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Getting Started with Jet Stream

Welcome to Jet Stream

The Delphix agile data platform has greatly improved the speed at which end users can get the data that they need. While end users reap the benefits, they do not typically interact with the Delphix Engine directly, nor are they necessarily even aware that they are using it. End users most commonly file tickets for data management operations and wait for the tickets to be serviced by their IT organization. Delphix data management workflows allow database administrators (DBAs) to respond to these tickets much more quickly and reliably, but DBAs are often overloaded, and resolving high-priority issues takes precedence over requests from users. Requiring interactions between users and IT for every data operation is inefficient and can lead to unwanted delays.

The goal of Jet Stream is to create a clear separation of IT infrastructure and data management. As with the current Delphix platform, IT administrators and DBAs continue to control decisions about how resources such as virtual databases (VDBs) and vFiles are allocated. However, with Jet Stream, administrators can also assign these resources directly to a user. A Jet Stream user has the ability to control what data these resources should make available, even though the details of the physical resources are hidden from them. This separation of roles empowers Jet Stream users to get the data they need, when they need it, while providing administrators with the controls to ensure resources are accounted for appropriately.

User Roles and Permissions

Jet Stream has two types of users:

**Admin User**

Admin users have full access to all report data and can configure Jet Stream. Additionally, they can use the Delphix data platform to add/delete Delphix Engines, add/delete reports, add/delete users, change tunable settings, add/delete tags, and create and assign data templates and containers.

**Jet Stream Data User**

Jet Stream data users have access to production data provided in a data container. The data container provides these users with a playground in which to work with data using the Self-Service Toolbar.

Login

1. Access Jet Stream by opening a web browser and using the IP address or DNS qualified host name.
2. Login with the Delphix Admin User ID and Password provided for you.
Jet Stream Concepts

- Data Sources
- Data Templates
- Data Containers
- Jet Stream Data Flow

Data Sources

A data source in Delphix can represent a database, an application, or a set of unstructured files. Delphix administrators configure the Delphix Engine to link to data sources, which pulls the data of these sources into Delphix. The Delphix Engine will periodically pull in new changes to the data, based on a specific policy. This, in turn, begins building a custom timeline for each data source. Additionally, the Delphix Engine can rapidly provision new data sources that are space-efficient copies, allowing users to work in parallel without impacting each other.

Data Templates

Data templates are the backbone of the Jet Stream data container. They are created by you, the Delphix administrator, and consist of the data sources users need in order to manage their data playground and their testing and/or development environments. Data templates serve as the parent for a set of data containers that the administrator assigns to Jet Stream users. Additionally, data templates enforce the boundaries for how data is shared. Data can only be shared directly with other users whose containers were created from the same parent data template.

Data Containers

A Jet Stream data container allows data users to access and manage their data in powerful ways. Their data can consist of application binaries, supporting information, and even the entire database(s) that underlie it.

A Jet Stream data container allows users to:

- Undo any changes to their application data in seconds or minutes
- Have immediate access to any version of their data over the course of their project
- Share their data with other people on their team, without needing to relinquish control of their own container
- Refresh their data from production data without waiting for an overworked DBA

A Jet Stream data container consists of one or more data sources, such as databases, application binaries, or other application data. The user controls the data made available by these data sources. Just like data sources in a template, changes that the user makes will be tracked, providing the user with their own data history.

The Jet Stream Data Container Interface lets users view the details and status of their data container and its associated data sources, as well as manipulating which data is in those sources. The Data Container Interface includes a section called the Data Container Report Panel, which displays details about each source, including the connection information needed to access it - for example, the java database connectivity (JDBC) string for a database. This connection of information is persistent and stable for the life of the data container, regardless of what data the resources are hosting.

Jet Stream Data Flow

The Jet Stream data flow diagram below demonstrates how a Jet Stream data user accesses data sources. Data sources are connected to a Delphix Engine, which is controlled by the Delphix administrator. The Delphix administrator will connect all data sources that developers and quality assurance (QA) teams need to a Jet Stream data template. This data template acts as a parent source to create the data containers that the administrator will assign to Jet Stream data users. Data sources flow from the Delphix Engine into a data template and downstream into a data container, where a Jet Stream data user or users will use the data sources to complete tasks. The data container acts as a self-contained testing environment and playground for the Jet Stream data user. Additionally, Jet Stream data users are able to set, bookmark, and share data
points in their container with other Jet Stream data users of other data containers, as long as all the data containers were created from the same parent data template.

JetStream Data Flow, Version 1.0.0
Navigating the Jet Stream Admin Interface

The following screenshots provide a roadmap for how to navigate the primary screens and places a user will go within the Jet Stream Admin Interface. The interface includes screens such as the Jet Stream Administrator Home Page, Jet Stream Data Platform Management, Jet Stream Users and Permissions, and the Data User Management Interface.

Jet Stream Administrator Home Page

The Jet Stream Administrator Home Page is the home page of Jet Stream once an admin user has selected Jet Stream in the Admin App user log in dropdown menu. On this page you can add and view existing data templates and data containers. You can also view users, whom you can then assign to data containers that you create from existing data templates.

Jet Stream Data Template Management

The Jet Stream Data Template Management page contains a view panel of 6 tiles on the left-hand side of the screen. Each tile reports on a variety of useful information, such as user activity, data sources, data capacity, specific details about data containers, and data templates. They
also help you navigate to areas where you can complete specific tasks, such as creating a new template or container, working with data timeflows, assigning users to containers, and bookmarking important points in time.

Jet Stream Data Template Management, Version 1.0.0

Jet Stream User Roles and Permissions in Admin App

The Jet Stream User Roles and Permissions Page is found under Manage-Users in the Admin App. Here you can add new Jet Stream users by selecting the Jet Stream users only in the user details box, as seen in the screenshot below.

JetStream User Roles and Permissions, Version 1.0.0

Jet Stream Data Management User Interface for Delphix Administrators

The Jet Stream Data Management User Interface is the only interface to which Jet Stream data users have access and with which they interact. The user interface is the environment in which a data user works with data in an assigned data container, using data sources from a data template.

The user interface is divided into two work areas. The upper half allows the user a workspace to complete tasks using self-service operations. The lower half provides users with a summary of important details about the data container and offers bookmark management.
For more details about how to use this interface, please refer to the Jet Stream Data User Guide. The screenshot below illustrates the data user interface.
Understanding Jet Stream User Management

- Jet Stream User Management Activities
  - Creating a Jet Stream User
  - Assigning a Jet Stream User to a Data Container
    - Case 1: Data Container Creation
    - Case 2: Changing the Owner of an Existing Data Container
- User Details Page

Jet Stream User Management Activities

This document describes the process of creating a Jet Stream user and assigning that user to a data container. It also provides an overview of the Jet Stream User Details page.

Creating a Jet Stream User

Follow the same process when creating a new user or modifying an existing Delphix user. Jet Stream users do not have access to the existing admin UI, and they can only access the Jet Stream Data Container page for containers they own.

1. From the Admin App, select Manage.
2. Select Users.
3. Click Add User.
   a. To make an existing user a Jet Stream user, select the user from the list.
4. Enter the appropriate information.
5. Select the JS-Only User checkbox.
6. Press **Save**.

The user is now a Jet Stream user! This means that the user can now login to the Jet Stream user interface, and you can make the user the owner of a data container.

**Notes**

- Jet Stream users will only be able to access the **Jet Stream Data Management** page. They will not be able to access the other portions of the Jet Stream interface, nor the Admin App.
- A Delphix admin user cannot be made a JS-Only User. However, admins can still use Jet Stream and own a data container. Admins are also able to manage all data containers.
- A user who owns one or more data containers cannot be deleted.
  - For the list of data containers that a given user owns, see **Jet Stream User Details**.
- You cannot revoke a user's JS-Only role if they own any data containers.
  - For the list of data containers that a given user owns, see **Jet Stream User Details**.

**Assigning a Jet Stream User to a Data Container**

This section describes how to assign a Jet Stream user (created in the previous section) to a data container. Making a Jet Stream user the owner of a data container allows them to perform operations such as **Refresh** on that data container. Jet Stream users cannot see or manipulate data containers that they do not own. You can either assign a user when creating a new data container, or modify the owner of an existing data container.

**Case 1: Data Container Creation**

![Create Data Container](image)

**Case 2: Changing the Owner of an Existing Data Container**

1. On the **Management Overview** page, select the data template from which the data container was provisioned.
2. Click the **Containers** tile in the left-hand panel.
3. Click the **Edit** icon next to the name of the data container's owner.

![Data Container Editing](image)

4. Select the desired **owner** from the drop-down list.
   a. To remove the current owner, select **<None>** from the list.
5. When you are finished editing, click the **checkmark** to the right.

The user you selected is now the owner of the data container and can perform operations on that data container.

**Note**

- A data container can only have a single owner at a time
User Details Page

This section provides an overview of the Jet Stream User Details page. This page displays graphs related to the user's Jet Stream activity, as well as a list of all of the data containers that the user owns.

1. On the Management Overview page, click the Users tab.

2. Select the name of the desired user to go to their User Details page.

3. The Operation Counts By Week graph shows the aggregate of all Jet Stream operations performed by this user on all of their containers. The Container Age Distribution graph shows the average time since a data operation was performed on all of the user's containers. Each container that the user owns will appear in the Containers section. The user details page looks like this:
Understanding Jet Stream Data Templates

- Jet Stream Data Templates: An Overview
- Jet Stream Data Template Activities
  - Creating a Data Template and Adding Data Sources
  - Setting the Ordering of Data Sources
  - Selecting Masked Data Sources
  - Viewing Data Templates
  - Managing Data Template Notes
    - Notes
    - Editing a Data Template’s Name
    - Deleting a Data Template

Jet Stream Data Templates: An Overview

A Jet Stream data template represents a collection of data sources that you can provision to a Jet Stream user. A data source can be a dSource, a VDB, or vFiles. These sources can be used in multiple data templates. Once you have created a data template, the set of data sources associated with it is fixed; you cannot add data sources to an existing template, nor can you remove data sources from it. In addition to data sources, you can define the set of metadata that is relevant for a given template – for example, notes, descriptions, names for sources that are relevant to an end user, and other configuration details. Once you have created the template, it provides a stencil for provisioning data containers. This, in turn, enables Jet Stream users to have self-service access to a space-efficient copy of the data sources defined in the data template.

Jet Stream Data Template Activities

Data templates are managed by a Delphix admin. The admin can provision data containers from the data template and assign a data container to an end user. The admin can also create bookmarks on the data template timeline in order to mark meaningful points in time.

When creating a data template, it is important to consider the set of users who will own data containers provisioned from it. In Jet Stream, templates effectively define the boundaries of the data that users can share directly with each other. Only owners of data containers created from the same data template are able to share data using bookmarks.

Creating a Data Template and Adding Data Sources

A data template consists of an arbitrary set of dSources, virtual databases (VDBs), and vFiles. These are created and managed in the Delphix Admin interface, and can be used in Jet Stream as data sources. You can use any data type supported by the Delphix Engine as a data source in Jet Stream. For more information, refer to the Linking/Provisioning documentation for the standard Delphix Engine. The following is an example of the many kinds of data sources you can use to create a data template.

![Data Sources](data_sources.png)

Data Sources, version 1.0.0

When adding data sources to the data template, it is important to consider whether there are any dependencies between them. For example, do data operations need to begin with a VDB (database) source before the same operation occurs on vFiles (application binary)? Or can data operations be performed in parallel on each of the data sources? The Jet Stream data source dependencies are by default synced together in
parallel during any data operation, including starting the data container and its sources. When working with specific ordering constraints, such as with Oracle EBS, you can set up and configure the ordering sequence for each data source.

To create a data template:

1. From the drop-down menu in the upper right-hand corner of the Delphix UI, select Jet Stream.

2. On the Mgmt Overview page, click Add Template.

   Jet Stream Drop Down, version 1.0.0

   Jet Stream Add Data Template, version 1.0.0

   This will send you to the Create Data Template page.

3. Enter a Name for the data template.

4. Optionally, enter a description for the data template.

5. Click Add Data Source to add data sources to the template.
Default vs. Setting the Ordering of Data Sources to a Data Template

You have the option of setting the ordering of data sources to a data template. This option minimizes the time needed to complete Jet Stream operations by running them in parallel on each data source. You cannot change this setting after the data template has been created. **If you want default behavior, do NOT select the box highlighted in the image above.**

When your template has ordering constraints, as with Oracle EBS, you must set the startup order for each data source. Check the **Set startup order of data sources** box. The Delphix Engine will select the data source with order 1 as the first source started and the last one to be stopped. The data source with order 2 will be selected as the second source started, and this sequence will continue until the last data source is selected and ordered. Note that it is not possible to have operations performed in parallel on a subset of data sources and sequentially on a different subset of data sources.

Setting the Ordering of Data Sources

1. Use the drop-down menu to select the **source** you want to include. The drop-down menu will display all dSources in the system and all VDBs and vFiles that are not already assigned to a Jet Stream data container.
2. Enter a Jet Stream-specific **name** for the data source.
3. Optionally, enter a **description** in the **Notes** section. Jet Stream users see a copy of these notes in the data containers they own.
4. Click **Add Data Source** to continue to add and configure more data sources to the data template. You can remove data sources using the **Delete** icon.
5. Click **Create** to finish creating the data template.

For Oracle EBS, the vFiles dbTechStack will have order 1, the Oracle database order 2, and the vFiles appsTier order 3. For more information about EBS, see the EBS documentation.

Once you have created a template, you cannot change the set of data sources in it. Any VDBs or dSources being used as data sources in Jet Stream will appear with a special badge in the Admin App.

Selecting Masked Data Sources
Prerequisites

Using Jet Stream with Masked Data Sources

Procedure

When creating a data template with masked data sources, select the parent masked VDBs as sources to use in the data template.

Viewing Data Templates

As the Delphix Admin user, you can view what sources have been included in a data template. You can distinguish the masked sources from the unmasked sources by referring to the corresponding data icons, as seen below.
Example of a template containing both masked and unmasked VDB's
Managing Data Template Notes

After you have created the data template, it will be visible from the Management Overview page under the Data Templates tab, which is the default tab.

Data Template Details in Jet Stream Management Overview

Notes

- Each tile corresponds to a data template and contains high-level information about that data template. For example, the number of child data containers is visible under the name of the container.
- You can search, sort, and filter the data template tiles, making it easy to manage a large number of data templates in Jet Stream.

Jet Stream Search

Editing a Data Template's Name

1. Click the Edit icon next to the data template name.

2. Enter the new name.
3. Click the checkmark icon to confirm changes.
Deleting a Data Template

1. Select the data template you want to delete.
2. Click the Delete icon in the lower right-hand corner of the tile.

Data Template Details

Note: If there are any data containers provisioned from the data template, you must remove them before you can delete the data template. See instructions in the Managing Data Containers section of this guide.
Understanding How to Manage Data Template Details

Viewing and Working with the Data Template Details Page

In the Data Management Page, under the Templates Tab, Select and click the data template's name. This will direct you to the Data Template Details page. You can use this page to view and configure details of an individual data template. It consists of a number of tiles:

- Summary
- Containers
- Sources
- Properties
- Bookmarks
- Capacity

Summary

Use this tile to get an overview of the data template and its child data containers.

Notes

- The graphs labeled Operation Counts By Week and Container Data Age Distribution give a sense of the amount of activity in the data template over time
- Top Checkouts shows at a glance which bookmarks have been used most frequently as part of a Restore or Branch operation
- Top Users by Data Operations shows at a glance which users are the most active in Jet Stream

Containers

Use this tile to create, view, and delete child data containers from this data template.
Sources

In this tile, you can view the data sources that this data template uses. Each data source has a Jet Stream user-visible name, a description, and a set of properties that consist of arbitrary key/value pairs. This information will be included in the data containers provisioned from this template.

Properties
Use this tile to edit the data template's properties. Properties are arbitrary key/value pairs associated with the data template. These values will be propagated to all data containers provisioned from this template. This provides a way for you to annotate data templates and data containers with whatever information is relevant to their use case.

**Bookmarks**

Use this tile to create and manage bookmarks on the data template. A bookmark represents a given point in time that is protected against retention. Bookmarks created on a data template are visible to all of the data containers provisioned from it. For more details, refer to the Bookmarks section in the Jet Stream Data User Guide.
Capacity

Use this tile to get information about the storage associated with the data template and its child containers.

Jet Stream Capacity Details, Version 1.0.0
Understanding Jet Stream Data Containers

- **Jet Stream Data Container Overview**
  - Refresh
  - Restore
  - Reset
  - Branch
  - Activate
  - Bookmark
  - Share

- **Jet Stream Data Container Activities**
  - Configuring Jet Stream Data Containers
    - Add a Data Container
    - Selecting Masked Data Sources for Data Containers
      - Prerequisites
      - Procedure
    - Delete a Data Container
  - Data Management Operations
    - Start a Data Container
    - Stop a Data Container

- **Working with Multiple Container Owners**
  - Coordinating Users
  - What operations could disrupt others using a container?
  - What processes should I put in place?
  - Where can I see which user has performed what operation?

### Jet Stream Data Container Overview

Data containers are provisioned from data templates by administrators and assigned to a Jet Stream user. A data container represents a socket that is capable of making any data within the data template accessible. The Jet Stream user controls what data they want to access. Jet Stream users have effectively been provisioned a set of "physical" resources, such as a database on a host that consumes some set of resources. A data container is comprised of a VDB or vFiles provisioned from each source in the data template from which it is created. The data container manages these VDBs, and the data operations performed on a data container will only impact these VDBs. Data containers represent the separation between IT infrastructure and end users. IT determines the set of VDBs or vFiles to allocate to a data container, and Jet Stream users determine the data that they want accessible in the containers allocated to them.

Data containers can be used to access any data within a single data template, but not across templates. Jet Stream users have the ability to populate the data within their data container from any point in time on the data template, the data container’s history, or shared bookmarks from other data containers. Although operations are all accomplished by performing timeflow operations on the underlying VDBs, the data containers hide the VDBs and their underlying properties from Jet Stream users. None of the data container operations require provisioning additional VDBs; everything is accomplished using the resources assigned when the data container is created.

### Refresh

This is the same basic concept as **Refresh** in VDBs. In Jet Stream, **Refresh** will update the data on the active branch of a user's data container. The user will then have the latest data in the sources of the data template from which the container was provisioned.

### Restore

**Restore** allows a Jet Stream user to update the data on the active branch of their data container to any point in time on the data container, the data template from which the container was provisioned, or a bookmark. This operation effectively means, "Take me to the data at this time."
Reset

Reset is a simplified version of Restore built to support the notion of "undo." It allows a user to reset the state of their application container to the latest operation. This can be useful for testing workflows where, after each test, users want to reset the state of their environment.

Branch

A Jet Stream branch represents a logical timeline, effectively a task on which a user is working. Only one branch can be active at a time, but a user can use multiple branches to track logically separate tasks. Jet Stream branches do not require the allocation of a new VDB; instead, they are comprised of a collection of timeflows within a VDB.

Activate

This allows the user to select which branch they want to be active. Only a single branch within a data container can be active at a time.

Bookmark

This creates a semantic name for a point in time and prevents this data from being removed by the retention policy. Bookmarks can be annotated with tags to make them easier to search for. In addition to tags, bookmarks allow a user to enter a description of what the bookmark represents.

Share

Bookmarks can be shared, which allows them to be seen by users who own data containers that have been provisioned from the same data template. This allows users to share data, providing a way for other users to either restore their existing timeline or create a new branch from these shared points.

Jet Stream Data Container Activities

Configuring Jet Stream Data Containers

A Jet Stream data container is comprised of a set of virtual databases (VDBs), where each VDB is a direct child of the dSource, VDB, or vFiles in the data template's data sources. Jet Stream does not automatically provision VDBs when creating a data container; a Delphix admin must create the required VDBs via the existing Admin App. Once the data container has been created, these VDBs are managed exclusively through Jet Stream.

1. Select the Management Overview page, select a template from which you want to create the data container. This will take you to the Data Template Page seen below.
Add a Data Container

1. Click Add Container in the upper right-hand corner of the screen.
Jet Stream Details Panel and Dashboard.

This will take you the Create Data Container page.
2. Enter information about the data container, such as the **Name** and **Description** (optional).
3. Select the Owners for the data container from the search box. **Note:** Any Delphix administrator is able to manage all containers, so the owners should be end users. Refer to the User Management section in this guide for details.

4. It is acceptable to have multiple Owners per each data container. Select the VDBs to use for this container’s data sources. The available VDBs have the following constraints:
   - They have been provisioned from the dSources/VDBs belonging to the parent data template
   - They are not already part of another Jet Stream data template or container

**Note:** If there are no VDBs that meet these constraints, you may see a message informing you that you do not have any compatible VDBs. Click
Selecting Masked Data Sources for Data Containers

Prerequisites

- Using Jet Stream with Masked Data Sources
- Selecting Masked Data Sources in Data Templates

Procedure

Once a child masked VDB is selected for the data container, the admin user can see the parent-child relationship as a masked source under data sources.

Additionally, an admin user can select both masked and unmasked data sources in both Jet Stream templates and data containers.
Selecting Masked and Unmasked Data Sources in a Data Container

Jet Stream users will not know whether the data in their containers and branches is masked or unmasked. All Jet Stream functionality remains the same regardless of whether a data source is masked or unmasked.

The figure above is an example of a data container with masked data.

Delete a Data Container
By default, all data sources (VDBs and vFiles) in a Jet Stream Data Container are deleted as part of the Jet Stream Data Container deletion process.

When performing the Delete Container operation, you can uncheck the **Delete associated VDBs and vFiles** box in the dialog window to keep these data sources intact after the Data Container is deleted.

### Data Management Operations

#### Start a Data Container

Starting a Data Container does the following:

- Starts the data sources, This means that each data source listed in the **Source Details** section of the **Data Container** page will start using CPU and network resources on the host system it is running.
- Puts a copy of the data from the active branch into those data sources.

On the **Self-Service Toolbar**, click **Start**.

#### Stop a Data Container

Stopping a data container does the following:

- If not already done, copies the current data in the data sources into the active branch of the data container
- Shuts down the data sources. This means each data source listed in the **Source Details** section of the **Data Container** page will stop using CPU and network resources on the host system.

On the **Self-Service Toolbar**, click **Stop**.

Jet Stream Self-Service Toolbar, Version 1.0.0

Jet Stream Self Service Toolbar, Version 1.0.0

Other operations on the data container, such as **Stop**, **Reset**, and **Refresh**, must be performed from the **Data Management** page:
Working with Multiple Container Owners

Administrators may designate multiple Jet Stream users as owners of a single data container. These users all share access to the same data container; actions taken by one user will impact all users. This means that if User A makes Branch X the active branch, User B will also see Branch X as the active branch. Because of this, Jet Stream Admins should take steps to avoid confusion when Jet Stream Users are sharing the same container.

Coordinating Users

Opportunity for disruption increases as more owners are sharing a single container. Sharing a container works best when users can communicate with each other, such as when they are part of a team, or when they are working with the container at different times. Jet Stream users cannot see the other users with whom they share the container. Work with Jet Stream users to ensure they know who they are sharing with.

What operations could disrupt others using a container?

Potentially disruptive operations include:

- Refresh
- Switching active branches
- Deleting bookmarks
- Creating Branches
- Un-sharing bookmarks
- Restore
- Reset
- Starting/ stopping your container

What processes should I put in place?

The more owners you have for a single container, the more processes you should put into place in order to coordinate usage between users. Each team is different, but strategies include

- designating a person to perform certain data operations
- saving your work with a bookmark or a creating/ working on a personal branch
- being aware of who is using your data container / data before performing operations
Where can I see which user has performed what operation?

Which user has performed which action can be seen in the “history” tab of the data-mgmt page in Jet Stream. Be aware that operations counts in the template view are currently counted based on the container, not the user performing the operation.

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Branch</td>
<td>User &quot;delphix_admin&quot; created the new branch &quot;default&quot; on Jet Stream data layout &quot;Container 1&quot;.</td>
<td>Thu, Dec 17, 2015 16:22:41 PM</td>
</tr>
<tr>
<td>Deactivate</td>
<td>User &quot;js1&quot; deactivated branch &quot;default&quot; on Jet Stream data container &quot;Container 1&quot;.</td>
<td>Mon, Dec 28, 2015 14:22:08 PM</td>
</tr>
<tr>
<td>Create Branch</td>
<td>User &quot;js1&quot; created the new branch &quot;Testing 123&quot; on Jet Stream data layout &quot;Container 1&quot;.</td>
<td>Mon, Dec 28, 2015 14:22:08 PM</td>
</tr>
<tr>
<td>Create Branch</td>
<td>User &quot;js1&quot; created the new branch &quot;Testing234&quot; on Jet Stream data layout &quot;Container 1&quot;.</td>
<td>Mon, Dec 28, 2015 14:27:00 PM</td>
</tr>
<tr>
<td>Deactivate</td>
<td>User &quot;js1&quot; deactivated branch &quot;Testing234&quot; on Jet Stream data container &quot;Container 1&quot;.</td>
<td>Mon, Dec 28, 2015 14:26:59 PM</td>
</tr>
<tr>
<td>Activate</td>
<td>User &quot;js1&quot; activated branch &quot;Testing123&quot; on Jet Stream data container &quot;Container 1&quot;.</td>
<td>Mon, Dec 28, 2015 14:30:48 PM</td>
</tr>
<tr>
<td>Deactivate</td>
<td>User &quot;js1&quot; deactivated branch &quot;Testing234&quot; on Jet Stream data container &quot;Container 1&quot;.</td>
<td>Mon, Dec 28, 2015 14:30:48 PM</td>
</tr>
<tr>
<td>Create Bookmark</td>
<td>User &quot;delphix_admin&quot; created the new bookmark &quot;bug123&quot; on branch &quot;Testing 123&quot; on Jet Stream data layout &quot;Container 1&quot;.</td>
<td>Wed, Dec 30, 2015 09:04:20 AM</td>
</tr>
<tr>
<td>Create Bookmark</td>
<td>User &quot;delphix_admin&quot; created the new bookmark &quot;Bug 234&quot; on branch &quot;Testing 123&quot; on Jet Stream data layout &quot;Container 1&quot;.</td>
<td>Wed, Dec 30, 2015 08:58:33 AM</td>
</tr>
<tr>
<td>Delete Bookmark</td>
<td>User &quot;delphix_admin&quot; deleted bookmark &quot;Testing123&quot; on branch &quot;Testing 123&quot; on Jet Stream data layout &quot;Container 1&quot;.</td>
<td>Tue, Dec 29, 2015 15:08:20 PM</td>
</tr>
</tbody>
</table>
Understanding Bookmarks

Bookmarks Overview

Bookmarks are a way to mark and name a particular moment of data on a timeline. You can restore the active branch's timeline to the moment of data marked with a bookmark. You can also share bookmarks with other Jet Stream users, which allows them to restore their own active branches to the moment of data in your container. The data represented by a bookmark is protected and will not be deleted until the bookmark is deleted. To help manage the space used by this data, users can set an optional expiration date for a bookmark. At the end of the set date, the bookmark will automatically be deleted. Once created, you can easily locate a bookmark through one of the bookmark viewers in the interface. To understand how to use bookmarks in Jet Stream, please refer to the Jet Stream Data User Guide.

Using Bookmarks in Data Templates

An admin user can create a bookmark on a template that will then be automatically shared to all containers created from that template. Additionally, an admin user can create a bookmark on the master template timeline with the point of time you are interested in. The bookmark will always be saved from retention policies and a new branch can be created from this bookmark.
Understanding Jet Stream Usage Management

- Jet Stream Usage Management Dashboard Overview
- Template Usage Overview
- Template Usage Details
- Template Usage (Containers) Overview
- Template Usage (Bookmarks) Overview
- Container Usage (Branches) Overview

Jet Stream Usage Management Dashboard Overview

Jet Stream data templates are comprised of dSources, virtual databases (VDBs), and vFiles. These data sources are controlled by the standard policies configured in the Admin App of the Delphix Engine. As with existing containers, space will be reclaimed by the retention policy over time. As retention cleans up historical data, users will no longer be able to use those points in time to restore or branch. In Jet Stream, an admin can create a bookmark on the data template timeline, which will prevent retention from cleaning up the data that a bookmark references.

Jet Stream data containers are comprised of VDBs provisioned from the sources defined in the data template. Similar to VDBs in the existing Admin App, data containers’ VDBs will share blocks with the source from which they are provisioned. This prevents the referenced data on the source from being cleaned up by retention. Retention for these VDBs is controlled by the standard Delphix retention policies. As on templates, bookmarks in data containers will prevent storage from being reclaimed by retention. In addition, Jet Stream will ensure that the latest data on each Jet Stream branch is never removed.

The Usage pages of the data templates and data containers provide information that can help you understand how storage is being used, how to reclaim space, and how much space you are able to reclaim.

Usage Overview is a top-level page, along with the Data Mgmt and Mgmt Overview pages. It contains the space usage breakdowns by data templates and users.

Jet Stream Usage Overview, version 1.0.0

Template Usage Overview

The Template Usage Overview page, seen in the image below, contains the usage breakdowns for data templates and users. The interface is interactive and allows you to visualize data by interacting with pie charts, bar graphs and tables. The pie chart contains information about the top 10 space consumers; the table at the bottom contains information about all of the templates and/or users.

The table below the charts includes category fields. You can find corresponding descriptions by hovering over the names of the fields in the table:
The Template Usage Overview page, Version 4.2

Additionally, the table allows you to sort, navigate, and interact by clicking the field category of interest. For example, to sort the table, click a column header such as Unvirtualized and the table will sort by that category. To navigate to a particular data template or user, you can click either the pie slice or the name of the template/user in the table.

Table of templates/users, Version 4.2

The field categories display the following information:

- **Total** – The sum of the space used by the data containers provisioned from this data template and by the bookmarks created on this template. This is the space that will be freed if you delete the template.

- **Containers** – The amount of space used by the data containers provisioned from this data template. This is the space that will be freed if you delete or purge all of the data containers.

- **Bookmarks** – The amount of space used by the bookmarks on this data template. This is the space that will be freed if you delete all bookmarks on the template.
- **Unvirtualized** – The amount of space that would be used by the data in this template and its child data containers without Delphix virtualization.

The pie chart and table graphs can help you analyze storage usage information.

**Template Usage Details**

You can locate the **Usage** tile at the bottom of the Jet Stream navigation sidebar, as seen in the image below. Usage summaries are available for templates, containers, and users. For example, when you click the **Usage** tile on the **Template Details** page, the usage details you interact with will be in the context of the selected data template. The same is true when you are navigating the **Data Management** page for the data containers, and the **User Details** page for users.

The Usage tile in the Jet Stream navigation sidebar, Version 4.2

**User Usage Overview**

The **User Usage Overview** page provides graphical visualizations of space used by the Jet Stream users assigned to data containers. The two category fields include the number of containers owned and the amount of space being referenced by a user.
The User Usage Overview page, Version 4.2

The field categories display the following information:

- **Referenced** – The amount of space used by data containers that are owned by this user. This excludes the space that this user is sharing with other users.
- **Containers Owned** – The number of data containers owned by this user.

**Template Usage (Containers) Overview**

The Template Usage Details page, as seen below, shows the space used by data containers provisioned from the template and the bookmarks created on the template.
Container Usage, Version 4.2

The stacked bar graph shows information about the top 10 space users. You can re-sort the graph based on the fields in the Sort by legend on the top right-hand corner of the screen as seen in the image above. For example, if you want to know which data containers are sharing the most data with others, you can un-select Shared (others data) and Unique by clicking them in the legend.

The Sort by legend, Version 4.2

**Note:** When the legend items are not selected, their corresponding colored boxes turn gray and the data is removed from the chart. The data and name will reappear when you re-select by clicking the grayed-out category you want.

The field categories display the following information:

- **Unique** – The amount of space that will be freed if you delete this data container. This assumes that also delete underlying data sources.
- **Shared (others data)** – The amount of space that cannot be freed on the parent data template (or sibling data containers) because it is also being referenced by this data container due to Restore or Create Branch operations. The snapshots on the template or sibling container are what use up the space.
- **Shared (self data)** – The amount of space that cannot be freed on this data container because it is also being referenced by sibling data containers due to Restore or Create Branch operations, via shared bookmarks.
- **Unvirtualized** – The amount of space that would be used by the data in this container without Delphix virtualization

**Template Usage (Bookmarks) Overview**

As shown in the image below, the Template Usage Details page provides the usage information about bookmarks created on a template. The primary categories of information include **Unique**, **Shared (others data)** and **Shared (self data)**.

![Image of Template Usage Details](image)

**Template Usage (Bookmarks), Version 4.2**

The field categories display the following information:

- **Unique** – The amount of space that will be freed if you delete this bookmark
- **Shared** – The amount of space referenced by this bookmark that cannot be freed by deleting this bookmark because it is also referenced by neighboring bookmarks or branches that have been created or restored from this bookmark
- **Externally Referenced** – The amount of space referenced by this bookmark that cannot be freed by deleting this bookmark because it is also being referenced outside of Jet Stream – for example, by a retention policy.

**Container Usage (Branches) Overview**

The Container Usage Details page shows the usage information about the branches and bookmarks created on a container. The primary categories of information include **Unique**, **Shared (others data)**, and **Shared (self data)**.
The Container Usage Details page, Version 4.2

The field categories display the following information:

- **Unique** – The amount of space that will be freed if you delete this branch
- **Shared (others data)** – The amount of space that cannot be freed on the parent data template or sibling branches because it is also being referenced by this branch due to Restore or Create Branch operations. The snapshots on the template or sibling container are what use up the space.
- **Shared (self data)** – The amount of space that cannot be freed on this branch because it is also being referenced by sibling data containers due to Restore or Create Branch operations, via shared bookmarks.
Resources

Access more resources at http://docs.delphix.com/display/DOCS50/Delphix+Engine+4.1+Documentation
Support

Ask the community for support at [https://community.delphix.com/delphix](https://community.delphix.com/delphix). If you are seeing an issue that cannot be resolved with help from the community, file a support case as appropriate.