How to produce a DataTurbine release (Bitbucket and Git)

Modification History			
Date	Author	Version	Description
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DataTurbine releases are produced periodically in order to disseminate bug fixes and new features to users. Before producing a release, developers will have conducted their own tests on the code to ensure bug fixes and enhancements are robust. Preliminary releases are given an incrementing "beta" release number - for example, V3.1B1, V3.1B2, V3.1B3, V3.1B4, V3.1B4a (the "a" signifying that this was a very minor change from the prior release). After a period of further testing, as long as no further bugs in the release are found, the latest "beta" release is copied to become the production release – in this case, V3.1B4a becomes V3.1. That is, the source code for V3.1B4a is identical to the source code for V3.1. Further development on the trunk code from this point will start with a new line of "beta" releases; for example, V3.2B1, V3.2B2, etc.

The decision to make a beta release should be in coordination and consensus with the Open Source DataTurbine (OSDT) developer community. A production release requires a still higher level of scrutiny and acceptance. Specific procedures for the review and acceptance of OSDT releases are beyond the scope of this document.

Prerequisites and preliminary notes

1. User must have a Bitbucket account and have WRITE or ADMIN access to the "Open Source DataTurbine" repository. To view user access privileges in the OSDT repository:
    a. go to the OSDT repository web page (https://bitbucket.org/OSDT/open-source-dataturbine)
    b. open the Administration page by clicking on the small "gear" icon that is located on the right side of the top menu bar (you must be logged into Bitbucket as a user with OSDT repository ADMIN privilege in order to see this "gear" icon)
    c. click on "Access management"
    d. A direct URL to the "Access management" page is https://bitbucket.org/OSDT/open-source-dataturbine/admin/access
2. Must have a clone of the OSDT repository from Bitbucket (by "clone" we mean a local copy of a Bitbucket repository). As an example, to put the cloned repository into the local directory C:\user\RBNB\osdt_repos\Dev, use the following commands in a "Git Bash" command window (note that the URL used in the "git clone" command below is specific to Bitbucket user "jpw3"):

```
cd /c/user/RBNB
mkdir osdt_repos
cd osdt_repos
git clone https://jpw3@bitbucket.org/OSDT/open-source-dataturbine.git Dev
```

3. Java SE Development Kit (JDK) and Apache Ant must be installed on your computer.

4. The same basic procedure described below will work on Windows, Macintosh, or Linux operating systems.
5. "Git" client software must be installed on your computer; options include:
    a. command line tool available from the official Git site, http://git-scm.com/
    b. numerous GUI tools are available; tools used by OSDT members include GitHub and TortoiseGit
6. For illustrative purposes, we make the following assumptions in the description to follow. Adapt this procedure as needed to your particular situation.
    a. Running under a Windows operating system.
    b. OSDT "trunk" repository is located at C:\user\RBNB\osdt_repos\Dev. For example, the "Source" directory is located at C:\user\RBNB\osdt_repos\Dev\Source.
    c. The text below describes how to make release "V3.3B1".

Procedure

1. Make sure all the changes you have made to your local cloned version of the OSDT repository have been "pushed" to the repository on Bitbucket. To see if you have any changes to commit, you can use the Git "status" command or the equivalent function in a GUI tool (for instance, use TortoiseGit's "Diff" tool).

2. Update your local cloned version of the OSDT repository with any changes that have been pushed to the OSDT repository on Bitbucket by other developers. You can use the "pull" command in Git (or the equivalent function in a GUI tool) to perform the update.

3. Update *ReleaseNotes.html* to include a description of DataTurbine changes since the last release. This information is available from the commit log, which can be viewed in one of two ways:
    a. At Bitbucket's OSDT repository web page, click on the "Commits" menu item (https://bitbucket.org/OSDT/open-source-dataturbine/commits/all). All commits are listed; you can click on a particular line to view the details of the specified commit.
    b. A more convenient way to get all the details for the desired commits is available using TortoiseGit on your locally cloned OSDT repository:
        i. In Windows File Explorer, go to "C:\user\RBNB\osdt_repos"
        ii. Right click the mouse over the "Dev" directory
        iii. Select "Show log" from the TortoiseGit menu
        iv. Specify the appropriate "From" and "To" date range at the top of the dialog box
        v. Use a "Shift+click" mouse action to select the desired range of commit messages from the upper frame of the dialog box
        vi. Click the right mouse button and select "Copy to clipboard"
        vii. Paste the copied information in a text document. The copied text will include all the details for the range of commits you selected, including the date, programmer, message, and files updated

viii. Extract the appropriate summary information from this text to include in the release notes.

4. Commit the updated *ReleaseNotes.html* to the OSDT repository on Bitbucket. As mentioned above, in order to be able to push changes from the local clone to the OSDT repository on Bitbucket, you must have "WRITE" or "ADMIN" user access privilege in the OSDT repository on Bitbucket. Here is an example of the commands used in a Git shell to push the updated file to the Bitbucket repository:

```
cd /c/user/RBNB/osdt_repos/Dev/Source
git status                  # You should see that ReleaseNotes.html has been modified
git add ReleaseNotes.html   # Add file to local staging area
git commit -m "Update ReleaseNotes.html"    # Commit changes to local repository
git push origin master      # Push changes to OSDT repository on Bitbucket
```

5. Save a snapshot of the OSDT repository by creating a "Fork" in Bitbucket:
   a. Log into Bitbucket as user "OSDT" (Tony Fountain's account, he is the "owner" of the OSDT repository on Bitbucket)
   b. Go to the "Open Source DataTurbine" repository web page at https://bitbucket.org/OSDT/open-source-dataturbine
   c. Click on the "Fork" button
   d. In the "Fork" web page that comes up:
      i. enter a name for the fork (for example, "OSDT V3.3B1")
      ii. enter a description (for example, "V3.3B1 release of the Open Source DataTurbine")
      iii. Since this will be a public repository, DO NOT select "This is a private repository"
      iv. Check the "Permissions" box in order to inherit the user and group permissions from the original OSDT repository
      v. Click the "Fork repository" button

6. Edit the root-level "README.txt" file in the new forked repository. To do this, go to the Bitbucket web page of the new forked repository, click on the "Source" menu item, and click on the "README.txt" file. Click the "Edit" button in the web page and update the text to something like the following:

```
Open Source DataTurbine V3.3B1 release,
"forked" from the main OSDT repository on 2013-05-15.
- John Wilson
```

7. Clone (that is, create a local copy of) the new forked repository. For example, to clone the V3.3B1 repository from Bitbucket using Git commands:

```
cd /c/user/RBNB/osdt_repos
```

```
git clone https://jpw3@bitbucket.org/OSDT/osdt-v3.3b1.git V3.3B1
```

(Note that the above HTTPS URL is specific for Bitbucket user "jpw3")

8. Compile the new local repository using "ant". For example, for V3.3B1:
    a. Pop up a command window and go to directory C:\user\RBNB\osdt_repos\V3.3B1\Source
    b. Run "ant" to perform a complete compilation of the OSDT system.

9. After successfully compiling the code, an installation JAR file will be located in the "Distribute" folder (named something like "RBNB-VX.X-install.jar"). Install a copy of this new distribution on your local computer.

10. Using Matlab, run the regression test suite against the newly compiled/installed version of DataTurbine.

    a. Launch the new DataTurbine server.

    b. Start Matlab

    c. Use Matlab's "javaaddpath" command to add the new "rbnb.jar" file to Matlab's classpath. For example: javaaddpath('C:\Program Files\RBNB\V3.3B1\bin\rbnb.jar')

    d. In Matlab, change to the "Matlab_Test" folder which is included in the new OSDT installation. For example, if V3.3B1 was installed at the default location, this folder will be located at "C:\Program Files\RBNB\V3.3B1\Matlab_Test".

    e. Run the Matlab regression test suite by executing the "testrbnb" script.

    NOTE: The "monitor stream test" will frequently display the following type of warning; having a small number of lost frames is acceptable:

    ```
    Warning: Gave up waiting to fetch data
    Lost 1/20 data frame(s)
    ```

Notes about the regression test:

- As appropriate, add new Matlab regression test driver functions (see testrbnb.m) to test/check OSDT server changes. JUnit tests to check your updates are also recommended.
- If you do not have Matlab, please coordinate with someone on the team who does in order to run the regression tests. This is especially important prior to production releases.

- An alternate to Matlab as the regression test driver is on the to-do list.
- Defining better testing requirements and procedures are also on the to-do list.

11. With the DataTurbine server still running, start Tomcat/WebTurbine for this new release. Run various tests under WebTurbine; for example: Using the WebTurbine interface (http://localhost), launch rbnbPlot, rbnbSource, and PNGPlugIn. Start rbnbSource streaming data to the DataTurbine; view the data in rbnbPlot; view the data in a web browser using PNGPlugIn (for example, http://localhost/RBNB/PNGPlugIn/rbnbSource/c0?d=2).

12. The above mentioned Matlab and WebTurbine tests can be repeated as follows:
    a. Repeat the tests after installing the new version of DataTurbine on a different machine/operating system.
    b. Run the Matlab regression tests and also access data in a web browser using WebTurbine over a network from a different machine with a different operating system (must install the new version of DataTurbine on this other machine).

13. Upload distributable files to the new "forked" repository on Bitbucket. Two files will be uploaded: the installation JAR file (for example, "RBNB-V3.3B1-install.jar") and the Release Notes. To maintain a unique name, "ReleaseNotes.html" should be renamed as "<release>-ReleaseNotes.html" (for example, "V3.3B1-ReleaseNotes.html"). To upload the files:
    a. Log into Bitbucket and go to the new "forked" repository (for example, the "OSDT V3.3B1" repository).
    b. Click on the "Downloads" menu item.
    c. Upload the above mentioned 2 files. For each file, you must first click the "Choose File" button, select the desired file, and then click the "Add file" button to upload the file.

14. To verify the integrity of the new release, download a copy of the newly uploaded installation JAR file, install it on a computer (preferably a different one than you used previously to develop/test the code), and run the above mentioned Matlab and WebTurbine tests.

15. Send an email to rbnb-dev email group, notifying them of the new DataTurbine release. Provide the new *ReleaseNotes.html* as an attachment to the email.