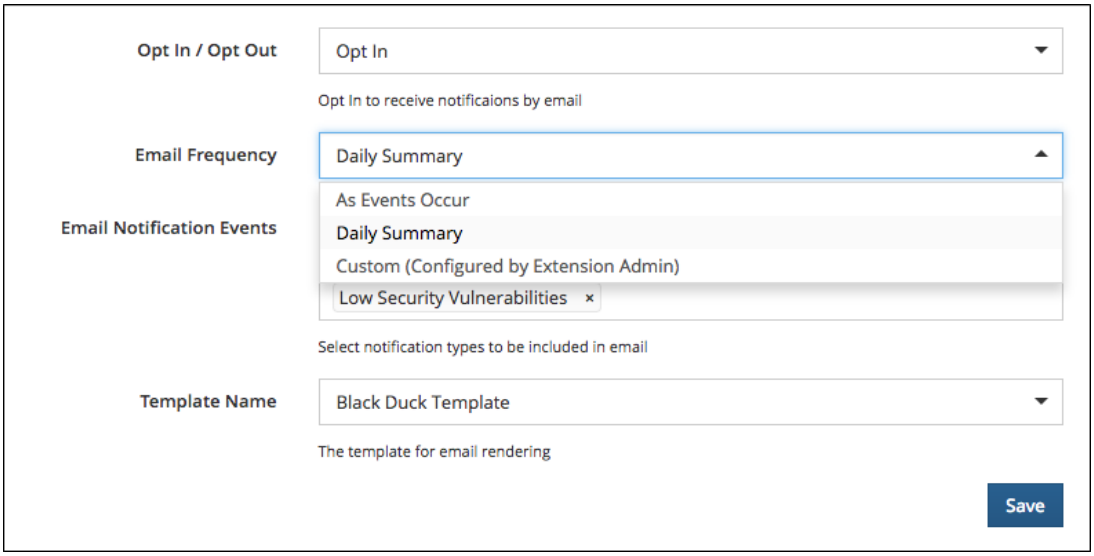
The default email digest distribution setting is that all users are opted in. Administrator users can edit the `user.configuration.json` file to globally opt all users in or out. Users can configure their personal settings to opt-in or opt-out on an individual basis. For more information, refer to Hub Email Extension User Configuration on page 16.

4.3 Hub Email Extension User Configuration

After you have successfully installed and authenticated the Hub Email Extension, and configured it for your environment, you can configure it according to your personal preferences. This is referred to as the *user* configuration. You can change your personal notification email preferences at any time.

To configure your user preferences for the Hub Email Extension:

1. Log in to the Hub.
2. In the username drop-down menu on the right, select **My Profile**.
3. On the **Profile** page, under **Extensions**, click **Email Extension** to open the **Email Extension** page. Note that if the Hub Email Extension is not available, the **Extensions** > **Email Extension** option does not display.



4. On the **Email Extension** page, complete the following steps:

   a. **Opt In / Opt Out**: While the global default is that all users are opted in for email

notifications, you can elect to opt out to stop receiving notification emails. Select **Opt In** to receive notification emails; select **Opt Out** to stop receiving notification emails.

b. **Email Frequency**: When you are opted in for notification emails, you can select how often you'd like to receive the emails. The options are:

    1. **As Events Occur**: One email per event. Emails are sent in real-time as notification events occur.
    2. **Daily Digest**: (Default) One email digest per 24-hour period.
    3. **Custom (Configured by Extension Admin**: One email digest is sent based on the administrator's custom email configuration. For example, this could be every other Thursday at 11:00 AM, every Monday at 6:00 PM, and so forth. Consult with your administrator for details.

c. The emails you receive display the type of frequency in the body of the email. For example, if you have selected *Daily Summary*, the email displays **Daily Digest**. In this manner, you always know the frequency of your email notifications without resorting to your user configuration settings.

d. **Email Notification Events**: Select the notification events for which your emails are sent. Clicking in this field displays a drop-down selector with notification events; click one or more events to select. Selected email notification events display in this field. To remove notification events, click the **X** at the right of the notification event to remove.

e. **Template Name**: Select the preferred email formatting template for your email digests. The template has no effect on the contents of your notification emails; only the formatting of the information contained within the emails. The values for template names correspond to the template files located in the `Templates` folder in the Hub Email Extension installation location.

5. Click **Save**.

4.4 Custom Email Distribution Schedules

As a Hub administrator, you can determine a custom interval for delivery of your notification email digests. Distribution options are:

- **Daily** (*default*): You receive a single email digest, containing all notification events for the preceding 24-hour period.
- **As Events Occur**: You receive individual emails as each notification event transpires.
- **Custom**: You can configure when to receive an email digest. The default Custom setting is an hourly digest. (*Optional*)

Setting up a custom email notification option may be a better fit for your workflow, and can allow greater flexibility for your users.

✱ To configure a custom notification email distribution schedule:

1. In the Hub email extension **Config** folder, locate the **Properties** file.
2. Open the **Properties** file, and locate the lines:

```
# default custom interval is to run every hour
hub.email.notifier.variable.customDigest.cron.expression=0 0 0/1 1/1 * ? *.
```

- Note that the default custom setting is to send notification emails in an hourly digest. You can keep this setting, or configure your custom distribution to be whatever fits your workflow requirements.

3. Using Cron expression syntax, edit the values in `expression=0 0 0/1 1/1 * ? *`.
4. Save and close the **Properties** file.
5. Restart the Hub Email Extension using the `email_extension.sh` file.

Note: Because the Hub Extensions require Cron job settings using Cron expressions and syntax, reference websites and examples are provided in Cron Reference Information for Hub Extensions on page 20.

4.5 JavaMail Configuration

The Hub Email Extension supports JavaMail configuration properties. This is achieved by adding properties to the `extension.properties` file beginning with the prefix `hub.email.javamail.config`. This allows an administrator of the extension to configure the full set of JavaMail properties as outlined on the Oracle website:

https://docs.oracle.com/javaee/7/api/javax/mail/package-summary.html

If you are using an authenticated SMTP server, specify the following properties in your `extension.properties` file to configure the user name and password.

- `hub.email.javamail.config.mail.smtp.username=<username>`
- `hub.email.javamail.config.mail.smtp.password=<password>`
- `hub.email.javamail.config.mail.smtp.auth=true`

4.6 HTTPS Configuration

The Hub Email Extension supports SSL communication between the Hub and the extension. The certificate used by the extension must be signed by a certificate authority (CA) that the Hub server recognizes in its keystore for the Hub server to create a Secure Socket Layers (SSL) handshake between the Hub and the extension.

In the `extension.properties` file, the property `hub.extension.url` must contain `https` as the protocol scheme in the URL. For example, `https://localhost:8000`.

Next, the optional SSL parameters in the `extension.properties` file must contain valid values as follows:

- `hub.extension.ssl.keyStorePath` = The full path to the keystore file containing the certificate for the extension.
- `hub.extension.ssl.keyStorePassword` = The password of the keystore containing the certificate.
- `hub.extension.ssl.keyPassword` = The password of the key used in the certificate. Note that

if the keystore type is `PKCS12`, then values for the `keyPassword` and the `keyStorePassword` are the same.

- `hub.extension.ssl.keyStoreType` = The type of keystore of the keystore file. For example, `JKS` or `PKCS12`.

For more information, refer to the *Restlet* documentation located at:

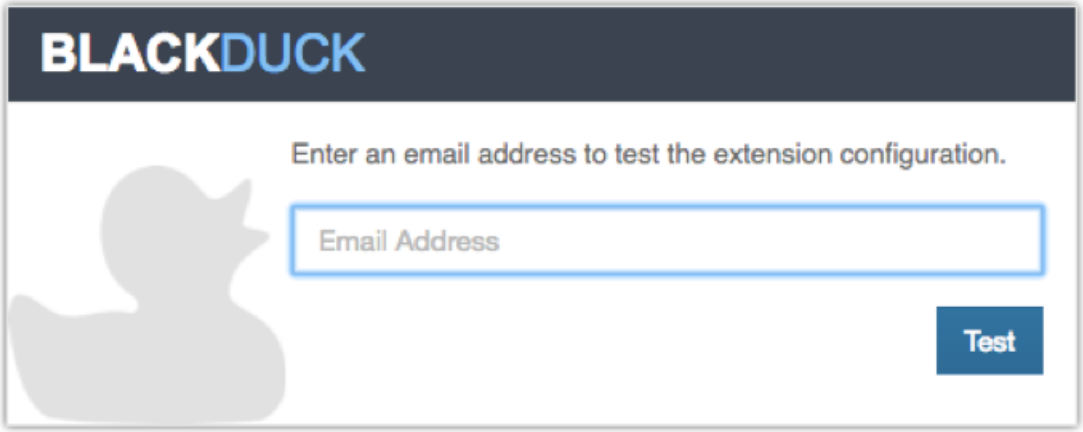
https://restlet.com/technical-resources/restlet-framework/guide/2.3/core/security/https

4.7 Testing Your Email Configuration

The Hub Email Extension features a test page that is hosted by the extension. After authorizing and configuring the extension, you can use the test page to verify that your configuration is correct. The test page is accessed using the URL *http://<extension_host_and_port>/extension/test*. For example, *http://mailextension.company.com:8000/extension/test*.

To test your Hub Email Extension configuration:

1. The Hub Email Extension can only be accessed after the Hub Email Extension is authorized.
2. In a web browser, type the URL: *http://mailextension.company.com:8000/extension/test*, replacing the *company* and port values as appropriate for your environment.
3. On the test page in the **Email Address** text box, type an email address to which a sample test email is sent. This process retrieves the global configuration options from the Hub configuration of the extension, and then sends an email to the address specified in the text box.
4. Click **Test**.

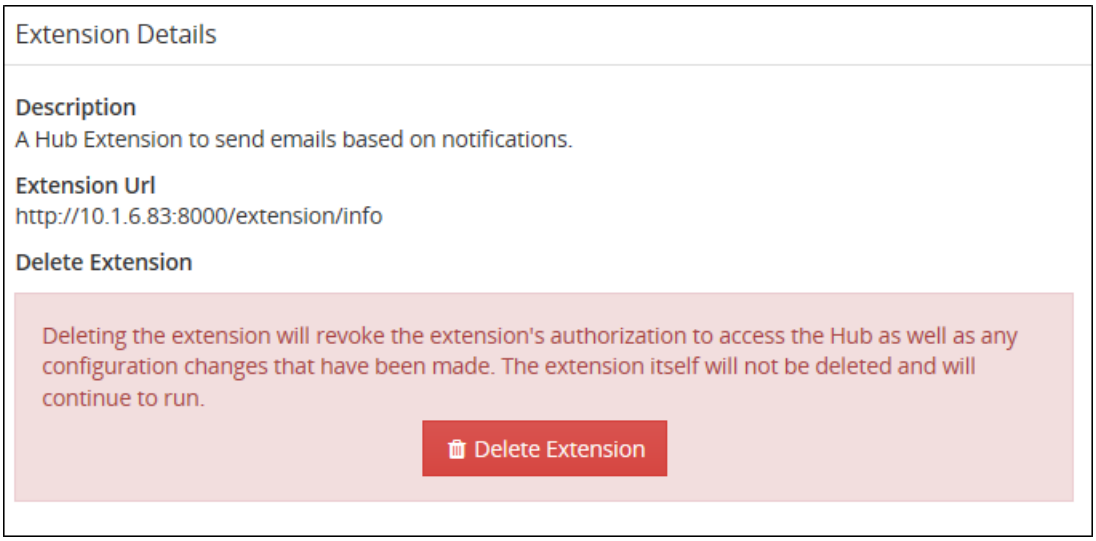


4.8 Removing the Hub Email Extension

If the Hub Email Extension is no longer required, you can delete it.

To delete the Hub Email Extension:

1. Log in to the Hub.
2. In the hamburger menu on the left, select **Administration**.
3. On the **Administration** page, select **Hub Extensions**.
4. On the **Hub Extensions** page, select **Hub Email Extension**.
5. On the **Hub Email Extension** page in **Extension Configuration** > **Extension Details**, click **Delete Extension**.



Note: After removing the Hub Email Extension, the installation and configuration files remain on your system. Therefore, you can reinstall the Hub Email Extension at any time. For more information, refer to Hub Email Extension Installation on page 6.

4.9 Cron Reference Information for Hub Extensions

Cron is a Unix tool with an established history. Its scheduling capabilities are both powerful and proven. The `CronTrigger` class is based on the scheduling capabilities of Cron.

`CronTrigger` uses Cron expressions, which are able to create distribution schedules such as:

- At 5:00 pm every other day.
- At 1:30 am every second Friday of the month.

Because the Hub Extensions require Cron job settings using Cron expressions and syntax, the following reference websites are provided.

Description	URL
Reference information for the Quartz scheduler used by the Hub.	http://www.quartz-scheduler.org/documentation/quartz-2.x/tutorials/crontrigger.html
A reference of Cron expressions.	https://docs.oracle.com/cd/E12058_01/doc/doc.1014/e12030/cron_expressions.htm
A site for building your Cron expression.	http://www.cronmaker.com/

Chapter 5: Troubleshooting Your Hub Email Extension

Should you experience difficulties with your Hub Email Extension, refer to the following topics for troubleshooting techniques.

5.1 Cannot Retrieve Extension Information

If you cannot retrieve the extension information, try running the following commands.

1. `iptables -L INPUT`
2. Check if the port is listed: `iptables -L OUTPUT`
3. Check if the port is listed: `netstat -nap | grep -i '<port_number>'`

If nothing is returned, then the Hub Email Extension either isn't able to use the port, or the Hub Email Extension isn't running.

5.2 Extension Previously Authorized Must be Re-Authorized

Scenario: you register the Hub Email Extension, and then delete it from the Hub. Before you can register and authorize it again, you must complete the following procedure.

To re-register and re-authorize the Hub Email Extension:

1. Stop the extension using the command: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh stop`.
2. Delete the file containing the token using the command: `/opt/blackduck/extensions/hub-email-extension-<version>/config/oauth.properties`.
3. Start the extension using the command: `/opt/blackduck/extensions/hub-email-extension-<version>/bin/email_extension.sh start`.

5.3 CentOS 7 Firewall Configuration

To properly set the firewall with CentOS versions 7.0 and higher, use the `firewall-cmd` command. If you have questions, refer to the manual page of the `firewall-cmd` command. Additionally, consult your IT department if you have further questions regarding requirements within your specific environment.

The following sections address specific areas of CentOS firewall configurations. Run the commands in the sections pertaining to your firewall configuration issues.

Check if `firewalld` is running:

To verify that the firewall is running, use the following commands:

```
>systemctl status firewalld
firewalld.service - firewalld - dynamic firewall daemon
Loaded: loaded (/usr/lib/systemd/system/firewalld.service; disabled;
vendor preset: enabled)
Active: inactive (dead)
```

Open Ports

If `firewalld` is running, use the command: `firewall-cmd --zone=public --add-port=<port>/tcp --permanent` to open the appropriate ports.

Note: Consult with your IT department before opening ports.

You must open the following port:

1. The port of the Hub Email Extension; for example, 55000.

Example:

```
>firewall-cmd --zone=public --add-port=55000/tcp --permanent
```

For the firewall changes to take effect, you must issue the reload command:

```
>firewall-cmd --reload
```

Chapter 6: Hub Email Extension Release Notes

6.1 New Features

Changes in Release 1.1.0

- Notification emails are now available in real-time as notification events occur.
- New installation and configuration procedures for both Hub and non-Hub server installations.

Changes in Release 1.0.0

- First release of Black Duck Hub Email Extension.

Chapter 7: 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.

7.1 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.

7.2 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.